

## ILLINOIS EPA RCRA CORRECTIVE ACTION CERTIFICATION

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

### 1.0 FACILITY IDENTIFICATION

Name: WRB Refining LP - Wood River Refinery County: Madison  
Street Address: 900 South Central Ave. Site No. (IEPA): 1191150002  
City: Roxana, IL 62084 Site No. (USEPA): ILD 080 012 305

### 2.0 OWNER INFORMATION

Name: Not Applicable

Mailing Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Contact Name: \_\_\_\_\_

Contact Title: \_\_\_\_\_

Phone No.: \_\_\_\_\_

### 3.0 OPERATOR INFORMATION

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

17 Junction Drive, PMB #399

Glen Carbon, IL 62034

Kevin Dyer

Principal Program Manager

618-288-7237

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

- RFI Phase I Workplan/Report  
 RFI Phase II Workplan/Report  
 CMP Report; Phase \_\_\_\_\_  
 Other (describe):

Groundwater Sampling Report - 4<sup>th</sup> Quarter 2011

Date of Submittal \_\_\_\_\_

IEPA Permit Log No. \_\_\_\_\_

Date of Last IEPA Letter \_\_\_\_\_

on Project 8/31/11

Log No. of Last IEPA \_\_\_\_\_

Letter on Project B-43R-CA-1; CA-3; CA5; CA-6; CA-7; CA-8; CA-10; CA-11; and PS11-032

Does this submittal include groundwater information:  Yes  No

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

Groundwater sampling report for the 4<sup>th</sup> quarter 2011 sampling event in the project area in the Village of Roxana.

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

Cover letter, RCRA Corrective Action Certification and Groundwater Sampling Report - 4<sup>th</sup> Quarter 2011

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

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

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

A person is a duly authorized representative only if:

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

Owner Signature: \_\_\_\_\_ (Date) \_\_\_\_\_

Title: \_\_\_\_\_

Operator Signature: [Signature] \_\_\_\_\_ 01/15/12 \_\_\_\_\_

(Date)

Title: Principal Program Manager

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

Professional's Signature: [Signature] \_\_\_\_\_

Date: 1/17/12

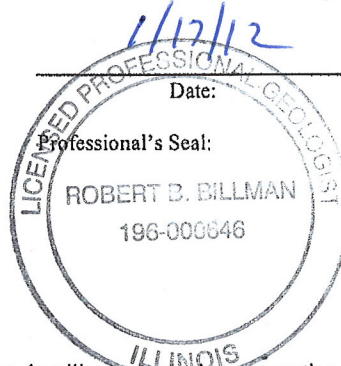
Professional's Name: Robert B. Billman

Professional's Address: URS Corporation

1001 Highlands Plaza Drive West

St. Louis, MO 63110

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



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

Name of Laboratory: Accutest Laboratories

Signature of Laboratory Responsible Officer: [Signature]

Date: 12-30-11

Mailing Address of Laboratory

Name and Title of Laboratory Responsible Officer: Reza Jand

\_\_\_\_ **Accutest Laboratories** \_\_\_\_\_  
\_\_\_\_ **495 Technology Center West** \_\_\_\_\_  
\_\_\_\_ **Building One** \_\_\_\_\_  
\_\_\_\_ **Marlboro, MA 01752** \_\_\_\_\_  
\_\_\_\_ **(508) 481-6200** \_\_\_\_\_



January 19, 2012

Mr. Steven F. Nightingale, P.E.  
Manager, Permit Section  
Illinois Environmental Protection Agency  
Bureau of Land  
1021 North Grand Avenue East  
Springfield, Illinois 62794

**Subject: Groundwater Monitoring Report – 4<sup>th</sup> Quarter 2011  
Roxana, Illinois  
119115002 – Madison County  
Equilon Enterprises LLC d/b/a Shell Oil Products US  
Log No. B-43-CA-21**

Dear Mr. Nightingale:

On behalf of Shell Oil Products US, URS Corporation is submitting the enclosed report for your review. This sampling was required by Condition 7 of the Agency's letter dated August 5, 2010.

If you have any questions during your review, please contact Kevin Dyer, SOPUS project manager, at [kevin.dyer@shell.com](mailto:kevin.dyer@shell.com) (618/288-7237), or me at [bob.billman@urs.com](mailto:bob.billman@urs.com) (314/743-4108).

Sincerely,

Robert B. Billman  
Senior Project Manager

Enclosures: RCRA Corrective Action Certification and Report (original plus 2 copies)

Cc: Kevin Dyer, SOPUS  
Marty Reynolds, Village of Roxana  
Eric Petersen, ConocoPhillips  
Amy Boley, IEPA, Springfield  
Gina Search, IEPA, Collinsville  
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1001 Highland Plaza Drive West, Suite 300  
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R E P O R T

INTERIM GROUNDWATER  
MONITORING PROGRAM –  
4<sup>TH</sup> QUARTER 2011

Roxana, Illinois

*Prepared for:*

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

January 2012



URS Corporation  
1001 Highlands Plaza Drive West, Suite 300  
St. Louis, MO 63110  
(314) 429-0100  
**Project 21562735**



Certification RCRA Corrective Action Form

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URS Corporation (URS) is submitting this report on behalf of Shell Oil Products US (SOPUS) for the 4<sup>th</sup> Quarter 2011 (4Q11) gauging and groundwater sampling activities conducted in the Village of Roxana, Illinois (**Figure 1**). Some monitoring wells within the WRB Refining LP Wood River Refinery (WRR) were also sampled as part of this event. The study area within the Village of Roxana (Village) is generally bounded by the alley north of First Street, Illinois Route 111, the property boundary (aka West Fenceline) of the WRR, and the Roxana Public Works Yard. Activities within the refinery were conducted in cooperation with ConocoPhillips Company (COP). For purposes of presentation in this report only, the combined area is collectively referred to as the “Investigation Area.”

In a letter from the Illinois Environmental Protection Agency (IEPA) to Shell dated August 5, 2010, the Agency requested various site characterization, monitoring activities, and initiation of an interim groundwater monitoring program. This program began in the 4<sup>th</sup> quarter 2010 (4Q10), and the first report was submitted on January 14, 2011. On March 3, 2011, a call was held between representatives of SOPUS, IEPA and URS to discuss the groundwater monitoring program and IEPA’s general comments on the 4Q10 report. Modifications based on some of these comments were incorporated during the 1<sup>st</sup> quarter 2011 (1Q11) and due to the timing of that 1Q11 report it was agreed in that call that additional items/comments would be addressed during the 2<sup>nd</sup> quarter 2011 (2Q11). IEPA memorialized these additional items/comments in a June 16, 2011 letter and a subsequent August 31, 2011 letter. Due to the timing of the letters with respect to development of the 2Q11 report, the balance of the information requested in the June 2011 and August 2011 letters was presented in the 3Q11 Report or presented in this 4Q11 Report. This is SOPUS’ understanding of the Agency’s requests and how the items have been or are being addressed:

IEPA Comment	SOPUS Response Taken or Planned to be Taken
June 16, 2011 Letter from IEPA	
4.a. Agency requested that the uppermost aquifer will be monitored with the following wells: MW-1 through MW-13, P-55, P-68, T-12, P-74, P-59, P-56, T-6, P-93A through D, P-58, P-66, MW-6A through D, P-114, GWP-23, and GWP-24.	The Interim Groundwater Monitoring Program incorporated additional wells P-55, P-68, T-12, P-74, P-59, P-56, P-57, P-58, P-66, P-114, and MW-14 (installed in October 2011 near boring location GWP-23) in the 4Q11. Well P-57 was also incorporated in place of T-6 in 4Q11.

IEPA Comment	SOPUS Response Taken or Planned to be Taken
June 16, 2011 Letter from IEPA	
4.b. Agency requested that the monitoring wells GWP-23 and GWP-24 be incorporated into the monitoring well network.	In the response (dated September 1, 2011) to the June 16 <sup>th</sup> letter, SOPUS recommended the installation of a well near location GWP-23 only. In October 2011, MW-14 was installed within 10 feet of boring location GWP-23, for the purpose of monitoring conditions along the southern boundary of the dissolved phase plume.
4.c. i.-iv. Agency requested completion of a perched groundwater investigation.	For the reasons discussed in SOPUS' September 1, 2011 letter, additional perched zone work was not proposed.
5.a. The facility must depict both the dissolved phase and free product plumes. Isoconcentration maps must be created, as well as spider diagrams depicting site-wide contamination.	The 3Q11 report first included the following new figures: Figure 4 providing an illustration of the "Thickness of Free Product," and Figure 6 providing an illustration of the "Dissolved Phase Benzene Concentrations in Groundwater. Figure 5, which provided an illustration of the dissolved phase concentrations entitled " Groundwater Analytical Results Summary," was first provided in the 4Q10 Report and analytical results have been added to the figure as wells have been incorporated into the program. These figures are also included in this 4Q11 Report
5.c. Geologic cross-sections must be constructed which depict: (1) the dissolved contamination; (2) screened intervals of the monitoring wells, production wells, and oil recovery wells; and (3) groundwater and product elevations, within each cross section.	The 3Q11 report first included the following new figures: Figure 7 provides an illustration of a North to South cross section from 1st Street to 8th Street, and Figure 8 provides an illustration of a West to East cross section from near Highway 111 to Chaffer Street. These figures are also included in this 4Q11 Report.
5.d. Utilize nested well sets across the site to evaluate the individual zones via discussions and maps in order to better delineate the zone or zones where the vertical and horizontal extent of free product and dissolved contamination exists.	Nested well sets MW-6A-D and P-93A-D were added to the Interim Groundwater Monitoring Program beginning in 4Q10. MW-6A was replaced with a new well by the same name in October 2011.
IEPA Comment	SOPUS Response Taken or Planned to be Taken
August 31, 2011 Letter from IEPA	

1. a-d.	Comment 1 provided in the August 31, 2011 letter was identical to comment 5 above provided by IEPA in the June 12, 2011 letter. It was correspondingly addressed by SOPUS as noted above.
2. Within ninety (90) days, the groundwater data for the First and Second Quarters of 2011 must be resubmitted, in accordance with Condition 1 above, for Illinois EPA Review and approval.	The groundwater data for the 1 <sup>st</sup> and 2 <sup>nd</sup> quarters was submitted to the Agency on November 28, 2011.

Groundwater samples were collected and analyzed during the 4Q11 to meet the requirements of the interim groundwater monitoring program. **Figure 2** shows the monitoring wells that are part of the interim monitoring well network.

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The monitoring well gauging and sampling activities discussed in this section are part of the interim groundwater monitoring program, as outlined in the IEPA's letter date August 5, 2010.

### 2.1 ADDITIONAL ACTIVITIES

The following additional work was conducted in 4Q11:

- Weekly gauging of a subset of the refinery and Village monitoring wells has continued to date, related to the potential partial loss of groundwater control at the WRR during the 1Q11. These data have been reviewed for this report.
- Monitoring wells MW-1 through MW-6A, which were 1-inch diameter wells with 15 foot long well screens, were replaced with 2-inch diameter wells with 10 foot long well screens and sampled in 4Q. Well construction information will be provided under separate cover.
- MW-14, located near previous profile location GWP-13, was installed and sampled as requested by IEPA.

### 2.2 GROUNDWATER GAUGING AND SAMPLING

#### **Groundwater Gauging**

A comprehensive round of gauging was conducted between October 5 through 8, 2011 in conjunction with the quarterly gauging event for the WRR to evaluate groundwater flow direction and identify possible separate phase product in the Investigation Area. In addition, weekly groundwater gauging has been performed since January 2011 upon discovering that groundwater control might have been partially lost. 4Q11 groundwater gauging data from the comprehensive October 5 through 8, 2011 gauging event can be found in **Table 1**.

#### **Low Flow Purging and Sampling**

Groundwater samples were collected October 26 through December 15, 2011. Low-flow purging and sampling procedures were followed for Village wells during the sampling event. Prior to sampling, the initial water level was measured and recorded on the field sheets.

Monitoring wells MW-1 through MW-14, P-54, P-55, P-56, P-57, P-58, P-59, P-68, P-66, P-74, and T-12 were purged and sampled using a stainless steel submersible pump and bonded designated polyethylene tubing.<sup>1</sup> The submersible bladder pump was powered by the QED Sample Pro

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<sup>1</sup>“Designated” tubing is used for multiple sampling events, and is stored in a sealed bag designated for the particular well between sampling events.

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controller unit. The submersible pump, with the proper length of designated polyethylene tubing, was slowly lowered into the monitoring well to be sampled and set with the pump intake near the midpoint of the monitoring well screen. The tubing from the pump was connected to a flow-through cell, which discharged into a 5-gallon plastic bucket. Pumping was performed at a low flow rate ( $\leq 500$  mL/minute) so as to not create drawdown of the water level within the monitoring well. During groundwater purging, water quality parameters (pH, temperature, conductivity, turbidity, dissolved oxygen (DO) and oxidation-reduction (ORP)) were measured and recorded on the field sheets after every flow-through cell volume. Purging continued until a minimum of three flow-through cell volumes of water were removed and the groundwater quality parameters stabilized. Once stabilization was achieved, the groundwater flow was diverted from the flow-through cell and groundwater samples were collected for volatile organic compound (VOC) and semivolatile organic compound (SVOC) analysis. Groundwater sampling field parameters can be found in **Table 2** and field data sheets are included in **Appendix A**.

### **Well Wizard® Purging and Sampling**

Monitoring wells P-93A, P-93B, P-93C, located on the North Property, and P-114 located on the West Property, were purged and sampled using a dedicated stainless steel QED Well Wizard® groundwater sampling pump. These wells are part of the WRR monitoring program, and the sampling procedures for these wells are normally different than those in Roxana because samples are collected after purging three well volumes in addition to achieving stabilization of groundwater parameters. The procedure requires that the pump intake is positioned near the midpoint of the well screen and the pump is operated using a QED MicroPurge Engine/Compressor with a QED Control Box. The depth to water measurement at each well is used to calculate well volume of each well. Purging of each of these wells continued until a minimum of three well volumes of water was removed from the well and water quality parameters (pH, temperature, conductivity, DO, ORP and turbidity) stabilized. Once three well volumes had been removed and groundwater parameters stabilized, groundwater samples were collected for VOC and SVOC analysis. Well P-93D, was replaced in 1Q11 because it was determined to be unusable. The replacement well has the same well ID as the original well. The replacement well P-93D was sampled using a submersible pump and dedicated tubing using the same purge criteria described above under Low Flow Purging and Sampling. Groundwater sampling field parameters can be found in **Table 2** and field data sheets are included in **Appendix A**.

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### 2.3 HEALTH & SAFETY, DECONTAMINATION, AND INVESTIGATIVE DERIVED WASTE

#### **Health & Safety**

The quarterly sampling activities were performed in general accordance with the investigation area Health and Safety Plans (HASPs). Field activities were governed by the *Route 111/Rand Avenue Vicinity Investigation Health and Safety Plan (HASP)*, dated January 2011 (and updates), as prepared by URS. In addition, for work performed on WRR property, health and safety procedures were supplemented by the *ConocoPhillips Environmental and Geotechnical Work 2011 HASP*, dated May 2011, as prepared by URS.

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

Each team was provided with a drink cooler with ice and sports drinks to keep field personnel hydrated. Canopies were provided to protect field personnel during rain events. URS field personnel primarily wore U.S. Environmental Protection Agency (USEPA) modified Level D personal protective equipment (PPE), which included hard hat, steel-toed boots, safety glasses, etc. In addition, work within the WRR was performed wearing flame retardant clothing (FRCs) per WRR requirements (in areas where required).

A photoionization detector (PID) with a 10.6 electron volt (eV) probe, combustible gas indicator (CGI), and individual Hydrogen Sulfide gas detectors (for locations inside WRR) were used during the field activities to monitor air quality for health and safety purposes. Field instruments were calibrated prior to use each day in accordance with the manufacturer's specifications.

Health and safety related information was primarily recorded in field logbooks.

A low energy work permit was also issued each day as needed by COP operators for groundwater sampling activities within the WRR. COP personnel inspected the work areas and monitored the ambient air, as necessary, prior to the issuance of daily work permits.

#### **Decontamination**

Field personnel and equipment underwent decontamination procedures to ensure the health and safety of those present, to maintain sample integrity, and to minimize cross contamination. Sampling equipment (e.g., groundwater pump) was decontaminated prior to the collection of each analytical sample, between sample locations, and prior to leaving the investigation site by



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washing with LiquiNox and a distilled water rinse. Interface probes are decontaminated using isopropyl alcohol. Personnel and small equipment decontamination was performed at the sample locations.

### **Investigation Derived Waste (IDW)**

Investigative derived waste (IDW), such as purge water and decontamination water, generated during monitoring well sampling activities was collected, stored and disposed of properly. Expendable materials (e.g., disposable sampling equipment such as gloves and tubing) having a low probability of impact were collected in trash bags and disposed as municipal waste.

Decontamination fluids and purge water from wells at the Public Works Yard (i.e., MW-7, MW-8) were staged in 55-gallon steel drums at the Yard. This material is managed as hazardous waste based on prior characterization and was disposed at the Heritage Environmental Disposal Facility in East Liverpool, Ohio.

Decontamination fluids and purge water from other wells in the Village of Roxana were staged in a 6,900-gallon double-walled polyethylene tank at the Public Works Yard. This material is managed as non-hazardous waste based on prior characterization and was solidified and landfilled at the Waste Management, Inc. Milam Recycling and Disposal Facility (Milam) in East St. Louis, Illinois.

Decontamination fluids and purge water related to or generated from work within the WRR were collected and disposed, per a COP issued permit, through the WRR's National Pollutant Discharge Elimination System (NPDES) permitted Wastewater Treatment Plant (WWTP).

### **2.3 SAMPLE HANDLING AND LABORATORY TESTING**

Samples were collected in laboratory-supplied containers, labeled in the field and information was recorded on the chain of custody (COC) forms at the time of sampling. The sample ID format used, starting with 1Q11, is "well ID-ROX-date". The COCs can be found with the analytical reports in **Appendix B**. After collection, the samples were placed on ice, packaged to prevent damage during shipment, and cooled to approximately 4°C. The samples were then delivered via overnight courier, under the proper COC documentation, to the laboratory for analysis.

Samples were analyzed by Accutest Laboratories in Marlborough, Massachusetts for VOCs via USEPA Methods 8260B and 8011, for SVOCs via USEPA Method 8270C, and for PAHs via USEPA Method 8270LL. The 8011 method for VOCs and 8270LL method for PAHs were used

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in order to achieve lower reporting limits for 1,2-dibromoethane, 1,2-dibromo-3-chloropropane, and PAHs respectively. The lower reporting limits are specified in the WRR Part B permit, and per direction from IEPA the interim groundwater monitoring program should be consistent with the Permit.

### 2.4 DATA QUALITY REVIEW AND DATA MANAGEMENT

Laboratory data were provided in electronic form, and were independently reviewed and qualified by URS. One hundred percent of the data were subjected to a data quality review (Level III validation). Evaluation of the data followed procedures outlined in the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (USEPA, 2008). The laboratory assigned data qualifiers on the basis of their quality control or to indicate sample analysis information. Data qualifiers were also added by URS, as appropriate, and are included on the data table and the laboratory result pages (**Appendix B**). The results of the data review are discussed in **Section 3.2**.

Field data and documentation collected as part of this scope of work became part of the project file. URS maintains the files for the site, and the database management system.

The following documentation was completed and supplements the COC records:

- Field logbooks
- Field sample collection sheets
- Safety documentation

This section presents the results of the 4Q11 groundwater sampling event.

## 3.1 GROUNDWATER GAUGING RESULTS

**Table 1** presents cumulative information from the gauging events for wells in the Interim Groundwater Monitoring Program in addition to wells that are gauged on a weekly basis to demonstrate groundwater flow and groundwater control. Water levels were above the top of the screens in many of the wells gauged for this event, consistent with the past several quarters. **Figure 3** illustrates the potentiometric surface observed during the comprehensive gauging event conducted October 5-8, 2011. This map illustrates groundwater flow toward the refinery pumping wells, most notably well W-86. Product was measured in the following wells in the October 5 through 8, 2011 comprehensive 4Q11 gauging, all located inside the WRR: P-60 (0.34 ft); P-64 (0.18 ft), P-68 (0.05 ft), P-75 (0.01 ft), P-92A (0.06), T-7 (0.07), and T-19 (0.04). In each case, the product was above the top of the screens. Product present in wells is being removed with bailers for reprocessing on site by WRR. The total product removed from well P-60 was approximately ¼ gallon. Product in the remaining wells was either not present during the removal attempt, or not able to be removed due to the low quantities of product in the wells. **Figure 4** illustrates the measured product thickness observed during the comprehensive gauging event conducted October 5 through 8, 2011.

## 3.2 DATA QUALITY REVIEW RESULTS

A total of nine sample delivery groups were prepared and sent to Accutest Laboratories in Marlborough, MA. Forty-nine groundwater samples were prepared and analyzed for VOCs and SVOCs (including PAHs). This included 31 investigative samples, three field duplicates, three equipment blanks, and two matrix spike/matrix spike duplicates (MS/MSDs). A trip blank was included in every cooler which contained samples for VOC analysis. A total of 10 trip blanks were analyzed for VOCs for the groundwater sampling event.

Trip blanks, equipment blanks, and laboratory method blanks were analyzed to evaluate for the existence and magnitude of any contamination resulting from field and laboratory activities. Compounds detected in blanks are specified in the data reviews (**Appendix B**). Due to blank contamination, bis(2-ethylhexyl)phthalate was qualified non-detect (U) in one investigative sample. In addition, certain PAH compounds were qualified non-detect (U) in eight investigative samples due to blank contamination.

Based on laboratory control sample/laboratory control sample duplicate (LCS/LCSD), MS/MSD, surrogate, and field duplicate criteria, all groundwater results reported were accepted for their intended use.

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## 3.3 ANALYTICAL RESULTS AND DISCUSSION

**Table 2** presents cumulative information on groundwater field parameters obtained during sampling. The laboratory analytical detections for the groundwater samples collected during this event are presented in **Table 3**<sup>1</sup>.

The following compounds were reported at concentrations above the laboratory reporting limit in groundwater samples during the 4Q11 sampling event. *Italic font denotes constituent detected for the first time.*

VOCs	
Benzene	Methyl tert-Butyl Ether (MTBE)
n-Butylbenzene	n-Propylbenzene
sec-Butylbenzene	Toluene
tert-Butylbenzene	1,2,4-Trimethylbenzene
<i>Chlorobenzene</i>	1,3,5-Trimethylbenzene
<i>Cymene (p-Isopropyltoluene)</i>	m,p-Xylene
Ethylbenzene	o-Xylenes
Cumene (Isopropylbenzene)	Xylenes (total)
SVOCs	
Acenaphthene	Fluorene
Acenaphthylene	Indeno(1,2,3-cd)pyrene
Anthracene	1-Methylnaphthalene
Benzo(a)anthracene	2-Methylnaphthalene
Benzo(a)pyrene	2-Methylphenol(o-cresol)
Benzo(b)fluoranthene	3&4-Methylphenol(m&p-cresol)
Bis(2-ethylhexyl)phthalate	Napthalene
Chrysene	Phenanthrene
2,4-Dimethylphenol	Phenol
Di-n-octyl phthalate	Pyrene
Fluoranthene	

<sup>1</sup> Monitoring wells P-55, P-56, P-59, P-93A-D, P-114, and T-12 are required to be sampled as part of both the WRR and the Roxana/Route 111 groundwater monitoring programs. These programs currently require different laboratory analyses and therefore two discrete samples were collected simultaneously. These samples are collected at the same time and using a combination of the two programs' sampling protocols. The analytical results between the two groundwater monitoring programs may vary slightly.

Thirty-seven constituents were detected during the 4Q11 groundwater sampling event. Two additional VOCs, chlorobenzene and cymene (p-Isopropyltoluene), were detected this event but were not detected in past events. Carbon disulfide was detected in the 3Q11, but was not

detected in any wells during the 4Q11 event. One additional SVOC, Acenaphthylene, was detected this quarter, and was present at low parts per trillion levels in a few wells. Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Benzoic Acid, and Dibenzo(a,h)anthracene were detected in the 3Q11, but were not detected in any wells during the 4Q11 event. The analytical detections were compared with Screening Criteria listed in Section IV.E.1 of the RCRA Part B Permit for the Wood River Refinery<sup>2</sup>, and the results of this comparison are presented in **Table 3**. IEPA-published screening values were not available for the following VOCs: sec-Butylbenzene, tert-Butylbenzene, Chloroethane, Chloromethane, Cymene (p-Isopropyltoluene), and 1,2,4-Trimethylbenzene. Screening values were not available for the following SVOCs: 3-Nitroaniline and Nitrobenzene.

The analytical results for the following VOCs exceeded their respective groundwater screening criteria in one or more samples this event: benzene, ethylbenzene, toluene, methyl tert-Butyl Ether (MTBE), and 1,3,5-trimethylbenzene. The analytical results for the following SVOCs exceeded their respective groundwater screening criteria in one or more samples: bis(2-Ethylhexyl)phthalate, 2-Methylnaphthalene, Naphthalene, and Phenol. The analytical results from these groundwater samples are shown on **Figure 5**. The analytes listed in the spider boxes in this figure are those with concentrations that exceeded one or more of the indicated screening criteria in the 4Q11.

**Figure 6** presents a plan view depiction of benzene analytical results in groundwater across the site. **Figure 7** presents a cross-section along Chaffer Street with a vertical distribution of the benzene analytical results in groundwater superimposed. **Figure 8** presents a cross-section across the public works property with a vertical distribution of the benzene analytical results in groundwater superimposed. Most of the benzene results appeared consistent in comparison to the results from prior events, with the exception of the following wells: Monitoring well MW-6A had a benzene detection of 0.0105 J/0.0137J mg/L. Benzene concentrations at MW-6A were below the screening criteria (0.005 mg/L) in 2Q11 and 3Q11. Monitoring well MW-6B had a detection of benzene (0.961 mg/L) which exceeded the screening value. Historical results at this well have ranged from non-detect (4Q10) to 0.0082 mg/L (1Q11). Newly added, or recently installed, wells to the Interim Groundwater Monitoring Program also had results that exceeded

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<sup>2</sup> IEPA requested that the Interim Groundwater Program be consistent with the RCRA Part B Permit.

the screening criteria. These wells included P-55, P-56, P-57, P-58, P-59, P-66, P-74, and T-12 (all located on the WRR). The analytical results for benzene and the extent of the dissolved phase plume are presented on **Figure 6**.

URS conducted the interim groundwater monitoring, as required, for the 4Q11. The following conclusions are based on the data and information collected as part of this program.

- Based on correspondence with IEPA, monitoring wells P-55, P-68, T-12, P-74, P-59, P-56, P-57, P-58, P-66, P-114, and MW-14 (installed in October 2011 near boring location GWP-23) were added to the Interim Groundwater Monitoring Program during the 4Q11.
- Groundwater flow beneath the Village is toward groundwater pumping wells at the refinery (e.g. W-86 and W-42).
- Groundwater analytical results from the 4Q event are similar to the results from the prior quarter.
- The areal extent of the dissolved phase benzene plume has become better delineated with the addition of new groundwater monitoring wells and sampling of additional existing wells (now part of the Interim Groundwater Monitoring Program).

Illinois Environmental Protection Agency (IEPA), 2010; (IEPA, 2010); *Letter providing approval with comments the SOPUS 2010 Delineation Report*. Issued to Shell Oil Products US (SOPUS), dated August 5, 2010.

*Illinois Environmental Protection Agency Hazardous Waste Management RCRA Post-Closure Permit*. Issued to Shell Oil Products US (SOPUS) September 23, 2010.

Illinois Environmental Protection Agency (IEPA), 2011; (IEPA, 2011); *Letter regarding Corrective Action Conditions*. Issued to Shell Oil Products US (SOPUS), dated June 16, 2011.

Illinois Environmental Protection Agency (IEPA), 2011, (IEPA, 2011), *Letter Regarding Corrective Action Efforts for Contaminated Groundwater and Potential Free Product*. Issued to Shell Oil Products US (SOPUS), dated August 31, 2011.

URS Corporation (URS), 2011 (URS, 2011e); *Groundwater Sampling Report for 3<sup>rd</sup> Quarter 2011 for Roxana, Illinois*; dated October 2011. Prepared for Shell Oil Products US.

URS Corporation (URS), 2011 (2011f); *Route 111/Rand Avenue Vicinity Investigation Health and Safety Plan – Roxana, Illinois*; dated January 2011. Prepared for Shell Oil Products US.

URS Corporation (URS), 2011 (URS, 2011g); *ConocoPhillips Environmental and Geotechnical Work 2010 Health and Safety Plan – WRB Refining LLC Wood River Refinery*; dated May 2011. Prepared for Shell Oil Products US.

URS Corporation (URS), 2011 (URS, 2011h); *ROST-4-PZ Delineation and Sampling*; dated September 2011. Prepared for Shell Oil Products US.

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





**TABLE 1  
CUMULATIVE GROUNDWATER GAUGING RESULTS**

Well ID/ Quarter	Top of Casing (ft MSL)	Date Gauged	Depth to Product (ft)	Depth to Water (Static)	Water- Product Interface (ft MSL)	Product Elev. (ft MSL)	Product Thickness (ft)	Corrected W.L. Elevation (ft MSL)	Comments
MW-01 Screened Interval Elevation: 399.45 - 384.45									
4Q10	442.86	11/12/2010	NE	36.91	NA	NA	NA	405.95	*
1Q11	442.86	1/13/2011	NE	37.58	NA	NA	NA	405.28	*
2Q11	442.86	4/25/2011	NE	38.38	NA	NA	NA	404.48	*
3Q11	442.86	7/5/2011	NE	35.77	NA	NA	NA	407.09	*
	442.86	9/19/2011	NE	35.15	NA	NA	NA	407.71	*
4Q11	442.86	10/5/2011	NE	35.48	NA	NA	NA	407.38	*
MW-02 Screened Interval Elevation: 396.74 - 381.74									
4Q10	443.93	11/12/2010	NE	38.12	NA	NA	NA	405.81	*
1Q11	443.93	1/13/2011	NE	38.67	NA	NA	NA	405.26	*
2Q11	443.93	4/25/2011	NE	39.61	NA	NA	NA	404.32	*
3Q11	443.93	7/5/2011	NE	37.04	NA	NA	NA	406.89	*
	443.93	9/19/2011	NE	36.36	NA	NA	NA	407.57	*
4Q11	443.93	10/5/2011	NE	36.65	NA	NA	NA	407.28	*
MW-03 Screened Interval Elevation: 399.38 - 384.38									
4Q10	430.36	11/12/2010	NE	24.05	NA	NA	NA	406.31	*
1Q11	430.36	1/13/2011	NE	24.92	NA	NA	NA	405.44	*
2Q11	430.36	4/25/2011	NE	25.42	NA	NA	NA	404.94	*
3Q11	430.36	7/5/2011	NE	22.72	NA	NA	NA	407.64	*
	430.36	9/19/2011	NE	22.40	NA	NA	NA	407.96	*
4Q11	430.36	10/5/2011	NE	22.76	NA	NA	NA	407.60	*
MW-04 Screened Interval Elevation: 398.95 - 383.95									
4Q10	441.58	11/12/2010	NE	35.38	NA	NA	NA	406.20	*
1Q11	441.58	1/13/2011	NE	36.04	NA	NA	NA	405.54	*
2Q11	441.58	4/25/2011	NE	36.74	NA	NA	NA	404.84	*
3Q11	441.58	7/5/2011	NE	34.15	NA	NA	NA	407.43	*
	441.58	9/19/2011	NE	33.65	NA	NA	NA	407.93	*
4Q11	441.58	10/5/2011	NE	33.99	NA	NA	NA	407.59	*
MW-05 Screened Interval Elevation: 398.6 - 383.6									
4Q10	429.73	11/12/2010	NE	23.32	NA	NA	NA	406.41	*
1Q11	429.73	1/13/2011	NE	24.15	NA	NA	NA	405.58	*
2Q11	429.73	4/25/2011	NE	24.65	NA	NA	NA	405.08	*
3Q11	429.73	7/5/2011	NE	22.00	NA	NA	NA	407.73	*
	429.73	9/19/2011	NE	21.72	NA	NA	NA	408.01	*
4Q11	429.73	10/5/2011	NE	22.06	NA	NA	NA	407.67	*
MW-06A Screened Interval Elevation: 400.44 - 385.44									
4Q10	432.42	11/12/2010	NE	25.62	NA	NA	NA	406.80	*
1Q11	432.42	1/13/2011	NE	26.36	NA	NA	NA	406.06	*
2Q11	432.42	4/25/2011	NE	26.78	NA	NA	NA	405.64	*
3Q11	432.42	7/5/2011	NE	24.21	NA	NA	NA	408.21	*
	432.42	9/19/2011	NE	24.07	NA	NA	NA	408.35	*
4Q11	432.42	10/5/2011	NE	24.44	NA	NA	NA	407.98	*
MW-06B Screened Interval Elevation: 368.24 - 363.24									
4Q10	432.29	11/12/2010	NE	25.47	NA	NA	NA	406.82	*
1Q11	432.29	1/13/2011	NE	26.21	NA	NA	NA	406.08	*
2Q11	432.29	4/25/2011	NE	26.65	NA	NA	NA	405.64	*
3Q11	432.29	7/5/2011	NE	24.08	NA	NA	NA	408.21	*
4Q11	432.29	10/5/2011	NE	24.28	NA	NA	NA	408.01	*
MW-06C Screened Interval Elevation: 347.16 - 342.16									
4Q10	432.11	11/12/2010	NE	25.25	NA	NA	NA	406.86	*
1Q11	432.11	1/13/2011	NE	25.97	NA	NA	NA	406.14	*
2Q11	432.11	4/25/2011	NE	26.73	NA	NA	NA	405.38	*
3Q11	432.11	7/5/2011	NE	23.80	NA	NA	NA	408.31	*
4Q11	432.11	10/5/2011	NE	24.03	NA	NA	NA	408.08	*
MW-06D Screened Interval Elevation: 327.27 - 322.27									
4Q10	431.99	11/12/2010	NE	25.13	NA	NA	NA	406.86	*
1Q11	431.99	1/13/2011	NE	25.87	NA	NA	NA	406.12	*
2Q11	431.99	4/25/2011	NE	26.30	NA	NA	NA	405.69	*
3Q11	431.99	7/5/2011	NE	23.67	NA	NA	NA	408.32	*
4Q11	431.99	10/5/2011	NE	23.95	NA	NA	NA	408.04	*

**TABLE 1  
CUMULATIVE GROUNDWATER GAUGING RESULTS**

Well ID/ Quarter	Top of Casing (ft MSL)	Date Gauged	Depth to Product (ft)	Depth to Water (Static)	Water- Product Interface (ft MSL)	Product Elev. (ft MSL)	Product Thickness (ft)	Corrected W.L. Elevation (ft MSL)	Comments
MW-07 Screened Interval Elevation: 400.18 - 390.18									
4Q10	443.10	11/12/2010	NE	36.93	NA	NA	NA	406.17	*
1Q11	443.10	1/13/2011	NE	37.52	NA	NA	NA	405.58	*
2Q11	443.10	4/25/2011	NE	38.18	NA	NA	NA	404.92	*
3Q11	443.10	7/5/2011	NE	35.65	NA	NA	NA	407.45	*
	443.10	9/19/2011	NE	35.22	NA	NA	NA	407.88	*
4Q11	443.10	10/5/2011	NE	25.52	NA	NA	NA	417.58	*Gauging Result is Suspect
MW-08 Screened Interval Elevation: 400.51 - 390.51									
4Q10	434.11	11/12/2010	NE	27.84	NA	NA	NA	406.27	*
1Q11	434.11	1/13/2011	NE	28.59	NA	NA	NA	405.52	*
2Q11	434.11	4/25/2011	NE	29.15	NA	NA	NA	404.96	*
3Q11	434.11	7/5/2011	NE	26.55	NA	NA	NA	407.56	*
4Q11	434.11	10/5/2011	NE	26.57	NA	NA	NA	407.54	*
MW-09 Screened Interval Elevation: 398.75 - 388.75									
4Q10	445.20	11/12/2010	NE	39.00	NA	NA	NA	406.20	*
1Q11	445.20	1/13/2011	NE	39.62	NA	NA	NA	405.58	*
2Q11	445.20	4/25/2011	NE	NE	NA	NA	NA	NA	*
3Q11	445.20	7/5/2011	NE	38.06	NA	NA	NA	407.14	*
	445.20	9/19/2011	NE	37.27	NA	NA	NA	407.93	*
4Q11	445.20	10/5/2011	NE	37.56	NA	NA	NA	407.64	*
MW-10 Screened Interval Elevation: 400.6 - 390.6									
4Q10	445.03	11/12/2010	NE	38.97	NA	NA	NA	406.06	*
1Q11	445.03	1/13/2011	NE	39.40	NA	NA	NA	405.63	*
2Q11	445.03	4/25/2011	NE	40.26	NA	NA	NA	404.77	*
3Q11	445.03	7/5/2011	NE	38.01	NA	NA	NA	407.02	*
	445.03	9/19/2011	NE	37.24	NA	NA	NA	407.79	*
4Q11	445.03	10/5/2011	NE	37.47	NA	NA	NA	407.56	*
MW-11 Screened Interval Elevation: 400.67 - 390.67									
4Q10	442.33	11/12/2010	NE	36.39	NA	NA	NA	405.94	*
1Q11	442.33	1/13/2011	NE	37.15	NA	NA	NA	405.18	*
2Q11	442.33	4/25/2011	NE	38.00	NA	NA	NA	404.33	*
3Q11	442.33	7/5/2011	NE	35.46	NA	NA	NA	406.87	*
	442.33	9/19/2011	NE	34.68	NA	NA	NA	407.65	*
4Q11	442.33	10/5/2011	NE	34.07	NA	NA	NA	408.26	*
MW-12 Screened Interval Elevation: 400.68 - 390.68									
4Q10	442.60	11/12/2010	NE	36.63	NA	NA	NA	405.97	*
1Q11	442.60	1/13/2011	NE	37.42	NA	NA	NA	405.18	*
2Q11	442.60	4/25/2011	NE	38.20	NA	NA	NA	404.40	*
3Q11	442.60	7/5/2011	NE	35.55	NA	NA	NA	407.05	*
	442.60	9/19/2011	NE	34.88	NA	NA	NA	407.72	*
4Q11	442.60	10/5/2011	NE	35.20	NA	NA	NA	407.40	*
MW-13 Screened Interval Elevation: 404.7 - 394.7									
1Q11	430.27	1/13/2011	NE	24.28	NA	NA	NA	405.99	*
2Q11	430.27	4/25/2011	NE	24.47	NA	NA	NA	405.80	*
3Q11	430.27	7/5/2011	NE	21.67	NA	NA	NA	408.60	*
	430.27	9/19/2011	NE	21.88	NA	NA	NA	408.39	*
4Q11	430.27	10/6/2011	NE	21.20	NA	NA	NA	409.07	*
P-01 Screened Interval Elevation: 380.61 - 375.61									
1Q09	442.56	1/1/2009	NE	39.38	NA	NA	NA	403.18	*
2Q09	442.56	4/1/2009	NE	38.89	NA	NA	NA	403.67	*
3Q09	442.56	7/1/2009	NE	35.98	NA	NA	NA	406.58	*
4Q09	442.56	10/1/2009	NE	35.56	NA	NA	NA	407.00	*
1Q10	442.56	1/1/2010	NE	31.87	NA	NA	NA	410.69	*
2Q10	442.56	4/1/2010	NE	30.11	NA	NA	NA	412.45	*
3Q10	442.56	7/1/2010	NE	29.49	NA	NA	NA	413.07	*
4Q10	442.56	10/1/2010	NE	27.86	NA	NA	NA	414.70	*
1Q11	442.56	1/1/2011	NE	28.52	NA	NA	NA	414.04	*
2Q11	442.56	4/1/2011	NE	27.30	NA	NA	NA	415.26	*
3Q11	442.56	9/19/2011	NE	27.75	NA	NA	NA	414.81	*
4Q11	442.56	10/6/2011	NE	28.15	NA	NA	NA	414.41	*

**TABLE 1**  
**CUMULATIVE GROUNDWATER GAUGING RESULTS**

Well ID/ Quarter	Top of Casing (ft MSL)	Date Gauged	Depth to Product (ft)	Depth to Water (Static)	Water- Product Interface (ft MSL)	Product Elev. (ft MSL)	Product Thickness (ft)	Corrected W.L. Elevation (ft MSL)	Comments
P-4U									Screened Interval Elevation: 361.35 - 359.35
1Q09	442.50	1/1/2009	NE	41.85	NA	NA	NA	400.65	*
2Q09	442.50	4/1/2009	NE	40.39	NA	NA	NA	402.11	*
3Q09	442.50	7/1/2009	NE	37.71	NA	NA	NA	404.79	*
4Q09	442.50	10/1/2009	NE	37.38	NA	NA	NA	405.12	*
1Q10	442.50	1/1/2010	NE	33.47	NA	NA	NA	409.03	*
2Q10	442.50	4/1/2010	NE	32.06	NA	NA	NA	410.44	*
3Q10	442.50	7/1/2010	NE	31.00	NA	NA	NA	411.50	*
4Q10	442.50	10/1/2010	NE	29.68	NA	NA	NA	412.82	*
1Q11	442.50	1/1/2011	NE	29.81	NA	NA	NA	412.69	*
2Q11	442.50	4/1/2011	NE	29.10	NA	NA	NA	413.40	*
3Q11	442.50	9/19/2011	NE	28.71	NA	NA	NA	413.79	*
4Q11	442.50	10/6/2011	NE	29.17	NA	NA	NA	413.33	*
P-5U									Screened Interval Elevation: 313.52 - 311.52
1Q09	444.15	1/1/2009	NE	NE	NA	NA	NA	NA	
2Q09	444.15	4/1/2009	NE	NE	NA	NA	NA	NA	
3Q09	444.15	7/1/2009	NE	NE	NA	NA	NA	NA	
4Q09	444.15	10/1/2009	NE	38.44	NA	NA	NA	405.71	*
1Q10	444.15	1/1/2010	NE	34.48	NA	NA	NA	409.67	*
2Q10	444.15	4/1/2010	NE	30.97	NA	NA	NA	413.18	*
3Q10	444.15	7/1/2010	NE	31.95	NA	NA	NA	412.20	*
4Q10	444.15	10/1/2010	NE	30.82	NA	NA	NA	413.33	*
1Q11	444.15	1/1/2011	NE	30.96	NA	NA	NA	413.19	*
2Q11	444.15	4/1/2011	NE	29.91	NA	NA	NA	414.24	*
3Q11	444.15	9/19/2011	NE	29.84	NA	NA	NA	414.31	*
4Q11	444.15	10/6/2011	NE	30.41	NA	NA	NA	413.74	*
P-6U									Screened Interval Elevation: 362.85 - 360.85
1Q09	443.35	1/1/2009	NE	41.58	NA	NA	NA	401.77	*
2Q09	443.35	4/1/2009	NE	41.14	NA	NA	NA	402.21	*
3Q09	443.35	7/1/2009	NE	38.27	NA	NA	NA	405.08	*
4Q09	443.35	10/1/2009	NE	38.03	NA	NA	NA	405.32	*
1Q10	443.35	1/1/2010	NE	33.94	NA	NA	NA	409.41	*
2Q10	443.35	4/1/2010	NE	32.49	NA	NA	NA	410.86	*
3Q10	443.35	7/1/2010	NE	31.43	NA	NA	NA	411.92	*
4Q10	443.35	10/1/2010	NE	30.33	NA	NA	NA	413.02	*
1Q11	443.35	1/1/2011	NE	30.53	NA	NA	NA	412.82	*
2Q11	443.35	4/1/2011	NE	29.57	NA	NA	NA	413.78	*
3Q11	443.35	9/19/2011	NE	29.26	NA	NA	NA	414.09	*
4Q11	443.35	10/6/2011	NE	29.78	NA	NA	NA	413.57	*
P-7U									Screened Interval Elevation: 382.72 - 380.72
1Q09	443.80	1/1/2009	NE	41.67	NA	NA	NA	402.13	*
2Q09	443.80	4/1/2009	NE	41.33	NA	NA	NA	402.47	*
3Q09	443.80	7/1/2009	NE	38.29	NA	NA	NA	405.51	*
4Q09	443.80	10/1/2009	NE	38.26	NA	NA	NA	405.54	*
1Q10	443.80	1/1/2010	NE	34.95	NA	NA	NA	408.85	*
2Q10	443.80	4/1/2010	NE	32.49	NA	NA	NA	411.31	*
3Q10	443.80	7/1/2010	NE	31.63	NA	NA	NA	412.17	*
4Q10	443.80	10/1/2010	NE	30.65	NA	NA	NA	413.15	*
1Q11	443.80	1/1/2011	NE	30.70	NA	NA	NA	413.10	*
2Q11	443.80	4/1/2011	NE	29.66	NA	NA	NA	414.14	*
3Q11	443.80	9/19/2011	NE	29.51	NA	NA	NA	414.29	*
4Q11	443.80	10/6/2011	NE	30.02	NA	NA	NA	413.78	*

**TABLE 1**  
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Well ID/ Quarter	Top of Casing (ft MSL)	Date Gauged	Depth to Product (ft)	Depth to Water (Static)	Water- Product Interface (ft MSL)	Product Elev. (ft MSL)	Product Thickness (ft)	Corrected W.L. Elevation (ft MSL)	Comments
P-8U									Screened Interval Elevation: 381.77 - 379.77
1Q09	441.87	1/1/2009	NE	43.79	NA	NA	NA	398.08	*
2Q09	441.87	4/1/2009	NE	43.35	NA	NA	NA	398.52	*
3Q09	441.87	7/1/2009	NE	41.09	NA	NA	NA	400.78	*
4Q09	441.87	10/1/2009	NE	40.56	NA	NA	NA	401.31	*
1Q10	441.87	1/1/2010	NE	NE	NA	NA	NA	NA	
2Q10	441.87	4/1/2010	NE	33.69	NA	NA	NA	408.18	*
3Q10	441.87	7/1/2010	NE	32.28	NA	NA	NA	409.59	*
4Q10	441.87	10/1/2010	NE	31.14	NA	NA	NA	410.73	*
1Q11	443.70	1/1/2011	NE	30.79	NA	NA	NA	411.08	*
2Q11	443.70	4/1/2011	NE	30.50	NA	NA	NA	411.37	*
3Q11	441.87	9/19/2011	NE	29.46	NA	NA	NA	412.41	*
4Q11	441.87	10/6/2011	NE	29.86	NA	NA	NA	412.01	*
P-9U									Screened Interval Elevation: 344.32 - 342.32
1Q09	444.91	1/1/2009	NE	NE	NA	NA	NA	NA	
2Q09	444.91	4/1/2009	NE	NE	NA	NA	NA	NA	
3Q09	444.91	7/1/2009	NE	NE	NA	NA	NA	NA	
4Q09	444.91	10/1/2009	NE	43.97	NA	NA	NA	400.94	*
1Q10	444.91	1/1/2010	NE	41.13	NA	NA	NA	403.78	*
2Q10	444.91	4/1/2010	NE	39.62	NA	NA	NA	405.29	*
3Q10	444.91	7/1/2010	NE	38.85	NA	NA	NA	406.06	*
4Q10	444.91	10/1/2010	NE	38.71	NA	NA	NA	406.20	*
1Q11	444.91	1/13/2011	NE	36.87	NA	NA	NA	408.04	*
2Q11	444.91	4/1/2011	NE	35.71	NA	NA	NA	409.20	*
3Q11	444.91	9/19/2011	NE	34.52	NA	NA	NA	410.39	*
4Q11	444.91	10/6/2011	NE	34.56	NA	NA	NA	410.35	*
P-11U									Screened Interval Elevation: 343.17 - 341.17
1Q09	443.09	1/1/2009	NE	NE	NA	NA	NA	NA	
2Q09	443.09	4/1/2009	NE	NE	NA	NA	NA	NA	
3Q09	443.09	7/1/2009	NE	NE	NA	NA	NA	NA	
4Q09	443.09	10/1/2009	NE	40.05	NA	NA	NA	403.04	*
1Q10	443.09	1/1/2010	NE	36.62	NA	NA	NA	406.47	*
2Q10	443.09	4/1/2010	NE	35.20	NA	NA	NA	407.89	*
3Q10	443.09	7/1/2010	NE	33.83	NA	NA	NA	409.26	*
4Q10	443.09	10/1/2010	NE	32.45	NA	NA	NA	410.64	*
1Q11	443.09	1/1/2011	NE	32.21	NA	NA	NA	410.88	*
2Q11	443.09	4/1/2011	NE	31.92	NA	NA	NA	411.17	*
3Q11	443.09	9/19/2011	NE	31.03	NA	NA	NA	412.06	*
4Q11	443.09	10/6/2011	NE	31.12	NA	NA	NA	411.97	*
P-14									Screened Interval Elevation: 395.32 - 385.32
1Q09	442.65	1/1/2009	NE	39.42	NA	NA	NA	403.23	*
2Q09	442.65	4/1/2009	NE	39.06	NA	NA	NA	403.59	*
3Q09	442.65	7/1/2009	NE	36.13	NA	NA	NA	406.52	*
4Q09	442.65	10/1/2009	NE	35.73	NA	NA	NA	406.92	*
1Q10	442.65	1/1/2010	NE	31.95	NA	NA	NA	410.70	*
2Q10	442.65	4/1/2010	NE	30.20	NA	NA	NA	412.45	*
3Q10	442.65	7/1/2010	NE	29.56	NA	NA	NA	413.09	*
4Q10	442.65	10/1/2010	NE	27.94	NA	NA	NA	414.71	*
1Q11	442.65	1/1/2011	NE	28.57	NA	NA	NA	414.08	*
2Q11	442.65	4/1/2011	NE	27.38	NA	NA	NA	415.27	*
3Q11	442.65	9/19/2011	NE	27.77	NA	NA	NA	414.88	*
4Q11	442.65	10/6/2011	NE	28.20	NA	NA	NA	414.45	*

**TABLE 1**  
**CUMULATIVE GROUNDWATER GAUGING RESULTS**

Well ID/ Quarter	Top of Casing (ft MSL)	Date Gauged	Depth to Product (ft)	Depth to Water (Static)	Water- Product Interface (ft MSL)	Product Elev. (ft MSL)	Product Thickness (ft)	Corrected W.L. Elevation (ft MSL)	Comments
P-15									Screened Interval Elevation: 397.9 - 387.9
1Q09	443.35	1/1/2009	NE	41.55	NA	NA	NA	401.80	*
2Q09	443.35	4/1/2009	NE	41.14	NA	NA	NA	402.21	*
3Q09	443.35	7/1/2009	NE	38.46	NA	NA	NA	404.89	*
4Q09	443.35	10/1/2009	NE	38.16	NA	NA	NA	405.19	*
1Q10	443.35	1/1/2010	NE	34.15	NA	NA	NA	409.20	*
2Q10	443.35	4/1/2010	NE	32.80	NA	NA	NA	410.55	*
3Q10	443.35	7/1/2010	NE	31.68	NA	NA	NA	411.67	*
4Q10	443.35	10/1/2010	NE	30.43	NA	NA	NA	412.92	*
1Q11	443.35	1/1/2011	NE	30.55	NA	NA	NA	412.80	*
2Q11	443.35	4/1/2011	NE	29.80	NA	NA	NA	413.55	*
3Q11	443.35	9/19/2011	NE	29.45	NA	NA	NA	413.90	*
4Q11	443.35	10/6/2011	NE	29.93	NA	NA	NA	413.42	*
P-16									Screened Interval Elevation: 396.57 - 386.57
1Q09	442.31	1/1/2009	NE	40.48	NA	NA	NA	401.83	*
2Q09	442.31	4/1/2009	NE	40.02	NA	NA	NA	402.29	*
3Q09	442.31	7/1/2009	NE	37.16	NA	NA	NA	405.15	*
4Q09	442.31	10/1/2009	NE	36.93	NA	NA	NA	405.38	*
1Q10	442.31	1/1/2010	NE	32.86	NA	NA	NA	409.45	*
2Q10	442.31	4/1/2010	NE	31.43	NA	NA	NA	410.88	*
3Q10	442.31	7/1/2010	NE	30.32	NA	NA	NA	411.99	*
4Q10	442.31	10/1/2010	NE	29.21	NA	NA	NA	413.10	*
1Q11	442.31	1/1/2011	NE	29.40	NA	NA	NA	412.91	*
2Q11	442.31	4/1/2011	NE	28.54	NA	NA	NA	413.77	*
3Q11	442.31	9/19/2011	NE	28.26	NA	NA	NA	414.05	*
4Q11	442.31	10/6/2011	NE	28.77	NA	NA	NA	413.54	*
P-43									Screened Interval Elevation: 380.51 - 370.51
1Q09	444.07	1/1/2009	NE	43.96	NA	NA	NA	400.11	*
2Q09	444.07	4/1/2009	NE	43.80	NA	NA	NA	400.27	*
3Q09	444.07	7/1/2009	NE	41.58	NA	NA	NA	402.49	*
4Q09	444.07	10/1/2009	NE	40.91	NA	NA	NA	403.16	*
1Q10	444.07	1/1/2010	NE	37.44	NA	NA	NA	406.63	*
2Q10	444.07	4/1/2010	NE	36.02	NA	NA	NA	408.05	*
3Q10	444.07	7/1/2010	NE	34.68	NA	NA	NA	409.39	*
4Q10	444.07	10/1/2010	NE	33.29	NA	NA	NA	410.78	*
1Q11	444.07	1/1/2011	NE	33.09	NA	NA	NA	410.98	*
2Q11	444.07	4/1/2011	NE	32.75	NA	NA	NA	411.32	*
3Q11	444.07	9/19/2011	NE	31.87	NA	NA	NA	412.20	*
4Q11	444.07	10/6/2011	NE	32.18	NA	NA	NA	411.89	*
P-53									Screened Interval Elevation: 407.73 - 382.73
1Q09	446.23	1/1/2009	NE	47.54	NA	NA	NA	398.69	
2Q09	446.23	4/1/2009	NE	47.25	NA	NA	NA	398.98	
3Q09	446.23	7/1/2009	NE	43.96	NA	NA	NA	402.27	
4Q09	446.23	10/1/2009	NE	45.52	NA	NA	NA	400.71	
1Q10	446.23	1/1/2010	NE	43.35	NA	NA	NA	402.88	
2Q10	446.23	4/1/2010	NE	42.17	NA	NA	NA	404.06	
3Q10	446.23	7/1/2010	NE	40.83	NA	NA	NA	405.40	
4Q10	446.23	10/1/2010	NE	39.33	NA	NA	NA	406.90	
1Q11	446.23	1/13/2011	NE	39.46	NA	NA	NA	406.77	
2Q11	446.23	4/1/2011	NE	39.99	NA	NA	NA	406.24	
3Q11	446.23	9/19/2011	NE	37.39	NA	NA	NA	408.84	*
4Q11	446.23	10/5/2011	NE	37.58	NA	NA	NA	408.65	*

**TABLE 1**  
**CUMULATIVE GROUNDWATER GAUGING RESULTS**

Well ID/ Quarter	Top of Casing (ft MSL)	Date Gauged	Depth to Product (ft)	Depth to Water (Static)	Water- Product Interface (ft MSL)	Product Elev. (ft MSL)	Product Thickness (ft)	Corrected W.L. Elevation (ft MSL)	Comments
P-54 Screened Interval Elevation: 404.18 - 379.18									
1Q09	442.18	1/1/2009	NE	44.54	NA	NA	NA	397.64	
2Q09	442.18	4/1/2009	NE	43.54	NA	NA	NA	398.64	
3Q09	442.18	7/1/2009	NE	42.01	NA	NA	NA	400.17	
4Q09	442.18	10/1/2009	NE	41.89	NA	NA	NA	400.29	
1Q10	442.18	1/1/2010	NE	39.88	NA	NA	NA	402.30	
2Q10	442.18	4/1/2010	NE	38.53	NA	NA	NA	403.65	
3Q10	442.18	7/1/2010	NE	37.33	NA	NA	NA	404.85	*
4Q10	442.18	11/12/2010	NE	36.43	NA	NA	NA	405.75	*
1Q11	442.18	1/13/2011	NE	37.24	NA	NA	NA	404.94	*
2Q11	442.18	4/25/2011	NE	38.00	NA	NA	NA	404.18	
3Q11	442.18	7/5/2011	NE	35.38	NA	NA	NA	406.80	*
	442.18	9/19/2011	NE	34.78	NA	NA	NA	407.40	*
4Q11	442.18	10/5/2011	NE	35.01	NA	NA	NA	407.17	*
P-55 Screened Interval Elevation: 406.13 - 381.13									
1Q09	445.95	1/1/2009	NE	48.65	NA	NA	NA	397.30	
2Q09	445.95	4/1/2009	48.07	48.09	397.86	397.88	0.02	397.88	
3Q09	445.95	7/1/2009	NE	46.51	NA	NA	NA	399.44	
4Q09	445.95	10/1/2009	NE	46.02	NA	NA	NA	399.93	
1Q10	445.95	1/1/2010	NE	44.14	NA	NA	NA	401.81	
2Q10	445.95	4/1/2010	NE	42.69	NA	NA	NA	403.26	
3Q10	445.95	7/1/2010	NE	41.81	NA	NA	NA	404.14	
4Q10	445.95	11/12/2010	NE	40.50	NA	NA	NA	405.45	
1Q11	445.95	1/13/2011	NE	40.56	NA	NA	NA	405.39	
2Q11	445.95	4/25/2011	41.52	41.54	404.41	404.43	0.02	404.43	
3Q11	445.95	7/5/2011	39.41	39.42	406.53	406.54	0.01	406.54	*
	445.95	9/19/2011	NE	38.57	NA	NA	NA	407.38	*
4Q11	445.95	10/6/2011	NE	38.61	NA	NA	NA	407.34	*
P-56 Screened Interval Elevation: 405.2 - 380.2									
1Q09	446.02	1/1/2009	NE	48.56	NA	NA	NA	397.46	
2Q09	446.02	4/1/2009	NE	47.90	NA	NA	NA	398.12	
3Q09	446.02	7/1/2009	NE	46.26	NA	NA	NA	399.76	
4Q09	446.02	10/1/2009	NE	45.79	NA	NA	NA	400.23	
1Q10	446.02	1/1/2010	NE	43.99	NA	NA	NA	402.03	
2Q10	446.02	4/1/2010	NE	42.71	NA	NA	NA	403.31	
3Q10	446.02	7/1/2010	NE	41.99	NA	NA	NA	404.03	
4Q10	446.02	11/11/2010	NE	40.94	NA	NA	NA	405.08	
1Q11	446.02	1/13/2011	NE	41.03	NA	NA	NA	404.99	
2Q11	446.02	4/25/2011	NE	42.16	NA	NA	NA	403.86	
3Q11	446.02	7/5/2011	NE	39.63	NA	NA	NA	406.39	*
	446.02	9/19/2011	NE	38.88	NA	NA	NA	407.14	*
4Q11	446.02	10/6/2011	NE	39.10	NA	NA	NA	406.92	*
P-57 Screened Interval Elevation: -									
1Q09	446.53	1/1/2009	NE	48.68	NA	NA	NA	397.85	
2Q09	446.53	4/1/2009	NE	47.91	NA	NA	NA	398.62	
3Q09	446.53	7/1/2009	NE	46.35	NA	NA	NA	400.18	
4Q09	446.53	10/1/2009	NE	46.01	NA	NA	NA	400.52	
1Q10	446.53	1/1/2010	NE	44.02	NA	NA	NA	402.51	
2Q10	446.53	4/1/2010	NE	42.73	NA	NA	NA	403.80	
3Q10	446.53	7/1/2010	NE	41.60	NA	NA	NA	404.93	
4Q10	446.53	11/12/2010	NE	40.64	NA	NA	NA	405.89	
1Q11	446.53	1/13/2011	NE	41.04	NA	NA	NA	405.49	
2Q11	446.53	4/25/2011	NE	41.88	NA	NA	NA	404.65	
3Q11	446.53	7/5/2011	NE	39.48	NA	NA	NA	407.05	
	446.53	9/19/2011	NE	39.92	NA	NA	NA	406.61	
4Q11	446.53	10/6/2011	NE	39.20	NA	NA	NA	407.33	



**TABLE 1**  
**CUMULATIVE GROUNDWATER GAUGING RESULTS**

Well ID/ Quarter	Top of Casing (ft MSL)	Date Gauged	Depth to Product (ft)	Depth to Water (Static)	Water- Product Interface (ft MSL)	Product Elev. (ft MSL)	Product Thickness (ft)	Corrected W.L. Elevation (ft MSL)	Comments
P-58 Screened Interval Elevation: 404.702 - 379.702									
1Q09	444.92	1/1/2009	NE	46.63	NA	NA	NA	398.29	
2Q09	444.92	4/1/2009	45.86	45.88	399.04	399.06	0.02	399.05	
3Q09	444.92	7/1/2009	44.63	44.66	400.26	400.29	0.03	400.28	
4Q09	444.92	10/1/2009	NE	44.06	NA	NA	NA	400.86	
1Q10	444.92	1/1/2010	NE	42.00	NA	NA	NA	402.92	
2Q10	444.92	4/1/2010	NE	40.76	NA	NA	NA	404.16	
3Q10	444.92	7/1/2010	39.42	39.46	405.46	405.50	0.04	405.49	*
4Q10	444.92	11/12/2010	NE	38.51	NA	NA	NA	406.41	*
1Q11	444.92	1/13/2011	NE	39.10	NA	NA	NA	405.82	*
2Q11	444.92	4/25/2011	NE	39.78	NA	NA	NA	405.14	*
3Q11	444.92	7/5/2011	NE	37.42	NA	NA	NA	407.50	*
	444.92	9/19/2011	NE	37.02	NA	NA	NA	407.90	*
4Q11	444.92	10/6/2011	NE	37.31	NA	NA	NA	407.61	*
P-59 Screened Interval Elevation: 398.871 - 373.871									
1Q09	446.78	1/1/2009	NE	49.50	NA	NA	NA	397.28	
2Q09	446.78	4/1/2009	NE	48.61	NA	NA	NA	398.17	
3Q09	446.78	7/1/2009	NE	47.14	NA	NA	NA	399.64	*
4Q09	446.78	10/1/2009	NE	46.67	NA	NA	NA	400.11	*
1Q10	446.78	1/1/2010	NE	44.91	NA	NA	NA	401.87	*
2Q10	446.78	4/1/2010	NE	43.59	NA	NA	NA	403.19	*
3Q10	446.78	7/1/2010	43.21	43.23	403.55	403.57	0.02	403.57	*
4Q10	446.78	11/12/2010	NE	42.13	NA	NA	NA	404.65	*
1Q11	446.78	1/13/2011	NE	42.16	NA	NA	NA	404.62	*
2Q11	446.78	4/25/2011	43.25	43.26	403.52	403.53	0.01	403.53	*
3Q11	446.78	7/5/2011	NE	41.44	NA	NA	NA	405.34	*
	446.78	9/19/2011	NE	40.56	NA	NA	NA	406.22	*
4Q11	446.78	10/6/2011	NE	40.77	NA	NA	NA	406.01	*
P-60 Screened Interval Elevation: 403.123 - 383.123									
1Q09	446.57	1/1/2009	47.80	54.34	392.23	398.77	6.54	397.47	
2Q09	446.57	4/1/2009	48.26	51.47	395.10	398.31	3.21	397.67	
3Q09	446.57	7/1/2009	46.89	48.02	398.55	399.68	1.13	399.46	
4Q09	446.57	10/1/2009	46.48	47.35	399.22	400.09	0.87	399.92	
1Q10	446.57	1/1/2010	44.83	45.08	401.49	401.74	0.25	401.69	
2Q10	446.57	4/1/2010	43.45	43.73	402.84	403.12	0.28	403.07	
3Q10	446.57	7/1/2010	42.61	43.18	403.39	403.96	0.57	403.85	*
4Q10	446.57	11/11/2010	41.40	41.44	405.13	405.17	0.04	405.16	*
1Q11	446.57	1/14/2011	41.68	41.72	404.85	404.89	0.04	404.88	*
2Q11	446.57	4/25/2011	42.72	43.18	403.39	403.85	0.46	403.76	*
3Q11	446.57	7/5/2011	40.41	40.77	405.80	406.16	0.36	406.09	*
	446.57	9/19/2011	39.54	39.89	406.68	407.03	0.35	406.96	*
4Q11	446.57	10/6/2011	39.72	40.06	406.51	406.85	0.34	406.79	*
P-60-11 Screened Interval Elevation: 413.03 - 383.03									
4Q10	443.39	11/11/2010	NE	40.91	NA	NA	NA	405.27	
1Q11	443.39	1/14/2011	NE	41.14	NA	NA	NA	405.04	
2Q11	443.39	4/25/2011	NE	42.22	NA	NA	NA	403.96	
3Q11	446.18	7/5/2011	NE	39.97	NA	NA	NA	406.21	
	446.18	9/19/2011	NE	39.07	NA	NA	NA	407.11	
4Q11	446.18	10/6/2011	NE	39.25	NA	NA	NA	406.93	
P-60-12 Screened Interval Elevation: 383.31 - 373.31									
4Q10	443.31	11/11/2010	NE	38.19	NA	NA	NA	405.12	*
1Q11	443.31	1/14/2011	NE	38.51	NA	NA	NA	404.80	*
2Q11	443.31	4/25/2011	NE	39.63	NA	NA	NA	403.68	*
3Q11	443.31	7/5/2011	NE	37.27	NA	NA	NA	406.04	*
	443.31	9/19/2011	NE	36.41	NA	NA	NA	406.90	*
4Q11	443.31	10/6/2011	NE	36.53	NA	NA	NA	406.78	*
P-60-12S Screened Interval Elevation: 429.49 - 419.49									
4Q10	443.33	11/11/2010	NE	23.36	NA	NA	NA	419.97	
1Q11	443.33	1/14/2011	NE	NE	NA	NA	NA	NA	
2Q11	443.33	4/25/2011	NE	21.84	NA	NA	NA	421.49	
3Q11	443.33	7/5/2011	21.10	21.11	422.22	422.23	0.01	422.23	
4Q11	443.33	10/6/2011	NE	23.36	NA	NA	NA	419.97	

**TABLE 1  
CUMULATIVE GROUNDWATER GAUGING RESULTS**

Well ID/ Quarter	Top of Casing (ft MSL)	Date Gauged	Depth to Product (ft)	Depth to Water (Static)	Water- Product Interface (ft MSL)	Product Elev. (ft MSL)	Product Thickness (ft)	Corrected W.L. Elevation (ft MSL)	Comments
P-60-13 Screened Interval Elevation: 402.43 - 382.43									
4Q10	442.43	11/11/2010	37.50	37.87	404.56	404.93	0.37	404.86	*
1Q11	442.43	1/14/2011	37.73	37.74	404.69	404.70	0.01	404.70	*
2Q11	442.43	4/25/2011	38.80	39.10	403.33	403.63	0.30	403.57	*
3Q11	442.43	7/5/2011	36.85	36.99	405.44	405.58	0.14	405.55	*
	442.43	9/19/2011	NE	35.72	NA	NA	NA	406.71	*
4Q11	442.43	10/6/2011	NE	35.86	NA	NA	NA	406.57	*
P-60-13S Screened Interval Elevation: 432.39 - 422.39									
4Q10	442.39	11/11/2010	NE	13.36	NA	NA	NA	429.03	
1Q11	442.39	1/14/2011	NE	NE	NA	NA	NA	NA	
2Q11	442.39	4/25/2011	NE	17.45	NA	NA	NA	424.94	
3Q11	442.39	7/5/2011	NE	17.08	NA	NA	NA	425.31	
4Q11	442.39	10/6/2011	NE	18.44	NA	NA	NA	423.95	
P-61 Screened Interval Elevation: 398.592 - 373.592									
1Q09	444.27	1/1/2009	47.35	48.01	396.26	396.92	0.66	396.78	
2Q09	444.27	4/1/2009	46.43	46.64	397.63	397.84	0.21	397.80	
3Q09	444.27	7/1/2009	45.06	45.29	398.98	399.21	0.23	399.16	*
4Q09	444.27	10/1/2009	44.44	44.62	399.65	399.83	0.18	399.79	*
1Q10	444.27	1/1/2010	43.33	43.53	400.74	400.94	0.20	400.90	*
2Q10	444.27	4/1/2010	41.97	42.09	402.18	402.30	0.12	402.27	*
3Q10	444.27	7/1/2010	41.04	41.18	403.09	403.23	0.14	403.20	*
4Q10	444.27	11/11/2010	39.91	40.03	404.24	404.36	0.12	404.33	*
1Q11	444.27	1/13/2011	38.81	38.94	405.33	405.46	0.13	405.43	*
2Q11	444.27	4/25/2011	NE	40.93	NA	NA	NA	403.34	*
3Q11	444.27	7/5/2011	37.58	37.59	406.68	406.69	0.01	406.69	*
	444.27	9/19/2011	NE	37.36	NA	NA	NA	406.91	*
4Q11	444.27	10/6/2011	NE	37.63	NA	NA	NA	406.64	*
P-62 Screened Interval Elevation: 400.85 - 375.85									
1Q09	442.32	1/1/2009	45.46	46.95	395.37	396.86	1.49	396.57	
2Q09	442.32	4/1/2009	44.79	46.22	396.10	397.53	1.43	397.25	
3Q09	442.32	7/1/2009	43.45	44.90	397.42	398.87	1.45	398.58	
4Q09	442.32	10/1/2009	42.68	44.16	398.16	399.64	1.48	399.35	
1Q10	442.32	1/1/2010	41.02	42.62	399.70	401.30	1.60	400.98	*
2Q10	442.32	4/1/2010	39.56	40.90	401.42	402.76	1.34	402.50	*
3Q10	442.32	7/1/2010	38.51	39.96	402.36	403.81	1.45	403.52	*
4Q10	442.32	11/11/2010	37.14	38.57	403.75	405.18	1.43	404.90	*
1Q11	442.32	1/13/2011	36.39	37.81	404.51	405.93	1.42	405.65	*
2Q11	442.32	4/25/2011	NE	38.18	NA	NA	NA	404.14	*
3Q11	442.32	7/5/2011	35.62	35.63	406.69	406.70	0.01	406.70	*
	442.32	9/19/2011	35.39	35.41	406.91	406.93	0.02	406.93	*
4Q11	442.32	10/6/2011	NE	35.64	NA	NA	NA	406.68	*
P-63 Screened Interval Elevation: 398.46 - 373.46									
1Q09	445.75	1/1/2009	49.85	50.15	395.60	395.90	0.30	395.84	
2Q09	445.75	4/1/2009	49.44	49.69	396.06	396.31	0.25	396.26	
3Q09	445.75	7/1/2009	48.30	48.31	397.44	397.45	0.01	397.45	
4Q09	445.75	10/1/2009	47.14	47.28	398.47	398.61	0.14	398.58	*
1Q10	445.75	1/1/2010	45.08	45.26	400.49	400.67	0.18	400.63	*
2Q10	445.75	4/1/2010	43.53	43.72	402.03	402.22	0.19	402.18	*
3Q10	445.75	7/1/2010	42.32	42.52	403.23	403.43	0.20	403.39	*
4Q10	445.75	10/1/2010	40.58	40.79	404.96	405.17	0.21	405.13	*
1Q11	445.75	1/13/2011	39.48	39.68	406.07	406.27	0.20	406.23	*
2Q11	445.75	4/1/2011	NE	41.11	NA	NA	NA	404.64	*
3Q11	445.75	9/19/2011	NE	39.12	NA	NA	NA	406.63	*
4Q11	445.75	10/6/2011	NE	39.20	NA	NA	NA	406.55	*

**TABLE 1**  
**CUMULATIVE GROUNDWATER GAUGING RESULTS**

Well ID/ Quarter	Top of Casing (ft MSL)	Date Gauged	Depth to Product (ft)	Depth to Water (Static)	Water- Product Interface (ft MSL)	Product Elev. (ft MSL)	Product Thickness (ft)	Corrected W.L. Elevation (ft MSL)	Comments
P-64 Screened Interval Elevation: 399.29 - 374.29									
1Q09	446.52	1/1/2009	50.95	52.32	394.20	395.57	1.37	395.30	
2Q09	446.52	4/1/2009	50.65	51.76	394.76	395.87	1.11	395.65	
3Q09	446.52	7/1/2009	49.71	50.13	396.39	396.81	0.42	396.73	
4Q09	446.52	10/1/2009	NE	48.52	NA	NA	NA	398.00	
1Q10	446.52	1/1/2010	46.32	46.37	400.15	400.20	0.05	400.19	*
2Q10	446.52	4/1/2010	44.61	44.70	401.82	401.91	0.09	401.89	*
3Q10	446.52	7/1/2010	43.46	43.61	402.91	403.06	0.15	403.03	*
4Q10	446.52	10/1/2010	41.45	41.56	404.96	405.07	0.11	405.05	*
1Q11	446.52	1/13/2011	40.14	40.46	406.06	406.38	0.32	406.32	*
2Q11	446.52	4/1/2011	41.77	41.86	404.66	404.75	0.09	404.73	*
3Q11	446.52	7/5/2011	39.25	39.42	407.10	407.27	0.17	407.24	*
	446.52	9/19/2011	40.10	41.10	405.42	406.42	1.00	406.22	*
4Q11	446.52	10/6/2011	40.35	40.53	405.99	406.17	0.18	406.13	*
P-65 Screened Interval Elevation: 396.913 - 371.913									
1Q09	444.53	1/1/2009	NE	47.88	NA	NA	NA	396.65	
2Q09	444.53	4/1/2009	NE	47.35	NA	NA	NA	397.18	*
3Q09	444.53	7/1/2009	NE	46.29	NA	NA	NA	398.24	*
4Q09	444.53	10/1/2009	NE	45.05	NA	NA	NA	399.48	*
1Q10	444.53	1/1/2010	NE	34.11	NA	NA	NA	410.42	*
2Q10	444.53	4/1/2010	41.33	41.34	403.19	403.20	0.01	403.20	*
3Q10	444.53	7/1/2010	44.34	44.35	400.18	400.19	0.01	400.19	*
4Q10	444.53	10/1/2010	38.61	38.63	405.90	405.92	0.02	405.92	*
1Q11	444.53	1/13/2011	37.73	37.74	406.79	406.80	0.01	406.80	*
2Q11	444.53	4/1/2011	NE	39.20	NA	NA	NA	405.33	*
3Q11	444.53	9/19/2011	NE	37.54	NA	NA	NA	406.99	*
4Q11	444.53	10/6/2011	NE	37.67	NA	NA	NA	406.86	*
P-66 Screened Interval Elevation: 401.981 - 376.981									
1Q09	436.70	1/1/2009	NE	38.43	NA	NA	NA	398.27	
2Q09	436.70	4/1/2009	37.42	37.43	399.27	399.28	0.01	399.28	
3Q09	436.70	7/1/2009	NE	35.91	NA	NA	NA	400.79	
4Q09	436.70	10/1/2009	NE	35.62	NA	NA	NA	401.08	
1Q10	436.70	1/1/2010	NE	33.49	NA	NA	NA	403.21	*
2Q10	436.70	4/1/2010	NE	32.30	NA	NA	NA	404.40	*
3Q10	436.70	7/1/2010	30.81	30.83	405.87	405.89	0.02	405.89	*
4Q10	436.70	11/12/2010	NE	30.02	NA	NA	NA	406.68	*
1Q11	436.70	1/13/2011	NE	30.70	NA	NA	NA	406.00	*
2Q11	436.70	4/25/2011	NE	31.26	NA	NA	NA	405.44	*
3Q11	436.70	7/5/2011	NE	28.87	NA	NA	NA	407.83	*
	436.70	9/19/2011	NE	28.64	NA	NA	NA	408.06	*
4Q11	436.70	10/5/2011	NE	28.92	NA	NA	NA	407.78	*
P-67 Screened Interval Elevation: 402.155 - 377.155									
1Q09	444.13	1/1/2009	44.61	44.62	399.51	399.52	0.01	399.52	
2Q09	444.13	4/1/2009	44.03	44.04	400.09	400.10	0.01	400.10	
3Q09	444.13	7/1/2009	NE	42.59	NA	NA	NA	401.54	
4Q09	444.13	10/1/2009	42.15	42.17	401.96	401.98	0.02	401.98	
1Q10	444.13	1/1/2010	39.96	39.98	404.15	404.17	0.02	404.17	*
2Q10	444.13	4/1/2010	38.78	38.80	405.33	405.35	0.02	405.35	*
3Q10	444.13	7/1/2010	37.27	37.46	406.67	406.86	0.19	406.82	*
4Q10	444.13	10/1/2010	36.27	36.31	407.82	407.86	0.04	407.85	*
1Q11	444.13	1/13/2011	36.75	36.78	407.35	407.38	0.03	407.37	*
2Q11	444.13	4/1/2011	NE	37.24	NA	NA	NA	406.89	*
3Q11	444.13	9/19/2011	NE	35.16	NA	NA	NA	408.97	*
4Q11	444.13	10/5/2011	NE	35.38	NA	NA	NA	408.75	*

**TABLE 1**  
**CUMULATIVE GROUNDWATER GAUGING RESULTS**

Well ID/ Quarter	Top of Casing (ft MSL)	Date Gauged	Depth to Product (ft)	Depth to Water (Static)	Water- Product Interface (ft MSL)	Product Elev. (ft MSL)	Product Thickness (ft)	Corrected W.L. Elevation (ft MSL)	Comments
P-68 Screened Interval Elevation: 399.813 - 374.813									
1Q09	445.07	1/1/2009	47.50	49.61	395.46	397.57	2.11	397.15	
2Q09	445.07	4/1/2009	46.53	49.08	395.99	398.54	2.55	398.03	
3Q09	445.07	7/1/2009	45.75	48.46	396.61	399.32	2.71	398.78	
4Q09	445.07	10/1/2009	44.10	47.76	397.31	400.97	3.66	400.24	*
1Q10	445.07	1/1/2010	42.44	46.62	398.45	402.63	4.18	401.80	*
2Q10	445.07	4/1/2010	40.94	48.15	396.92	404.13	7.21	402.69	*
3Q10	445.07	7/1/2010	40.50	44.65	400.42	404.57	4.15	403.74	*
4Q10	445.07	11/12/2010	39.32	43.42	401.65	405.75	4.10	404.93	*
1Q11	445.07	1/13/2011	39.15	43.18	401.89	405.92	4.03	405.12	*
2Q11	445.07	4/25/2011	41.42	41.51	403.56	403.65	0.09	403.63	*
3Q11	445.07	7/5/2011	39.06	39.13	405.94	406.01	0.07	406.00	*
	445.07	9/19/2011	39.01	39.03	406.04	406.06	0.02	406.06	*
4Q11	445.07	10/6/2011	38.53	38.58	406.49	406.54	0.05	406.53	*
P-69 Screened Interval Elevation: 402.363 - 377.363									
1Q09	443.18	1/1/2009	NE	46.24	NA	NA	NA	396.94	
2Q09	443.18	4/1/2009	45.43	45.48	397.70	397.75	0.05	397.74	
3Q09	443.18	7/1/2009	43.98	44.00	399.18	399.20	0.02	399.20	
4Q09	443.18	10/1/2009	43.41	43.45	399.73	399.77	0.04	399.77	
1Q10	443.18	1/1/2010	41.87	41.92	401.26	401.31	0.05	401.30	
2Q10	443.18	4/1/2010	40.39	40.42	402.76	402.79	0.03	402.79	*
3Q10	443.18	7/1/2010	NE	40.14	NA	NA	NA	403.04	*
4Q10	443.18	11/11/2010	38.99	39.02	404.16	404.19	0.03	404.19	*
1Q11	443.18	1/13/2011	38.62	38.63	404.55	404.56	0.01	404.56	*
2Q11	443.18	4/25/2011	NE	39.98	NA	NA	NA	403.20	*
3Q11	443.18	7/5/2011	NE	37.41	NA	NA	NA	405.77	*
	443.18	9/19/2011	NE	36.62	NA	NA	NA	406.56	*
4Q11	443.18	10/6/2011	NE	36.77	NA	NA	NA	406.41	*
P-70 Screened Interval Elevation: 398.157 - 373.157									
1Q09	442.83	1/1/2009	45.93	46.87	395.96	396.90	0.94	396.71	
2Q09	442.83	4/1/2009	45.10	45.75	397.08	397.73	0.65	397.60	
3Q09	442.83	7/1/2009	43.71	44.35	398.48	399.12	0.64	398.99	*
4Q09	442.83	10/1/2009	43.09	43.69	399.14	399.74	0.60	399.62	*
1Q10	442.83	1/1/2010	41.65	41.84	400.99	401.18	0.19	401.14	*
2Q10	442.83	4/1/2010	40.21	40.67	402.16	402.62	0.46	402.53	*
3Q10	442.83	7/1/2010	39.42	39.86	402.97	403.41	0.44	403.32	*
4Q10	442.83	11/11/2010	38.20	38.69	404.14	404.63	0.49	404.53	*
1Q11	442.83	1/13/2011	37.48	37.90	404.93	405.35	0.42	405.27	*
2Q11	442.83	4/25/2011	39.20	39.22	403.61	403.63	0.02	403.62	*
3Q11	442.83	7/5/2011	36.42	36.43	406.40	406.41	0.01	406.41	*
	442.83	9/19/2011	NE	35.98	NA	NA	NA	406.85	*
4Q11	442.83	10/6/2011	NE	36.25	NA	NA	NA	406.58	*
P-71 Screened Interval Elevation: 402.219 - 377.219									
1Q09	444.83	1/1/2009	47.31	47.39	397.44	397.52	0.08	397.50	
2Q09	444.83	4/1/2009	NE	46.58	NA	NA	NA	398.25	
3Q09	444.83	7/1/2009	NE	45.24	NA	NA	NA	399.59	
4Q09	444.83	10/1/2009	NE	44.52	NA	NA	NA	400.31	
1Q10	444.83	1/1/2010	NE	42.64	NA	NA	NA	402.19	
2Q10	444.83	4/1/2010	NE	41.31	NA	NA	NA	403.52	*
3Q10	444.83	7/1/2010	NE	40.20	NA	NA	NA	404.63	*
4Q10	444.83	11/11/2010	NE	38.92	NA	NA	NA	405.91	*
1Q11	444.83	1/13/2011	NE	38.32	NA	NA	NA	406.51	*
2Q11	444.83	4/25/2011	NE	39.52	NA	NA	NA	405.31	*
3Q11	444.83	7/5/2011	NE	37.91	NA	NA	NA	406.92	*
	444.83	9/19/2011	NE	37.71	NA	NA	NA	407.12	*
4Q11	444.83	10/6/2011	NE	47.31	NA	NA	NA	397.52	Winch present prevents cap from fitting

**TABLE 1**  
**CUMULATIVE GROUNDWATER GAUGING RESULTS**

Well ID/ Quarter	Top of Casing (ft MSL)	Date Gauged	Depth to Product (ft)	Depth to Water (Static)	Water- Product Interface (ft MSL)	Product Elev. (ft MSL)	Product Thickness (ft)	Corrected W.L. Elevation (ft MSL)	Comments
P-72 Screened Interval Elevation: 398.659 - 373.659									
1Q09	444.43	1/1/2009	NE	46.36	NA	NA	NA	398.07	
2Q09	444.43	4/1/2009	45.75	45.76	398.67	398.68	0.01	398.68	*
3Q09	444.43	7/1/2009	44.61	44.63	399.80	399.82	0.02	399.82	*
4Q09	444.43	10/1/2009	43.85	43.88	400.55	400.58	0.03	400.57	*
1Q10	444.43	1/1/2010	41.83	41.87	402.56	402.60	0.04	402.59	*
2Q10	444.43	4/1/2010	40.36	40.39	404.04	404.07	0.03	404.06	*
3Q10	444.43	7/1/2010	NE	NE	NA	NA	NA	NA	
4Q10	444.43	11/11/2010	38.01	38.06	406.37	406.42	0.05	406.41	*
1Q11	444.43	1/13/2011	37.65	37.66	406.77	406.78	0.01	406.78	*
2Q11	444.43	4/25/2011	38.78	38.80	405.63	405.65	0.02	405.65	*
3Q11	444.43	7/5/2011	37.02	37.03	407.40	407.41	0.01	407.41	*
	444.43	9/19/2011	NE	36.60	NA	NA	NA	407.83	*
4Q11	444.43	10/6/2011	NE	36.82	NA	NA	NA	407.61	*
P-73 Screened Interval Elevation: 402.165 - 377.165									
1Q09	443.76	1/1/2009	46.31	46.32	397.44	397.45	0.01	397.45	
2Q09	443.76	4/1/2009	NE	45.53	NA	NA	NA	398.23	
3Q09	443.76	7/1/2009	NE	43.99	NA	NA	NA	399.77	
4Q09	443.76	10/1/2009	NE	43.38	NA	NA	NA	400.38	
1Q10	443.76	1/1/2010	NE	41.39	NA	NA	NA	402.37	*
2Q10	443.76	4/1/2010	NE	40.15	NA	NA	NA	403.61	*
3Q10	443.76	7/1/2010	40.24	41.26	402.50	403.52	1.02	403.32	*
4Q10	443.76	11/11/2010	NE	38.10	NA	NA	NA	405.66	*
1Q11	443.76	1/13/2011	NE	38.10	NA	NA	NA	405.66	*
2Q11	443.76	4/25/2011	NE	39.13	NA	NA	NA	404.63	*
3Q11	443.76	7/5/2011	NE	36.88	NA	NA	NA	406.88	*
	443.76	9/19/2011	NE	36.38	NA	NA	NA	407.38	*
4Q11	443.76	10/6/2011	NE	36.68	NA	NA	NA	407.08	*
P-74 Screened Interval Elevation: 398.203 - 373.203									
1Q09	442.63	1/1/2009	NE	45.65	NA	NA	NA	396.98	
2Q09	442.63	4/1/2009	NE	44.70	NA	NA	NA	397.93	
3Q09	442.63	7/1/2009	NE	43.09	NA	NA	NA	399.54	*
4Q09	442.63	10/1/2009	NE	42.60	NA	NA	NA	400.03	*
1Q10	442.63	1/1/2010	NE	40.90	NA	NA	NA	401.73	*
2Q10	442.63	4/1/2010	NE	39.07	NA	NA	NA	403.56	*
3Q10	442.63	7/1/2010	NE	38.88	NA	NA	NA	403.75	*
4Q10	442.63	11/12/2010	NE	38.29	NA	NA	NA	404.34	*
1Q11	442.63	1/13/2011	NE	37.94	NA	NA	NA	404.69	*
2Q11	442.63	4/25/2011	NE	39.18	NA	NA	NA	403.45	*
3Q11	442.63	7/5/2011	NE	36.51	NA	NA	NA	406.12	*
	442.63	9/19/2011	NE	35.86	NA	NA	NA	406.77	*
4Q11	442.63	10/6/2011	NE	36.26	NA	NA	NA	406.37	*
P-75 Screened Interval Elevation: 403.194 - 378.194									
1Q09	446.32	1/1/2009	NE	48.02	NA	NA	NA	398.30	
2Q09	446.32	4/1/2009	NE	47.24	NA	NA	NA	399.08	
3Q09	446.32	7/1/2009	NE	45.74	NA	NA	NA	400.58	
4Q09	446.32	10/1/2009	NE	45.35	NA	NA	NA	400.97	
1Q10	446.32	1/1/2010	NE	43.05	NA	NA	NA	403.27	*
2Q10	446.32	4/1/2010	42.01	42.30	404.02	404.31	0.29	404.26	*
3Q10	446.32	7/1/2010	40.58	40.87	405.45	405.74	0.29	405.69	*
4Q10	446.32	11/11/2010	39.72	40.00	406.32	406.60	0.28	406.55	*
1Q11	446.32	1/13/2011	40.04	40.43	405.89	406.28	0.39	406.21	*
2Q11	446.32	4/25/2011	40.81	40.83	405.49	405.51	0.02	405.51	*
3Q11	446.32	7/5/2011	38.57	38.59	407.73	407.75	0.02	407.75	*
	446.32	9/19/2011	NE	38.31	NA	NA	NA	408.01	*
4Q11	446.32	10/5/2011	38.52	38.53	407.79	407.80	0.01	407.80	*

**TABLE 1**  
**CUMULATIVE GROUNDWATER GAUGING RESULTS**

Well ID/ Quarter	Top of Casing (ft MSL)	Date Gauged	Depth to Product (ft)	Depth to Water (Static)	Water- Product Interface (ft MSL)	Product Elev. (ft MSL)	Product Thickness (ft)	Corrected W.L. Elevation (ft MSL)	Comments
P-82A Screened Interval Elevation: 401.48 - 386.48									
1Q09	434.69	1/1/2009	NE	32.37	NA	NA	NA	402.32	*
2Q09	434.69	4/1/2009	NE	31.60	NA	NA	NA	403.09	*
3Q09	434.69	7/1/2009	NE	30.30	NA	NA	NA	404.39	*
4Q09	434.69	10/1/2009	NE	30.12	NA	NA	NA	404.57	*
1Q10	434.69	1/1/2010	NE	27.98	NA	NA	NA	406.71	*
2Q10	434.69	4/1/2010	NE	26.62	NA	NA	NA	408.07	*
3Q10	434.69	7/1/2010	NE	25.00	NA	NA	NA	409.69	*
4Q10	434.69	10/1/2010	NE	24.07	NA	NA	NA	410.62	*
1Q11	434.69	1/13/2011	NE	25.29	NA	NA	NA	409.40	*
2Q11	434.69	4/1/2011	NE	25.12	NA	NA	NA	409.57	*
3Q11	434.69	9/19/2011	NE	23.62	NA	NA	NA	411.07	*
4Q11	434.69	10/5/2011	NE	24.00	NA	NA	NA	410.69	*
P-83A Screened Interval Elevation: 398.58 - 383.58									
1Q09	445.23	1/1/2009	NE	48.86	NA	NA	NA	396.37	
2Q09	445.23	4/1/2009	NE	48.49	NA	NA	NA	396.74	
3Q09	445.23	7/1/2009	NE	47.00	NA	NA	NA	398.23	
4Q09	445.23	10/1/2009	NE	46.03	NA	NA	NA	399.20	*
1Q10	445.23	1/1/2010	NE	43.61	NA	NA	NA	401.62	*
2Q10	445.23	4/1/2010	NE	42.05	NA	NA	NA	403.18	*
3Q10	445.23	7/1/2010	NE	40.64	NA	NA	NA	404.59	*
4Q10	445.23	10/1/2010	NE	38.82	NA	NA	NA	406.41	*
1Q11	445.23	1/13/2011	NE	37.93	NA	NA	NA	407.30	*
2Q11	445.23	4/1/2011	NE	38.42	NA	NA	NA	406.81	*
3Q11	445.23	9/19/2011	NE	37.21	NA	NA	NA	408.02	*
4Q11	445.23	10/6/2011	NE	37.41	NA	NA	NA	407.82	*
P-84A Screened Interval Elevation: 392.57 - 377.57									
1Q09	446.39	1/1/2009	NE	48.80	NA	NA	NA	397.59	*
2Q09	446.39	4/1/2009	NE	48.43	NA	NA	NA	397.96	*
3Q09	446.39	7/1/2009	NE	46.97	NA	NA	NA	399.42	*
4Q09	446.39	10/1/2009	NE	46.33	NA	NA	NA	400.06	*
1Q10	446.39	1/1/2010	NE	44.20	NA	NA	NA	402.19	*
2Q10	446.39	4/1/2010	NE	42.91	NA	NA	NA	403.48	*
3Q10	446.39	7/1/2010	NE	41.55	NA	NA	NA	404.84	*
4Q10	446.39	11/11/2010	NE	39.95	NA	NA	NA	406.44	*
1Q11	446.39	1/13/2011	NE	39.55	NA	NA	NA	406.84	*
2Q11	446.39	4/25/2011	NE	40.11	NA	NA	NA	406.28	*
3Q11	446.39	7/5/2011	NE	38.58	NA	NA	NA	407.81	*
4Q11	446.39	10/6/2011	NE	34.36	NA	NA	NA	412.03	*
P-84B Screened Interval Elevation: 372.6 - 370.6									
1Q09	446.10	1/1/2009	NE	48.50	NA	NA	NA	397.60	*
2Q09	446.10	4/1/2009	NE	48.15	NA	NA	NA	397.95	*
3Q09	446.10	7/1/2009	NE	46.68	NA	NA	NA	399.42	*
4Q09	446.10	10/1/2009	NE	46.05	NA	NA	NA	400.05	*
1Q10	446.10	1/1/2010	NE	43.91	NA	NA	NA	402.19	*
2Q10	446.10	4/1/2010	NE	42.61	NA	NA	NA	403.49	*
3Q10	446.10	7/1/2010	NE	41.28	NA	NA	NA	404.82	*
4Q10	446.10	11/11/2010	NE	39.67	NA	NA	NA	406.43	*
1Q11	446.10	1/13/2011	NE	39.27	NA	NA	NA	406.83	*
2Q11	446.10	4/25/2011	NE	39.85	NA	NA	NA	406.25	*
3Q11	446.10	7/5/2011	NE	38.32	NA	NA	NA	407.78	*
4Q11	446.10	10/6/2011	NE	38.09	NA	NA	NA	408.01	*

**TABLE 1**  
**CUMULATIVE GROUNDWATER GAUGING RESULTS**

Well ID/ Quarter	Top of Casing (ft MSL)	Date Gauged	Depth to Product (ft)	Depth to Water (Static)	Water- Product Interface (ft MSL)	Product Elev. (ft MSL)	Product Thickness (ft)	Corrected W.L. Elevation (ft MSL)	Comments
P-84C									Screened Interval Elevation: 352.08 - 350.08
1Q09	446.13	1/1/2009	NE	48.71	NA	NA	NA	397.42	*
2Q09	446.13	4/1/2009	NE	48.43	NA	NA	NA	397.70	*
3Q09	446.13	7/1/2009	NE	46.71	NA	NA	NA	399.42	*
4Q09	446.13	10/1/2009	NE	46.07	NA	NA	NA	400.06	*
1Q10	446.13	1/1/2010	NE	44.39	NA	NA	NA	401.74	*
2Q10	446.13	4/1/2010	NE	42.65	NA	NA	NA	403.48	*
3Q10	446.13	7/1/2010	NE	41.32	NA	NA	NA	404.81	*
4Q10	446.13	11/11/2010	NE	39.68	NA	NA	NA	406.45	*
1Q11	446.13	1/13/2011	NE	39.29	NA	NA	NA	406.84	*
2Q11	446.13	4/25/2011	NE	39.86	NA	NA	NA	406.27	*
3Q11	446.13	7/5/2011	NE	38.64	NA	NA	NA	407.49	*
4Q11	446.13	10/6/2011	NE	38.41	NA	NA	NA	407.72	*
P-84D									Screened Interval Elevation: 324.99 - 322.99
1Q09	446.14	1/1/2009	NE	48.92	NA	NA	NA	397.22	*
2Q09	446.14	4/1/2009	NE	48.48	NA	NA	NA	397.66	*
3Q09	446.14	7/1/2009	NE	46.70	NA	NA	NA	399.44	*
4Q09	446.14	10/1/2009	NE	46.07	NA	NA	NA	400.07	*
1Q10	446.14	1/1/2010	NE	43.92	NA	NA	NA	402.22	*
2Q10	446.14	4/1/2010	NE	42.63	NA	NA	NA	403.51	*
3Q10	446.14	7/1/2010	NE	41.34	NA	NA	NA	404.80	*
4Q10	446.14	11/11/2010	NE	39.69	NA	NA	NA	406.45	*
1Q11	446.14	1/13/2011	NE	39.31	NA	NA	NA	406.83	*
2Q11	446.14	4/25/2011	NE	39.87	NA	NA	NA	406.27	*
3Q11	446.14	7/5/2011	NE	38.68	NA	NA	NA	407.46	*
4Q11	446.14	10/6/2011	NE	38.43	NA	NA	NA	407.71	*
P-88A									Screened Interval Elevation: 404.72 - 389.72
1Q09	443.12	1/1/2009	NE	39.11	NA	NA	NA	404.01	
2Q09	443.12	4/1/2009	NE	38.83	NA	NA	NA	404.29	
3Q09	443.12	7/1/2009	NE	37.24	NA	NA	NA	405.88	*
4Q09	443.12	10/1/2009	NE	36.85	NA	NA	NA	406.27	*
1Q10	443.12	1/1/2010	NE	34.78	NA	NA	NA	408.34	*
2Q10	443.12	4/1/2010	NE	33.22	NA	NA	NA	409.90	*
3Q10	443.12	7/1/2010	NE	31.80	NA	NA	NA	411.32	*
4Q10	443.12	10/1/2010	NE	30.65	NA	NA	NA	412.47	*
1Q11	443.12	1/14/2011	NE	31.16	NA	NA	NA	411.96	*
2Q11	443.12	4/1/2011	NE	31.36	NA	NA	NA	411.76	*
3Q11	443.12	9/19/2011	NE	29.72	NA	NA	NA	413.40	*
4Q11	443.12	10/5/2011	NE	29.92	NA	NA	NA	413.20	*
P-91A									Screened Interval Elevation: 395.675 - 380.675
1Q09	447.19	1/1/2009	52.80	53.24	393.95	394.39	0.44	394.30	
2Q09	447.19	4/1/2009	52.74	53.31	393.88	394.45	0.57	394.34	
3Q09	447.19	7/1/2009	51.55	52.03	395.16	395.64	0.48	395.54	
4Q09	447.19	10/1/2009	50.22	50.73	396.46	396.97	0.51	396.87	*
1Q10	447.19	1/1/2010	47.91	48.42	398.77	399.28	0.51	399.18	*
2Q10	447.19	4/1/2010	46.08	46.58	400.61	401.11	0.50	401.01	*
3Q10	447.19	7/1/2010	44.85	45.36	401.83	402.34	0.51	402.24	*
4Q10	447.19	10/1/2010	42.70	43.19	404.00	404.49	0.49	404.39	*
1Q11	447.19	1/14/2011	41.19	41.64	405.55	406.00	0.45	405.91	*
2Q11	447.19	4/1/2011	NE	43.10	NA	NA	NA	404.09	*
3Q11	447.19	9/19/2011	NE	41.69	NA	NA	NA	405.50	*
4Q11	447.19	10/6/2011	NE	41.63	NA	NA	NA	405.56	*



**TABLE 1  
CUMULATIVE GROUNDWATER GAUGING RESULTS**

Well ID/ Quarter	Top of Casing (ft MSL)	Date Gauged	Depth to Product (ft)	Depth to Water (Static)	Water- Product Interface (ft MSL)	Product Elev. (ft MSL)	Product Thickness (ft)	Corrected W.L. Elevation (ft MSL)	Comments
P-92A									Screened Interval Elevation: 398.55 - 383.55
1Q09	446.12	1/1/2009	49.95	51.09	395.03	396.17	1.14	395.94	
2Q09	446.12	4/1/2009	49.53	50.62	395.50	396.59	1.09	396.37	
3Q09	446.12	7/1/2009	NE	NE	NA	NA	NA	NA	
4Q09	446.12	10/1/2009	47.22	47.41	398.71	398.90	0.19	398.86	*
1Q10	446.12	1/1/2010	45.05	45.25	400.87	401.07	0.20	401.03	*
2Q10	446.12	4/1/2010	43.43	43.63	402.49	402.69	0.20	402.65	*
3Q10	446.12	7/1/2010	42.43	42.63	403.49	403.69	0.20	403.65	*
4Q10	446.12	10/1/2010	40.50	40.70	405.42	405.62	0.20	405.58	*
1Q11	446.12	1/14/2011	39.43	39.57	406.55	406.69	0.14	406.66	*
2Q11	446.12	4/1/2011	NE	41.02	NA	NA	NA	405.10	*
3Q11	446.12	9/19/2011	39.62	39.67	406.45	406.50	0.05	406.49	*
4Q11	446.12	10/6/2011	39.70	39.76	406.36	406.42	0.06	406.41	*
P-93A									Screened Interval Elevation: 398.409 - 383.409
1Q09	446.58	1/1/2009	NE	48.55	NA	NA	NA	398.03	
2Q09	446.58	4/1/2009	NE	47.90	NA	NA	NA	398.68	*
3Q09	446.58	7/1/2009	NE	46.30	NA	NA	NA	400.28	*
4Q09	446.58	10/1/2009	NE	45.92	NA	NA	NA	400.66	*
1Q10	446.58	1/1/2010	NE	43.92	NA	NA	NA	402.66	*
2Q10	446.58	4/1/2010	NE	42.67	NA	NA	NA	403.91	*
3Q10	446.58	7/1/2010	NE	41.47	NA	NA	NA	405.11	*
4Q10	446.58	11/11/2010	NE	40.75	NA	NA	NA	405.83	*
1Q11	446.58	1/14/2011	NE	40.97	NA	NA	NA	405.61	*
2Q11	446.58	4/25/2011	NE	41.80	NA	NA	NA	404.78	*
3Q11	446.58	7/5/2011	NE	39.40	NA	NA	NA	407.18	*
	446.58	9/19/2011	NE	38.86	NA	NA	NA	407.72	*
4Q11	446.58	10/6/2011	NE	39.16	NA	NA	NA	407.42	*
P-93B									Screened Interval Elevation: 371.863 - 369.863
1Q09	446.46	1/1/2009	NE	49.49	NA	NA	NA	396.97	*
2Q09	446.46	4/1/2009	NE	47.93	NA	NA	NA	398.53	*
3Q09	446.46	7/1/2009	NE	46.19	NA	NA	NA	400.27	*
4Q09	446.46	10/1/2009	NE	45.95	NA	NA	NA	400.51	*
1Q10	446.46	1/1/2010	NE	44.34	NA	NA	NA	402.12	*
2Q10	446.46	4/1/2010	NE	42.56	NA	NA	NA	403.90	*
3Q10	446.46	7/1/2010	NE	41.38	NA	NA	NA	405.08	*
4Q10	446.46	11/11/2010	NE	40.73	NA	NA	NA	405.73	*
1Q11	446.46	1/14/2011	NE	41.03	NA	NA	NA	405.43	*
2Q11	446.46	4/25/2011	NE	41.69	NA	NA	NA	404.77	*
3Q11	446.46	7/5/2011	NE	39.44	NA	NA	NA	407.02	*
4Q11	446.46	10/6/2011	NE	39.19	NA	NA	NA	407.27	*
P-93C									Screened Interval Elevation: 352.257 - 350.257
1Q09	446.51	1/1/2009	NE	48.56	NA	NA	NA	397.95	*
2Q09	446.51	4/1/2009	NE	47.76	NA	NA	NA	398.75	*
3Q09	446.51	7/1/2009	NE	46.23	NA	NA	NA	400.28	*
4Q09	446.51	10/1/2009	NE	45.85	NA	NA	NA	400.66	*
1Q10	446.51	1/1/2010	NE	43.86	NA	NA	NA	402.65	*
2Q10	446.51	4/1/2010	NE	42.59	NA	NA	NA	403.92	*
3Q10	446.51	7/1/2010	NE	41.42	NA	NA	NA	405.09	*
4Q10	446.51	11/11/2010	NE	40.69	NA	NA	NA	405.82	*
1Q11	446.51	1/14/2011	NE	40.91	NA	NA	NA	405.60	*
2Q11	446.51	4/25/2011	NE	41.70	NA	NA	NA	404.81	*
3Q11	446.51	7/5/2011	NE	39.32	NA	NA	NA	407.19	*
4Q11	446.51	10/6/2011	NE	39.15	NA	NA	NA	407.36	*

**TABLE 1**  
**CUMULATIVE GROUNDWATER GAUGING RESULTS**

Well ID/ Quarter	Top of Casing (ft MSL)	Date Gauged	Depth to Product (ft)	Depth to Water (Static)	Water- Product Interface (ft MSL)	Product Elev. (ft MSL)	Product Thickness (ft)	Corrected W.L. Elevation (ft MSL)	Comments
P-93D Screened Interval Elevation: 321.14 - 319.14									
1Q09	446.89	1/1/2009	NE	48.37	NA	NA	NA	398.52	*
2Q09	446.89	4/1/2009	NE	47.65	NA	NA	NA	399.24	*
3Q09	446.89	7/1/2009	NE	46.11	NA	NA	NA	400.78	*
4Q09	446.89	10/1/2009	NE	45.75	NA	NA	NA	401.14	*
1Q10	446.89	1/1/2010	NE	43.76	NA	NA	NA	403.13	*
2Q10	446.89	4/1/2010	NE	42.51	NA	NA	NA	404.38	*
3Q10	446.89	7/1/2010	NE	41.32	NA	NA	NA	405.57	*
4Q10	446.36	11/11/2010	NE	40.59	NA	NA	NA	406.30	*
1Q11	446.36	1/14/2011	NE	40.81	NA	NA	NA	406.08	*
2Q11	446.89	4/25/2011	NE	41.84	NA	NA	NA	405.05	*
3Q11	446.89	7/5/2011	NE	39.46	NA	NA	NA	407.43	*
4Q11	446.89	10/6/2011	NE	39.22	NA	NA	NA	407.67	*
P-94 Screened Interval Elevation: 398.804 - 383.804									
1Q09	444.65	1/1/2009	NE	45.68	NA	NA	NA	398.97	*
2Q09	444.65	4/1/2009	NE	45.21	NA	NA	NA	399.44	*
3Q09	444.65	7/1/2009	NE	42.98	NA	NA	NA	401.67	*
4Q09	444.65	10/1/2009	NE	42.62	NA	NA	NA	402.03	*
1Q10	444.65	1/1/2010	NE	38.86	NA	NA	NA	405.79	*
2Q10	444.65	4/1/2010	NE	37.55	NA	NA	NA	407.10	*
3Q10	444.65	7/1/2010	NE	36.11	NA	NA	NA	408.54	*
4Q10	444.65	10/1/2010	NE	35.13	NA	NA	NA	409.52	*
1Q11	444.65	1/13/2011	NE	34.66	NA	NA	NA	409.99	*
2Q11	444.65	4/1/2011	NE	34.27	NA	NA	NA	410.38	*
3Q11	444.65	9/19/2011	NE	33.17	NA	NA	NA	411.48	*
4Q11	444.65	10/6/2011	NE	33.53	NA	NA	NA	411.12	*
P-102 Screened Interval Elevation: 402.158 - 382.158									
1Q09	444.91	1/1/2009	NE	42.01	NA	NA	NA	402.90	*
2Q09	444.91	4/1/2009	NE	NE	NA	NA	NA	NA	
3Q09	444.91	7/1/2009	NE	40.19	NA	NA	NA	404.72	*
4Q09	444.91	10/1/2009	NE	39.56	NA	NA	NA	405.35	*
1Q10	444.91	1/1/2010	NE	36.48	NA	NA	NA	408.43	*
2Q10	444.91	4/1/2010	NE	35.31	NA	NA	NA	409.60	*
3Q10	444.91	7/1/2010	NE	33.97	NA	NA	NA	410.94	*
4Q10	444.91	10/1/2010	NE	33.62	NA	NA	NA	411.29	*
1Q11	444.91	1/3/2011	NE	32.61	NA	NA	NA	412.30	*
2Q11	444.91	4/1/2011	NE	32.41	NA	NA	NA	412.50	*
3Q11	444.91	9/19/2011	NE	31.18	NA	NA	NA	413.73	*
4Q11	444.91	10/6/2011	NE	31.47	NA	NA	NA	413.44	*
P-114 Screened Interval Elevation: 399.733 - 379.733									
1Q09	432.41	1/1/2009	NE	32.70	NA	NA	NA	399.71	
2Q09	432.41	4/1/2009	NE	31.33	NA	NA	NA	401.08	*
3Q09	432.41	7/1/2009	NE	30.55	NA	NA	NA	401.86	*
4Q09	432.41	10/1/2009	NE	30.71	NA	NA	NA	401.70	*
1Q10	432.41	1/1/2010	NE	28.40	NA	NA	NA	404.01	*
2Q10	432.41	4/1/2010	NE	27.05	NA	NA	NA	405.36	*
3Q10	432.41	7/1/2010	NE	25.00	NA	NA	NA	407.41	*
4Q10	432.41	11/12/2010	NE	24.66	NA	NA	NA	407.75	*
1Q11	432.41	1/13/2011	NE	26.84	NA	NA	NA	405.57	*
2Q11	432.41	4/25/2011	NE	26.61	NA	NA	NA	405.80	*
3Q11	432.41	7/5/2011	NE	23.48	NA	NA	NA	408.93	*
	432.41	9/19/2011	NE	24.20	NA	NA	NA	408.21	*
4Q11	432.41	10/5/2011	NE	24.59	NA	NA	NA	407.82	*

**TABLE 1**  
**CUMULATIVE GROUNDWATER GAUGING RESULTS**

Well ID/ Quarter	Top of Casing (ft MSL)	Date Gauged	Depth to Product (ft)	Depth to Water (Static)	Water- Product Interface (ft MSL)	Product Elev. (ft MSL)	Product Thickness (ft)	Corrected W.L. Elevation (ft MSL)	Comments
P-115 Screened Interval Elevation: 401.01 - 381.01									
1Q09	433.31	1/1/2009	NE	33.50	NA	NA	NA	399.81	
2Q09	433.31	4/1/2009	NE	31.99	NA	NA	NA	401.32	*
3Q09	433.31	7/1/2009	NE	31.32	NA	NA	NA	401.99	*
4Q09	433.31	10/1/2009	NE	31.52	NA	NA	NA	401.79	*
1Q10	433.31	1/1/2010	NE	29.31	NA	NA	NA	404.00	*
2Q10	433.31	4/1/2010	NE	27.77	NA	NA	NA	405.54	*
3Q10	433.31	7/1/2010	NE	25.59	NA	NA	NA	407.72	*
4Q10	433.31	11/11/2010	NE	25.41	NA	NA	NA	407.90	*
1Q11	433.31	1/13/2011	NE	27.88	NA	NA	NA	405.43	*
2Q11	433.31	4/25/2011	NE	27.38	NA	NA	NA	405.93	*
3Q11	433.31	7/5/2011	NE	NE	NA	NA	NA	NA	
	433.31	9/19/2011	NE	25.10	NA	NA	NA	408.21	*
4Q11	433.31	10/6/2011	NE	25.67	NA	NA	NA	407.64	*
P-116 Screened Interval Elevation: 399.01 - 379.01									
1Q09	436.45	1/1/2009	NE	36.85	NA	NA	NA	399.60	*
2Q09	436.45	4/1/2009	NE	35.18	NA	NA	NA	401.27	*
3Q09	436.45	7/1/2009	NE	35.64	NA	NA	NA	400.81	*
4Q09	436.45	10/1/2009	NE	34.84	NA	NA	NA	401.61	*
1Q10	436.45	1/1/2010	NE	32.68	NA	NA	NA	403.77	*
2Q10	436.45	4/1/2010	NE	31.05	NA	NA	NA	405.40	*
3Q10	436.45	7/1/2010	NE	28.82	NA	NA	NA	407.63	*
4Q10	436.45	11/11/2010	NE	28.76	NA	NA	NA	407.69	*
1Q11	436.45	1/13/2011	NE	31.35	NA	NA	NA	405.10	*
2Q11	436.45	4/25/2011	NE	30.76	NA	NA	NA	405.69	*
3Q11	436.45	7/5/2011	NE	27.41	NA	NA	NA	409.04	*
	436.45	9/19/2011	NE	28.52	NA	NA	NA	407.93	*
4Q11	436.45	10/5/2011	NE	28.96	NA	NA	NA	407.49	*
P-117 Screened Interval Elevation: 399.74 - 379.74									
1Q09	432.67	1/1/2009	NE	32.98	NA	NA	NA	399.69	
2Q09	432.67	4/1/2009	NE	31.27	NA	NA	NA	401.40	*
3Q09	432.67	7/1/2009	NE	30.82	NA	NA	NA	401.85	*
4Q09	432.67	10/1/2009	NE	31.05	NA	NA	NA	401.62	*
1Q10	432.67	1/1/2010	NE	28.87	NA	NA	NA	403.80	*
2Q10	432.67	4/1/2010	NE	27.19	NA	NA	NA	405.48	*
3Q10	432.67	7/1/2010	NE	24.91	NA	NA	NA	407.76	*
4Q10	432.67	11/11/2010	NE	24.11	NA	NA	NA	408.56	*
1Q11	432.67	1/13/2011	NE	27.62	NA	NA	NA	405.05	*
2Q11	432.67	4/25/2011	NE	26.96	NA	NA	NA	405.71	*
3Q11	432.67	7/5/2011	NE	23.54	NA	NA	NA	409.13	*
	432.67	9/19/2011	NE	24.71	NA	NA	NA	407.96	*
4Q11	432.67	10/5/2011	NE	25.16	NA	NA	NA	407.51	*
P-118 Screened Interval Elevation: 400.198 - 384.268									
1Q09	431.32	1/1/2009	NE	37.81	NA	NA	NA	393.51	
2Q09	431.32	4/1/2009	NE	29.76	NA	NA	NA	401.56	*
3Q09	431.32	7/1/2009	NE	29.67	NA	NA	NA	401.65	*
4Q09	431.32	10/1/2009	NE	29.92	NA	NA	NA	401.40	*
1Q10	431.32	1/1/2010	NE	27.78	NA	NA	NA	403.54	*
2Q10	431.32	4/1/2010	NE	25.81	NA	NA	NA	405.51	*
3Q10	431.32	7/1/2010	NE	23.27	NA	NA	NA	408.05	*
4Q10	431.32	10/1/2010	NE	23.80	NA	NA	NA	407.52	*
1Q11	431.32	1/13/2011	NE	26.95	NA	NA	NA	404.37	*
2Q11	431.32	4/1/2011	NE	25.75	NA	NA	NA	405.57	*
3Q11	431.32	9/19/2011	NE	23.78	NA	NA	NA	407.54	*
4Q11	431.32	10/5/2011	NE	34.28	NA	NA	NA	397.04	

**TABLE 1**  
**CUMULATIVE GROUNDWATER GAUGING RESULTS**

Well ID/ Quarter	Top of Casing (ft MSL)	Date Gauged	Depth to Product (ft)	Depth to Water (Static)	Water- Product Interface (ft MSL)	Product Elev. (ft MSL)	Product Thickness (ft)	Corrected W.L. Elevation (ft MSL)	Comments
P-119 Screened Interval Elevation: 401.248 - 385.318									
1Q09	431.92	1/1/2009	NE	32.23	NA	NA	NA	399.69	
2Q09	431.92	4/1/2009	NE	31.29	NA	NA	NA	400.63	
3Q09	431.92	7/1/2009	NE	30.01	NA	NA	NA	401.91	*
4Q09	431.92	10/1/2009	NE	30.09	NA	NA	NA	401.83	*
1Q10	431.92	1/1/2010	NE	27.74	NA	NA	NA	404.18	*
2Q10	431.92	4/1/2010	NE	26.49	NA	NA	NA	405.43	*
3Q10	431.92	7/1/2010	NE	24.71	NA	NA	NA	407.21	*
4Q10	431.92	11/11/2010	NE	24.93	NA	NA	NA	406.99	*
1Q11	431.92	1/13/2011	NE	25.64	NA	NA	NA	406.28	*
2Q11	431.92	4/25/2011	NE	25.77	NA	NA	NA	406.15	*
3Q11	431.92	7/5/2011	NE	23.06	NA	NA	NA	408.86	*
	431.92	9/19/2011	NE	23.40	NA	NA	NA	408.52	*
4Q11	431.92	10/5/2011	NE	23.70	NA	NA	NA	408.22	*
P-120 Screened Interval Elevation: 401.4 - 385.47									
1Q09	432.78	1/1/2009	NE	32.28	NA	NA	NA	400.50	
2Q09	432.78	4/1/2009	NE	31.09	NA	NA	NA	401.69	*
3Q09	432.78	7/1/2009	NE	30.04	NA	NA	NA	402.74	*
4Q09	432.78	10/1/2009	NE	30.21	NA	NA	NA	402.57	*
1Q10	432.78	1/1/2010	NE	27.86	NA	NA	NA	404.92	*
2Q10	432.78	4/1/2010	NE	26.60	NA	NA	NA	406.18	*
3Q10	432.78	7/1/2010	NE	24.53	NA	NA	NA	408.25	*
4Q10	432.78	10/1/2010	NE	24.13	NA	NA	NA	408.65	*
1Q11	432.78	1/13/2011	NE	26.14	NA	NA	NA	406.64	*
2Q11	432.78	4/1/2011	NE	25.82	NA	NA	NA	406.96	*
3Q11	432.78	9/19/2011	NE	23.82	NA	NA	NA	408.96	*
4Q11	432.78	10/5/2011	NE	24.15	NA	NA	NA	408.63	*
GP-9-PZ Screened Interval Elevation: 404.81 - 394.81									
4Q10	442.41	11/11/2010	NE	37.38	NA	NA	NA	405.03	*
1Q11	442.41	1/14/2011	NE	37.53	NA	NA	NA	404.88	*
2Q11	442.41	4/25/2011	NE	38.85	NA	NA	NA	403.56	*
3Q11	442.41	9/19/2011	NE	35.44	NA	NA	NA	406.97	*
4Q11	442.41	10/6/2011	NE	36.65	NA	NA	NA	405.76	*
ROST-3-PZ Screened Interval Elevation: 402.29 - 392.29									
4Q10	442.29	11/12/2010	NE	36.60	NA	NA	NA	405.69	*
1Q11	442.29	1/13/2011	NE	37.29	NA	NA	NA	405.00	*
2Q11	442.29	4/25/2011	NE	38.21	NA	NA	NA	404.08	*
3Q11	442.29	7/5/2011	NE	35.83	NA	NA	NA	406.46	*
	442.29	9/19/2011	NE	34.89	NA	NA	NA	407.40	*
4Q11	442.29	10/5/2011	NE	35.18	NA	NA	NA	407.11	*
ROST-4-PZ Screened Interval Elevation: 407.2 - 397.2									
4Q10	442.27	11/12/2010	NE	36.48	NA	NA	NA	405.65	
1Q11	442.27	1/13/2011	NE	36.97	NA	NA	NA	405.16	
2Q11	442.13	4/25/2011	NE	37.69	NA	NA	NA	404.44	
3Q11	442.13	7/5/2011	NE	35.85	NA	NA	NA	406.28	
	442.13	9/19/2011	NE	34.38	NA	NA	NA	407.75	*
4Q11	442.13	10/5/2011	NE	35.64	NA	NA	NA	406.49	
ROST-4-PZ(A) Screened Interval Elevation: 407.34 - 397.34									
2Q11	442.11	4/25/2011	NE	37.18	NA	NA	NA	404.93	
3Q11	442.11	7/5/2011	NE	35.21	NA	NA	NA	406.90	
4Q11	442.11	10/5/2011	NE	34.03	NA	NA	NA	408.08	*
ROST-4-PZ(B) Screened Interval Elevation: 407.33 - 397.33									
2Q11	442.38	4/25/2011	NE	37.80	NA	NA	NA	404.58	
3Q11	442.38	7/5/2011	NE	35.93	NA	NA	NA	406.45	
4Q11	442.38	10/5/2011	NE	34.70	NA	NA	NA	407.68	*
ROST-4-PZ(C) Screened Interval Elevation: 407.71 - 397.71									
2Q11	442.66	4/25/2011	NE	38.52	NA	NA	NA	404.14	
3Q11	442.66	7/5/2011	NE	36.62	NA	NA	NA	406.04	
4Q11	442.66	10/5/2011	NE	35.41	NA	NA	NA	407.25	
ROST-4-PZ(D) Screened Interval Elevation: 408.01 - 398.01									
2Q11	442.98	4/25/2011	NE	38.41	NA	NA	NA	404.57	
3Q11	442.98	7/5/2011	NE	36.58	NA	NA	NA	406.40	
4Q11	442.98	10/5/2011	NE	35.37	NA	NA	NA	407.61	

**TABLE 1**  
**CUMULATIVE GROUNDWATER GAUGING RESULTS**

Well ID/ Quarter	Top of Casing (ft MSL)	Date Gauged	Depth to Product (ft)	Depth to Water (Static)	Water- Product Interface (ft MSL)	Product Elev. (ft MSL)	Product Thickness (ft)	Corrected W.L. Elevation (ft MSL)	Comments
ROST-4-PZ(E) Screened Interval Elevation: 407.21 - 397.21									
2Q11	441.96	4/25/2011	NE	37.63	NA	NA	NA	404.33	
3Q11	441.96	7/5/2011	NE	35.81	NA	NA	NA	406.15	
4Q11	441.96	10/5/2011	NE	34.61	NA	NA	NA	407.35	*
ROST-4-PZ(F) Screened Interval Elevation: 407.59 - 397.59									
2Q11	442.12	4/25/2011	NE	37.87	NA	NA	NA	404.25	
3Q11	442.12	7/5/2011	NE	35.99	NA	NA	NA	406.13	
4Q11	442.12	10/5/2011	NE	34.84	NA	NA	NA	407.28	
ROST-4-PZ(G) Screened Interval Elevation: 407.85 - 397.85									
2Q11	442.13	4/25/2011	NE	38.08	NA	NA	NA	404.05	
3Q11	442.13	7/5/2011	NE	35.76	NA	NA	NA	406.37	
4Q11	442.13	10/5/2011	NE	35.07	NA	NA	NA	407.06	
ROST-5-PZ Screened Interval Elevation: 429.02 - 419.02									
4Q10	442.22	11/12/2010	NE	NE	NA	NA	NA	NA	
1Q11	442.22	1/13/2011	NE	NE	NA	NA	NA	NA	
2Q11	442.22	4/25/2011	NE	NE	NA	NA	NA	NA	
3Q11	442.22	7/5/2011	NE	NE	NA	NA	NA	NA	
	442.22	9/19/2011	NE	NE	NA	NA	NA	NA	
4Q11	442.22	10/5/2011	NE	NE	NA	NA	NA	NA	
ROST-7-PZ Screened Interval Elevation: 422.19 - 412.19									
4Q10	442.19	11/12/2010	NE	22.93	NA	NA	NA	419.26	
1Q11	442.19	1/13/2011	NE	23.74	NA	NA	NA	418.45	
2Q11	442.19	4/25/2011	NE	23.72	NA	NA	NA	418.47	
3Q11	442.19	7/5/2011	NE	22.05	NA	NA	NA	420.14	
	442.19	9/19/2011	NE	22.63	NA	NA	NA	419.56	
4Q11	442.19	10/5/2011	NE	22.52	NA	NA	NA	419.67	
ROST-10-PZ Screened Interval Elevation: 434.51 - 424.51									
4Q10	444.51	11/12/2010	NE	NE	NA	NA	NA	NA	
1Q11	444.51	1/13/2011	NE	NE	NA	NA	NA	NA	
2Q11	444.51	4/25/2011	NE	NE	NA	NA	NA	NA	
3Q11	444.51	7/5/2011	NE	19.67	NA	NA	NA	424.84	
	444.51	9/19/2011	NE	19.88	NA	NA	NA	424.63	
4Q11	444.51	10/5/2011	NE	NE	NA	NA	NA	NA	
ROST-21-PZ Screened Interval Elevation: 433.72 - 423.72									
4Q10	443.72	11/12/2010	NE	19.30	NA	NA	NA	424.42	
1Q11	443.72	1/13/2011	NE	19.59	NA	NA	NA	424.13	
2Q11	443.72	4/25/2011	NE	19.04	NA	NA	NA	424.68	
3Q11	443.72	7/5/2011	NE	18.37	NA	NA	NA	425.35	
	443.72	9/19/2011	NE	19.26	NA	NA	NA	424.46	
4Q11	443.72	10/5/2011	NE	NE	NA	NA	NA	NA	
S-1 Screened Interval Elevation: -									
1Q09	443.79	1/1/2009	45.85	49.73	394.06	397.94	3.88	397.16	
2Q09	443.79	4/1/2009	45.36	48.49	395.30	398.43	3.13	397.80	
3Q09	443.79	7/1/2009	43.70	48.58	395.21	400.09	4.88	399.11	
4Q09	443.79	10/1/2009	42.73	48.01	395.78	401.06	5.28	400.00	
1Q10	443.79	1/1/2010	40.88	46.14	397.65	402.91	5.26	401.86	
2Q10	443.79	4/1/2010	39.38	44.32	399.47	404.41	4.94	403.42	
3Q10	443.79	7/1/2010	38.27	43.29	400.50	405.52	5.02	404.52	
4Q10	443.79	11/11/2010	36.96	41.91	401.88	406.83	4.95	405.84	
1Q11	443.79	1/13/2011	36.41	41.33	402.46	407.38	4.92	406.40	
2Q11	443.79	4/25/2011	38.70	38.73	405.06	405.09	0.03	405.08	
3Q11	443.79	7/5/2011	36.50	36.54	407.25	407.29	0.04	407.28	
	443.79	9/19/2011	NE	36.42	NA	NA	NA	407.37	
4Q11	443.79	10/6/2011	NE	36.68	NA	NA	NA	407.11	

**TABLE 1**  
**CUMULATIVE GROUNDWATER GAUGING RESULTS**

Well ID/ Quarter	Top of Casing (ft MSL)	Date Gauged	Depth to Product (ft)	Depth to Water (Static)	Water- Product Interface (ft MSL)	Product Elev. (ft MSL)	Product Thickness (ft)	Corrected W.L. Elevation (ft MSL)	Comments
T-1									Screened Interval Elevation: 396.92 - 373
1Q09	444.55	1/1/2009	NE	48.78	NA	NA	NA	395.77	
2Q09	444.55	4/1/2009	NE	48.39	NA	NA	NA	396.16	
3Q09	444.55	7/1/2009	NE	47.71	NA	NA	NA	396.84	
4Q09	444.55	10/1/2009	NE	47.30	NA	NA	NA	397.25	*
1Q10	444.55	1/1/2010	NE	46.55	NA	NA	NA	398.00	*
2Q10	444.55	4/1/2010	NE	45.51	NA	NA	NA	399.04	*
3Q10	444.55	7/1/2010	NE	NE	NA	NA	NA	NA	
4Q10	444.55	11/11/2010	NE	39.08	NA	NA	NA	405.47	*
1Q11	444.55	1/13/2011	NE	41.02	NA	NA	NA	403.53	*
2Q11	444.55	4/25/2011	NE	46.65	NA	NA	NA	397.90	*
3Q11	444.55	7/5/2011	NE	35.99	NA	NA	NA	408.56	*
	444.55	9/19/2011	NE	51.50	NA	NA	NA	393.05	
4Q11	444.55	10/6/2011	NE	50.83	NA	NA	NA	393.72	
T-2									Screened Interval Elevation: 392.63 - 372.48
1Q09	443.13	1/1/2009	NE	46.39	NA	NA	NA	396.74	*
2Q09	443.13	4/1/2009	NE	46.07	NA	NA	NA	397.06	*
3Q09	443.13	7/1/2009	NE	44.64	NA	NA	NA	398.49	*
4Q09	443.13	10/1/2009	NE	43.75	NA	NA	NA	399.38	*
1Q10	443.13	1/1/2010	NE	41.81	NA	NA	NA	401.32	*
2Q10	443.13	4/1/2010	NE	40.35	NA	NA	NA	402.78	*
3Q10	443.13	7/1/2010	NE	39.16	NA	NA	NA	403.97	*
4Q10	443.13	11/11/2010	NE	37.51	NA	NA	NA	405.62	*
1Q11	443.13	1/13/2011	NE	36.97	NA	NA	NA	406.16	*
2Q11	443.13	4/25/2011	NE	38.03	NA	NA	NA	405.10	*
3Q11	443.13	7/5/2011	NE	35.89	NA	NA	NA	407.24	*
	443.13	9/19/2011	NE	35.80	NA	NA	NA	407.33	*
4Q11	443.13	10/6/2011	NE	35.97	NA	NA	NA	407.16	*
T-3									Screened Interval Elevation: 403.65 - 388.65
1Q09	450.91	1/1/2009	NE	55.85	NA	NA	NA	395.06	
2Q09	450.91	4/1/2009	NE	NE	NA	NA	NA	NA	
3Q09	450.91	7/1/2009	NE	54.30	NA	NA	NA	396.61	
4Q09	450.91	10/1/2009	NE	53.24	NA	NA	NA	397.67	
1Q10	450.91	1/1/2010	NE	50.99	NA	NA	NA	399.92	
2Q10	450.91	4/1/2010	NE	48.84	NA	NA	NA	402.07	
3Q10	450.91	7/1/2010	NE	48.07	NA	NA	NA	402.84	
4Q10	450.91	10/1/2010	NE	45.66	NA	NA	NA	405.25	*
1Q11	450.91	1/13/2011	NE	44.64	NA	NA	NA	406.27	*
2Q11	450.91	4/1/2011	NE	46.50	NA	NA	NA	404.41	*
3Q11	450.91	9/19/2011	NE	44.60	NA	NA	NA	406.31	*
4Q11	450.91	10/6/2011	NE	45.68	NA	NA	NA	405.23	*
T-4									Screened Interval Elevation: 398.24 - 383.24
1Q09	447.95	1/1/2009	NE	54.02	NA	NA	NA	393.93	
2Q09	447.95	4/1/2009	NE	53.11	NA	NA	NA	394.84	
3Q09	447.95	7/1/2009	NE	52.10	NA	NA	NA	395.85	
4Q09	447.95	10/1/2009	NE	50.78	NA	NA	NA	397.17	
1Q10	447.95	1/1/2010	NE	48.38	NA	NA	NA	399.57	*
2Q10	447.95	4/1/2010	NE	46.44	NA	NA	NA	401.51	*
3Q10	447.95	7/1/2010	NE	45.22	NA	NA	NA	402.73	*
4Q10	447.95	10/1/2010	NE	42.99	NA	NA	NA	404.96	*
1Q11	447.95	1/13/2011	NE	41.38	NA	NA	NA	406.57	*
2Q11	447.95	4/1/2011	NE	42.23	NA	NA	NA	405.72	*
3Q11	447.95	9/19/2011	NE	41.97	NA	NA	NA	405.98	*
4Q11	447.95	10/6/2011	NE	42.04	NA	NA	NA	405.91	*

**TABLE 1**  
**CUMULATIVE GROUNDWATER GAUGING RESULTS**

Well ID/ Quarter	Top of Casing (ft MSL)	Date Gauged	Depth to Product (ft)	Depth to Water (Static)	Water- Product Interface (ft MSL)	Product Elev. (ft MSL)	Product Thickness (ft)	Corrected W.L. Elevation (ft MSL)	Comments
T-6									
Screened Interval Elevation: 394.79 - 380.54									
1Q09	446.55	1/1/2009	NE	48.81	NA	NA	NA	397.74	*
2Q09	446.55	4/1/2009	NE	47.98	NA	NA	NA	398.57	*
3Q09	446.55	7/1/2009	NE	46.46	NA	NA	NA	400.09	*
4Q09	446.55	10/1/2009	NE	46.04	NA	NA	NA	400.51	*
1Q10	446.55	1/1/2010	NE	44.09	NA	NA	NA	402.46	*
2Q10	446.55	4/1/2010	NE	42.83	NA	NA	NA	403.72	*
3Q10	446.55	7/1/2010	NE	41.74	NA	NA	NA	404.81	*
4Q10	446.55	11/12/2010	NE	40.77	NA	NA	NA	405.78	*
1Q11	446.55	1/13/2011	NE	41.07	NA	NA	NA	405.48	*
2Q11	446.55	4/25/2011	NE	42.01	NA	NA	NA	404.54	*
3Q11	446.55	7/5/2011	NE	39.58	NA	NA	NA	406.97	*
	446.55	9/19/2011	NE	38.95	NA	NA	NA	407.60	*
4Q11	446.55	10/6/2011	NE	39.26	NA	NA	NA	407.29	*
T-7									
Screened Interval Elevation: 395.29 - 380.29									
1Q09	444.01	1/1/2009	44.50	44.79	399.22	399.51	0.29	399.45	*
2Q09	444.01	4/1/2009	43.93	44.11	399.90	400.08	0.18	400.04	*
3Q09	444.01	7/1/2009	42.58	42.68	401.33	401.43	0.10	401.41	*
4Q09	444.01	10/1/2009	42.11	42.26	401.75	401.90	0.15	401.87	*
1Q10	444.01	1/1/2010	39.87	40.02	403.99	404.14	0.15	404.11	*
2Q10	444.01	4/1/2010	38.74	38.89	405.12	405.27	0.15	405.24	*
3Q10	444.01	7/1/2010	37.21	37.37	406.64	406.80	0.16	406.77	*
4Q10	444.01	10/1/2010	36.24	36.40	407.61	407.77	0.16	407.74	*
1Q11	444.01	1/13/2011	36.74	36.87	407.14	407.27	0.13	407.24	*
2Q11	444.01	4/1/2011	37.20	37.25	406.76	406.81	0.05	406.80	*
3Q11	444.01	9/19/2011	35.14	35.19	408.82	408.87	0.05	408.86	*
4Q11	444.01	10/5/2011	35.36	35.43	408.58	408.65	0.07	408.64	*
T-12									
Screened Interval Elevation: 398.228 - 372.228									
1Q09	444.69	1/1/2009	47.68	47.69	397.00	397.01	0.01	397.01	
2Q09	444.69	4/1/2009	NE	46.80	NA	NA	NA	397.89	
3Q09	444.69	7/1/2009	NE	45.20	NA	NA	NA	399.49	*
4Q09	444.69	10/1/2009	NE	44.73	NA	NA	NA	399.96	*
1Q10	444.69	1/1/2010	NE	42.94	NA	NA	NA	401.75	*
2Q10	444.69	4/1/2010	NE	41.59	NA	NA	NA	403.10	*
3Q10	444.69	7/1/2010	NE	41.21	NA	NA	NA	403.48	*
4Q10	444.69	11/12/2010	NE	40.35	NA	NA	NA	404.34	*
1Q11	444.69	1/13/2011	NE	40.30	NA	NA	NA	404.39	*
2Q11	444.69	4/25/2011	NE	41.40	NA	NA	NA	403.29	*
3Q11	444.69	7/5/2011	NE	39.07	NA	NA	NA	405.62	*
	444.69	9/19/2011	NE	38.06	NA	NA	NA	406.63	*
4Q11	444.69	10/6/2011	NE	38.23	NA	NA	NA	406.46	*
T-13									
Screened Interval Elevation: 396.46 - 370.46									
1Q09	443.46	1/1/2009	NE	48.50	NA	NA	NA	394.96	
2Q09	443.46	4/1/2009	NE	45.30	NA	NA	NA	398.16	*
3Q09	443.46	7/1/2009	NE	43.77	NA	NA	NA	399.69	*
4Q09	443.46	10/1/2009	NE	43.31	NA	NA	NA	400.15	*
1Q10	443.46	1/1/2010	NE	41.27	NA	NA	NA	402.19	*
2Q10	443.46	4/1/2010	NE	40.02	NA	NA	NA	403.44	*
3Q10	443.46	7/1/2010	NE	38.72	NA	NA	NA	404.74	*
4Q10	443.46	11/11/2010	NE	37.37	NA	NA	NA	406.09	*
1Q11	443.46	1/13/2011	NE	37.57	NA	NA	NA	405.89	*
2Q11	443.46	4/25/2011	NE	38.25	NA	NA	NA	405.21	*
3Q11	443.46	9/19/2011	NE	37.54	NA	NA	NA	405.92	*
4Q11	443.46	10/5/2011	NE	35.78	NA	NA	NA	407.68	*

**TABLE 1**  
**CUMULATIVE GROUNDWATER GAUGING RESULTS**

Well ID/ Quarter	Top of Casing (ft MSL)	Date Gauged	Depth to Product (ft)	Depth to Water (Static)	Water- Product Interface (ft MSL)	Product Elev. (ft MSL)	Product Thickness (ft)	Corrected W.L. Elevation (ft MSL)	Comments
T-15									Screened Interval Elevation: 396.99 - 370.99
1Q09	445.03	1/1/2009	NE	48.62	NA	NA	NA	396.41	
2Q09	445.03	4/1/2009	NE	46.78	NA	NA	NA	398.25	*
3Q09	445.03	7/1/2009	NE	47.01	NA	NA	NA	398.02	*
4Q09	445.03	10/1/2009	NE	46.01	NA	NA	NA	399.02	*
1Q10	445.03	1/1/2010	NE	43.88	NA	NA	NA	401.15	*
2Q10	445.03	4/1/2010	NE	42.39	NA	NA	NA	402.64	*
3Q10	445.03	7/1/2010	NE	41.07	NA	NA	NA	403.96	*
4Q10	445.03	10/1/2010	NE	39.31	NA	NA	NA	405.72	*
1Q11	445.03	1/13/2011	NE	38.39	NA	NA	NA	406.64	*
2Q11	445.03	4/1/2011	NE	39.55	NA	NA	NA	405.48	*
3Q11	445.03	9/19/2011	NE	37.59	NA	NA	NA	407.44	*
4Q11	445.03	10/6/2011	NE	37.79	NA	NA	NA	407.24	*
T-17									Screened Interval Elevation: 401.8 - 375.8
1Q09	445.90	1/1/2009	NE	48.60	NA	NA	NA	397.30	
2Q09	445.90	4/1/2009	NE	47.99	NA	NA	NA	397.91	
3Q09	445.90	7/1/2009	46.40	46.41	399.49	399.50	0.01	399.50	
4Q09	445.90	10/1/2009	45.54	46.40	399.50	400.36	0.86	400.19	
1Q10	445.90	1/1/2010	NE	42.57	NA	NA	NA	403.33	*
2Q10	445.90	4/1/2010	NE	41.12	NA	NA	NA	404.78	*
3Q10	445.90	7/1/2010	NE	39.60	NA	NA	NA	406.30	*
4Q10	445.90	10/1/2010	NE	38.11	NA	NA	NA	407.79	*
1Q11	445.90	1/13/2011	NE	37.11	NA	NA	NA	408.79	*
2Q11	445.90	4/1/2011	NE	37.30	NA	NA	NA	408.60	*
3Q11	445.90	9/19/2011	NE	35.90	NA	NA	NA	410.00	*
4Q11	445.90	10/6/2011	NE	36.23	NA	NA	NA	409.67	*
T-19									Screened Interval Elevation: 395.94 - 369.94
1Q09	446.71	1/1/2009	51.93	54.19	392.52	394.78	2.26	394.33	
2Q09	446.71	4/1/2009	51.21	53.11	393.60	395.50	1.90	395.12	
3Q09	446.71	7/1/2009	50.30	51.90	394.81	396.41	1.60	396.09	*
4Q09	446.71	10/1/2009	48.89	50.45	396.26	397.82	1.56	397.51	*
1Q10	446.71	1/1/2010	46.55	48.07	398.64	400.16	1.52	399.86	*
2Q10	446.71	4/1/2010	44.64	46.11	400.60	402.07	1.47	401.78	*
3Q10	446.71	7/1/2010	43.47	44.91	401.80	403.24	1.44	402.95	*
4Q10	446.71	10/1/2010	41.39	42.73	403.98	405.32	1.34	405.05	*
1Q11	446.71	1/13/2011	39.78	41.15	405.56	406.93	1.37	406.66	*
2Q11	446.71	4/1/2011	40.88	40.90	405.81	405.83	0.02	405.83	*
3Q11	446.71	9/19/2011	40.60	40.64	406.07	406.11	0.04	406.10	*
4Q11	446.71	10/6/2011	40.65	40.69	406.02	406.06	0.04	406.05	*
T-21									Screened Interval Elevation: 412.04 - 386.04
1Q09	444.00	1/1/2009	NE	38.29	NA	NA	NA	405.71	
2Q09	444.00	4/1/2009	NE	38.15	NA	NA	NA	405.85	
3Q09	444.00	7/1/2009	NE	36.57	NA	NA	NA	407.43	
4Q09	444.00	10/1/2009	NE	36.06	NA	NA	NA	407.94	
1Q10	444.00	1/1/2010	NE	33.39	NA	NA	NA	410.61	
2Q10	444.00	4/1/2010	NE	32.11	NA	NA	NA	411.89	
3Q10	444.00	7/1/2010	NE	30.79	NA	NA	NA	413.21	*
4Q10	444.00	10/1/2010	NE	29.65	NA	NA	NA	414.35	*
1Q11	444.00	1/13/2011	NE	29.96	NA	NA	NA	414.04	*
2Q11	444.00	4/1/2011	NE	29.83	NA	NA	NA	414.17	*
3Q11	444.00	9/19/2011	NE	28.24	NA	NA	NA	415.76	*
4Q11	444.00	10/5/2011	NE	28.41	NA	NA	NA	415.59	*
T-22									Screened Interval Elevation: 410.66 - 384.96
1Q09	442.21	1/1/2009	NE	38.32	NA	NA	NA	403.89	
2Q09	442.21	4/1/2009	NE	37.80	NA	NA	NA	404.41	
3Q09	442.21	7/1/2009	NE	36.44	NA	NA	NA	405.77	
4Q09	442.21	10/1/2009	NE	36.18	NA	NA	NA	406.03	
1Q10	442.21	1/1/2010	NE	34.13	NA	NA	NA	408.08	
2Q10	442.21	4/1/2010	NE	32.69	NA	NA	NA	409.52	
3Q10	442.21	7/1/2010	NE	31.11	NA	NA	NA	411.10	*
4Q10	442.21	10/1/2010	NE	30.12	NA	NA	NA	412.09	*
1Q11	442.21	1/13/2011	NE	31.04	NA	NA	NA	411.17	*
2Q11	442.21	4/1/2011	NE	30.96	NA	NA	NA	411.25	*
3Q11	442.21	9/19/2011	NE	29.26	NA	NA	NA	412.95	*
4Q11	442.21	10/5/2011	NE	29.51	NA	NA	NA	412.70	*



**TABLE 1**  
**CUMULATIVE GROUNDWATER GAUGING RESULTS**

Well ID/ Quarter	Top of Casing (ft MSL)	Date Gauged	Depth to Product (ft)	Depth to Water (Static)	Water- Product Interface (ft MSL)	Product Elev. (ft MSL)	Product Thickness (ft)	Corrected W.L. Elevation (ft MSL)	Comments
T-23									Screened Interval Elevation: 405.41 - 379.41
1Q09	432.64	1/1/2009	NE	30.60	NA	NA	NA	402.04	
2Q09	432.64	4/1/2009	NE	29.78	NA	NA	NA	402.86	
3Q09	432.64	7/1/2009	NE	NE	NA	NA	NA	NA	
4Q09	432.64	10/1/2009	NE	NE	NA	NA	NA	NA	
1Q10	432.64	1/1/2010	NE	26.27	NA	NA	NA	406.37	*
2Q10	432.64	4/1/2010	NE	25.00	NA	NA	NA	407.64	*
3Q10	432.64	7/1/2010	NE	23.35	NA	NA	NA	409.29	*
4Q10	432.64	10/1/2010	NE	22.41	NA	NA	NA	410.23	*
1Q11	432.64	1/13/2011	NE	23.83	NA	NA	NA	408.81	*
2Q11	432.64	4/1/2011	NE	23.40	NA	NA	NA	409.24	*
3Q11	432.64	9/19/2011	NE	27.83	NA	NA	NA	404.81	
4Q11	432.64	10/5/2011	NE	22.21	NA	NA	NA	410.43	*
T-24									Screened Interval Elevation: 402.22 - 376.57
1Q09	443.72	1/1/2009	47.04	48.02	395.70	396.68	0.98	396.48	
2Q09	443.72	4/1/2009	46.29	47.27	396.45	397.43	0.98	397.23	
3Q09	443.72	7/1/2009	44.90	45.72	398.00	398.82	0.82	398.65	
4Q09	443.72	10/1/2009	44.36	45.07	398.65	399.36	0.71	399.22	
1Q10	443.72	1/1/2010	42.68	43.03	400.69	401.04	0.35	400.97	
2Q10	443.72	4/1/2010	41.25	41.55	402.17	402.47	0.30	402.41	*
3Q10	443.72	7/1/2010	40.36	40.68	403.04	403.36	0.32	403.29	*
4Q10	443.72	11/11/2010	39.07	39.38	404.34	404.65	0.31	404.59	*
1Q11	443.72	1/13/2011	38.60	38.92	404.80	405.12	0.32	405.05	*
2Q11	443.72	4/25/2011	NE	39.98	NA	NA	NA	403.74	*
3Q11	443.72	7/5/2011	NE	37.53	NA	NA	NA	406.19	*
	443.72	9/19/2011	NE	35.08	NA	NA	NA	408.64	*
4Q11	443.72	10/6/2011	NE	37.29	NA	NA	NA	406.43	*
T-28									Screened Interval Elevation: -
1Q09	444.22	1/1/2009	NE	NE	NA	NA	NA	NA	
2Q09	444.22	4/1/2009	NE	NE	NA	NA	NA	NA	
3Q09	444.22	7/1/2009	NE	NE	NA	NA	NA	NA	
4Q09	444.22	10/1/2009	NE	45.12	NA	NA	NA	399.10	
1Q10	444.22	1/1/2010	NE	42.49	NA	NA	NA	401.73	
2Q10	444.22	4/1/2010	NE	40.94	NA	NA	NA	403.28	
3Q10	444.22	7/1/2010	NE	NE	NA	NA	NA	NA	
4Q10	444.22	10/1/2010	NE	37.65	NA	NA	NA	406.57	
1Q11	444.22	1/13/2011	NE	36.53	NA	NA	NA	407.69	
2Q11	444.22	4/1/2011	NE	37.18	NA	NA	NA	407.04	
3Q11	444.22	9/19/2011	NE	35.75	NA	NA	NA	408.47	
4Q11	444.22	10/6/2011	NE	35.98	NA	NA	NA	408.24	
T-62									Screened Interval Elevation: 412.017 - 382.017
1Q09	431.73	1/1/2009	NE	31.66	NA	NA	NA	400.07	
2Q09	431.73	4/1/2009	NE	30.42	NA	NA	NA	401.31	
3Q09	431.73	7/1/2009	NE	29.48	NA	NA	NA	402.25	
4Q09	431.73	10/1/2009	NE	29.56	NA	NA	NA	402.17	
1Q10	431.73	1/1/2010	NE	27.30	NA	NA	NA	404.43	
2Q10	431.73	4/1/2010	NE	25.98	NA	NA	NA	405.75	
3Q10	431.73	7/1/2010	NE	23.99	NA	NA	NA	407.74	
4Q10	431.73	11/11/2010	NE	23.49	NA	NA	NA	408.24	
1Q11	431.73	1/13/2011	NE	25.48	NA	NA	NA	406.25	
2Q11	431.73	4/25/2011	NE	25.33	NA	NA	NA	406.40	
3Q11	431.73	7/5/2011	NE	22.37	NA	NA	NA	409.36	
	431.73	9/19/2011	NE	23.12	NA	NA	NA	408.61	
4Q11	431.73	10/5/2011	NE	23.46	NA	NA	NA	408.27	

**TABLE 1  
CUMULATIVE GROUNDWATER GAUGING RESULTS**

Well ID/ Quarter	Top of Casing (ft MSL)	Date Gauged	Depth to Product (ft)	Depth to Water (Static)	Water- Product Interface (ft MSL)	Product Elev. (ft MSL)	Product Thickness (ft)	Corrected W.L. Elevation (ft MSL)	Comments
T-63									Screened Interval Elevation: 411.26 - 381.26
1Q09	431.24	1/1/2009	NE	31.22	NA	NA	NA	400.02	
2Q09	431.24	4/1/2009	NE	29.55	NA	NA	NA	401.69	
3Q09	431.24	7/1/2009	NE	28.95	NA	NA	NA	402.29	
4Q09	431.24	10/1/2009	NE	29.11	NA	NA	NA	402.13	
1Q10	431.24	1/1/2010	NE	26.94	NA	NA	NA	404.30	
2Q10	431.24	4/1/2010	NE	25.42	NA	NA	NA	405.82	
3Q10	431.24	7/1/2010	NE	23.23	NA	NA	NA	408.01	
4Q10	431.24	11/11/2010	NE	23.03	NA	NA	NA	408.21	
1Q11	431.24	1/13/2011	NE	25.45	NA	NA	NA	405.79	
2Q11	431.24	4/25/2011	NE	NE	NA	NA	NA	NA	
3Q11	431.24	9/19/2011	NE	22.88	NA	NA	NA	408.36	
4Q11	431.24	10/5/2011	NE	23.28	NA	NA	NA	407.96	
T-64									Screened Interval Elevation: 408.99 - 378.99
1Q09	428.80	1/1/2009	NE	28.90	NA	NA	NA	399.90	
2Q09	428.80	4/1/2009	NE	26.80	NA	NA	NA	402.00	
3Q09	428.80	7/1/2009	NE	26.67	NA	NA	NA	402.13	
4Q09	428.80	10/1/2009	NE	26.87	NA	NA	NA	401.93	
1Q10	428.80	1/1/2010	NE	24.72	NA	NA	NA	404.08	
2Q10	428.80	4/1/2010	NE	22.91	NA	NA	NA	405.89	
3Q10	428.80	7/1/2010	NE	20.46	NA	NA	NA	408.34	
4Q10	428.80	11/11/2010	NE	20.76	NA	NA	NA	408.04	
1Q11	428.80	1/13/2011	NE	23.84	NA	NA	NA	404.96	
3Q11	428.80	7/5/2011	NE	19.06	NA	NA	NA	409.74	*
	428.80	9/19/2011	NE	21.86	NA	NA	NA	406.94	
4Q11	428.80	10/5/2011	NE	21.36	NA	NA	NA	407.44	
PZ-1-101									Screened Interval Elevation: 354.52 - 344.52
4Q11	445.52	10/5/2011	NE	37.83	NA	NA	NA	407.69	*
PZ-1-85									Screened Interval Elevation: 369.7 - 359.7
4Q11	445.50	10/5/2011	NE	37.85	NA	NA	NA	407.65	*
PZ-2-70.5									Screened Interval Elevation: 382.65 - 372.65
4Q11	443.15	10/5/2011	NE	35.74	NA	NA	NA	407.41	*
PZ-2-84									Screened Interval Elevation: 371.12 - 359.12
4Q11	443.12	10/5/2011	NE	35.71	NA	NA	NA	407.41	*

**NOTES:**

- 1) The Corrected W.L. Elevations presented in this table were corrected by a specific gravity of 0.80 for the wells in which product was identified.
- 2) Elevations presented in this table are relative to the 1988 USGS datum.
- 3) NA = Not Applicable; NE = Not Encountered
- 4) \* Indicates that the product and/or water level is above the top of the screened zone of the well.
- 5) Additional wells that are not currently included in the Interim Groundwater Monitoring Program are included on the table for information purposes only.

**TABLE 2**  
**CUMULATIVE SUMMARY OF GROUNDWATER FIELD PARAMETERS**

Well ID	pH	Temp (C)	Specific Cond (uS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (Mv)	General Notes
<b>MW-1</b>							
4Q10	8.04	20.53	1449.0	3.90	8.99	93.00	
1Q11	6.76	5.93	1189.0	1.00	0.08	102.00	
2Q11	6.69	27.11	1459.0	138.10	1.03	157.00	
3Q11	6.68	30.81	*	*	0.08	0.03	
4Q11	6.62	16.52	1021.0	7.70	-0.03	0.02	
<b>MW-2</b>							
4Q10	7.24	18.38	1066.0	41.00	8.90	-113.00	
1Q11	6.72	15.19	2048.0	8.00	0.97	-69.00	
2Q11	6.75	20.82	1313.0	168.50	0.09	-69.00	
3Q11	6.76	25.10	*	2.10	-0.08	-0.28	
4Q11	6.67	17.71	1126.0	29.40	0.00	-0.08	
<b>MW-3</b>							
4Q10	6.88	21.59	1157.0	6.50	0.32	-146.00	
1Q11	6.88	22.83	2349.0	2.00	0.26	-89.00	
2Q11	6.91	23.40	1268.0	54.00	0.00	-74.00	
3Q11	7.15	34.21	1280.0	0.00	0.00	195.00	
4Q11	6.75	17.94	1151.0	0.89	0.07	-0.11	
<b>MW-4</b>							
4Q10	6.76	19.51	854.2	7.70	4.88	-59.00	
1Q11	6.83	10.24	2352.0	9.60	0.86	-51.00	
2Q11	6.73	24.20	1106.0	7.30	0.15	-57.00	
3Q11	6.60	38.84	*	6.10	0.00	-0.01	
4Q11	6.89	19.04	1111.0	13.20	-0.05	-0.07	
<b>MW-5</b>							
4Q10	6.77	19.39	801.2	2.90	0.17	-112.00	
1Q11	6.82	19.51	2051.0	2.80	0.95	-66.00	
2Q11	6.78	22.82	4743.0	41.00	0.18	-68.00	
3Q11	6.88	25.11	*	9.80	-0.08	0.29	
4Q11	6.70	17.87	955.9	10.03	0.02	-0.09	
<b>MW-6A</b>							
4Q10	6.74	21.87	1535.0	5.40	0.01	-127.00	
1Q11	6.80	10.99	2274.0	7.40	0.34	-75.00	
2Q11	6.72	17.98	1049.0	8.20	0.07	-61.00	
3Q11	6.82	30.26	*	6.40	0.06	0.19	
4Q11	6.73	18.39	1319.0	7.97	0.01	-0.10	
<b>MW-6B</b>							
4Q10	6.80	17.14	1113.0	17.50	0.14	-77.00	
1Q11	6.73	15.90	2138.0	1.40	0.22	-46.00	
2Q11	6.76	19.87	629.9	2.10	0.17	-54.00	
3Q11	6.85	25.55	*	20.50	-0.08	0.44	
4Q11	6.86	18.30	1059.0	1.35	0.11	-0.06	
<b>MW-6C</b>							
4Q10	6.86	17.87	1132.0	5.50	0.16	-104.00	
1Q11	6.87	13.90	981.0	4.20	0.13	-66.00	
2Q11	6.84	18.93	713.0	2.10	0.43	-72.00	
3Q11	*	26.07	*	0.80	-0.11	0.02	
4Q11	6.90	18.08	1095.0	7.00	0.07	-0.08	
<b>MW-6D</b>							
4Q10	6.94	17.42	1342.0	5.90	0.05	-112.00	
1Q11	7.05	13.66	1330.0	1.30	0.14	-74.00	
2Q11	6.86	18.82	613.5	13.20	0.09	-61.00	
3Q11	7.04	28.06	*	*	0.00	0.31	
4Q11	6.99	17.79	1240.0	1.25	-0.08	-107.00	
<b>MW-7</b>							
4Q10	6.48	17.80	1097.0	59.90	0.05	-32.00	
1Q11	6.53	14.40	1869.0	3.20	0.74	-6.00	
2Q11	6.81	18.18	560.0	30.00	1.10	-53.00	
3Q11	6.83	18.79	*	19.00	*	0.01	
4Q11	6.65	19.79	1100.0	2.22	0.28	-49.00	
<b>MW-8</b>							
4Q10	6.41	17.17	1133.0	61.50	0.04	-54.00	
1Q11	6.37	16.21	2065.0	18.00	0.80	-14.00	
2Q11	6.55	19.98	791.0	20.40	0.06	-64.00	
3Q11	*	19.18	*	62.50	4.64	-0.15	
4Q11	6.56	19.16	1159.0	5.28	1.22	-0.03	
<b>MW-9</b>							
4Q10	6.72	16.98	919.4	48.30	1.72	-45.00	
1Q11	6.73	12.97	1524.0	17.20	0.03	-34.00	
2Q11	6.73	18.14	1138.0	15.00	0.05	-58.00	
3Q11	6.68	22.67	*	*	-0.06	-0.08	
4Q11	6.66	18.84	1012.0	366.20	0.20	-75.00	

**TABLE 2  
CUMULATIVE SUMMARY OF GROUNDWATER FIELD PARAMETERS**

Well ID	pH	Temp (C)	Specific Cond (uS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (Mv)	General Notes
<b>MW-10</b>							
4Q10	6.72	18.75	1284.0	35.00	0.64	-78.00	
1Q11	6.72	13.08	1344.0	4.30	0.35	-48.00	
1Q11	6.92	18.28	545.5	17.50	1.89	-48.00	
3Q11	6.93	21.44	*	*	-0.05	-0.11	
4Q11	6.81	18.15	823.4	3.25	-0.06	-0.10	
<b>MW-11</b>							
4Q10	6.59	15.28	1023.0	25.50	0.01	-76.00	
1Q11	6.59	14.34	1276.0	8.80	0.05	-59.00	
2Q11	6.75	17.51	1284.0	21.90	0.05	-90.00	
3Q11	*	19.34	*	7.10	-0.07	0.06	
4Q11	6.78	17.01	1099.0	20.33	0.01	-0.06	
<b>MW-12</b>							
4Q10	6.72	14.87	1328.0	62.40	0.45	212.00	
1Q11	6.66	14.98	1196.0	9.20	0.16	159.00	
2Q11	6.80	19.51	958.4	5.40	0.01	132.00	
3Q11	6.89	20.17	*	*	0.01	0.22	
4Q11	6.83	18.28	1127.0	0.03	-0.03	0.10	
<b>MW-13</b>							
4Q10	NI	NI	NI	NI	NI	NI	
1Q11	6.52	17.78	1379.0	19.20	0.10	-82.00	
2Q11	6.79	21.28	713.0	48.00	0.07	-71.00	
3Q11	6.89	20.78	1230.0	18.50	0.57	-130.00	
4Q11	6.65	20.01	1115.0	5.25	-0.08	-102.00	
<b>MW-14</b>							
4Q11	6.71	19.33	966.0	1783.00	-0.07	-0.09	
<b>P-54</b>							
4Q10	6.71	14.70	869.8	68.60	1.74	140.00	
1Q11	6.69	14.47	969.6	25.40	1.29	56.00	
2Q11	6.74	17.70	885.0	48.00	1.62	-66.00	
3Q11	6.80	17.89	*	20.80	0.27	0.27	
4Q11	6.72	16.64	911.8	6.07	0.69	0.15	
<b>P-55</b>							
4Q11	6.90	18.41	727.1	4.80	-0.06	-0.13	
<b>P-56</b>							
4Q11	6.68	18.24	1063.0	1286.00	-0.06	-0.12	
<b>P-57</b>							
4Q11	6.60	18.98	1220.0	220.70	-0.03	-0.10	
<b>P-58</b>							
4Q11	6.53	18.87	1144.0	10.71	-0.04	-0.06	
<b>P-59</b>							
4Q11	6.71	18.22	1211.0	38.94	-0.05	-0.11	
<b>P-66</b>							
4Q11	6.38	20.15	1228.0	29.77	-0.07	-0.10	
<b>P-74</b>							
4Q11	6.54	18.49	502.3	15.49	-0.11	-0.10	
<b>P-93A</b>							
4Q10	6.81	17.70	1259.0	23.00	NM	NM	
1Q11	6.68	16.16	2517.0	12.80	NM	NM	
2Q11	6.65	17.90	662.0	8.42	NM	NM	
3Q11	*	18.72	1690.0	23.40	NM	NM	
4Q11	6.67	17.44	1525.0	12.44	2.96	-68.00	
<b>P-93B</b>							
4Q10	7.10	18.10	1150.0	0.00	NM	NM	
1Q11	6.69	16.44	1377.0	1.20	NM	NM	
2Q11	6.63	18.70	750.0	0.13	NM	NM	
3Q11	7.38	21.60	1330.0	14.60	NM	NM	
4Q11	6.87	17.38	1551.0	2.40	3.34	-104.00	
<b>P-93C</b>							
4Q10	7.28	17.50	1057.0	0.00	NM	NM	
1Q11	7.14	16.51	1832.0	0.50	NM	NM	
2Q11	6.78	18.50	697.0	0.55	NM	NM	
3Q11	6.96	21.41	1320.0	5.10	NM	NM	
4Q11	6.92	17.34	1176.0	1.14	0.92	-77.00	
<b>P-93D</b>							
4Q10	7.13	18.50	1211.0	0.00	NM	NM	
1Q11	NM	NM	NM	NM	NM	NM	
2Q11	6.89	16.70	710.0	0.16	NM	NM	
3Q11	6.68	20.90	1410.0	0.86	NM	NM	
4Q11	6.99	18.13	1224.0	-0.28	-0.16	-166.00	
<b>P-114</b>							
4Q11	7.16	20.29	1287.0	12.60	3.19	-118.00	

**TABLE 2  
CUMULATIVE SUMMARY OF GROUNDWATER FIELD PARAMETERS**

Well ID	pH	Temp (C)	Specific Cond (uS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (Mv)	General Notes
<b>T-12</b>							
4Q11	6.87	16.98	918.6	6.28	-0.17	-111.00	

**NOTES:**

- 1) Field parameters were collected using theTroll 9500 except at P-93(A-D) where the Oakton pH/Con10 and LaMotte Turbidimeter were used.
- 2) NM = Not Measured; NI = Not Installed
- 3) \* = Equipment malfunction. Results are suspect.

TABLE 3  
CUMULATIVE SUMMARY OF GROUNDWATER ANALYTICAL RESULTS AND EXCEEDANCES

Screening Values (mg/L)					VOCs																															
Location	Sample ID	Sample Date	Depth to Water (ft btoc)	Product Thickness (ft)	Acetone	Benzene	n-Butylbenzene	sec-Butylbenzene	tert-Butylbenzene	Carbon disulfide	Carbon tetrachloride	Chlorobenzene	Chloroethane	Chloroform	Chloromethane	Ethylbenzene	Hexachlorobutadiene	Isopropylbenzene (Cumene)	Cymene (p-Isopropyltoluene)	Methyl tert-Butyl Ether (MTBE)	Naphthalene	n-Propylbenzene	Toluene	1,2,3-Trichlorobenzene	1,2,4-Trichlorobenzene	1,1,2-Trichloroethane	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	m,p-Xylene	o-Xylenes	Xylenes (total)					
					0.005	0.05	0.35			0.7	0.005	0.1		0.0002		0.7	0.007	0.7		0.07	0.14	0.7	1	0.0056	210		10	10								
MW-1	MW-1-111110	11/11/2010	36.91	NE	<0.1	<0.005	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.01	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005				
	MW-1-111110-Dup	11/11/2010	36.91	NE	<0.1	<0.005	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.01	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005				
	MW1-ROX-011711	1/17/2011	37.58	NE	<0.039 U	<0.0005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.002	<0.001	<0.002	<0.001	<0.002	<0.001	<0.002	<0.001	<0.002	<0.001	<0.002	<0.001	<0.002	<0.001	<0.002	<0.001	<0.002	<0.001	<0.002	<0.001	<0.002			
	MW1-ROX-042911	4/29/2011	38.38	NE	<0.0145 U	0.0363	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.002	<0.001	<0.002	<0.001	<0.002	<0.001	<0.002	<0.001	<0.002	<0.001	<0.002	<0.001	<0.002	<0.001	<0.002	<0.001	<0.002	<0.001	<0.002	<0.001	<0.002		
	MW1-ROX-072711	7/27/2011	35.77	NE	<0.005	0.0053	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.002	<0.001	<0.002	<0.001	<0.002	<0.001	<0.002	<0.001	<0.002	<0.001	<0.002	<0.001	<0.002	<0.001	<0.002	<0.001	<0.002	<0.001	<0.002	<0.001	<0.002	<0.001	<0.002	
MW1-ROX-120511	12/5/2011	35.48	NE	<0.005 UJ	0.00097	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.002	<0.001	<0.002	<0.001	<0.002	<0.001	<0.002	<0.001	<0.002	<0.001	<0.002	<0.001	<0.002	<0.001	<0.002	<0.001	<0.002	<0.001	<0.002	<0.001	<0.002	<0.001	<0.002	
MW-02	MW-2-111010	11/11/2010	38.12	NE	<0.5	0.401	<0.025	<0.025	<0.025	<0.25	<0.025	<0.025	<0.05	<0.025	<0.05	0.641	<0.025	0.0236 J	<0.025	<0.025		<0.0354	1.22 D	<0.025	<0.025	<0.025	<0.025	0.273	0.0618	1.14	0.318					
	MW2-ROX-011711	1/17/2011	38.67	NE	<0.005	0.294	0.0078	0.0047 J	<0.005	<0.005	<0.001	<0.001	0.0077	<0.001	0.0019 J	0.74	<0.005	0.0617	0.0032 J	<0.001		0.0652	0.737	<0.005	<0.005	<0.001	0.279	0.0744	0.892	0.191						
	MW02-ROX-051011	5/10/2011	39.61	NE	<0.005	1.18	<0.005	0.0029 J	0.0012 J	<0.005	<0.001	<0.001	<0.002	<0.001	<0.002	1.24	<0.005	0.0539	0.0027 J	<0.001		0.0669	3.51	<0.005	<0.005	<0.001	0.339	0.103	2.05	0.549	2.6					
	MW2-ROX-072711	7/27/2011	37.04	NE	<0.05	1.98	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	<0.02	<0.01	<0.02	1.76	<0.05	0.0995	<0.05	<0.01		0.111	4.69	<0.05	<0.05	<0.01	0.338	0.116	2.91	0.823	3.74					
	MW2-ROX-072711-DUP	7/27/2011	37.04	NE	<0.05	1.79	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	<0.02	<0.01	<0.02	1.57	<0.05	0.0967	<0.05	<0.01		0.1	4.67	<0.05	<0.05	<0.01	0.298	0.108	2.63	0.728	3.36					
MW2-ROX-112811	11/28/2011	36.65	NE	<0.005	0.0216	<0.005	0.0106	<0.005	<0.005	<0.001	<0.001	<0.002	<0.001	<0.002	0.503	<0.005	0.128	0.0121	<0.001	0.0777	0.146	0.0328	<0.005	<0.005	<0.001	0.407	0.212	0.747	0.0574	0.804						
MW-03	MW-3-111210	11/12/2010	24.05	NE	<0.1	<0.005	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.01	<0.005	<0.01	<0.005	<0.005	0.0016 J	<0.005	<0.005		0.00622	0.00257 J	<0.005	<0.005	<0.005	<0.005	<0.005	0.00653 J	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
	MW3-ROX-011811	1/18/2011	24.92	NE	<0.005	0.00056	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	0.00077 J	<0.001	0.00082 J	0.00082 J	<0.005	<0.005	<0.005	0.0021		<0.005	<0.001	<0.005	<0.005	<0.001	0.00085 J	<0.005	0.0012	0.0014						
	MW03-ROX-051011	5/10/2011	25.42	NE	<0.005	0.013	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.002	<0.001	<0.002	<0.001	<0.005	<0.005	<0.005	0.0026		<0.005	<0.001	<0.005	<0.005	<0.001	<0.005	<0.005	0.0022	<0.001	0.0022	<0.001	0.0022			
	MW3-ROX-080311	8/3/2011	22.72	NE	<0.005	0.00056	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.002	<0.001	<0.002	<0.001	<0.005	0.0012 J	<0.005	<0.001		<0.005	0.0015	<0.005	<0.005	<0.001	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	
	MW3-ROX-112911	11/29/2011	22.76	NE	<0.005	<0.0005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.002	<0.001	<0.002	<0.001	<0.005	<0.005	<0.005	0.0014		<0.005	<0.001	<0.005	<0.005	<0.001	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
MW-04	MW-4-111210	11/12/2010	35.38	NE	<0.1	0.0752	<0.005	0.001 J	<0.005	<0.05	<0.005	<0.005	<0.01	<0.005	<0.01	<0.005	<0.005	0.00271 J	<0.005	0.00508		0.00395 J	0.0157	<0.005	<0.005	<0.005	<0.005	<0.005	0.00699 J	0.00139 J						
	MW4-ROX-011811	1/18/2011	36.04	NE	<0.005	0.0567	0.0006 J	0.00063 J	0.00069 J	<0.005	<0.001	<0.001	0.00096 J	<0.001	<0.002	<0.001	<0.005	<0.005	0.0022 J	<0.001		0.0022 J	0.0071	<0.005	<0.005	<0.001	<0.005	<0.005	0.0062	0.0062	0.0021					
	MW04-ROX-051111	5/11/2011	36.74	NE	<0.005	0.0625	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.002	<0.001	<0.002	<0.001	<0.005	0.0036 J	<0.005	0.0096		0.0037 J	0.0125	<0.005	<0.005	<0.001	<0.005	<0.005	0.0096	0.0016	0.0111					
	MW4-ROX-072611	7/26/2011	34.15	NE	<0.005	0.114	<0.005	0.0058	0.0063	<0.005	<0.001	<0.001	<0.002	<0.001	<0.002	0.0023	<0.005	0.0088	<0.005	0.0113		0.0085	0.017	<0.005	<0.005	<0.001	<0.005	0.0052	0.0067	<0.001	0.0067					
	MW4-ROX-072611-DUP	7/26/2011	34.15	NE	<0.005	0.108	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.002	<0.001	<0.002	0.0021	<0.005	0.0088	<0.005	0.0103		0.0083	0.0162	<0.005	<0.005	<0.001	<0.005	0.0063	0.0063	<0.001	0.0063					
MW4-ROX-121511	12/15/2011	33.99	NE		0.0381	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.002	<0.001	<0.002	<0.001	<0.005	<0.005	<0.005	0.0073 J		<0.005	0.0092	<0.005	<0.005	<0.001	<0.005	<0.005	0.0069	0.001	0.0079						
MW-05	MW-5-111210	11/12/2010	23.32	NE	<0.1	<0.005	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.01	<0.005	<0.01	<0.005	<0.005	<0.005	0.00556		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.00277 J	<0.005				
	MW5-ROX-011811	1/18/2011	24.15	NE	<0.0344 U	0.0048	<0.005	<0.005	0.0014 J	<0.005	<0.001	<0.001	<0.002	<0.001	<0.002	<0.001	<0.005	<0.005	<0.005	0.0066		<0.005	<0.001	<0.005	<0.005	<0.001	<0.005	<0.005	<0.005	0.00087 J	0.0014					
	MW05-ROX-051211	5/12/2011	24.65	NE	<0.005 UJ	0.0055	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.002	<0.001	<0.002	<0.001	<0.005	<0.005	<0.005	0.0085		<0.005	<0.001	<0.005	<0.005	<0.001	<0.005	<0.005	<0.005	0.0035	<0.001	0.0035				
	MW5-ROX-072611	7/26/2011	22.00	NE	<0.005	0.0222	0.0054	0.0061	0.0078	<0.005	<0.001	<0.001	<0.002	<0.001	<0.002	<0.001	<0.005	0.0161	<0.005	0.0031		0.0105	0.0017	<0.005	<0.005	<0.001	<0.005	0.0055	0.0074	<0.001	0.0074					
	MW5-ROX-072611-DUP	7/26/2011	22.00	NE	<0.005	0.0221	0.0054	0.0061	0.0078	<0.005	<0.001	<0.001	<0.002	<0.001																						



TABLE 3  
CUMULATIVE SUMMARY OF GROUNDWATER ANALYTICAL RESULTS AND EXCEEDANCES

Screening Values (mg/L)					VOCs																											
Location	Sample ID	Sample Date	Depth to Water (ft btoc)	Product Thickness (ft)	Acetone	Benzene	n-Butylbenzene	sec-Butylbenzene	tert-Butylbenzene	Carbon disulfide	Carbon tetrachloride	Chlorobenzene	Chloroethane	Chloroform	Chloromethane	Ethylbenzene	Hexachlorobutadiene	Isopropylbenzene (Cumene)	Cymene (p-Isopropyltoluene)	Methyl tert-Butyl Ether (MTBE)	Naphthalene	n-Propylbenzene	Toluene	1,2,3-Trichlorobenzene	1,2,4-Trichlorobenzene	1,1,2-Trichloroethane	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	m,p-Xylene	o-Xylenes	Xylenes (total)	
					<0.005	0.005 <sup>1</sup>	0.35 <sup>2</sup>			0.7 <sup>3</sup>	0.005 <sup>4</sup>	0.1 <sup>4</sup>		0.0002 <sup>4</sup>		0.7 <sup>3</sup>	0.007 <sup>3</sup>	0.7 <sup>3</sup>		0.07 <sup>3</sup>	0.14 <sup>3</sup>	0.7 <sup>3</sup>	1 <sup>3</sup>	0.0056 <sup>3</sup>	210 <sup>3</sup>		0.07 <sup>3</sup>		10		10 <sup>1</sup>	
P-93A	P93A-ROX-050511	5/5/2011	41.80	NE	<0.005	551	<0.005	0.0054 J	0.0133 J	<0.005	<0.001	<0.001	<0.002	<0.001	<0.002	<5	<0.005	0.0206 J	0.0034 J J	0.0684 J		0.0228 J	0.0718 J	<0.005	<0.005	<0.001	0.169 J	0.0293 J	0.628 J	0.0707 J	0.699 J	
	P93A-ROX-081811	8/18/2011	39.40	NE	<0.005	467	<0.005	0.0071	0.0177	<0.005	<0.001	<0.001	<0.002	<0.001	<0.002	<10	<0.005	0.0236 J	0.0049 J	0.0356		0.0254	0.0678	<0.005	<0.005	<0.001	0.237	0.0495	0.745	0.09	0.835	
	P93A-ROX-102611	10/26/2011	39.16	NE	<0.005 UJ	543	<0.005	0.006	0.015	<0.005	<0.001	<0.001	<0.002	<0.001	<0.002	0.304	<0.005	0.0189	0.0081	0.0405	0.108	0.0172	0.0438	<0.005 UJ	<0.005	<0.001	0.171	0.0399	0.482	0.0614	0.543	
P-93B	P93B-102610	10/26/2010	40.73	NE	<10	189 D	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<1	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5		
	P93B-ROX_012611	1/26/2011	41.03	NE	<0.005	105	<0.005	<0.005	0.00058 J	<0.005	<0.001	<0.001	0.00077 J	<0.001	0.0014 J	0.0104	<0.005	0.0108	<0.005	0.0088		0.011	0.0321	<0.005	<0.005	<0.001	0.0052	0.0016 J	0.0555	0.0092		
	P93B-ROX-050511	5/5/2011	41.69	NE	<0.005	134	<0.005	0.0045 J	<0.005	<0.005	<0.001	<0.001	<0.002	<0.001	<0.002	0.0169	<0.005	0.0142	<0.005	0.0113		0.0151	0.0488	<0.005	<0.005	<0.001	0.0057	0.0014 J	0.0502	0.0112	0.0614	
	P93B-ROX-081811	8/18/2011	39.44	NE	<5	304	<5	<5	<5	<5	<1	<1	<2	<1	<2	<1	<5	<5	<5	<5		<5	<1	<5	<5	<1	<5	<5	<1	<1	<1	
P-93C	P93B-ROX-102611	10/26/2011	39.19	NE	<0.005 UJ	590	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.002	<0.001	<0.002	0.0533	<0.005	0.0292	<0.005	<0.001	0.012	0.0359	0.0859	<0.005 UJ	<0.005	<0.001	0.0303	0.0082	0.167	0.0352	0.202	
	P93C-102610	10/26/2010	40.69	NE	<0.1	<0.005	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.01	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	0.00136 J		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005		
	P93C-ROX_012611	1/26/2011	40.91	NE	<0.005	86.5	<0.005	<0.005	0.00056 J	<0.005	<0.001	<0.001	<0.002	<0.001	<0.002	0.0175	<0.005	0.0019 J	<0.005	0.0014		0.0013 J	0.0067	<0.005	<0.005	<0.001	0.0025 J	<0.005	0.0051	0.0035		
	P93C-ROX-050611	5/6/2011	41.70	NE	<0.005	15.7	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.002	<0.001	<0.002	0.0029	<0.005	<0.005	<0.005	0.0052		<0.005	0.0018	<0.005	<0.005	<0.001	<0.005	<0.005	<0.001	<0.001	0.00059 J	
	P93C-ROX-081811	8/18/2011	39.32	NE	<0.005	1.2	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.002	<0.001	<0.002	<0.001	<0.005	<0.005	<0.005	0.0067		<0.005	<0.001	<0.005	<0.005	<0.001	<0.005	<0.005	<0.001	<0.001	<0.001	
P-93D	P93C-ROX-102611	10/26/2011	39.15	NE	<0.005 UJ	0.0014	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.002	<0.001	<0.002	<0.001	<0.005	<0.005	<0.005	0.0096		<0.005	<0.001	<0.005 UJ	<0.005	<0.001	<0.005	<0.005	<0.001	<0.001	<0.001	
	P93D-102610	10/26/2010	40.59	NE	<0.1	0.0429	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.01	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	0.0122		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005		
	P93D-ROX-050511	5/5/2011	41.84	NE	<0.005	0.0287	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.002	<0.001	<0.002 UJ	<0.001	<0.005	<0.005	<0.005	0.0014		<0.005	<0.001	<0.005	<0.005	<0.001	<0.005	<0.005	<0.001	<0.001	<0.001	
	P93D-ROX-081811	8/18/2011	39.46	NE	<0.005	0.0059	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.002	<0.001	<0.002	<0.001	<0.005	<0.005	<0.005	0.00095 J		<0.005	<0.001	<0.005	<0.005	<0.001	<0.005	<0.005	<0.001	<0.001	<0.001	
T-12	T12-ROX-102711	10/27/2011	38.23	NE	<0.05	1.09	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	<0.02	<0.01	<0.02	0.648	<0.05	<0.05	<0.05	<0.01	0.105	<0.05	0.233	<0.05	<0.05	<0.01	0.358	0.0527	1.13	0.108	1.24	

Notes:  
 Indicates a historical exceedance or screening criteria  
 Indicates a current exceedance or screening criteria  
<sup>1</sup> Denotes screening criteria source from 35 I.A.C. 620, Subpart D  
<sup>2</sup> Denotes screening criteria source from 35 I.A.C. 742 (TACO), Appendix B, Table E  
<sup>3</sup> Denotes screening criteria source from IL EPA Toxicity Assessment Unit (Chemicals not in TACO, Tier I Tables)  
<sup>4</sup> Denotes screening criteria source R2008-018, Proposed Revisions to Groundwater Quality Standards, 35 I.A.C. 620



TABLE 3
CUMULATIVE SUMMARY OF GROUNDWATER ANALYTICAL RESULTS AND EXCEEDANCES

Table with 30 columns for SVOCs and 5 columns for screening values (mg/L). Rows include MW-1 through MW-6D with columns for Location, Sample ID, Sample Date, Depth to Water (ft btoe), Product Thickness (ft), and various chemical compounds like Acenaphthene, Anthracene, Benzo(a)anthracene, etc.



TABLE 3  
CUMULATIVE SUMMARY OF GROUNDWATER ANALYTICAL RESULTS AND EXCEEDANCES

Screening Values (mg/L)					SVOCs																															
Location	Sample ID	Sample Date	Depth to Water (ft btoc)	Product Thickness (ft)	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Benzoic Acid	Benzyl alcohol	bis(2-Ethylhexyl)phthalate	Butyl benzyl phthalate	Chrysene (1,2-Benzophenanthracene)	Dibenzo(a,h)anthracene	Dibenzofuran	Diethyl phthalate	2,4-Dimethylphenol	Di-n-butyl phthalate	Di-n-octyl phthalate	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	1-Methylnaphthalene	2-Methylnaphthalene	2-Methylphenol (o-Cresol)	3 & 4-Methylphenol (m & p-Cresol)	Naphthalene	3-Nitroaniline	Nitrobenzene	Phenanthrene	Phenol	Pyrene
P-93A	P93A-ROX-050511	5/5/2011	41.80	NE	0.00026 J	<0.0001 UJ	0.000035 J J	<0.00005 UJ	<0.0001 UJ	<0.00005 UJ	<0.0001 UJ	<0.01	<0.01	<0.002	<0.005	<0.0001 UJ	<0.0001 UJ	0.00035 J	<0.00073 U	<0.01	<0.001 U	<0.005	0.000019 J J	0.00044 J	<0.0001 UJ	0.0172 J	0.0309 J	<0.01	0.0075 J	<0.01	<0.005 UJ	0.0004 J	0.21	0.000026 J		
	P93A-ROX-081811	8/18/2011	39.40	NE	0.00036	<0.0001	0.000058 J	<0.00005	<0.0001	<0.00005	<0.0001	<0.01	<0.01	0.003	<0.005	<0.0001	<0.0001	<0.005	<0.0029 U	<0.01	<0.001 U	<0.005	<0.000033 U	0.00047	<0.0001	0.0224	0.0302	<0.01	0.0093 J	0.0868	<0.01	<0.005	0.00043	0.183	0.000037 J	
	P93A-ROX-102611	10/26/2011	39.16	NE	0.00024	<0.0001	<0.0001	<0.00005	<0.0001	<0.00005	<0.0001	<0.01	<0.01	0.0075	<0.005	<0.0001	<0.0001	<0.005	<0.005	<0.01	<0.005	<0.005	<0.0001	0.00033	<0.0001	0.0162	0.0258	<0.01	<0.01	<0.01	<0.005	0.00032	0.193	<0.0001		
	P93B-102610	10/26/2010	40.73	NE	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.047			<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	0.094	<0.009	
	P93B-ROX_012611	1/26/2011	41.03	NE	<0.0053	<0.0053	<0.0053	<0.0053	<0.0053	<0.0053	<0.0053	<0.011 UJ			<0.0021	<0.0053	<0.0053	<0.0053	<0.0053	<0.00086 U	<0.011	<0.0053	<0.0053	<0.0053	<0.0053	<0.0053	<0.0053	<0.011	<0.011	0.0011 J	0.00069 J J	<0.0053	<0.0053	0.106	<0.0053	
	P93B-ROX-050511	5/5/2011	41.69	NE	<0.0001 UJ	<0.0001 UJ	<0.0001 UJ	<0.00005 UJ	<0.0001 UJ	<0.00005 UJ	<0.0001 UJ	<0.01	<0.01	<0.002	<0.005	<0.0001 UJ	<0.0001 UJ	<0.005	<0.005	<0.01	<0.001 U	<0.005	<0.0001 UJ	<0.0001 UJ	<0.0001 UJ	<0.005 UJ	<0.0002 UJ	<0.01	<0.01	0.0013 J	<0.01	<0.005 UJ	0.000017 J J	0.0933	<0.0001	
	P93B-ROX-081811	8/18/2011	39.44	NE	<0.0001	<0.0001	<0.0001	<0.000052	<0.0001	<0.000052	<0.0001	<0.01	<0.01	0.001 J	<0.0052	<0.0001	<0.0001	<0.0052	<0.0021 U	<0.01	<0.00077 U	<0.0052	<0.0001	<0.0001	<0.0001	<0.00021	<0.00021	<0.01	<0.01	0.0037	<0.01	<0.0052	<0.000052	0.116	<0.0001	
	P93B-ROX-102611	10/26/2011	39.19	NE	<0.0001	<0.0001	<0.0001	<0.000052	<0.0001	<0.000052	<0.0001	<0.01	<0.01	0.0103	<0.0052	<0.0001	<0.0001	<0.0052	<0.0021 U	<0.01	<0.00077 U	<0.0052	<0.0001	<0.0001	<0.0001	<0.00021	<0.00021	<0.01	<0.01	<0.01	<0.0052	<0.000052	0.122	<0.0001		
	P93C-102610	10/26/2010	40.69	NE	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.047			<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	
	P93C-ROX_012611	1/26/2011	40.91	NE	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.01 UJ			<0.002	<0.0051	<0.0051	<0.0051	<0.0051	<0.00097 U	<0.01	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.01	<0.01	<0.0051	<0.01 UJ	<0.0051	0.0166	<0.0051	
	P93C-ROX-050611	5/6/2011	41.70	NE	<0.0001 UJ	0.000041 J J	<0.0001 UJ	<0.00005 UJ	<0.0001 UJ	<0.00005 UJ	<0.0001 UJ	<0.01	<0.01	<0.0022 U	<0.005	<0.0001 UJ	<0.0001 UJ	<0.005	<0.005	<0.01	<0.0011 U	<0.005	<0.0001 UJ	<0.0001 UJ	<0.0001 UJ	<0.005 UJ	0.00009 J J	<0.01	<0.01	0.00003 J J	<0.01	<0.005 UJ	<0.00005 UJ	0.0144	<0.0001	
	P93C-ROX-081811	8/18/2011	39.32	NE	<0.0001	<0.0001	<0.0001	<0.00005	<0.0001	<0.00005	<0.0001	<0.01	<0.01	0.0092	<0.005	<0.0001	<0.0001	<0.005	<0.0015 U	<0.01	<0.00064 U	<0.005	<0.0001	<0.0001	<0.0001	<0.0002	<0.000033 U	<0.01	<0.01	<0.000054 U	<0.01	<0.005	<0.00005	0.0046 J	<0.0001	
	P93C-ROX-102611	10/26/2011	39.15	NE	<0.0001	<0.0001	<0.0001	<0.000052	<0.0001	<0.000052	<0.0001	<0.01	<0.01	<0.0021	<0.0052	<0.0001	<0.0001	<0.0052	<0.0052	<0.01	<0.0052	<0.0052	<0.0001	<0.0001	<0.0001	<0.00021	<0.00021	<0.01	<0.01	<0.0001	<0.01	<0.0052	<0.000052	<0.0052	<0.0001	
	P93D-102610	10/26/2010	40.59	NE	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.048			<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
	P93D-ROX-050511	5/5/2011	41.84	NE	<0.0001 UJ	<0.0001 UJ	<0.0001 UJ	<0.00005 UJ	<0.0001 UJ	<0.00005 UJ	<0.0001 UJ	<0.01	<0.01	<0.0027 U	<0.005	<0.0001 UJ	<0.0001 UJ	<0.005	<0.005	<0.01	<0.0011 U	<0.005	<0.0001 UJ	<0.0001 UJ	<0.0001 UJ	<0.005 UJ	0.000045 J J	<0.01	<0.01	0.000036 J J	<0.01	<0.005 UJ	<0.00005 UJ	<0.005	<0.0001	
	P93D-ROX-081811	8/18/2011	39.46	NE	<0.0001	<0.0001	<0.0001	<0.00005	<0.0001	<0.00005	<0.0001	<0.01	<0.01	<0.002	<0.005	<0.000015 U	<0.0001	<0.005	<0.0018 U	<0.01	<0.0011 U	<0.005	<0.000023 U	<0.0001	<0.0001	<0.0002	<0.000042 U	<0.01	<0.01	<0.000087 U	<0.01	<0.005	<0.00005	<0.005	0.000021 J	
	P93D-ROX-102711	10/27/2011	39.22	NE	<0.0001	<0.0001	<0.0001	<0.00005	<0.0001	<0.00005	<0.0001	<0.01	<0.01	<0.002	<0.005	<0.0001	<0.0001	<0.005	<0.005	<0.01	<0.005	<0.005	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.01	<0.01	<0.0001	<0.01	<0.005	<0.00005	<0.005	<0.0001	
T-12	T12-ROX-102711	10/27/2011	38.23	NE	0.00079	0.00012	0.00017	<0.000051	<0.0001	<0.000051	<0.0001	<0.0001	<0.01	<0.01	0.0025	<0.0051	<0.0001	<0.0001	<0.0051	<0.0051	0.0109	<0.0051	<0.0051	<0.0001	0.0006	<0.0001	0.0264	0.0415	<0.01	<0.01	<0.01	<0.0051	0.0015	0.0167	0.0001	

Notes:  
 Indicates a historical exceedance or screening criteria  
 Indicates a current exceedance or screening criteria  
 1 Denotes screening criteria source from 35 I.A.C. 620, Subpart D  
 2 Denotes screening criteria source from 35 I.A.C. 742 (TACO), Appendix B, Table E  
 3 Denotes screening criteria source from IL EPA Toxicity Assessment Unit (Chemicals not in TACO, Tier I Tables)  
 4 Denotes screening criteria source R2008-018, Proposed Revisions to Groundwater Quality Standards, 35 I.A.C. 620

LABORATORY QUALIFIERS:  
 B = Target analyte or common lab contaminant was identified in the method blank indicating possible field or lab contamination  
 D = The result is from a diluted sample  
 J = The analyte was detected below the reporting limit. Result is estimated.  
 E = The value exceeds calibration range

URS QUALIFIERS:  
 J = The results is estimated  
 UJ = Estimated nondetect  
 U = Result is non-detect.

The following EVS Descriptions and Assumptions apply to **Figure 6**. C Tech Development Corporation's Environmental Visualization System PRO, Version 9.52 (EVS-PRO) was used to model the estimated distribution of benzene in the groundwater.

***EVS Descriptions and Assumptions:***

**Plan View Model Output** – The data input for the plan view model was not limited by depth and was modeled in three dimensions (3D). The bottom surface of the resulting model was limited to the potentiometric groundwater surface elevation. The two dimensional (2D) appearance of the figures created from the 3D model was achieved by displaying an aerial view of horizontal slices through the model. The horizontal slices were taken parallel to the ground surface that was created from GPS survey data, rather than at single elevation plane. The result of this is a surface that accurately represents groundwater concentrations at discrete depths measured from ground surface.

**Inward Kriging / Boundary Cut-off** – This method of kriging limits the horizontal extent of data modeling to the extent of the data on the x/y plane in a convex hull.

More simply, if each soil boring location were represented by a tack pushed into the model's surface and a rubber band stretched around them, the model would be represented by the space inside the rubber band.

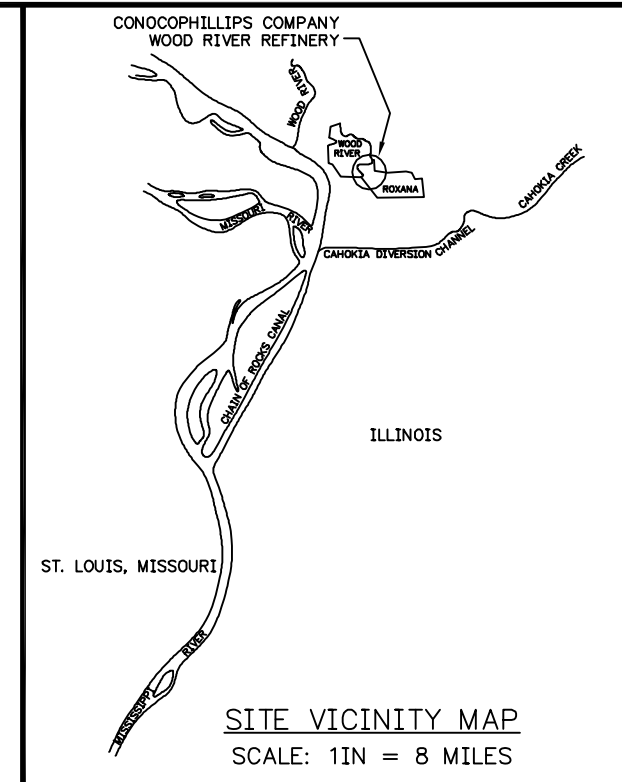
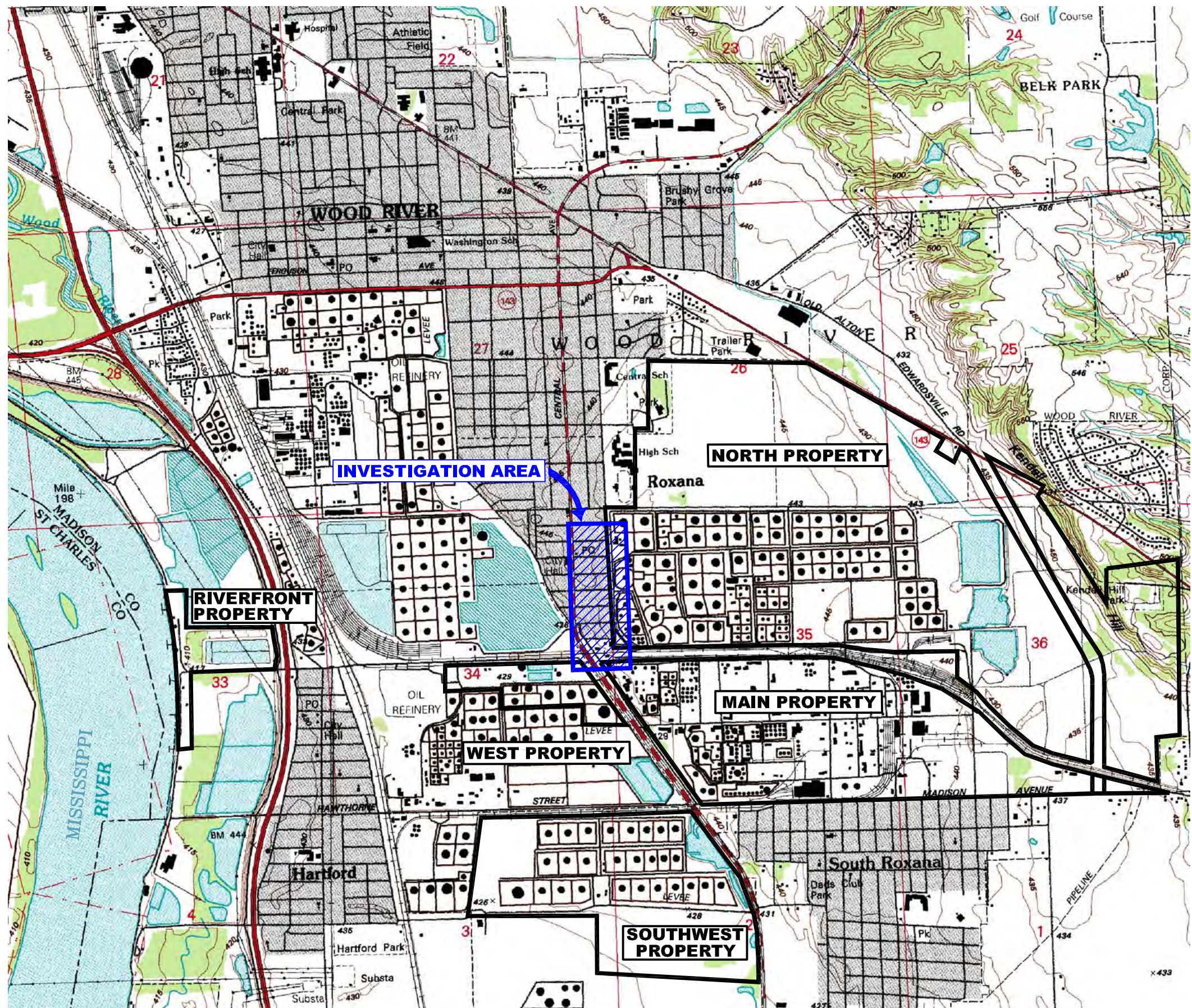
**Vertical Cut-off** – The bottom surface of this model is based on the 4<sup>th</sup> Quarter 2011 groundwater gauging data collected in Roxana. The groundwater gauging data were used to model a 2D surface that represents the interface between the top surface of groundwater and the bottom surface of soil vapor.

**Duplicate Samples** – Analytical concentrations from duplicate samples collected at the same location and depth were averaged.

**Detection Limits** – In cases where the lab reported a non-detect, half the value of the lab detection limit was used in the model. This conservative method is based on the assumption that the soil is likely not free of benzene but the quantity contained is lower than detectable at the analyzed dilution.



Fig. P:\ENVIRONMENTAL\SHELL\_OIL\_PRODUCT\_US-B-ROXANA-ROUTE\_111\2156XXXX-ROXANA\_I & A\QUARTERLY\_GW\_2011\4TH QUARTER 2011\FIGURES\FIGURE\_1 INVESTIGATION AREA LOCATION MAP.DWG Last edited: 12/29/11 @ 10:11 a.m. © WCC-ST. LOUIS



**LEGEND**  
 — WOOD RIVER REFINERY PROPERTY BOUNDARY  
 ▨ INVESTIGATION AREA





SOURCE: MAP TAKEN FROM ELECTRONIC USGS DIGITAL RASTER GRAPHIC 7.5 MINUTE TOPOGRAPHIC MAP OF WOOD RIVER, ILL-MO REVISED 1994.

CONTOUR INTERVAL = 5 FT  
 0 2000  
 SCALE FEET

SHELL OIL PRODUCTS US INTERIM GROUNDWATER MONITORING PROGRAM ROXANA, ILLINOIS		PROJECT NO. 21562735
<b>URS</b>		
DRN. BY: djd December 2011 DSGN. BY: djd CHKD. BY: jm	Investigation Area Location Map	FIG. NO. 1

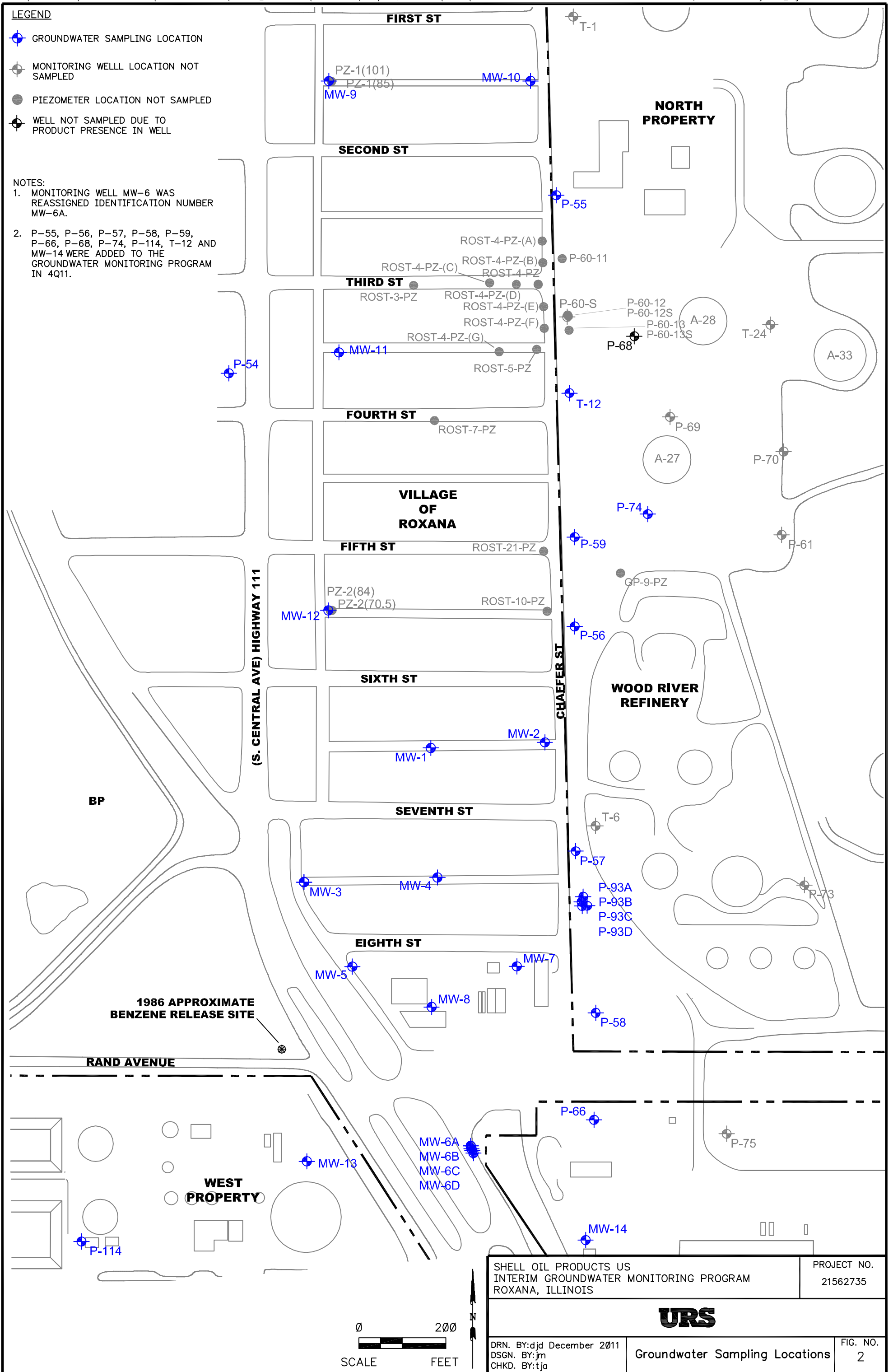



**LEGEND**

-  GROUNDWATER SAMPLING LOCATION
-  MONITORING WELL LOCATION NOT SAMPLED
-  PIEZOMETER LOCATION NOT SAMPLED
-  WELL NOT SAMPLED DUE TO PRODUCT PRESENCE IN WELL

**NOTES:**

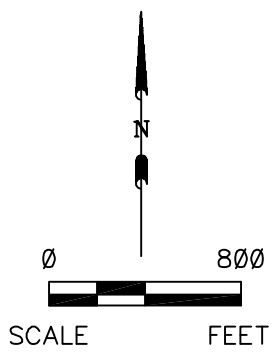
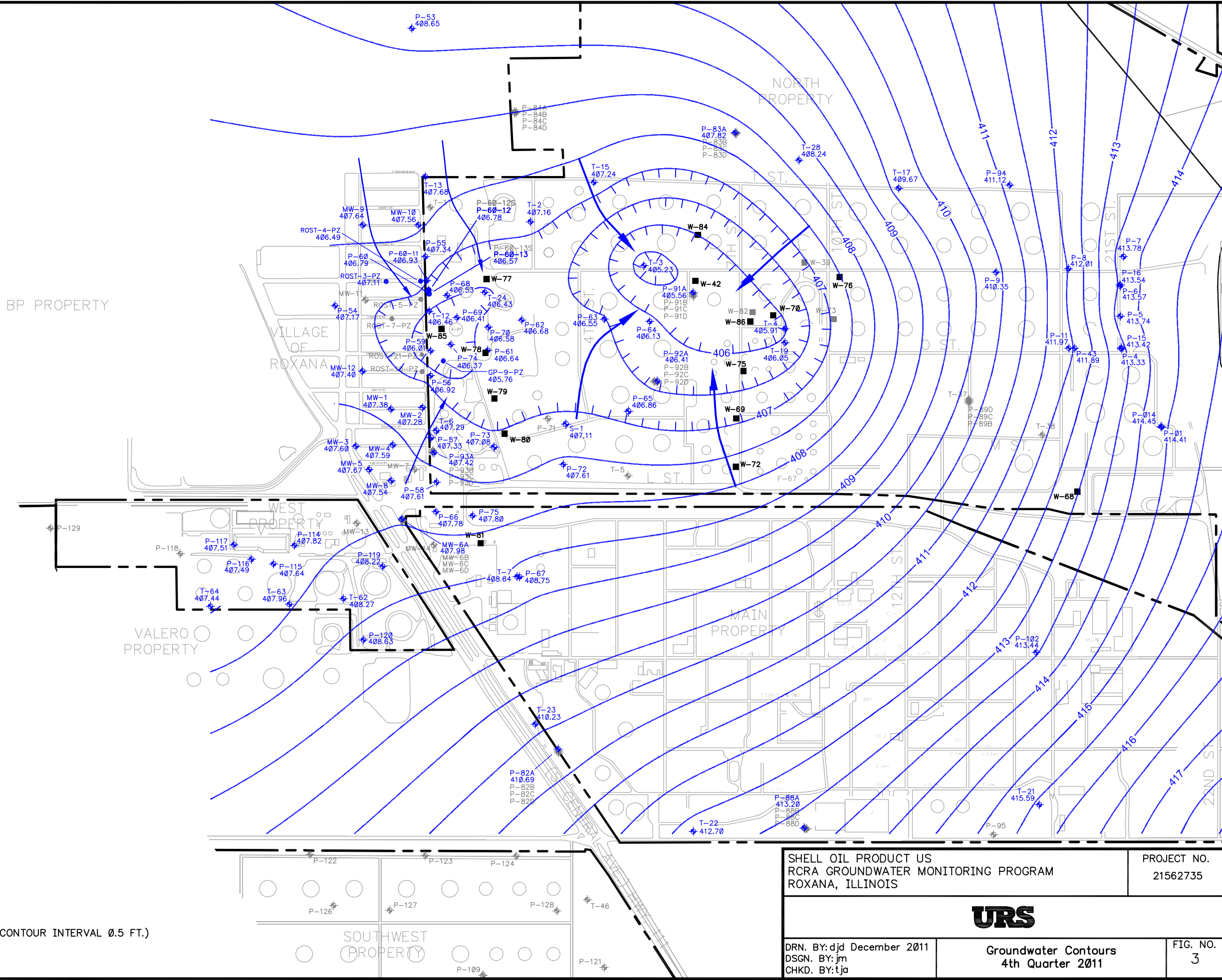
1. MONITORING WELL MW-6 WAS REASSIGNED IDENTIFICATION NUMBER MW-6A.
2. P-55, P-56, P-57, P-58, P-59, P-66, P-68, P-74, P-114, T-12 AND MW-14 WERE ADDED TO THE GROUNDWATER MONITORING PROGRAM IN 4Q11.



SHELL OIL PRODUCTS US INTERIM GROUNDWATER MONITORING PROGRAM ROXANA, ILLINOIS		PROJECT NO. 21562735
		
DRN. BY:djd December 2011 DSGN. BY:jm CHKD. BY:tja	Groundwater Sampling Locations	FIG. NO. 2

File: P:\ENVIRONMENTAL\SHELL\_OIL\_PRODUCT\_US-B-ROXANA-ROUTE\_111\2156XXXX-ROXANA\_I & A\QUARTERLY\_GW\2011\4TH QUARTER\_2011\FIGURES\FIGURE\_3\_GROUNDWATER\_CONTOURS\_4TH QUARTER\_2011.DWG Last edited: DEC. 29, 11 @ 12:10 p.m. by: david\_deguire




- NOTES:
- 1) CONTOUR LINES PRIMARILY GENERATED BY SURFER VERSION 8 MODELING OF GROUNDWATER ELEVATIONS. SOME INTERPRETATION WAS DONE UTILITIZING PROFESSIONAL JUDGMENT AND CONTOUR LINES WERE MODIFIED BY HAND.
  - 2) ELEVATIONS ARE RELATIVE TO 1988 USGS DATUM.
  - 3) ROST-4 WELLS WERE GAUGED BUT NOT DISPLAYED DUE TO MAP SCALE LIMITATIONS.



- LEGEND
- ◆ MONITORING WELL LOCATION GAUGED
  - PIEZOMETER LOCATION GAUGED
  - WATER WELLS
  - GROUNDWATER GRADIENT
  - 407 GROUNDWATER SURFACE CONTOUR NGVD (CONTOUR INTERVAL 0.5 FT.)

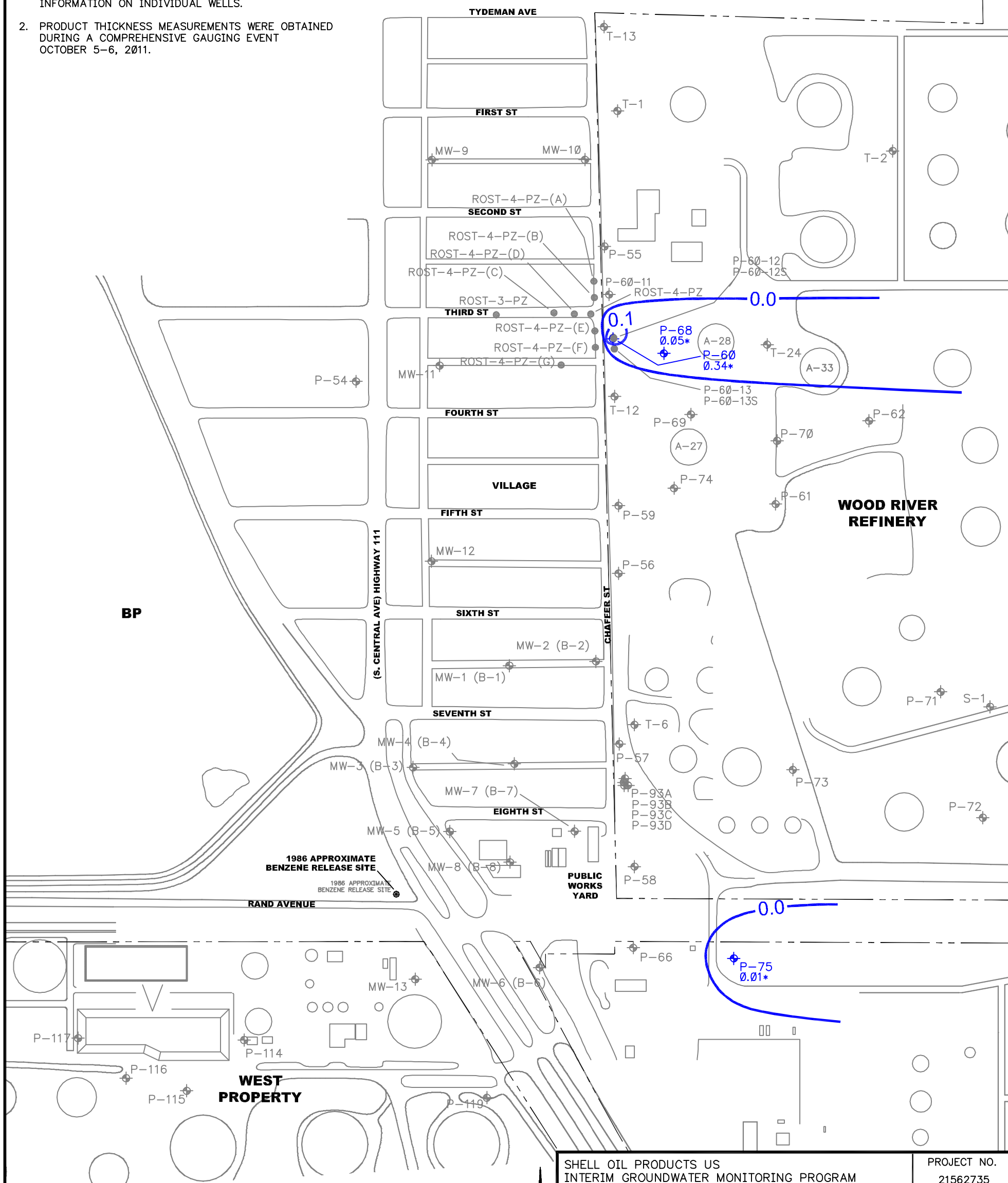
SHELL OIL PRODUCT US RCRA GROUNDWATER MONITORING PROGRAM ROXANA, ILLINOIS		PROJECT NO. 21562735
<b>URS</b>		
DRN. BY: djd December 2011 DSGN. BY: jm CHKD. BY: tja	Groundwater Contours 4th Quarter 2011	FIG. NO. 3

**LEGEND**

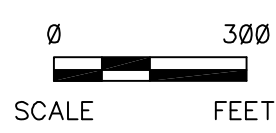
-  0.02 GROUNDWATER MONITORING LOCATION GAUGED, PRODUCT THICKNESS IN FEET
-  GROUNDWATER MONITORING LOCATION (NO PRODUCT OBSERVED UNLESS OTHERWISE NOTED)
-  FREE PRODUCT THICKNESS CONTOUR
- \* INDICATES THAT THE PRODUCT AND/OR WATER LEVEL IS ABOVE THE TOP OF WELL SCREEN
- \*\* SCREENED INTERVAL INFORMATION IS NOT AVAILABLE FOR THIS WELL

**NOTE:**

1. THIS MAP DEPICTS OF THE EXTENT AND THICKNESS OF PRODUCT BENEATH THE WEST FENCE LINE AREA. WELLS LOCATED OUTSIDE "0" FOOT CONTOUR DID NOT EXHIBIT MEASURABLE PRODUCT. REFER TO TABLE 1 FOR GAUGING INFORMATION ON INDIVIDUAL WELLS.
2. PRODUCT THICKNESS MEASUREMENTS WERE OBTAINED DURING A COMPREHENSIVE GAUGING EVENT OCTOBER 5-6, 2011.



SHELL OIL PRODUCTS US INTERIM GROUNDWATER MONITORING PROGRAM ROXANA, ILLINOIS		PROJECT NO. 21562735
<b>URS</b>		
DRN. BY: djd December 2011 DSGN. BY: jm CHKD. BY: bbb	4th Quarter 2011 Thickness of Free Product	FIG. NO. 4





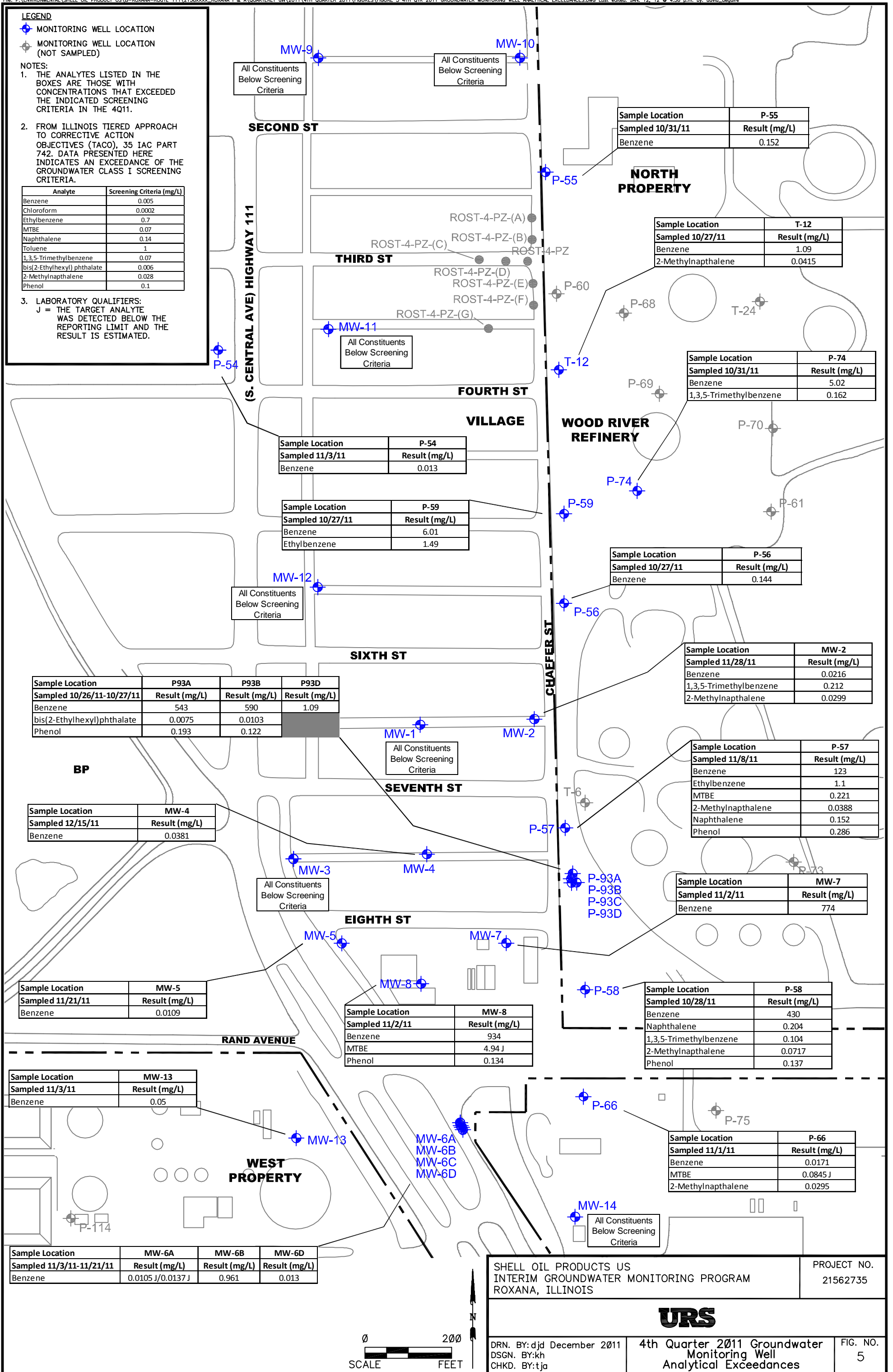
**LEGEND**

- MONITORING WELL LOCATION
- ⊕ MONITORING WELL LOCATION (NOT SAMPLED)

**NOTES:**  
 1. THE ANALYTES LISTED IN THE BOXES ARE THOSE WITH CONCENTRATIONS THAT EXCEEDED THE INDICATED SCREENING CRITERIA IN THE 4Q11.  
 2. FROM ILLINOIS TIERED APPROACH TO CORRECTIVE ACTION OBJECTIVES (TACO), 35 IAC PART 742. DATA PRESENTED HERE INDICATES AN EXCEEDANCE OF THE GROUNDWATER CLASS I SCREENING CRITERIA.

Analyte	Screening Criteria (mg/L)
Benzene	0.005
Chloroform	0.0002
Ethylbenzene	0.7
MTBE	0.07
Naphthalene	0.14
Toluene	1
1,3,5-Trimethylbenzene	0.07
bis(2-Ethylhexyl) phthalate	0.006
2-Methylnaphthalene	0.028
Phenol	0.1

3. LABORATORY QUALIFIERS:  
 J = THE TARGET ANALYTE WAS DETECTED BELOW THE REPORTING LIMIT AND THE RESULT IS ESTIMATED.



Sample Location	P93A	P93B	P93D
Sampled 10/26/11-10/27/11	Result (mg/L)	Result (mg/L)	Result (mg/L)
Benzene	543	590	1.09
bis(2-Ethylhexyl)phthalate	0.0075	0.0103	
Phenol	0.193	0.122	

Sample Location	MW-4
Sampled 12/15/11	Result (mg/L)
Benzene	0.0381

Sample Location	MW-5
Sampled 11/21/11	Result (mg/L)
Benzene	0.0109

Sample Location	MW-13
Sampled 11/3/11	Result (mg/L)
Benzene	0.05

Sample Location	MW-6A	MW-6B	MW-6D
Sampled 11/3/11-11/21/11	Result (mg/L)	Result (mg/L)	Result (mg/L)
Benzene	0.0105 J/0.0137 J	0.961	0.013

Sample Location	P-54
Sampled 11/3/11	Result (mg/L)
Benzene	0.013

Sample Location	P-59
Sampled 10/27/11	Result (mg/L)
Benzene	6.01
Ethylbenzene	1.49

Sample Location	P-55
Sampled 10/31/11	Result (mg/L)
Benzene	0.152

Sample Location	T-12
Sampled 10/27/11	Result (mg/L)
Benzene	1.09
2-Methylnaphthalene	0.0415

Sample Location	P-74
Sampled 10/31/11	Result (mg/L)
Benzene	5.02
1,3,5-Trimethylbenzene	0.162

Sample Location	P-56
Sampled 10/27/11	Result (mg/L)
Benzene	0.144

Sample Location	MW-2
Sampled 11/28/11	Result (mg/L)
Benzene	0.0216
1,3,5-Trimethylbenzene	0.212
2-Methylnaphthalene	0.0299

Sample Location	P-57
Sampled 11/8/11	Result (mg/L)
Benzene	123
Ethylbenzene	1.1
MTBE	0.221
2-Methylnaphthalene	0.0388
Naphthalene	0.152
Phenol	0.286

Sample Location	MW-7
Sampled 11/2/11	Result (mg/L)
Benzene	774

Sample Location	P-58
Sampled 10/28/11	Result (mg/L)
Benzene	430
Naphthalene	0.204
1,3,5-Trimethylbenzene	0.104
2-Methylnaphthalene	0.0717
Phenol	0.137

Sample Location	P-66
Sampled 11/1/11	Result (mg/L)
Benzene	0.0171
MTBE	0.0845 J
2-Methylnaphthalene	0.0295

SHLL OIL PRODUCTS US  
 INTERIM GROUNDWATER MONITORING PROGRAM  
 ROXANA, ILLINOIS

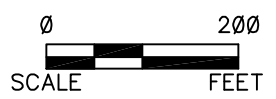
PROJECT NO.  
 21562735



DRN. BY: djd December 2011  
 DSGN. BY: kh  
 CHKD. BY: tja

4th Quarter 2011 Groundwater  
 Monitoring Well  
 Analytical Exceedances

FIG. NO.  
 5

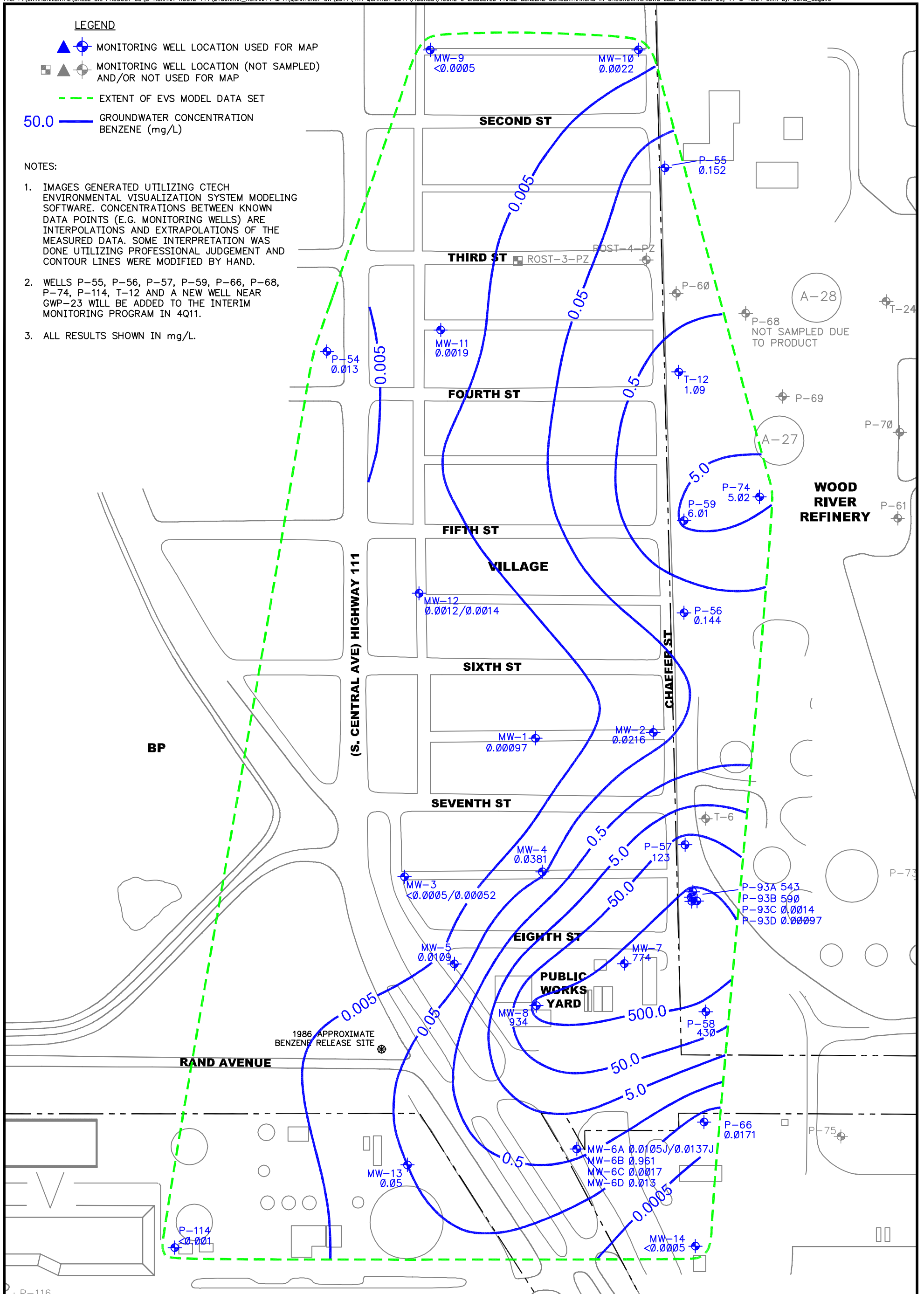


**LEGEND**

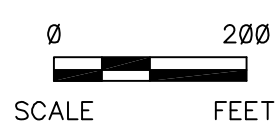
- MONITORING WELL LOCATION USED FOR MAP
- MONITORING WELL LOCATION (NOT SAMPLED) AND/OR NOT USED FOR MAP
- EXTENT OF EVS MODEL DATA SET
- 50.0 GROUNDWATER CONCENTRATION BENZENE (mg/L)

**NOTES:**

1. IMAGES GENERATED UTILIZING CTECH ENVIRONMENTAL VISUALIZATION SYSTEM MODELING SOFTWARE. CONCENTRATIONS BETWEEN KNOWN DATA POINTS (E.G. MONITORING WELLS) ARE INTERPOLATIONS AND EXTRAPOLATIONS OF THE MEASURED DATA. SOME INTERPRETATION WAS DONE UTILIZING PROFESSIONAL JUDGEMENT AND CONTOUR LINES WERE MODIFIED BY HAND.
2. WELLS P-55, P-56, P-57, P-59, P-66, P-68, P-74, P-114, T-12 AND A NEW WELL NEAR GWP-23 WILL BE ADDED TO THE INTERIM MONITORING PROGRAM IN 4Q11.
3. ALL RESULTS SHOWN IN mg/L.

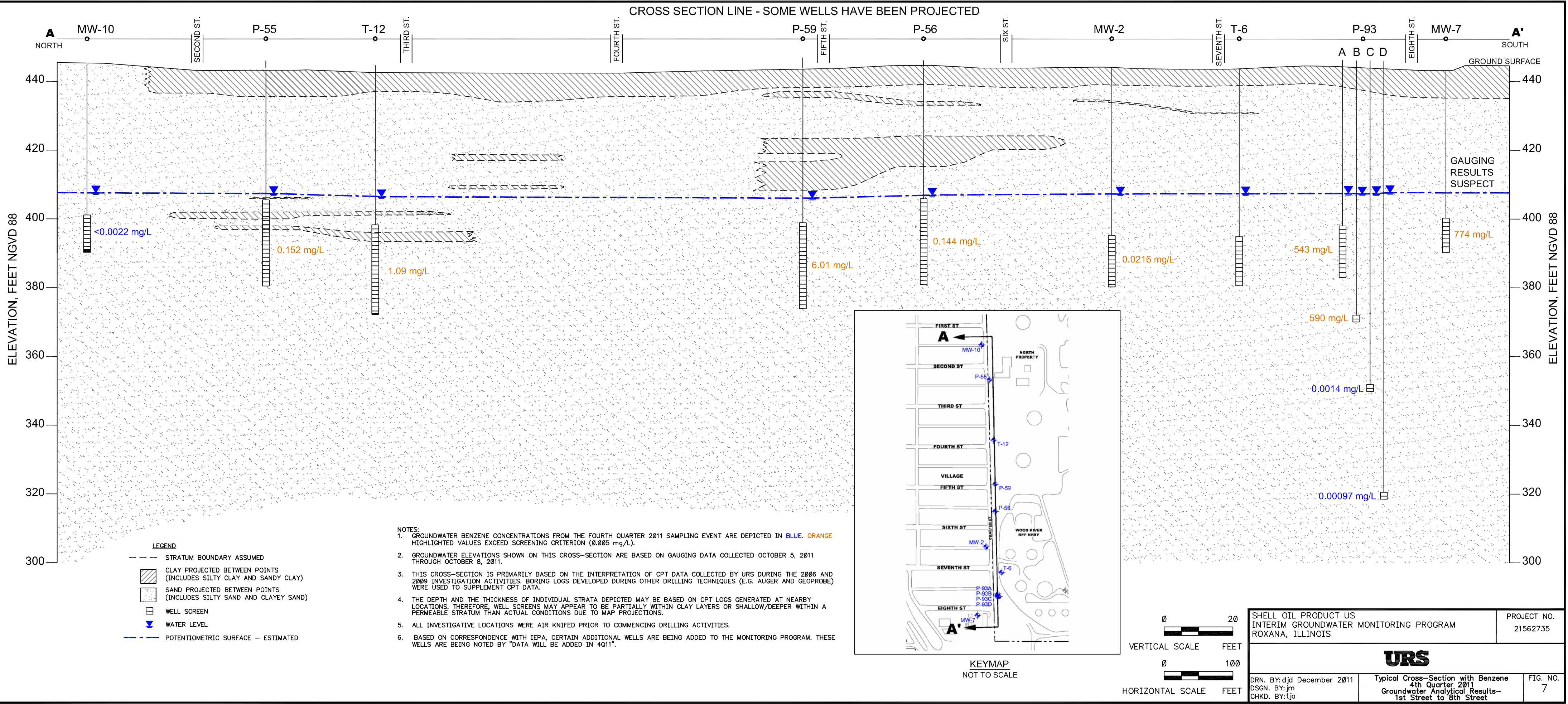


SHELL OIL PRODUCTS US INTERIM GROUNDWATER MONITORING PROGRAM ROXANA, ILLINOIS		PROJECT NO. 21562735
<b>URS</b>		
DRN. BY: djd December 2011 DSGN. BY: nm CHKD. BY: b3	4th Quarter 2011 Dissolved Phase Benzene Concentrations in Groundwater	FIG. NO. 6

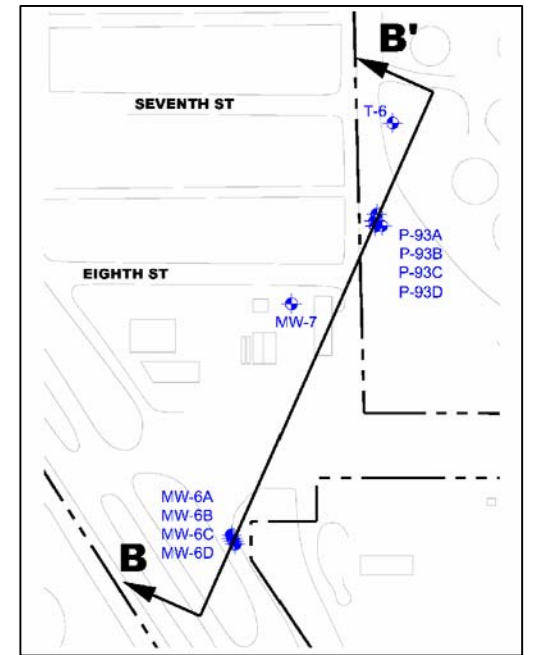
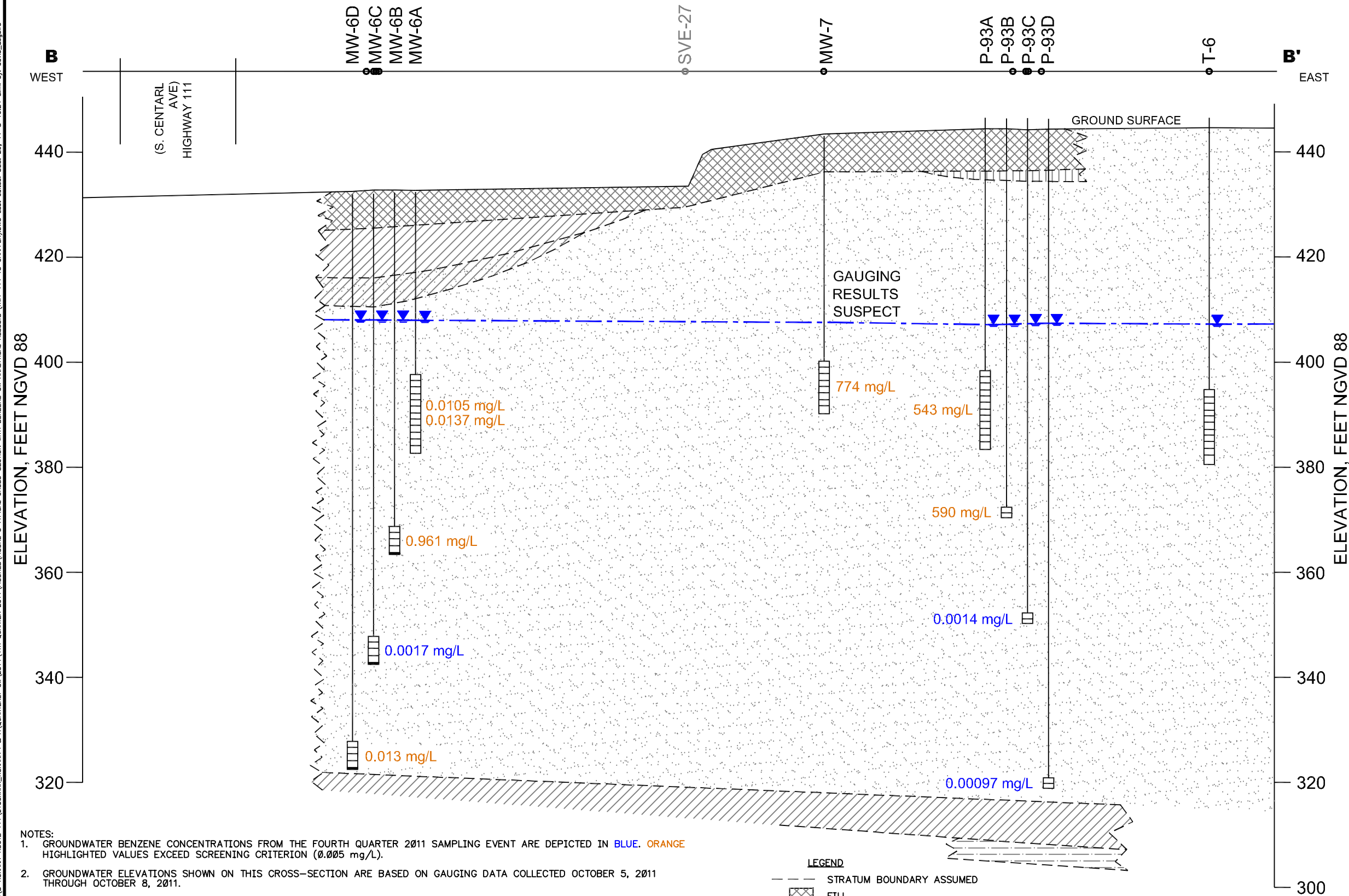




P:\ENVIRONMENTAL\SHLL\_OIL\_PRODUCT\_US\B-ROXANA-ROUTE 111\2156XXX\ROXANA & A\QUARTERLY\_GW\_2011\4TH QUARTER 2011\FIGURES\FIGURE 7 TYPICAL CROSS-SECTION WITH BENZENE GW ANALYTICAL RESULTS (LIST TO 8TH ST).DWG (last edited: DEC 29, 11 @ 10:52 am, by: djd, depure)



CROSS SECTION LINE - SOME WELLS HAVE BEEN PROJECTED

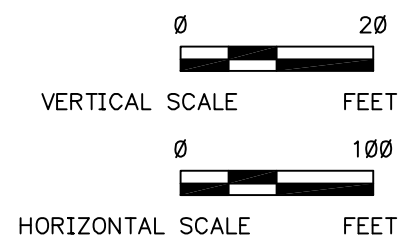


KEYMAP  
NOT TO SCALE

- NOTES:
- GROUNDWATER BENZENE CONCENTRATIONS FROM THE FOURTH QUARTER 2011 SAMPLING EVENT ARE DEPICTED IN BLUE. ORANGE HIGHLIGHTED VALUES EXCEED SCREENING CRITERION (0.005 mg/L).
  - GROUNDWATER ELEVATIONS SHOWN ON THIS CROSS-SECTION ARE BASED ON GAUGING DATA COLLECTED OCTOBER 5, 2011 THROUGH OCTOBER 8, 2011.
  - THIS CROSS-SECTION IS PRIMARILY BASED ON THE INTERPRETATION OF CPT DATA COLLECTED BY URS DURING THE 2006 AND 2009 INVESTIGATION ACTIVITIES. BORING LOGS DEVELOPED DURING OTHER DRILLING TECHNIQUES (E.G. AUGER AND GEOPROBE) WERE USED TO SUPPLEMENT CPT DATA.
  - THE DEPTH AND THE THICKNESS OF INDIVIDUAL STRATA DEPICTED MAY BE BASED ON CPT LOGS GENERATED AT NEARBY LOCATIONS. THEREFORE, WELL SCREENS MAY APPEAR TO BE PARTIALLY WITHIN CLAY LAYERS OR SHALLOW/DEEPER WITHIN A PERMEABLE STRATUM THAN ACTUAL CONDITIONS DUE TO MAP PROJECTIONS.
  - ALL INVESTIGATIVE LOCATIONS WERE AIR KNIFED PRIOR TO COMMENCING DRILLING ACTIVITIES.
  - LITHOLOGICAL INFORMATION FROM SVE-27 WAS OBTAINED FROM BORING LOG TO SUPPLEMENT SITE GEOLOGY ONLY.

**LEGEND**

- - - STRATUM BOUNDARY ASSUMED
- [Cross-hatched] FILL
- [Horizontal lines] SHALE
- [Diagonal lines] CLAY PROJECTED BETWEEN POINTS (INCLUDES SILTY CLAY AND SANDY CLAY)
- [Dotted] SAND PROJECTED BETWEEN POINTS (INCLUDES SILTY SAND AND CLAYEY SAND)
- [Square with vertical lines] WELL SCREEN
- [Blue inverted triangle] WATER LEVEL
- [Dashed blue line] POTENTIOMETRIC SURFACE - ESTIMATED



SHELL OIL PRODUCT US INTERIM GROUNDWATER MONITORING PROGRAM ROXANA, ILLINOIS		PROJECT NO. 21562735
<b>URS</b>		
DRN. BY: djd December 2011 DSGN. BY: jm CHKD. BY: tj	Typical Cross-Section with Benzene 4th Quarter 2011 Groundwater Analytical Results- Highway 111 to Chaffer	FIG. NO. 8

Fig. P:\ENVIRONMENTAL\SHELL OIL PRODUCT US\B-ROXANA-ROUTE 111\2156XXXX-ROXANA 1 & A\QUARTERLY GW\2011\4TH QUARTER 2011\FIGURES\FIGURE 8 TYPICAL CROSS-SECTION WITH BENZENE GW ANALYTICAL RESULTS (HWY 111 TO CHAFFER).DWG Last edited: DEC. 29, 11 @ 10:24 a.m. by: david\_degure





LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Roxana 3Q11 GW

PROJECT NUMBER: 21562593.000056

FIELD PERSONNEL: L. Authrow, D. Mattingly

DATE: 12/5/11

WEATHER: Cloudy, Cold

MONITORING WELL ID: MW-1

SAMPLE ID: MW1-ROX-120511, MW1-ROX-120511-MS, MW1-ROX-120511-MSD, MW1-ROX-120511-EB

INITIAL DATA

Well Diameter: 1 in  
 Total Well Depth (btoc): 58.41 ft  
 Depth to Water (btoc): 17.4 ft  
 Depth to LNAPL/DNAPL (btoc): 17.4 ft  
 Depth to Top of Screen (btoc): 43.41 ft  
 Screen Length: 10.15 ft

Water Column Height (do not include LNAPL or DNAPL): \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is > Depth to Water AND Screen Length is (4 feet,  
 Place Pump at: Total Well Depth - 0.5 (Screen Length + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are < 4ft,  
 Place Pump at: Total Well Depth - (0.5 X Water Column Height + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = \_\_\_\_\_ ft btoc

Volume of Flow Through Cell: 973 mL  
 Minimum Purge Volume = (3 x Flow Cell Volume): 2,919 mL  
 Ambient PID/FID Reading: \_\_\_\_\_ ppm  
 Wellbore PID/FID Reading: \_\_\_\_\_ ppm

PURGE DATA

Pump Type: MONSOON SS Bladder Pump

Purge Volume (mL)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
<del>200</del>	<del>10:00</del>		<del>clear</del>	<del>none</del>	<del>6.54</del>	<del>62.27</del>	<del>1032</del>	<del>41.27</del>	<del>0.02</del>	<del>0.07</del>
<del>300</del>	<del>10:05</del>		<del>clear</del>	<del>none</del>	<del>6.54</del>	<del>62.27</del>	<del>1032</del>	<del>41.27</del>	<del>0.02</del>	<del>0.07</del>
1	0944	17.4	clear	none	6.561	61.79	1019	171.0	0.90	0.13
2	0950	17.4	clear	none	6.59	60.67	1020	139.5	1.07	0.10
3	0955	37.10	clear	none	6.60	61.31	1018	111.9	0.04	0.09
4	1005	37.10	clear	none	6.59	62.20	1032	107.8	0.02	0.07
5	1012	37.10	clear	none	6.60	62.28	1026	74.35	-0.01	0.07
6	1019	37.10	clear	none	6.60	62.27	1024	37.82	-0.02	0.06
7	1026	37.10	clear	none	6.60	62.28	1026	22.33	-0.02	0.05
8	1034	37.10	clear	none	6.60	62.18	1024	16.92	-0.02	0.05
9	1041	37.10	clear	none	6.61	61.92	1026	12.38	-0.02	0.04
11	1047	37.10	clear	none	6.61	62.50	1031	13.70	-0.03	0.04
14	1055	37.10	clear	none	6.61	62.47	1030	15.38	-0.03	0.03
15	1101	37.10	clear	none	6.61	62.31	1025	7.905	-0.03	0.03
16	1108	37.10	clear	none	6.62	61.88	1023	9.104	-0.03	0.03

Start Time: 0944

Elapsed Time (min): 121 mins

Water Quality Meter ID: TROLL 9500

Stop Time: 1145

Average Purge Rate (mL/min): 300

Date Calibrated: 12/5/11

SAMPLING DATA

Sample Date: 12/5/11

Sample Time: 1120

Lab Analysis: VOC, SVOC

Sample Method: Bladder Pump / Low Flow

Sample Flow Rate (mL/min): 300

QA/QC Samples: MSMSD, EB

VOA Vials, No Headspace  Initials: LAR

COMMENTS:

Total Purge Volume: 17 mL gal

Purge vol.	Time	Depth to water	Color	Odor	pH	Temp	Cond	Turbidity	DO	ORP
17	1116	37.10	clear	none	6.62	61.74	1021	7.679	-0.03	0.02

MW-1

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Roxana 3Q11 GW

PROJECT NUMBER: 21562593.00005

FIELD PERSONNEL: J. Jackson, R. Hunt

DATE: 11-28-11

WEATHER: Cloudy 40°

MONITORING WELL ID: MW-2

SAMPLE ID: MW2-BOX-112811

INITIAL DATA

Well Diameter: 1 in  
 Total Well Depth (btoc): 62.19 ft  
 Depth to Water (btoc): 38.03 ft  
 Depth to LNAPL/DNAPL (btoc): — ft  
 Depth to Top of Screen (btoc): 47.19 ft  
 Screen Length): 15 ft

Water Column Height (do not include LNAPL or DNAPL): — ft btoc  
 If Depth to Top of Screen is > Depth to Water AND Screen Length is (4 feet,  
 Place Pump at: Total Well Depth - 0.5 (Screen Length + DNAPL Column Height) = — ft btoc  
 If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are (4 ft,  
 Place Pump at: Total Well Depth - (0.5 X Water Column Height + DNAPL Column Height) = — ft btoc  
 If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = — ft btoc

Volume of Flow Through Cell): 973 mL  
 Minimum Purge Volume = (3 x Flow Cell Volume): 2,919 mL  
 Ambient PID/FID Reading: — ppm  
 Wellbore PID/FID Reading: — ppm

PURGE DATA

Pump Type: 70 gpm SS Bladder Pump

Purge Volume (mL)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
300	1407	38.03	Brown/Blk	petro	6.64	60.67	1064	716.9	0.33	-0.04
300	1410	38.03	Brown/Blk	petro	6.65	61.26	1076	578.1	0.18	-0.05
300	1413	38.03	Brown/Blk	petro	6.66	61.96	1088	422.2	0.11	-0.06
300	1416	38.03	Brown/Blk	none	6.66	62.44	1096	313.9	0.08	-0.07
300	1419	38.02	Brown	none	6.66	63.11	1107	231.6	0.05	-0.07
300	1422	38.02	Brown	none	6.66	62.98	1108	198.5	0.03	-0.07
300	1425	38.02	Brown	none	6.66	63.13	1107	154.1	0.03	-0.08
300	1428	38.02	Brown	none	6.66	63.51	1125	107.2	0.02	-0.08
300	1431	38.02	Brown	none	6.66	64.14	1125	74.7	0.01	-0.08
300	1434	38.02	Brown	none	6.67	64.05	1124	55.4	0.00	-0.08
300	1437	38.02	Clean	none	6.67	64.06	1125	43.2	0.00	-0.08
300	1441	38.02	Clean	none	6.67	64.07	1128	32.9	0.00	-0.08
300	1444	38.02	Clean	none	6.67	63.57	1126	29.4	0.00	-0.08

Start Time: 1407

Elapsed Time (min): 37

Water Quality Meter ID: TROLL 9500

Stop Time: 1444

Average Purge Rate (mL/min): 300 gals

Date Calibrated: 1125-11

SAMPLING DATA

Sample Date: 11-28-11

Sample Time: 1444

Lab Analysis: VOC, SVOC

Sample Method: Bladder Pump / Low Flow

Sample Flow Rate (mL/min): 300

QA/QCSamples: N/A

VOA Vials, No Headspace  Initials: JS/RL

COMMENTS:

Total Purge Volume: 11,100 mL



LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Roxana 3011 GW PROJECT NUMBER: 21562593.00005 FIELD PERSONNEL: L Patterson, J Jackson

DATE: 11/29/11 WEATHER: Cloudy, Windy, Cold

MONITORING WELL ID: MW-3 SAMPLE ID: MW3-ROX-112911, MW3-ROX-112911-N/D, MW3 ROX-112911-EB

INITIAL DATA

Well Diameter: 1 in Water Column Height (do not include LNAPL or DNAPL): \_\_\_\_\_ ft btoc Volume of Flow Through Cell: 973 mL  
 Total Well Depth (btoc): 45.98 ft If Depth to Top of Screen is > Depth to Water AND Screen Length is (4 feet, Minimum Purge Volume = (3 x Flow Cell Volume): 2,919 mL  
 Depth to Water (btoc): 24.06 ft Place Pump at: Total Well Depth - 0.5 (Screen Length + DNAPL Column Height) = \_\_\_\_\_ ft btoc Ambient PID/FID Reading: \_\_\_\_\_ ppm  
 Depth to LNAPL/DNAPL (btoc): \_\_\_\_\_ ft If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are < 4ft, Wellbore PID/FID Reading: \_\_\_\_\_ ppm  
 Depth to Top of Screen (btoc): 30.98 ft Place Pump at: Total Well Depth - (0.5 X Water Column Height + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 Screen Length: 15 ft If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = \_\_\_\_\_ ft btoc

PURGE DATA

Pump Type: 170,500m SS Bladder Pump

Purge Volume (mL)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
0.5	14:00	24.06	clear	-	6.58	62.52	1132	7.051	2.20	-0.04
1	14:05	24.05	clear	-	6.66	63.76	1149	5.330	1.12	-0.04
1.5	14:08	24.05	clear	-	6.69	64.12	1151	4.365	0.39	-0.09
2	14:14	24.05	clear	-	6.71	64.43	1155	2.625	0.22	-0.10
2.5	14:18	24.05	clear	-	6.72	64.46	1156	1.705	0.14	-0.10
2.5	14:24	24.05	clear	-	6.73	64.43	1156	1.362	0.11	-0.10
2.65	14:29	24.05	clear	-	6.74	64.50	1155	0.94	0.08	-0.10
2.75	14:34	24.05	clear	-	6.75	64.30	1152	0.572	0.07	-0.11
2.85	14:39	24.05	clear	-	6.75	64.29	1151	0.8910	0.07	-0.11

Start Time: 14:00 Elapsed Time (min): 39 Water Quality Meter ID: TROLL 9500  
 Stop Time: 14:39 Average Purge Rate (mL/min): 300 Date Calibrated: 11/29/11

SAMPLING DATA

Sample Date: 11-29-11 Sample Time: 14:39 Lab Analysis: VOC, SVOC  
 Sample Method: Bladder Pump / Low Flow Sample Flow Rate (mL/min): 300 QA/QC Samples: Dup EB  
 VOA Vials, No Headspace  Initials: RK

COMMENTS:

Total Purge Volume: 2.85 me gal

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Roxana 3Q11 GW

PROJECT NUMBER: 21562593.000056

FIELD PERSONNEL: D. Mattingly, L. Rathnan

DATE: 11/21/11

WEATHER: cloudy, foggy, 47

MONITORING WELL ID: MW-10 MW-5

SAMPLE ID: MW5-ROX-112111

INITIAL DATA

Well Diameter: 2 in  
 Total Well Depth (btoc): 54.76 ft  
 Depth to Water (btoc): 23.46 ft  
 Depth to LNAPL/DNAPL (btoc): NA ft  
 Depth to Top of Screen (btoc): 44.43 ft  
 Screen Length: 10 ft

Water Column Height (do not include LNAPL or DNAPL): \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is > Depth to Water AND Screen Length is (4 feet,  
 Place Pump at: Total Well Depth - 0.5 (Screen Length + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are (4ft,  
 Place Pump at: Total Well Depth - (0.5 X Water Column Height + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = \_\_\_\_\_ ft btoc

Volume of Flow Through Cell: 973 mL  
 Minimum Purge Volume = (3 x Flow Cell Volume) 2,919 mL  
 Ambient PID/FID Reading: \_\_\_\_\_ ppm  
 Wellbore PID/FID Reading: \_\_\_\_\_ ppm

PURGE DATA

Pump Type: monsoon SS Bladder Pump

Purge Volume (mL)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
1/4 gal	1411	23.46	clear	none	6.79	62.04	863.1	111.7	1.30	-0.04
3/4	1416	23.46	clear	none	6.71	62.59	917.2	23.40	0.38	-0.06
1	1421	23.46	clear	none	6.70	62.90	934.4	27.11	0.24	-0.07
2.00	1426	23.46	clear	none	6.70	63.14	945.0	9.467	0.18	-0.07
3.00	1431	23.46	clear	none	6.69	64.14	960.7	14.48	0.14	-0.08
4.00	1437	23.46	clear	none	6.69	64.76	965.8	9.945	0.06	-0.08
7.00	1442	23.46	clear	none	6.70	64.83	944.3	10.46	0.03	-0.08
8.00	1446	23.46	clear	none	6.70	64.17	955.9	10.03	0.02	-0.09

Start Time: 1411

Elapsed Time (min): 30

Water Quality Meter ID: TROLL 9500

Stop Time: 1447

Average Purge Rate (mL/min): 300

Date Calibrated: 11/21/11

SAMPLING DATA

Sample Date: 11/21/11

Sample Time: 1450

Lab Analysis: VOC, SVOC

Sample Method: Bladder Pump / Low Flow

Sample Flow Rate (mL/min): 300

QA/QC Samples: \_\_\_\_\_

VOA Vials, No Headspace  Initials: LR

COMMENTS:

Total Purge Volume: 3 mL

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Roxana 3041 GW PROJECT NUMBER: 21562593.00005 FIELD PERSONNEL: D Mattingly / L. Rathner

DATE: 11/21/11 WEATHER: cloudy, foggy, 45°

MONITORING WELL ID: MW-6A SAMPLE ID: MW-6A-ROX-112111, MW-6A-ROX-112111-Dup

INITIAL DATA

Well Diameter: 1 in  
 Total Well Depth (btoc): 46.98 ft  
 Depth to Water (btoc): 25.49 ft  
 Depth to LNAPL/DNAPL (btoc): N/A ft  
 Depth to Top of Screen (btoc): 31.98 ft  
 Screen Length: 15 ft

Water Column Height (do not include LNAPL or DNAPL): \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is > Depth to Water AND Screen Length is < 4 feet,  
 Place Pump at: Total Well Depth - 0.5 (Screen Length + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are < 4ft,  
 Place Pump at: Total Well Depth - (0.5 X Water Column Height + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = \_\_\_\_\_ ft btoc

Volume of Flow Through Cell: 973 mL  
 Minimum Purge Volume = (3 x Flow Cell Volume): 2919 mL  
 Ambient PID/FID Reading: \_\_\_\_\_ ppm  
 Wellbore PID/FID Reading: \_\_\_\_\_ ppm

PURGE DATA

Pump Type: Acrosson SS Bladder Pump

Purge Volume (mL/gal)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
0.4	0909	25.49	cloudy	none	6.58	62.64	1215	162.8	1.32	-0.03
1 gal	0913	25.49	none	none	6.64	64.08	1264	50.96	0.52	-0.06
	0915				6.66	64.08	1263		0.42	-0.08
1.5	0918									
1.75	0920	11.7m	cloudy	none	6.67	63.34	1237	521.9	0.84	-0.06
2.25	0933	11.7m	cloudy	none	6.67	64.33	1272	162.7	0.32	-0.07
2.75	0936	N/A	cloudy	none	6.67	64.53	1276	210.2	0.16	-0.05
3.25	0940	N/A	cloudy	none	6.68	64.53	1288	35.30	0.08	-0.05
3.75	0945	25.49	cloudy	none	6.69	65.01	1297	18.68	0.05	-0.09
4.5	0949	25.49	cloudy	none	6.70	65.24	1304	14.69	0.03	-0.09
5.25	0953	25.49	cloudy	none	6.71	65.19	1305	19.86	0.02	-0.09
5.5	0957	25.49	cloudy	none	6.71	65.03	1305	20.78	0.02	-0.09
6.0	1002	25.49	cloudy	none	6.72	64.98	1305	24.61	0.02	-0.09
7.0	1008	25.49	cloudy	none	6.72	64.86	1305	28.59	0.02	-0.09
8.0	1011	25.49	cloudy	none	6.71	64.51	1302	50.40	0.01	-0.09
8.5	1016	25.49	cloudy	none	6.72	64.68	1307	10.43	0.02	-0.10

Start Time: 0909 Elapsed Time (min): 80 min Water Quality Meter ID: TROLL 9500  
 Stop Time: 1031 Average Purge Rate (mL/min): 300 Date Calibrated: 11/21/11

SAMPLING DATA

Sample Date: 11/21/11 Sample Time: 1033 Lab Analysis: VOC, SVOC  
 Sample Method: Bladder Pump / Low Flow Sample Flow Rate (mL/min): 300 QA/QC Samples: Dup  
 VOA Vials, No Headspace  Initials: LR

COMMENTS:

Reading @ 0918 was taken when we had problems w/the troll, so it wasn't recorded

Total Purge Volume: 10 mL/gal

<u>Purge Vol.</u>	<u>Time</u>	<u>Depth to H<sub>2</sub>O</u>	<u>Color</u>	<u>Odor</u>	<u>PH</u>	<u>Temp</u>	<u>Cond</u>	<u>Turbidity</u>	<u>DO</u>	<u>ORP</u>
9.0	1020	25.49	cloudy	none	6.72	64.97	1313	2.839	0.02	-0.10
9.5	1021	25.49	cloudy	none	6.73	65.14	1319	6.725	0.01	-0.10
9.75	1029	25.49	cloudy	none	6.73	65.10	1319	7.969	0.01	-0.10

MW-6A

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Roxana 3Q11 GW

PROJECT NUMBER: 21562593.00005

FIELD PERSONNEL: J. Jackson, A. Mattingly

DATE: 11/3/11

WEATHER: cloudy, rainy

MONITORING WELL ID: MW-6B

SAMPLE ID: MW6B-ROX-110301

INITIAL DATA

Well Diameter: 2 in  
 Total Well Depth (btoc): 69.38 ft  
 Depth to Water (btoc): 24.68 ft  
 Depth to LNAPL/DNAPL (btoc): ft  
 Depth to Top of Screen (btoc): 64.05 ft  
 Screen Length): 5 ft

Water Column Height (do not include LNAPL or DNAPL): ft btoc  
 If Depth to Top of Screen is > Depth to Water AND Screen Length is (4 feet,  
 Place Pump at: Total Well Depth - 0.5 (Screen Length + DNAPL Column Height) = ft btoc  
 If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are < 4ft,  
 Place Pump at: Total Well Depth - (0.5 X Water Column Height + DNAPL Column Height) = ft btoc  
 If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = ft btoc

Volume of Flow Through Cell): 973 mL  
 Minimum Purge Volume = (3 x Flow Cell Volume): 2919 mL  
 Ambient PID/FID Reading: ppm  
 Wellbore PID/FID Reading: ppm

PURGE DATA

Pump Type: <sup>Morseco</sup> SS Bladder Pump

Purge Volume (mL)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
300	0840	24.68	clear	none	6.49	64.00	894.5	2.869	1.97	0.04
450	0847	24.68	clear	none	6.78	64.95	1053	0.1819	0.22	-0.04
450	0853	24.68	clear	none	6.84	65.23	1059	0.8619	0.12	-0.05
450	0900	24.68	clear	none	6.86	64.94	1059	1.350	0.11	-0.06

Start Time: 0840

Elapsed Time (min): 21

Water Quality Meter ID: TROLL 9500

Stop Time: 0901

Average Purge Rate (mL/min):

Date Calibrated: 11-3-11

SAMPLING DATA

Sample Date: 11/3/11

Sample Time: 0901

Lab Analysis: VOC, SVOC

Sample Method: <sup>Morseco</sup> Bladder Pump / Low Flow

Sample Flow Rate (mL/min):

QA/QCSamples: 1A

VOA Vials, No Headspace  Initials:

COMMENTS:

Total Purge Volume: mL

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Roxana 3Q11 GW

PROJECT NUMBER: 21562593.00005

FIELD PERSONNEL: J. Jackson, D. Mattingly

DATE: 11/3/11

WEATHER: Cloudy, cold

MONITORING WELL ID: MW-6C

SAMPLE ID: MW6C-ROX-110311

INITIAL DATA

Well Diameter: 2 in  
 Total Well Depth (btoc): 90.28 ft  
 Depth to Water (btoc): 24.47 ft  
 Depth to LNAPL/DNAPL (btoc): \_\_\_\_\_ ft  
 Depth to Top of Screen (btoc): 84.95 ft  
 Screen Length: 5 ft

Water Column Height (do not include LNAPL or DNAPL): \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is > Depth to Water AND Screen Length is < 4 feet,  
 Place Pump at: Total Well Depth - 0.5 (Screen Length + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are < 4ft,  
 Place Pump at: Total Well Depth - (0.5 X Water Column Height + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = \_\_\_\_\_ ft btoc

Volume of Flow Through Cell): 913 mL  
 Minimum Purge Volume = (3 x Flow Cell Volume): 2739 mL  
 Ambient PID/FID Reading: \_\_\_\_\_ ppm  
 Wellbore PID/FID Reading: \_\_\_\_\_ ppm

PURGE DATA

Pump Type: Memberg SS Bladder Pump

Purge Volume (mL)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
400	0941	24.47	clear	none	6.93	62.67	754.6	0.7917	3.23	-0.05
400	0948	24.47	clear	none	6.90	63.93	930.5	0.7263	0.46	-0.02
275	0956	24.50	clear	none	6.89	63.24	976.5	1.832	0.25	-0.07
275	1003	24.50	clear	none	6.89	63.85	1048	2.856	0.18	-0.07
500	1010	24.50	clear	none	6.90	64.14	1088	2.994	0.12	-0.08
500	1017	24.50	clear	none	6.91	63.92	1085	5.076	0.07	-0.08
500	1025	24.50	clear	none	6.96	64.55	1095	7.003	0.07	-0.08

Start Time: 0941

Elapsed Time (min): 43

Water Quality Meter ID: TROLL 9500

Stop Time: 1025

Average Purge Rate (mL/min): \_\_\_\_\_

Date Calibrated: 11-3-11

SAMPLING DATA

Sample Date: 11/3/11

Sample Time: 1025

Lab Analysis: VOC, SVOC

Sample Method: Memberg Bladder Pump / Low Flow

Sample Flow Rate (mL/min): \_\_\_\_\_

QA/QC Samples: NA

VOA Vials, No Headspace  Initials: \_\_\_\_\_

COMMENTS:

Total Purge Volume: \_\_\_\_\_ mL

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Roxana 3041 GW PROJECT NUMBER: 21562593.0000x6 FIELD PERSONNEL: L. Rathnow, B. Crafton

DATE: 11/3/11 WEATHER: Rainy

MONITORING WELL ID: MW-66D SAMPLE ID: MW66D-ROX-110311

INITIAL DATA

Well Diameter: ± 2 in Water Column Height (do not include LNAPL or DNAPL): \_\_\_\_\_ ft btoc  
 Total Well Depth (btoc): 40.3 ft If Depth to Top of Screen is > Depth to Water AND Screen Length is (4 feet, \_\_\_\_\_ ft btoc  
 Depth to Water (btoc): 24.31 ft Place Pump at: Total Well Depth - 0.5 (Screen Length + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 Depth to LNAPL/DNAPL (btoc): N/A ft If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are (4ft, \_\_\_\_\_ ft btoc  
 Depth to Top of Screen (btoc): 31.13 ft Place Pump at: Total Well Depth - (0.5 X Water Column Height + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 Screen Length: 15 ft If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = \_\_\_\_\_ ft btoc

Volume of Flow Through Cell: 973 mL  
 Minimum Purge Volume = (3 x Flow Cell Volume): 2917 mL  
 Ambient PID/FID Reading: \_\_\_\_\_ ppm  
 Wellbore PID/FID Reading: \_\_\_\_\_ ppm

PURGE DATA

Pump Type: SS Bladder Pump

Purge Volume (ml) - gal	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
0.25	09:04	24.31	clear	-	6.99	17.31	1162	0.69	0.54	-28
2	09:14	24.31	clear	-	6.99	17.30	1232	1.19	0.12	-90
4	09:24	24.31	clear	-	7.02	17.56	1227	0.76	0.06	-102
5	09:34	24.31	clear	-	6.99	17.54	1233	2.88	0.04	-103
6.5	09:44	24.32	clear	-	6.99	17.56	1234	4.37	0.02	-104
7.5	09:54	Nm	clear	-	6.99	17.29	1224	5.86	0.06	-103
8.4	10:05	Nm	clear	-	6.99	17.30	1238	8.72	0.04	-104
10	10:15	Nm	clear	-	6.99	17.63	1230	2.15	0.01	-105
11	10:25	24.32	clear	-	6.99	17.81	1241	8.52	0.01	-105
12	10:35	24.32	clear	-	6.99	17.71	1238	3.00	-0.02	-105
13	10:45	Nm	clear	-	6.99	17.84	1242	0.26	-0.02	-106
14.5	10:56	Nm	clear	-	6.99	17.80	1241	0.28	-0.05	-107
	11:06	Nm	clear	-	6.99	17.79	1240	1.25	-0.08	-107

Start Time: 09:04 Elapsed Time (min): 136 Water Quality Meter ID: TROLL 9500

Stop Time: 11:20 Average Purge Rate (mL/min): 300 Date Calibrated: 11/3/11

SAMPLING DATA

Sample Date: 11/3/11 Sample Time: 11:05 Lab Analysis: VOC, SVOC

Sample Method: Bladder Pump / Low Flow Sample Flow Rate (mL/min): 300 QA/QC Samples: \_\_\_\_\_

VOA Vials, No Headspace  Initials: LR

COMMENTS: Couldnt get Turbidity to stabilize, so we sampled the well after 2 hours of purging.

Total Purge Volume: \_\_\_\_\_ mL

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Roxana 3Q11 GW

PROJECT NUMBER: 21562593.00005

FIELD PERSONNEL: J. Jackson, D. Mattingly

DATE: 11/2/11

WEATHER: Clear

MONITORING WELL ID: #54 MW-7

SAMPLE ID: MW7-ROX-110211

INITIAL DATA

Well Diameter: 2 in  
 Total Well Depth (btoc): 63.00 ft  
 Depth to Water (btoc): 35.95 ft  
 Depth to LNAPL/DNAPL (btoc): N/A ft  
 Depth to Top of Screen (btoc): 38.00 ft  
 Screen Length: 25 ft

Water Column Height (do not include LNAPL or DNAPL): \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is > Depth to Water AND Screen Length is < 4 ft,  
 Place Pump at: Total Well Depth - 0.5 (Screen Length + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are < 4 ft,  
 Place Pump at: Total Well Depth - (0.5 X Water Column Height + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = \_\_\_\_\_ ft btoc

Volume of Flow Through Cell: 973 mL  
 Minimum Purge Volume = (3 x Flow Cell Volume): 2919 mL  
 Ambient PID/FID Reading: \_\_\_\_\_ ppm  
 Wellbore PID/FID Reading: \_\_\_\_\_ ppm

PURGE DATA

Pump Type: SS Bladder Pump

Purge Volume (mL)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
350	1413	35.95	clear	none	6.67	19.29	996.2	21.50	6.52	38
350	1419	35.95	clear	none	6.61	19.76	1028	<del>22.87</del> 5.25	5.25	-18
250	1424	35.96	clear	none	6.60	19.80	1040	<del>22.89</del> 3.97	3.97	-31
250	1428	35.96	clear	none	6.61	19.70	1050	44.07	3.03	-38
400	1432	35.97	clear	none	6.62	18.95	1054	57.02	2.24	-44
400	1436	35.97	clear	none	6.63	18.69	1037	57.62	1.65	-47
500	1440	35.96	clear	none	6.64	18.60	1039	120.3	1.23	-50
500	1445	35.96	clear	none	6.64	18.66	1045	140.2	0.97	-51
450	1450	35.97	clear	none	6.64	18.73	1052	124.3	0.77	-52
450	1455	35.97	clear	none	6.64	18.63	1052	569.7	0.60	-52
450	1500	35.96	clear	none	6.65	18.60	1059	350.3	0.46	-53
450	1505	35.96	clear	none	6.66	18.85	1072	2.569	0.37	-52
300	1510	35.96	clear	none	6.65	19.64	1093	1.637	0.31	-50
300	1515	35.96	clear	none	6.65	19.89	1100	2.224	0.28	-49

Start Time: 1413

Elapsed Time (min): 62

Water Quality Meter ID: TROLL 9500

Stop Time: 1515

Average Purge Rate (mL/min): \_\_\_\_\_

Date Calibrated: 11-2-11

SAMPLING DATA

Sample Date: 11/2/11

Sample Time: 1515

Lab Analysis: VOC, SVOC

Sample Method: Bladder Pump / Low Flow

Sample Flow Rate (mL/min): \_\_\_\_\_

QA/QC Samples: NA

VOA Vials, No Headspace  Initials: \_\_\_\_\_

COMMENTS:

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ Total Purge Volume: \_\_\_\_\_ mL



LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Roxana 4011 GW PROJECT NUMBER: 21562593.000006 FIELD PERSONNEL: L. Rathnow, B. Crafton

DATE: 11/2/11 WEATHER: Partly Cloudy

MONITORING WELL ID: ROX-10-RZ MW-8 SAMPLE ID: MW-8-ROX-110211

INITIAL DATA

Well Diameter: ± 2 in  
 Total Well Depth (btoc): 28.00 ft  
 Depth to Water (btoc): 27.02 ft  
 Depth to LNAPL/DNAPL (btoc):        ft  
 Depth to Top of Screen (btoc): 28.00 ft  
 Screen Length: 18 ft

Water Column Height (do not include LNAPL or DNAPL):        ft btoc  
 If Depth to Top of Screen is > Depth to Water AND Screen Length is (4 feet,  
 Place Pump at: Total Well Depth - 0.5 (Screen Length + DNAPL Column Height) =        ft btoc  
 If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are (4 ft,  
 Place Pump at: Total Well Depth - (0.5 X Water Column Height + DNAPL Column Height) =        ft btoc  
 If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft =        ft btoc

Volume of Flow Through Cell: 973 mL  
 Minimum Purge Volume = (3 x Flow Cell Volume): 2917 mL  
 Ambient PID/FID Reading:        ppm  
 Wellbore PID/FID Reading:        ppm

PURGE DATA

Pump Type: SS Bladder Pump

Purge Volume (mL)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
0.5	14:18	27.02	clear	—	6.55	65.93	1121	27.97	0.80	-0.02
1.5	14:23	27.02	clear	—	6.55	65.73	1119	14.54	0.32	-0.02
2	14:28	27.02	clear	—	6.56	65.82	1125	14.63	0.05	-0.03
2.5	14:33	NM	clear	—	6.56	66.00	1132	14.72	0.02	-0.03
3.5	14:38	NM	clear	—	6.57	65.86	1135	18.70	0.00	-0.03
4	14:43	27.02	clear	—	6.57	65.91	1138	17.49	0.01	-0.03
4.5	14:48	27.02	clear	—	6.57	66.03	1140	32.44	0.04	-0.03
5	14:53	NM	clear	—	6.56	66.04	1142	14.02	0.09	-0.03
5.5	14:58	27.02	clear	—	6.57	66.05	1143	6.53	0.45	-0.03
6.5	15:03	27.02	clear	—	6.57	66.22	1147	5.09	0.30	-0.03
7	15:08	27.02	clear	—	6.56	66.37	1150	4.58	0.33	-0.03
7.5	15:13	27.02	clear	—	6.57	66.35	1151	6.12	0.38	-0.03
8	15:18	27.02	clear	—	6.56	66.33	1155	8.27	0.42	-0.03
8.5	15:23	27.02	clear	—	6.56	66.42	1156	6.53	0.46	-0.03
9	15:28	27.02	clear	—	6.56	66.40	1156	8.42	0.52	-0.03
9.5	15:32	NM	clear	—	6.56	66.37	1156	10.89	0.59	-0.03

Start Time: 14:18 Elapsed Time (min): 120 Water Quality Meter ID: TROLL 9500  
 Stop Time: 16:18 Average Purge Rate (mL/min): 300 Date Calibrated: 11/2/11

SAMPLING DATA

Sample Date: 11/2/11 Sample Time: 16:20 Lab Analysis: VOC, SVOC  
 Sample Method: Bladder Pump / Low Flow Sample Flow Rate (mL/min): 300 QA/QC Samples:         
 VOA Vials, No Headspace  Initials: ZR

COMMENTS: Couldnt get the turbidity or DO to stabilize w/in 10%, so we sampled the well after 2 hours of purging

Total Purge Volume: 15 gall

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Roxana 4Q11 GW

PROJECT NUMBER: 21562593.00006 FIELD PERSONNEL: L. Rothrow, B. Crafton

DATE: 11/2/11

MONITORING WELL ID: MW-8

WATER QUALITY METER: TPI 19500

Purge Volume (mL)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
10	15:38	27.02	clear	—	6.56	16.53	1159	10.57	0.62	-0.03
10.5	15:43	NM	clear	—	6.56	16.62	1159	14.52	0.69	-0.03
11	15:48	NM	clear	—	6.56	16.29	1155	20.14	0.72	-0.03
11.5	15:53	NM	clear	—	6.57	16.13	1186	14.08	0.80	-0.03
12	15:58	NM	clear	—	6.57	16.90	1151	4.71	0.86	-0.03
12.5	16:03	27.02	clear	—	6.57	16.88	1155	4.33	0.95	-0.03
13	16:08	NM	clear	—	6.57	16.03	1157	5.60	1.04	-0.03
14	16:13	NM	clear	—	6.56	16.27	1156	2.81	1.13	-0.03
14.5	16:18	NM	clear	—	6.56	16.48	1159	5.28	1.22	-0.03

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Roxana 3Q11 GW

PROJECT NUMBER: 21562593.00005

FIELD PERSONNEL: J. Jacobsen / D. Mathew

DATE: 11-1-11

WEATHER: Clear - 70°

MONITORING WELL ID: MW-9

SAMPLE ID: MW9-ROX-11011

INITIAL DATA

Well Diameter: 2 in  
 Total Well Depth (btoc): 56.78 ft  
 Depth to Water (btoc): 37.78 ft  
 Depth to LNAPL/DNAPL (btoc): NA ft  
 Depth to Top of Screen (btoc): 46.45 ft  
 Screen Length: 10 ft

Water Column Height (do not include LNAPL or DNAPL): \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is > Depth to Water AND Screen Length is (4 feet,  
 Place Pump at: Total Well Depth - 0.5 (Screen Length + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are (4ft,  
 Place Pump at: Total Well Depth - (0.5 X Water Column Height + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = \_\_\_\_\_ ft btoc

Volume of Flow Through Cell: 973 mL  
 Minimum Purge Volume = (3 x Flow Cell Volume) 2919 mL  
 Ambient PID/FID Reading: \_\_\_\_\_ ppm  
 Wellbore PID/FID Reading: \_\_\_\_\_ ppm

PURGE DATA

Pump Type: Monsoon SS Bladder Pump

Purge Volume (mL)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
400	1330	37.78	Clear	none	6.53	18.23	822.5	452.4	8.03	-29
400	1334	37.91	clear	none	6.57	19.00	911.5	262.5	7.72	-55
300	1338	37.91	clear	none	6.59	19.43	965.5	149.0	6.76	-60
300	1343	37.90	clear	none	6.60	19.20	984.10	241.9	6.33	-68
400	1347	37.91	clear	none	6.61	18.61	985.5	485.6	5.97	-76
400	1351	37.91	clear	none	6.62	18.47	984.5	484.0	6.73	-72
400	1356	37.90	clear	none	6.63	18.41	987.2	512.2	6.89	-73
400	1400	37.91	clear	none	6.64	18.45	988.6	512.4	6.85	-74
400	1404	37.90	clear	none	6.65	18.55	997.7	361.2	6.27	-74
400	1409	37.90	clear	none	6.65	18.69	1000	347.2	6.25	-75
400	1414	37.90	clear	none	6.66	18.84	1012	366.2	6.20	-75

Start Time: 1330  
 Stop Time: 1414

Elapsed Time (min): 44:17  
 Average Purge Rate (mL/min): 350

Water Quality Meter ID: TROLL 9500  
 Date Calibrated: 11-1-11

SAMPLING DATA

Sample Date: 11-1-11  
 Sample Method: Monsoon Bladder Pump / Low Flow  
 VOA Vials, No Headspace  Initials: \_\_\_\_\_

Sample Time: 1414  
 Sample Flow Rate (mL/min): 350

Lab Analysis: VOC, SVOC  
 QA/QC Samples: NA

COMMENTS:

Total Purge Volume: \_\_\_\_\_ mL

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Roxana 304 GW PROJECT NUMBER: 21562593.000056 FIELD PERSONNEL: L. Rathrow, B. Crafton

DATE: 11/1/11 WEATHER: Sunny

MONITORING WELL ID: MW-10 SAMPLE ID: MW10-ROX-11011

INITIAL DATA

Well Diameter: #2 in  
 Total Well Depth (btoc): 37.63 ft  
 Depth to Water (btoc): 37.72 ft  
 Depth to LNAPL/DNAPL (btoc): N/A ft  
 Depth to Top of Screen (btoc): 42.63 ft  
 Screen Length: 15 ft

Water Column Height (do not include LNAPL or DNAPL): \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is > Depth to Water AND Screen Length is (4 feet,  
 Place Pump at: Total Well Depth - 0.5 (Screen Length + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are (< 4ft,  
 Place Pump at: Total Well Depth - (0.5 X Water Column Height + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = \_\_\_\_\_ ft btoc

Volume of Flow Through Cell: 973 mL  
 Minimum Purge Volume = (3 x Flow Cell Volume): 2919 mL  
 Ambient PID/FID Reading: \_\_\_\_\_ ppm  
 Wellbore PID/FID Reading: \_\_\_\_\_ ppm

PURGE DATA

Pump Type: SS Bladder Pump

Purge Volume (mL) gal	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
0.25	15:03	37.72	clear	—	6.69	65.19	818.7	17.39	0.39	-0.06
1.5	15:07	37.72	clear	—	6.75	64.57	798.6	29.97	0.12	-0.08
2	15:12	N/A	clear	—	6.78	64.16	796.8	19.76	0.01	-0.09
3.5	15:16	N/A	clear	—	6.79	63.98	799.8	21.48	-0.02	-0.09
4	15:20	N/A	clear	—	6.80	63.97	803.1	14.80	-0.04	-0.09
5	15:25	N/A	clear	—	6.80	64.05	804.9	16.87	-0.05	-0.10
5.5	15:29	37.72	clear	—	6.80	64.73	811.1	7.22	-0.04	-0.10
6	15:33	37.72	clear	—	6.80	65.06	820.8	4.37	-0.04	-0.10
6.5	15:37	N/A	clear	—	6.80	64.82	823.2	3.54	-0.05	-0.10
7	15:41	N/A	clear	—	6.81	64.67	823.4	3.25	-0.06	-0.10

Start Time: 15:03 Elapsed Time (min): 52 Water Quality Meter ID: TROLL 9500  
 Stop Time: 15:55 Average Purge Rate (mL/min): 300 Date Calibrated: 11/1/11

SAMPLING DATA

Sample Date: 11/1/11 Sample Time: 1545 Lab Analysis: VOC, SVOC  
 Sample Method: Bladder Pump / Low Flow Sample Flow Rate (mL/min): 300 QA/QC Samples: \_\_\_\_\_  
 VOA Vials, No Headspace  Initials: LR

COMMENTS:

Total Purge Volume: 7 me gal

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

L. Rathnow, B. Crafton  
~~W. Meyer, H. Hester, H. Mumper~~

PROJECT NAME: Roxana 4Q GW

PROJECT NUMBER: 21562593.00006

FIELD PERSONNEL:

DATE: 11/2/11

WEATHER: Partly Cloudy

MONITORING WELL ID: MW-11

SAMPLE ID: MW11-ROX-110211; MW11-ROX-110211-MS; MW11-ROX-110211-MS

INITIAL DATA

Well Diameter: \_\_\_\_\_ in  
 Total Well Depth (btoc): \_\_\_\_\_ ft  
 Depth to Water (btoc): 35.44 ft  
 Depth to LNAPL/DNAPL (btoc): N/A ft  
 Depth to Top of Screen (btoc): \_\_\_\_\_ ft  
 Screen Length): \_\_\_\_\_ ft  
 Water Column Height (do not include LNAPL or DNAPL): \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is > Depth to Water AND Screen Length is  $\geq 4$  feet,  
 Place Pump at: Total Well Depth - 0.5 (Screen Length + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are  $\geq 4$  ft,  
 Place Pump at: Total Well Depth - (0.5 X Water Column Height + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = \_\_\_\_\_ ft btoc

Volume of Flow Through Cell): 973 ml  
 Minimum Purge Volume = (3 x Flow Cell Volume): 2919 ml  
 Ambient PID/FID Reading: \_\_\_\_\_ ppi  
 Wellbore PID/FID Reading: \_\_\_\_\_ ppi

PURGE DATA

Pump Type: Monsoon Stainless Steel Submersible Pump

Purge Volume (ml)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
1.5	0910	35.44	clear	—	6.75	61.88	1064	45.02	0.04	-0.04
2.5	0915	35.44	clear	—	6.76	62.15	1077	27.72	0.01	-0.05
3	0918	NM	clear	—	6.77	62.30	1097	32.36	0.00	-0.05
4	0923	NM	clear	—	6.77	62.49	1091	23.40	-0.01	-0.06
4.5	0927	NM	clear	—	6.77	62.62	1093	20.83	-0.01	-0.06
5	0931	35.43	clear	—	6.78	62.58	1096	19.67	0.01	-0.06
5.5	0935	35.43	clear	—	6.78	62.62	1099	20.33	0.01	-0.06

Start Time: 0910

Elapsed Time (min): 55

Water Quality Meter ID: Troll 9500

Stop Time: 1005

Average Purge Rate (mL/min): 400

Date Calibrated: 11/2/11

SAMPLING DATA

Sample Date: 11/2/11

Sample Time: 0935

Lab Analysis: VOC, SVOC

Sample Method: Low Flow

Sample Flow Rate (mL/min): 300

QA/QC Samples: MS, MSB

VOA Vials, No Headspace  Initials: ZR

COMMENTS:

Total Purge Volume: 5.5 ml gal

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

L. Rathnow, B. Crafton

PROJECT NAME: 4Q GW - Roxana

PROJECT NUMBER: 215162593.0000 FIELD PERSONNEL: ~~Watermeter, Hasker, Humper~~

DATE: 11/2/11

WEATHER: Partly Cloudy

MONITORING WELL ID: MW-12

SAMPLE ID: MW12-ROX-110211; MW12-ROX-110211-Sub

INITIAL DATA

Well Diameter: \_\_\_\_\_ in  
 Total Well Depth (btoc): \_\_\_\_\_ ft  
 Depth to Water (btoc): 35.70 ft  
 Depth to LNAPL/DNAPL (btoc): NA ft  
 Depth to Top of Screen (btoc): \_\_\_\_\_ ft  
 Screen Length: \_\_\_\_\_ ft

Water Column Height (do not include LNAPL or DNAPL): \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is > Depth to Water AND Screen Length is ≥ 4 feet,  
 Place Pump at: Total Well Depth - 0.5 (Screen Length + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are ≥ 4ft,  
 Place Pump at: Total Well Depth - (0.5 X Water Column Height + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = \_\_\_\_\_ ft btoc

Volume of Flow Through Cell: 973 ml  
 Minimum Purge Volume = (3 x Flow Cell Volume): 2919 ml  
 Ambient PID/FID Reading: \_\_\_\_\_ ppt  
 Wellbore PID/FID Reading: \_\_\_\_\_ pp

PURGE DATA

Pump Type: Monsoon Stainless Steel Submersible Pump

Purge Volume (ml) gal	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
1	10:44	35.70	clear	—	6.85	64.02	1086	3.97	0.52	0.03
2	10:49	35.70	clear	—	6.85	64.78	1106	4.04	0.22	0.03
2	10:55	NM	clear	—	6.84	65.53	1121	4.34	0.18	0.03
2.25	11:00	NM	clear	—	6.84	66.05	1130	3.35	0.12	0.09
2.50	11:06	35.70	clear	—	6.84	65.55	1127	4.92	0.03	0.09
4.5	11:11	35.70	clear	—	6.84	65.10	1123	2.31	0.03	0.09
5	11:17	35.70	clear	—	6.84	65.23	1130	1.42	0.01	0.09
6	11:22	35.70	clear	—	6.84	65.33	1133	0.89	0.00	0.10
6.5	11:28	35.70	clear	—	6.84	65.13	1125	2.95	0.00	0.10
7	11:33	NM	clear	—	6.83	65.10	1131	1.30	-0.01	0.10
7.5	11:39	NM	clear	—	6.83	65.26	1131	0.14	-0.01	0.10
8.5	11:44	NM	clear	—	6.84	64.96	1122	0.27	-0.02	0.10
9.5	11:49	NM	clear	—	6.83	64.31	1126	0.16	-0.03	0.10
10.5	11:55	NM	clear	—	6.83	64.90	1127	0.03	-0.03	0.10

Start Time: 10:44

Elapsed Time (min): 91

Water Quality Meter ID: Troll 9500

Stop Time: 12:15

Average Purge Rate (mL/min): 300

Date Calibrated: 11/2/11

SAMPLING DATA

Sample Date: 11/2/11

Sample Time: 1155

Lab Analysis: VOC, SVOC

Sample Method: Low flow

Sample Flow Rate (mL/min): 300

QA/QCSamples: Net

VOA Vials, No Headspace  Initials: ZR

COMMENTS:

Total Purge Volume: 11 megal

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Roxana 3Q11 GW PROJECT NUMBER: 21562593.00005.6 FIELD PERSONNEL: L. Pathrow, B. Crafton

DATE: 11/3/11 WEATHER: Cloudy, Windy, Rainy

MONITORING WELL ID: MW-13 SAMPLE ID: MW13-ROX-110311

INITIAL DATA

Well Diameter: 2 in  
 Total Well Depth (btoc): 35.78 ft  
 Depth to Water (btoc): 22.85 ft  
 Depth to LNAPL/DNAPL (btoc): \_\_\_\_\_ ft  
 Depth to Top of Screen (btoc): 46.45 ft  
 Screen Length: 48 ft

Water Column Height (do not include LNAPL or DNAPL): \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is > Depth to Water AND Screen Length is (4 feet, Place Pump at: Total Well Depth - 0.5 (Screen Length + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are (4 ft, Place Pump at: Total Well Depth - (0.5 X Water Column Height + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = \_\_\_\_\_ ft btoc

Volume of Flow Through Cell: 973 mL  
 Minimum Purge Volume = (3 x Flow Cell Volume): 2,919 mL  
 Ambient PID/FID Reading: \_\_\_\_\_ ppm  
 Wellbore PID/FID Reading: \_\_\_\_\_ ppm

PURGE DATA

Pump Type: monsoon SS Bladder Pump

Purge Volume (gal)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
0.25	14:21	22.85	clear	—	6.51	19.32	1051	115.2	0.91	-57
0.5	14:25	22.85	clear	—	6.55	19.13	1050	118.8	0.22	-71
0.75	14:30	22.85	clear	—	6.56	19.66	1073	108.1	0.05	-73
1	14:34	22.85	clear	—	6.57	19.76	1078	73.90	0.03	-83
1.25	14:38	22.85	clear	—	6.58	20.00	1087	48.44	0.00	-87
1.5	14:43	22.85	clear	—	6.59	20.04	1093	30.43	-0.03	-90
2	14:47	22.87	clear	—	6.61	20.01	1097	15.73	-0.05	-93
2.5	14:52	NM	clear	—	6.61	20.01	1101	13.35	-0.06	-96
3.5	14:56	NM	clear	—	6.63	20.06	1109	8.00	-0.06	-98
4.5	15:00	NM	clear	—	6.64	20.06	1115	6.47	-0.07	-101
5	15:05	NM	clear	—	6.65	20.01	1115	5.25	-0.08	-102

Start Time: 14:21  
 Stop Time: 15:15

Elapsed Time (min): 54  
 Average Purge Rate (mL/min): 300

Water Quality Meter ID: TROLL 9500  
 Date Calibrated: 11/3/11

SAMPLING DATA

Sample Date: 11/3/11  
 Sample Method: monsoon Bladder Pump / Low Flow  
 VOA Vials, No Headspace: 0 Initials: ZR

Sample Time: 1506  
 Sample Flow Rate (mL/min): 300

Lab Analysis: VOC, SVOC  
 QA/QC Samples: \_\_\_\_\_

COMMENTS:

Total Purge Volume: 5 gal

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: SOPUS 4Q Sampling PROJECT NUMBER: 21562593 FIELD PERSONNEL: J. Jackson & L. M.

DATE: 11-9-11 WEATHER: Cloudy, Windy, 490

MONITORING WELL ID: MW-14 SAMPLE ID: MW14-ROX-110911

INITIAL DATA

Well Diameter: 2 in  
 Total Well Depth (btoc): \_\_\_\_\_ ft  
 Depth to Water (btoc): 27.00 ft  
 Depth to LNAPL/DNAPL (btoc): NA ft  
 Depth to Top of Screen (btoc): \_\_\_\_\_ ft  
 Screen Length: \_\_\_\_\_ ft

Water Column Height (do not include LNAPL or DNAPL): \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is > Depth to Water AND Screen Length is ≥ 4 ft,  
 Place Pump at: Total Well Depth - 0.5 (Screen Length + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are ≥ 4ft,  
 Place Pump at: Total Well Depth - (0.5 X Water Column Height + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = \_\_\_\_\_ ft btoc

Volume of Flow Through Cell): 973 ml  
 Minimum Purge Volume = (3 x Flow Cell Volume): 2,919 ml  
 Ambient PID/FID Reading: \_\_\_\_\_ ppb  
 Wellbore PID/FID Reading: \_\_\_\_\_ ppb

PURGE DATA

Pump Type: Monsoon Stainless Steel Submersible Pump

Purge Volume (mL)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
350	0834	27.00	Clear	None	6.59	66.80	439.7	132.3	0.12	-0.05
350	0838	27.00	Clear	None	6.65	65.81	439.2	83.85	0.08	-0.07
300	0842	27.03	Clear	None	6.67	65.40	432.4	58.78	0.05	-0.07
300	0846	27.03	Clear	None	6.68	65.17	431.7	42.54	0.04	-0.08
300	0850	27.03	Clear	None	6.70	65.73	437.8	34.28	0.02	-0.08
300	0854	27.03	Clear	None	6.71	64.68	424.7	27.15	0.02	-0.08
300	0858	27.03	Clear	None	6.71	65.14	429.8	23.86	0.02	-0.08
300	0900	27.03	Clear	None	6.72	62.09	415.8	22.25	0.01	-0.08
300	0904	27.03	Clear	None	6.73	60.88	404.7	21.99	0.02	-0.08
300	0910	27.03	Clear	None	6.73	59.46	453.7	19.04	0.06	-0.08
300	0918	27.03	Clear	None	6.72	68.07	463.3	23.86	-0.01	-0.08
300	0922	27.06	Clear	None	6.72	66.75	448.7	27.75	-0.03	-0.09
300	0926	27.06	Clear	None	6.72	67.23	460.7	153.8	-0.04	-0.09
300	0930	27.06	Clear	None	6.72	67.13	458.4	159.7	-0.04	-0.09
300	0934	27.06	Clear	None	6.72	66.97	456.1	48.47	-0.05	-0.09
300		27.06	Clear	None	6.73	66.66	450.9	246.8	-0.06	-0.09

Start Time: 0834 Elapsed Time (min): 119 Water Quality Meter ID: Troll-9500  
 Stop Time: 10:33 Average Purge Rate (mL/min): \_\_\_\_\_ Date Calibrated: 11-9-11

SAMPLING DATA

Sample Date: 11-9-11 Sample Time: 10:35 Lab Analysis: VOC, SVOC  
 Sample Method: Monsoon Pump / Low Flow Sample Flow Rate (mL/min): \_\_\_\_\_ QA/QC Samples: NA  
 VOA Vials, No Headspace  Initials: \_\_\_\_\_

COMMENTS:

Total Purge Volume: \_\_\_\_\_ mL

8011300-149





LOW FLOW GROUNDWATER SAMPLING DATA SHEET

D. Matthey / S. Julson

PROJECT NAME: Roxana 3Q11 GW

PROJECT NUMBER: 21562593.00005

FIELD PERSONNEL: \_\_\_\_\_

DATE: 11-3-11

WEATHER: Rain / 50°

MONITORING WELL ID: MW3 P-54

SAMPLE ID: P54-ROX-110311

INITIAL DATA

Well Diameter: 2 in  
 Total Well Depth (btoc): ~~43.88~~ ft  
 Depth to Water (btoc): 35.49 ft  
 Depth to LNAPL/DNAPL (btoc): NA ft  
 Depth to Top of Screen (btoc): ~~33.88~~ ft  
 Screen Length: 10 ft

Water Column Height (do not include LNAPL or DNAPL): \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is > Depth to Water AND Screen Length is (4 feet,  
 Place Pump at: Total Well Depth - 0.5 (Screen Length + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are (4ft,  
 Place Pump at: Total Well Depth - (0.5 X Water Column Height + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = \_\_\_\_\_ ft btoc

Volume of Flow Through Cell: 973 mL  
 Minimum Purge Volume = (3 x Flow Cell Volume): 2919 mL  
 Ambient PID/FID Reading: \_\_\_\_\_ ppm  
 Wellbore PID/FID Reading: \_\_\_\_\_ ppm

PURGE DATA

Pump Type: SS Bladder Pump

Purge Volume (mL)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
300	1417	35.49	clear	none	6.30	59.50	818.5	25.26	4.67	0.18
300	1420	35.49	clear	none	6.60	61.30	902.5	37.48	3.15	0.16
400	1427	35.50	clear	none	6.65	62.09	911.6	33.97	2.62	0.16
400	1433	35.50	clear	none	6.67	62.17	913.2	25.24	2.52	0.16
400	1439	35.51	clear	none	6.68	62.46	915.3	28.88	1.19	0.15
400	1439 44	35.51	clear	none	6.69	62.49	917.3	24.45	0.98	0.15
300	1451	35.51	clear	none	6.69	62.36	918.6	31.85	0.94	0.15
300	1456	35.51	clear	none	6.70	62.08	914.8	31.50	0.92	0.15
300	1501	35.51	clear	none	6.70	62.25	915.3	40.50	0.83	0.15
350	1506	35.52	clear	none	6.71	62.25	915.1	2.416	0.82	0.15
200	1511	35.52	clear	none	6.72	62.35	916.2	2.715	0.78	0.15
300	1518	35.52	clear	none	6.72	62.51	921.1	4.189	0.72	0.15
350	1524	35.52	clear	none	6.72	62.26	916.1	4.657	0.73	0.15
300	1529	35.52	clear	none	6.72	62.24	915.6	5.419	0.69	0.15
300	1534	35.52	clear	none	6.72	61.96	911.8	6.066	0.69	0.15

FLIP PAPER OVER

Start Time: 1417

Elapsed Time (min): 118

Water Quality Meter ID: TROLL 9500

Stop Time: 1615

Average Purge Rate (mL/min): 300

Date Calibrated: 11-3-11

SAMPLING DATA

Sample Date: 11-3-11

Sample Time: 16:17

Lab Analysis: VOC, SVOC

Sample Method: Bladder Pump / Low Flow

Sample Flow Rate (mL/min): 300

QA/QC Samples: NA

VOA Vials, No Headspace  Initials: \_\_\_\_\_

COMMENTS:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Total Purge Volume: \_\_\_\_\_ mL

Well ID: P-54

Date: 11-3-11

Project: Roxana 4&11 GW monitoring Program

Purge Vol	Time	Depth to water	Clarity Color	PH	Temp	Cond	Turbidity	DO	ORP
300	1542	35.53	clear	6.72	62.07	911.8	6.859	0.69	0.15
300	1547	35.53	clear	6.72	62.24	914.8	7.196	0.68	0.15
300	1552	35.53	clear	6.72	62.55	921.8	8.045	0.64	0.14
300	1557	35.53	clear	6.72	62.62	921.8	9.082	0.61	0.14
350	1602	35.53	clear	6.73	62.72	922.7	9.807	0.59	0.14
300	1610	35.52	clear	6.73	62.68	921.8	10.46	0.58	0.14
300	1615	35.53	clear	6.73	62.62	921.1	11.53	0.57	0.14

Stopped after  
2 hours

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Roxana 4011 GW

PROJECT NUMBER: 21562593.000106

FIELD PERSONNEL: L. Rathrow, B. Crafton

DATE: 10/31/11

WEATHER: Sunny

MONITORING WELL ID: MW-1 P-55

SAMPLE ID: P55-~~10311~~-10311

INITIAL DATA

Well Diameter: 4.2 in  
 Total Well Depth (btoc): 38.1 ft  
 Depth to Water (btoc): 39.15 ft  
 Depth to LNAPL/DNAPL (btoc): N/A ft  
 Depth to Top of Screen (btoc): 43.4 ft  
 Screen Length: 15.25 ft

Water Column Height (do not include LNAPL or DNAPL): \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is > Depth to Water AND Screen Length is (4 feet,  
 Place Pump at: Total Well Depth - 0.5 (Screen Length + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are < 4ft,  
 Place Pump at: Total Well Depth - (0.5 X Water Column Height + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = \_\_\_\_\_ ft btoc

Volume of Flow Through Cell: 973 mL  
 Minimum Purge Volume = (3 x Flow Cell Volume): 2919 mL  
 Ambient PID/FID Reading: \_\_\_\_\_ ppm  
 Wellbore PID/FID Reading: \_\_\_\_\_ ppm

PURGE DATA

Pump Type: SS Bladder Pump

Purge Volume (mL)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
0.25	10:14	39.15	clear	—	6.81	63.71	725.5	14.68	0.13	-0.10
1	10:21	NM	clear	—	6.87	64.02	726.6	9.905	0.03	-0.12
2	10:27	NM	clear	—	6.89	64.03	724.4	7.330	-0.02	-0.13
2.5	10:32	NM	clear	—	6.91	64.09	720.0	5.942	-0.03	-0.13
3.5	10:38	NM	clear	—	6.90	64.77	724.4	5.367	-0.07	-0.13
4.5	10:44	NM	clear	—	6.91	64.58	725.6	5.508	-0.07	-0.13
5	10:50	NM	clear	—	6.90	65.14	727.1	4.883	-0.06	-0.13

Start Time: 10:14

Elapsed Time (min): 54

Water Quality Meter ID: TROLL 9500

Stop Time: 11:10

Average Purge Rate (mL/min): 300

Date Calibrated: 10/31/11

SAMPLING DATA

Sample Date: 10/31/11

Sample Time: 1050

Lab Analysis: VOC, SVOC

Sample Method: Bladder Pump / Low Flow

Sample Flow Rate (mL/min): 300

QA/QC Samples: —

VOA Vials, No Headspace  Initials: ER

COMMENTS:

We only had the probe to take the initial depth to water, so we were unable to measure draw down, but we expect it to be negligible

Total Purge Volume: \_\_\_\_\_ mL

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Roxana 5011 GW

PROJECT NUMBER: 21562593.00005

FIELD PERSONNEL: M. Manstar, J. Jackson, L. Marque

DATE: 10/27/11

WEATHER: 50°F, Cloudy

MONITORING WELL ID: ~~R056-11~~ P-56

SAMPLE ID: P56-Rox-102711

INITIAL DATA

Well Diameter: ✓ in  
 Total Well Depth (btoc): 80.00 ft  
 Depth to Water (btoc): 39.42 ft  
 Depth to LNAPL/DNAPL (btoc): NA ft  
 Depth to Top of Screen (btoc): 20.00 ft  
 Screen Length: 10 ft

Water Column Height (do not include LNAPL or DNAPL): \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is > Depth to Water AND Screen Length is (4 feet,  
 Place Pump at: Total Well Depth - 0.5 (Screen Length + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are < 4ft,  
 Place Pump at: Total Well Depth - (0.5 X Water Column Height + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = \_\_\_\_\_ ft btoc

Volume of Flow Through Cell: 973 mL  
 Minimum Purge Volume = (3 x Flow Cell Volume): 2919 mL  
 Ambient PID/FID Reading: \_\_\_\_\_ ppm  
 Wellbore PID/FID Reading: \_\_\_\_\_ ppm

PURGE DATA

Pump Type: SS Bladder Pump Monsoon

Purge Volume (mL)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
0.5	11:17	39.43	clear	-	6.65	64.33	1017	8.204	0.05	-0.12
1.0	11:17	39.44	clear	-	6.65	64.60	1023	14.75	0.02	-0.12
1.5	11:20	39.44	clear	-	6.66	64.87	1023	22.24	0.01	-0.13
2.0	11:23	39.43	clear	-	6.66	64.68	1022	3.452	0.01	-0.13
2.5	11:27	39.43	clear	-	6.66	64.73	1025	165.5	0.01	-0.12
3.0	11:30	39.44	Sheen	-	6.67	64.89	1025	60.13	0.01	-0.13
3.5	11:34	39.44	clear	-	6.68	65.21	1027	91.94	0.01	-0.13
4.0	11:38	39.44	clear	-	6.68	65.24	1028	16.21	0.00	-0.12
4.5	11:41	39.44	clear	-	6.68	65.27	1023	51.08	-0.02	-0.12
5.0	11:44	39.44	clear	-	6.68	65.20	1020	3050	-0.02	-0.12
5.5	11:49	39.44	clear	-	6.69	65.08	1032	276.1	-0.04	-0.13
6.0	11:52	39.44	clear	-	6.69	64.87	1035	1530	-0.05	-0.13
6.5	11:55	39.44	clear	-	6.68	64.98	1038	7500	-0.06	-0.13
7.0	11:59	39.46	clear	-	6.68	64.93	1037	971.8	-0.06	-0.13
7.5	12:02	39.45	clear	-	6.67	65.02	1058	141.7	-0.06	-0.12
8.0	12:06	39.46	clear	-	6.68	64.92	1065	1149	-0.06	-0.12

Start Time: 11:17

Elapsed Time (min): 67 min

Water Quality Meter ID: TROLL 9500

Stop Time: 12:19

Average Purge Rate (mL/min): 450 mL/min

Date Calibrated: 10/27/11

SAMPLING DATA

Sample Date: 10/27/11

Sample Time: 12:17

Lab Analysis: VOC, SVOC

Sample Method: Bladder Pump / Low Flow

Sample Flow Rate (mL/min): 450 mL/min

QA/QCSamples: NA

VOA Vials, No Headspace  Initials: MM

COMMENTS:

Total Purge Volume: \_\_\_\_\_ mL



# LOW FLOW GROUNDWATER SAMPLING DATA SHEET

FIELD PERSONNEL: J. Jackson, L. m

PROJECT NUMBER: 21562543

DATE: 11-8-11  
 MONITORING WELL ID: P-57

WEATHER: Cloudy 70°

SAMPLE ID: P-57-ROX-110811

Volume of Flow Through Cell: 973 ml  
 Minimum Purge Volume = (3 x Flow Cell Volume): 2919 ml  
 Ambient PID/FID Reading: \_\_\_\_\_ ppb  
 Wellbore PID/FID Reading: \_\_\_\_\_ ppb

INITIAL DATA  
 Well Diameter: 2 in  
 Total Well Depth (btoc): \_\_\_\_\_ ft  
 Depth to Water (btoc): \_\_\_\_\_ ft  
 Depth to LNAPL/DNAPL (btoc): \_\_\_\_\_ ft  
 Depth to Top of Screen (btoc): \_\_\_\_\_ ft  
 Screen Length: \_\_\_\_\_ ft

Water Column Height (do not include LNAPL or DNAPL):  
 If Depth to Top of Screen is > Depth to Water AND Screen Length is ≥ 4 feet,  
 Place Pump at: Total Well Depth - 0.5 (Screen Length + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are ≥ 4ft,  
 Place Pump at: Total Well Depth - (0.5 X Water Column Height + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = \_\_\_\_\_ ft btoc

PURGE DATA		Monsoon Stainless Steel Submersible Pump								
Purge Volume (mL)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm) x	Turbidity (NTUs)	DO (mg/L) x	ORP (mV) x
400	9:41	39.94	clear	none	6.54	68.02	1227	49.39	0.15	-0.09
400	9:47	39.97	clear	none	6.55	68.36	1232	47.45	0.09	-0.09
400	9:53	39.97	clear	none	6.56	68.28	1240	8.27	0.06	-0.09
400	9:58	39.97	clear	none	6.56	68.56	1217	8.53	0.05	-0.09
400	10:04	39.97	clear	none	6.57	68.62	1285	295.9	0.04	-0.09
400	10:00	39.97	clear	none	6.57	68.57	1281	164.1	0.04	-0.09
400	10:15	39.97	clear	none	6.57	67.54	1281	295.9	0.06	-0.10
400	10:21	39.96	clear	none	6.58	67.49	1286	134.4	0.01	-0.10
400	10:27	39.96	clear	none	6.58	67.54	1281	173.0	0.01	-0.06
400	10:33	39.96	clear	none	6.58	67.54	1254	273.1	2.09	-0.09
400	10:39	39.96	muck	none	6.58	68.67	1250	430.9	0.54	-0.09
400	10:45	39.97	muck	none	6.57	68.36	1221	439.0	0.28	-0.10
400	10:51	39.97	muck	none	6.55	66.43	1210	466.0	0.14	-0.10
400	10:57	39.96	muck	none	6.56	65.83	1200	753.5	0.08	-0.10
400	11:02	39.96	muck	none	6.56	65.83	1199	122.7	-0.03	-0.10
400	11:08	39.96	muck	none	6.59	65.21	1205	200.9	-0.03	-0.10
400	09:41	39.96	muck	none	6.60	65.46	1205	335.0	-0.03	-0.10

Elapsed Time (min): 130  
 Average Purge Rate (mL/min): 400

Water Quality Meter ID: Troll 9500  
 Date Calibrated: 11-8-11

Start Time: 0941  
 Stop Time: 1141

Lab Analysis: MIC S/OC  
 QA/QC Samples: NA

SAMPLING DATA  
 Sample Date: 11-8-11  
 Sample Method: Monsoon/Troll  
 VOA Vials, No Headspace  Initials: \_\_\_\_\_

Sample Time: 11:41  
 Sample Flow Rate (mL/min): \_\_\_\_\_

COMMENTS:

Total Purge Volume: \_\_\_\_\_





LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Roxana 3Q11 GW PROJECT NUMBER: 21562593.00005 FIELD PERSONNEL: B. Crafton, A. Mansker

DATE: 10/28/11 WEATHER: 45°F Sunny

MONITORING WELL ID: P-58 SAMPLE ID: P58-Rox-102811

INITIAL DATA

Well Diameter: 2 in  
 Total Well Depth (btoc): 65.21 ft  
 Depth to Water (btoc): 37.73 ft  
 Depth to LNAPL/DNAPL (btoc): NA ft  
 Depth to Top of Screen (btoc): 40.21 ft  
 Screen Length: 25 ft

Water Column Height (do not include LNAPL or DNAPL): \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is > Depth to Water AND Screen Length is < 4 feet,  
 Place Pump at: Total Well Depth - 0.5 (Screen Length + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are < 4ft,  
 Place Pump at: Total Well Depth - (0.5 X Water Column Height + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = \_\_\_\_\_ ft btoc

Volume of Flow Through Cell: 973 mL  
 Minimum Purge Volume = (3 x Flow Cell Volume): 2919 mL  
 Ambient PID/FID Reading: \_\_\_\_\_ ppm  
 Wellbore PID/FID Reading: \_\_\_\_\_ ppm

PURGE DATA

Pump Type: Monscon SS-Bladder Pump

Purge Volume / Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
<del>0.5 gal</del> 0.5 gal / 955	37.73	clear	=	6.45	62.60	1133	10.05	0.49	-0.02
1 gal / 1000	37.73	clear	=	6.47	65.72	1155	24.86	0.13	-0.04
1.5 gal / 1006	37.73	clear	-minor	6.49	65.37	1153	17.27	0.07	-0.05
2 gal / 1010	37.92	clear	small Microtabon	6.50	65.18	1137	17.24	-0.02	-0.05
3 gal / 1014	37.92	clear	=	6.53	65.49	1140	9.568	-0.04	-0.06
3.5 gal / 1019	37.90	minor slight green	=	6.53	65.72	1141	7.755	-0.04	-0.06
4 gal / 1024	37.90	clear	=	6.53	65.97	1144	10.71	-0.04	-0.06

Start Time: 0955 Elapsed Time (min): 30 Water Quality Meter ID: TROLL 9500  
 Stop Time: 1025 Average Purge Rate (mL/min): 400 mL/min Date Calibrated: 10/28/11

SAMPLING DATA

Sample Date: 10/28/11 Sample Time: 1030 Lab Analysis: VOC, SVOC  
 Sample Method: Bladder Pump / Low Flow Sample Flow Rate (mL/min): 400 mL/min QA/QC Samples: NA

VOA Vials, No Headspace  Initials: \_\_\_\_\_

COMMENTS:

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ Total Purge Volume: \_\_\_\_\_ mL

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Roxana 4011 GW

PROJECT NUMBER: 21562593.00005

FIELD PERSONNEL: J. Jackson, M. Mansler, L. Murga

DATE: 10/27/11

WEATHER: 55°F Partly cloudy

MONITORING WELL ID: RUST-21PZ

SAMPLE ID: P59-Rox-102711

INITIAL DATA

Well Diameter: 2 in  
 Total Well Depth (btoc): 29.00 ft  
 Depth to Water (btoc): 41.06 ft  
 Depth to LNAPL/DNAPL (btoc): NA ft  
 Depth to Top of Screen (btoc): 10.00 ft  
 Screen Length: 10 ft

Water Column Height (do not include LNAPL or DNAPL): \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is > Depth to Water AND Screen Length is < 4 feet,  
 Place Pump at: Total Well Depth - 0.5 (Screen Length + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are < 4ft,  
 Place Pump at: Total Well Depth - (0.5 X Water Column Height + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = \_\_\_\_\_ ft btoc

Volume of Flow Through Cell: 973 mL  
 Minimum Purge Volume = (3 x Flow Cell Volume): 2919 mL  
 Ambient PID/FID Reading: \_\_\_\_\_ ppm  
 Wellbore PID/FID Reading: \_\_\_\_\_ ppm

PURGE DATA

Pump Type: SS Bladder Pump Monsoon

Purge Volume (ml) gal	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
1 gal	1500	41.06	sheen	strong petro	6.63	63.44	997.3	22.35	0.03	-0.09
1.5	1503	41.06	sheen	petro	6.62	64.19	994.1	25.48	0.01	-0.09
2.0	1510	41.06	sheen	very strong	6.62	64.57	1002	30.63	-0.01	-0.09
2.5	1515	41.07	silver	strong	6.62	64.93	1022	39.44	-0.02	-0.10
3.0	1524	41.07	silver	petro	6.63	64.86	1069	45.88	-0.03	-0.10
3.5	1524	41.07	silver	petro	6.66	64.88	1145	28.90	-0.04	-0.11
4.0	1524	41.08	sheen	strong	6.67	64.85	1187	49.78	-0.05	-0.11
4.5	1534	41.08	sheen	petro	6.70	64.95	1199	44.99	-0.05	-0.11
5.0	1538	41.08	sheen	strong petro	6.71	64.80	1211	38.44	-0.05	-0.11

Start Time: 1500

Elapsed Time (min): 38 min

Water Quality Meter ID: TROLL 9500

Stop Time: 1538

Average Purge Rate (mL/min): 400.00

Date Calibrated: 10/27/11

SAMPLING DATA

Sample Date: 10/27/11

Sample Time: 1546

Lab Analysis: VOC, SVOC

Sample Method: Bladder Pump / Low Flow

Sample Flow Rate (mL/min): \_\_\_\_\_

QA/QC Samples: NA

VOA Vials, No Headspace  Initials: \_\_\_\_\_

COMMENTS:

Total Purge Volume: \_\_\_\_\_ mL

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Roxana 4011 GW PROJECT NUMBER: 21562593.0000 FIELD PERSONNEL: L. Rathnow, B. Crafton

DATE: 11/1/11 WEATHER: Sunny

MONITORING WELL ID: P1do SAMPLE ID: P1do-RDX-170111

INITIAL DATA  
 Well Diameter: 2 in  
 Total Well Depth (btoc): 85.45 ft  
 Depth to Water (btoc): 29.45 ft  
 Depth to LNAPL/DNAPL (btoc): NA ft  
 Depth to Top of Screen (btoc): 40.15 ft  
 Screen Length: 25 ft  
 Water Column Height (do not include LNAPL or DNAPL): \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is > Depth to Water AND Screen Length is (4 feet,  
 Place Pump at: Total Well Depth - 0.5 (Screen Length + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are (4ft,  
 Place Pump at: Total Well Depth - (0.5 X Water Column Height + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = \_\_\_\_\_ ft btoc  
 Volume of Flow Through Cell: 973 mL  
 Minimum Purge Volume = (3 x Flow Cell Volume): 2919 mL  
 Ambient PID/FID Reading: \_\_\_\_\_ ppm  
 Wellbore PID/FID Reading: \_\_\_\_\_ ppm

PURGE DATA Pump Type: Mensor SS Bladder Pump

Purge Volume (ml/gal)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
0.25	0940	29.45	clear	-	6.33	66.23	1194	5.58	0.30	-0.07
0.5	0945	29.45	clear	-	6.34	67.49	1199	13.32	0.11	-0.08
1	0950	29.45	clear	-	6.35	67.10	1204	13.46	0.03	-0.08
2	0956	29.44	clear	-	6.36	67.55	1205	19.11	0.00	-0.09
2.5	1002	NM	clear	-	6.36	68.17	1212	19.68	-0.01	-0.09
3	1006	NM	clear	-	6.36	67.48	1211	33.94	-0.02	-0.09
4.5	1012	29.44	clear	-	6.37	67.61	1212	100.6	-0.04	-0.09
5.5	1018	NM	clear	-	6.37	67.65	1218	93.6	-0.05	-0.09
6.5	1023	NM	clear	-	6.37	67.52	1218	39.45	-0.06	-0.09
7	1028	29.44	clear	-	6.37	67.44	1218	60.99	-0.06	-0.09
7.5	1034	29.44	clear	-	6.38	67.41	1218	39.97	-0.07	-0.10
9	1040	29.44	clear	-	6.38	67.61	1218	21.99	-0.07	-0.10
10	1045	29.44	clear	-	6.38	67.74	1219	25.60	-0.07	-0.10
11	1050	29.44	clear	-	6.38	67.63	1220	36.32	-0.07	-0.10
11.5	1056	NM	clear	-	6.38	68.09	1222	30.32	-0.08	-0.10
12.5	1101	NM	clear	-	6.38	68.05	1224	30.80	-0.07	-0.10

Start Time: 0940 Elapsed Time (min): 116 Water Quality Meter ID: TROLL 9500  
 Stop Time: 1130 Average Purge Rate (mL/min): 300 Date Calibrated: 11/1/11

SAMPLING DATA  
 Sample Date: 11/1/11 Sample Time: 11:20 Lab Analysis: VOC, SVOC  
 Sample Method: Bladder Pump / Low Flow Sample Flow Rate (mL/min): 300 QA/QC Samples: \_\_\_\_\_

VOA Vials, No Headspace  Initials: LK

COMMENTS:  
 \_\_\_\_\_  
 \_\_\_\_\_  
 Total Purge Volume: 15 mL/gal



LOW FLOW GROUNDWATER SAMPLING DATA SHEET

L. Ashrow, B. Crafton

PROJECT NAME: 4011 Groundwater

PROJECT NUMBER: 21562593.000016

FIELD PERSONNEL: ~~W. Ashrow, B. Crafton, H. Humber~~

DATE: 10/31/11

WEATHER: Sunny

MONITORING WELL ID: P-74

SAMPLE ID: P74-ROX-10311

INITIAL DATA

Well Diameter: 4 in  
 Total Well Depth (btoc): \_\_\_\_\_ ft  
 Depth to Water (btoc): 36.45 ft  
 Depth to LNAPL/DNAPL (btoc): \_\_\_\_\_ ft  
 Depth to Top of Screen (btoc): \_\_\_\_\_ ft  
 Screen Length): 25 ft

Water Column Height (do not include LNAPL or DNAPL): \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is > Depth to Water AND Screen Length is ≥ 4 feet,  
 Place Pump at: Total Well Depth - 0.5 (Screen Length + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are ≥ 4ft,  
 Place Pump at: Total Well Depth - (0.5 X Water Column Height + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = \_\_\_\_\_ ft btoc

Volume of Flow Through Cell): 973 ml  
 Minimum Purge Volume = (3 x Flow Cell Volume): 2,919 ml  
 Ambient PID/FID Reading: \_\_\_\_\_ ppi  
 Wellbore PID/FID Reading: \_\_\_\_\_ pp

PURGE DATA

Pump Type: Monsoon Stainless Steel Submersible Pump

Purge Volume (ml) gal	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
2	13:49	36.45	clear	—	6.50	64.01	458.5	20.86	0.09	-0.07
3.5	13:56	NM	clear	—	6.52	64.17	463.9	24.04	0.08	-0.07
5	14:02	NM	clear	—	6.52	64.06	469.8	22.09	-0.04	-0.08
6.7	14:08	NM	clear	—	6.53	64.31	477.0	26.63	-0.11	-0.08
7.5	14:15	NM	clear	—	6.53	65.16	485.0	18.07	-0.12	-0.09
8.5	14:21	NM	clear	—	6.53	64.85	491.0	17.43	-0.11	-0.09
9	14:27	NM	clear	—	6.54	65.51	496.2	14.46	-0.12	-0.09
10	14:33	NM	clear	—	6.54	65.56	500.3	16.11	-0.12	-0.10
	14:40	NM	clear	—	6.54	65.28	502.3	15.49	-0.11	-0.10

Start Time: 13:49  
 Stop Time: 14:55

Elapsed Time (min): 66  
 Average Purge Rate (mL/min): 300

Water Quality Meter ID: Troll 9500  
 Date Calibrated: 10/31/11

SAMPLING DATA

Sample Date: ~~10/31/11~~ 10/31/11  
 Sample Method: Low Flow  
 VOA Vials, No Headspace  Initials: LR

Sample Time: 1440  
 Sample Flow Rate (mL/min): 300

Lab Analysis: VOC, SVOC  
 QA/QC Samples: \_\_\_\_\_

COMMENTS:

We only had the geoprobe to take the initial depth to water.

Total Purge Volume: \_\_\_\_\_ mL

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Roxana Interim GW Monitoring PROJECT NUMBER: 21562593.0006 FIELD PERSONNEL: Mittermeyer, Maasler, Mumper

DATE: 10/26/2011 WEATHER: Over cast

MONITORING WELL ID: P-93A

SAMPLE ID: P93A-ROX-102611

INITIAL DATA

Well Diameter: 2 in  
 Total Well Depth (btoc): 63.17 ft  
 Depth to Water (btoc): 39.43 ft  
 Depth to LNAPL/DNAPL (btoc): NA ft  
 Depth to Top of Screen (btoc): 48.17 ft  
 Screen Length): 15 ft

Water Column Height (do not include LNAPL or DNAPL): \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is > Depth to Water AND Screen Length is ≥ 4 feet,  
 Place Pump at: Total Well Depth - 0.5 (Screen Length + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are ≥ 4ft,  
 Place Pump at: Total Well Depth - (0.5 X Water Column Height + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = \_\_\_\_\_ ft btoc

Volume of Flow Through Cell): 973 ml  
 Minimum Purge Volume = (3 x Flow Cell Volume): 2919 ml  
 Ambient PID/FID Reading: 0.0 ppb  
 Wellbore PID/FID Reading: 0.0 ppb

PURGE DATA

Pump Type: ~~Mesonon Stainless Steel Submersible Pump~~ RED Well Wizard

Purge Volume (ml) gal	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
1.5	11:16	39.43	Clear	None	6.57	17.40	11.57	3.660	0.06	-88
4.5	11:23	<del>39.43</del> <u>NA</u>	Clear	None	6.63	17.47	14.95	13.69	1.66	-81
5.0	11:31	39.43	clear	none	6.66	17.46	15.16	13.54	2.42	-74
5.5	11:37	39.43	clear	none	6.66	17.46	15.22	13.27	2.83	-70
6.5	11:43	39.43	clear	none	6.67	17.44	15.25	12.44	2.96	-69
7.5	11:45	39.43	clear	none	- All stable					

Start Time: 11:17

Elapsed Time (min): 26

Water Quality Meter ID: TROLL 9500

Stop Time: 11:43

Average Purge Rate (mL/min): 300 mL/min

Date Calibrated: 10-26-11

SAMPLING DATA

Sample Date: 10/26/11

Sample Time: 11:45

Lab Analysis: VOC, SVOC

Sample Method: Low Flow

Sample Flow Rate (mL/min): 300 mL/min

QA/QC Samples: n/a

VOA Vials, No Headspace  Initials: GRM

COMMENTS:

Total Purge Volume: 8 gallons ml

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Roxana Interim GWT Mon PROJECT NUMBER: 21562593.0006 FIELD PERSONNEL: Mittermeyer, Maasker, Mumper

DATE: 10/26/11 WEATHER: Overcast - Mid 50's °F

MONITORING WELL ID: P-93B SAMPLE ID: P93B-ROX-102611

INITIAL DATA

Well Diameter: 2.0 in  
 Total Well Depth (btoc): 76.60 ft  
 Depth to Water (btoc): 39.43 ft  
 Depth to LNAPL/DNAPL (btoc): NA ft  
 Depth to Top of Screen (btoc): 74.10 ft  
 Screen Length): 2.00 ft

Water Column Height (do not include LNAPL or DNAPL): \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is > Depth to Water AND Screen Length is ≥ 4 feet,  
 Place Pump at: Total Well Depth - 0.5 (Screen Length + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are ≥ 4ft,  
 Place Pump at: Total Well Depth - (0.5 X Water Column Height + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = \_\_\_\_\_ ft btoc

Volume of Flow Through Cell): 973 ml  
 Minimum Purge Volume = (3 x Flow Cell Volume): 2919 ml  
 Ambient PID/EH Reading: 0.0 ppi  
 Wellbore PID/EH Reading: 0.0 ppi

PURGE DATA

Pump Type: Well Wizard Monsoon Stainless Steel Submersible Pump

± 0.20      ± 0.10      ± 0.0      ± 0.20      ± 20.00

Purge Volume (ml/gal)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
2	1248	39.43	clear	-	6.87	17.34	1567	1.470	2.43	-105
3.1	1252	39.43	clear	-	6.88	17.27	1559	1.478	1.42	-105
4	1266	39.43	clear	-	6.87	17.33	1561	2.538	1.44	-105
4.5	1302	NM	clear	-	6.87	17.33	1557	5.737		
4.5	1307	NM	clear	-	6.87	17.38	1557	6.178	1.30	-107
5	1311	39.43	clear	-	6.87	17.30	1549	6.534	1.81	-107
6.0	1318	NM	clear	-	6.87	17.30	1553	11.30	1.28	-104
6.5	1324	39.43	clear	-	6.87	17.36	1556	1.544	2.07	-106
7.0	1329	NM	clear	-	6.88	17.39	1556	1.225	3.38	-105
7.5	1335	39.43	clear	-	6.87	17.38	1555	1.406	2.25	-104
8.0	1342	39.43	clear	-	6.87	17.38	1551	2.395	3.34	-104
Parameters stable										

Start Time: 1245

Elapsed Time (min): 58

Water Quality Meter ID: TROLL 9500

Stop Time: 1343

Average Purge Rate (mL/min): 400 mL/min

Date Calibrated: 10-26-11

SAMPLING DATA

Sample Date: 10-26-11

Sample Time: 1345

Lab Analysis: VOC, SVOC

Sample Method: Low Flow

Sample Flow Rate (mL/min): 400 mL/min

QA/QC Samples: NA

VOA Vials, No Headspace  Initials: QPM - one vial had effervescence - marked vials to ind. rate

COMMENTS:

Total Purge Volume: 8 gal ml

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Roxana 4811 35# GW

PROJECT NUMBER: 21562593.000076

FIELD PERSONNEL: E. Arthur, L. Rathrow, L. Marquez, B. Craft

DATE: 10/26/11 WEATHER: Overcast

MONITORING WELL ID: ~~MMZ~~ P930C

SAMPLE ID: P930-ROX-102611

INITIAL DATA

Well Diameter: 1 in  
 Total Well Depth (btoc): 62.19 ft  
 Depth to Water (btoc): 39.36 ft  
 Depth to LNAPL/DNAPL (btoc): NA ft  
 Depth to Top of Screen (btoc): 47.19 ft  
 Screen Length): 158.0 ft 94.26

Water Column Height (do not include LNAPL or DNAPL): \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is > Depth to Water AND Screen Length is < 4 feet,  
 Place Pump at: Total Well Depth - 0.5 (Screen Length + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are < 4ft,  
 Place Pump at: Total Well Depth - (0.5 X Water Column Height + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = \_\_\_\_\_ ft btoc

Volume of Flow Through Cell): 973 mL  
 Minimum Purge Volume = (3 x Flow Cell Volume): 2.919 mL  
 Ambient PID/FID Reading: 0.0 ppm  
 Wellbore PID/FID Reading: 0.0 ppm

PURGE DATA

Pump Type: SS Bladder Pump REAL WELL W. 700d

Purge Volume (mL/gal)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
0	14:35	39.36	clear	—	7.04	17.31	1144	0.52	1.10	-88
0.25			clear	—	6.99	17.39	1143	0.91	1.15	-84
1.5			clear	—	6.96	17.39	1155	2.29	1.44	-78
2.0			clear	—	6.94	17.38	1160	0.8731	1.10	-75
2.25			clear	—	6.94	17.36	1167	0.76	1.09	-75
2.5			clear	—	6.93	17.33	1169	1.18	1.00	-74
2.75			clear	—	6.93	17.37	1171	1.415	1.12	-74
3			clear	—	6.95	17.35	1173	1.073	1.05	-75
3.5			clear	—	6.93	17.32	1173	1.64	0.98	-75
3.75			clear	—	6.92	17.37	1174	1.08	0.98	-76
4.0			clear	—	6.93	17.36	1176	0.66	1.01	-76
4.5			clear	—	6.92	17.31	1175	0.59	0.97	-76
5	15:20		clear	—	6.92	17.34	1176	1.14	0.92	-77

Start Time: 1435

Elapsed Time (min): 45

Water Quality Meter ID: TROLL 9500

Stop Time: 1520

Average Purge Rate (mL/min): 300

Date Calibrated: 10/26/11

SAMPLING DATA

Sample Date: 10/26/11

Sample Time: 1525

Lab Analysis: VOC, SVOC

Sample Method: Bladder Pump / Low Flow

Sample Flow Rate (mL/min): 300

QA/QC Samples: \_\_\_\_\_

VOA Vials, No Headspace  Initials: JK

COMMENTS:

Total Purge Volume: 5 gal



LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Roxana 4041 GW PROJECT NUMBER: 21562593.000026 FIELD PERSONNEL: L. Rothman, B. Crafton

DATE: 10/27/11 WEATHER: Overcast

MONITORING WELL ID: P-930 SAMPLE ID: P930-Rox-102711

INITIAL DATA

Well Diameter: 0.752 in  
 Total Well Depth (btoc): 28.00 ft  
 Depth to Water (btoc): 39.59 ft  
 Depth to LNAPL/DNAPL (btoc): NA ft  
 Depth to Top of Screen (btoc): 10.00 ft  
 Screen Length): 40 ft

Water Column Height (do not include LNAPL or DNAPL): \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is > Depth to Water AND Screen Length is < 4 feet,  
 Place Pump at: Total Well Depth - 0.5 (Screen Length + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are < 4ft,  
 Place Pump at: Total Well Depth - (0.5 X Water Column Height + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = \_\_\_\_\_ ft btoc

Volume of Flow Through Cell): 973 mL  
 Minimum Purge Volume = (3 x Flow Cell Volume): 2,919 mL  
 Ambient PID/FID Reading: \_\_\_\_\_ ppm  
 Wellbore PID/FID Reading: \_\_\_\_\_ ppm

PURGE DATA Pump Type: SS Bladder Pump

Purge Volume (mL)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
0.5	10:43	39.59	clear	—	7.16	17.88	1037.2	2.02	-0.03	-1167
2.5	10:51	39.59	clear	—	7.75	18.09	1078.4	2.68	-0.12	-227
4	11:00	39.59	clear	—	7.17	18.12	1132	0.37	-0.14	-196
10	11:08	<del>39.67</del> 39.67	clear	—	7.07	18.09	1202	0.072	-0.14	-180
37	11:16	NM	clear	—	7.04	18.09	1209	0.075	-0.15	-174
9	11:28	39.66	clear	—	7.02	18.06	1214	-0.070	-0.15	-170
10.5	11:36	39.66	clear	—	7.00	18.18	1222	-0.276	-0.15	-167
11.5	11:44	NM	clear	—	6.99	18.13	1224	-0.28	-0.16	-166

Start Time: 10:43 Elapsed Time (min): 32 Water Quality Meter ID: TROLL 9500  
 Stop Time: 12:15 Average Purge Rate (mL/min): 400 Date Calibrated: 10/27/11

SAMPLING DATA

Sample Date: 10/27/11 Sample Time: 1147 Lab Analysis: VOC, SVOC  
 Sample Method: Bladder Pump / Low Flow Sample Flow Rate (mL/min): 400 QA/QC Samples: \_\_\_\_\_  
 VOA Vials, No Headspace  Initials: YL

COMMENTS:

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ Total Purge Volume: 15 mL

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: 4011 Roxana 3011 GW PROJECT NUMBER: 21562593.000089 FIELD PERSONNEL: J. Jackson  
 DATE: 10-28-11 WEATHER: Clear

MONITORING WELL ID: ROST-5-PZ P-114 SAMPLE ID: P114-ROX-102811

INITIAL DATA

Well Diameter: 1 in 52.70 ft  
 Total Well Depth (btoc): 33.00 ft  
 Depth to Water (btoc): 25.42 ft  
 Depth to LNAPL/DNAPL (btoc):      ft  
 Depth to Top of Screen (btoc): 33.20 ft  
 Screen Length: 20.00 ft 32.00 ft  
 Water Column Height (do not include LNAPL or DNAPL):      ft btoc  
 If Depth to Top of Screen is > Depth to Water AND Screen Length is (4 feet, Place Pump at: Total Well Depth - 0.5 (Screen Length + DNAPL Column Height) =      ft btoc  
 If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are (4ft, Place Pump at: Total Well Depth - (0.5 X Water Column Height + DNAPL Column Height) =      ft btoc  
 If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft =      ft btoc  
 Volume of Flow Through Cell): 300-973 mL  
 Minimum Purge Volume = (3 x Flow Cell Volume) 2919 mL  
 Ambient PID/FID Reading: 0.0 ppm  
 Wellbore PID/FID Reading: 0.0 ppm

PURGE DATA

Pump Type: Bladder Pump  
SS Bladder Pump

Purge Volume (mL)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
300	0955	25.42	Clear	none	7.32	19.18	1057	14.77	2.87	-58
300	1001	25.45	Clear	none	7.40	19.27	1050	8.680	3.76	-100
300	1006	25.45	clear	none	7.34	19.29	1077	13.64	4.26	-115
300	1011	25.48	murk	none	7.33	19.39	1085	37.32	4.33	-115
300	1016	25.49	murk	none	7.37	19.47	1100	8.567	4.01	-114
300	1021	25.48	murk	none	7.29	19.55	1113	9.626	3.84	-115
300	1026	25.48	murk	none	7.28	20.09	1148	10.27	3.57	-116
300	1031	25.55	murk	none	7.17	20.26	1159	9.286	3.40	-117
300	1036	25.54	murk	none	7.616	20.29	1287	12.6	3.19	-118

Start Time: 0955 Elapsed Time (min): 76 Water Quality Meter ID: TROLL 9500  
 Stop Time: 1111 Average Purge Rate (mL/min): 300 Date Calibrated: 10-28-11

SAMPLING DATA

Sample Date: 10-28-11 Sample Time: 1037 Lab Analysis: VOC, SVOC  
 Sample Method: Bladder Pump / Low Flow Sample Flow Rate (mL/min): 300 QA/QC Samples: NA  
 VOA Vials, No Headspace  Initials:     

COMMENTS:

Total Purge Volume:      mL

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Roxana <sup>4Q11</sup> GW PROJECT NUMBER: 21562593.0000916 FIELD PERSONNEL: L. Rothman, B. Crafton

DATE: 10/27/11 WEATHER: Partly Sunny

MONITORING WELL ID: ~~R-80-125~~ T-12 SAMPLE ID: T12-ROX-102711

INITIAL DATA

Well Diameter: 6.75-6 in Water Column Height (do not include LNAPL or DNAPL): \_\_\_\_\_ ft btoc  
 Total Well Depth (btoc): 29.84 ft If Depth to Top of Screen is > Depth to Water AND Screen Length is (4 feet,  
 Depth to Water (btoc): 38.54 ft Place Pump at: Total Well Depth - 0.5 (Screen Length + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 Depth to LNAPL/DNAPL (btoc): NA ft If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are < 4ft,  
 Depth to Top of Screen (btoc): 18.84 ft Place Pump at: Total Well Depth - (0.5 X Water Column Height + DNAPL Column Height) = \_\_\_\_\_ ft btoc  
 Screen Length): 46 ft If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = \_\_\_\_\_ ft btoc

Volume of Flow Through Cell): 973 mL  
 Minimum Purge Volume = (3 x Flow Cell Volume): 2919 mL  
 Ambient PID/FID Reading: \_\_\_\_\_ ppm  
 Wellbore PID/FID Reading: \_\_\_\_\_ ppm

PURGE DATA Pump Type: SS Bladder Pump

Purge Volume (ml/gal)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
0	14:57	<del>38.54</del> 38.54	clear	—	6.93	17.28	943.1	9.34	1.15	-92
1.5	15:03	38.62	clear	—	6.94	16.83	932.3	13.46	0.73	-108
2.5	15:09	38.62	clear	—	6.97	17.12	937.0	9.46	0.54	-114
5	15:15	38.62	clear	—	6.97	17.08	935.1	13.49	0.42	-115
6.5	15:22	NM	clear	—	6.95	17.01	932.3	15.27	0.25	-116
7.5	15:29	38.62	clear	—	6.94	17.10	931.8	19.37	0.14	-115
9.5	15:36	38.62	clear	—	6.93	16.91	925.9	22.05	0.11	-115
11	15:43	38.62	clear	—	6.92	17.00	925.9	26.45	0.17	-114
13	15:49	NM	clear	—	6.91	17.15	926.7	6.28	-0.16	-114
14.5	15:56	38.62	clear	—	6.90	17.05	<del>923.4</del> 923.4	4.55	-0.17	-113
16.5	16:03	38.62	clear	—	6.88	16.94	919.2	6.73	-0.17	-112
19	16:10	NM	clear	—	6.87	16.98	918.6	6.28	-0.17	-111

Start Time: 14:57 Elapsed Time (min): 76 Water Quality Meter ID: TROLL 9500

Stop Time: 16:13 Average Purge Rate (mL/min): 300 Date Calibrated: 10/27/11

SAMPLING DATA

Sample Date: 10/27/11 Sample Time: 1615 Lab Analysis: VOC, SVOC

Sample Method: Bladder Pump / Low Flow Sample Flow Rate (mL/min): 300 QA/QC Samples: \_\_\_\_\_

VOA Vials, No Headspace  Initials: LR

COMMENTS:

Total Purge Volume: 20 mL/gal



# Roxana Groundwater Quarterly – 4<sup>th</sup> Quarter 2011 Data Review

Laboratory SDG: MC4964

Data Reviewer: Elizabeth Kunkel

Peer Reviewer: Tony Sedlacek

Date Reviewed: 11/28/2011

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

Sample Identification	Sample Identification
P93A-ROX-102611	P93B-ROX-102611
P93C-ROX-102611	TB-102611
TB-102611	

## 1.0 Data Package Completeness

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

Yes

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

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

Yes, the laboratory case narrative indicated VOC and SVOC LCS recoveries were outside evaluation criteria. One method 8011 VOC surrogate recovery was outside evaluation criteria. Although not indicated in the laboratory case narrative, samples P93A-ROX-102611 and P93B-ROX-102611 were diluted due to high levels of benzene. These issues are addressed further in the appropriate sections below.

The cooler receipt form indicated samples in two of two coolers were received by the laboratory at temperatures of 1.1°C and 1.4°C which are outside the 4°C ± 2°C criteria. Samples were received in good condition; therefore, no qualification of data was required.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

Yes

## 4.0 Blank Contamination

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

No

## 5.0 Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

No

LCS ID	Parameter	Analyte	LCS Recovery	LCS Criteria
MSN2139-BS	VOCs	Acetone	158	70-130
MSN2139-BS	VOCs	Acrolein	157	70-130
MSN2139-BS	VOCs	Acrylonitrile	594	70-130
MSN2139-BS	VOCs	2-Butanone	149	70-130
MSN2139-BS	VOCs	Carbon tetrachloride	133	70-130
MSN2139-BS	VOCs	Dibromochloromethane	132	70-130
MSN2139-BS	VOCs	2,2-Dichloropropane	137	70-130
MSN2139-BS	VOCs	trans-1,3-Dichloropropene	139	70-130
MSN2139-BS	VOCs	2-Hexanone	152	70-130
MSN2139-BS	VOCs	Methyl tert-butyl ether	139	70-130
MSN2139-BS	VOCs	Vinyl acetate	148	70-130
MSP1844-BS	VOCs	Acetone	66	70-130
MSP1844-BS	VOCs	Acrolein	277	70-130
MSP1844-BS	VOCs	Chloromethane	133	70-130
MSP1844-BS	VOCs	1,2,3-Trichlorobenzene	69	70-130
OP2677-BS	SVOCs	Aniline	34	40-140
OP2677-BS	SVOCs	Hexachlorocyclopentadiene	23	40-140

Analytical data that required qualification based on LCS data are included in the table below. Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification.

Sample ID	Parameter	Analyte	Qualification
P93A-ROX-102611	VOCs	Acetone	UJ
P93A-ROX-102611	VOCs	1,2,3-Trichlorobenzene	UJ
P93B-ROX-102611	VOCs	Acetone	UJ
P93B-ROX-102611	VOCs	1,2,3-Trichlorobenzene	UJ
P93CROX-102611	VOCs	Acetone	UJ
P93CROX-102611	VOCs	1,2,3-Trichlorobenzene	UJ
P93A-ROX-102611	SVOCs	Aniline	UJ
P93A-ROX-102611	SVOCs	Hexachlorocyclopentadiene	UJ
P93B-ROX-102611	SVOCs	Aniline	UJ
P93B-ROX-102611	SVOCs	Hexachlorocyclopentadiene	UJ
P93CROX-102611	SVOCs	Aniline	UJ
P93CROX-102611	SVOCs	Hexachlorocyclopentadiene	UJ

**6.0 Surrogate Recoveries**

*Were surrogate recoveries within evaluation criteria?*

No

Sample ID	Parameter	Surrogate	Recovery	Criteria
P93B-ROX-102611	8011 VOCs	Bromofluorobenzene	180	36-173

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

**7.0 Matrix Spike and Matrix Spike Duplicate Recoveries**

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

No

**8.0 Internal Standard (IS) Recoveries**

*Were internal standard area recoveries within evaluation criteria?*

Yes

**9.0 Laboratory Duplicate Results**

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

No

**10.0 Field Duplicate Results**

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

No

**11.0 Sample Dilutions**

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

Not applicable; analytes were detected in samples that were diluted.

**12.0 Additional Qualifications**

*Were additional qualifications applied?*

No



11/18/11

Technical Report for

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Shell Oil

URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana,

Accutest Job Number: MC4964

Sampling Date: 10/26/11

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Report to:

URS Corporation

Elizabeth\_Kunkel@URSCorp.com

ATTN: Elizabeth Kunkel

Reviewed  
on  
11/23/2011

Total number of pages in report: 86



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

*Reza Fand*  
Reza Fand  
Lab Director

Client Service contact: Jeremy Vienneau 508-481-6200

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

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Test results relate only to samples analyzed.



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### Sample Summary

Shell Oil

Job No: MC4964  
URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
MC4964-1	10/26/11	11:45	MMMN	0/27/11	AQ Ground Water	P93A-ROX-102611 ✓
MC4964-2	10/26/11	13:45	MMMN	0/27/11	AQ Ground Water	P93B-ROX-102611 ✓
MC4964-3	10/26/11	15:25	MMMN	0/27/11	AQ Ground Water	P93C-ROX-102611 ✓
MC4964-4	10/26/11	00:00	MMMN	0/27/11	AQ Trip Blank Water	TB-102611 ✓

## SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Shell Oil Job No MC4964  
 Site: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Report Date 11/15/2011 2:56:06 PM

3 Sample(s), 1 Trip Blank(s) were collected on 10/26/2011 and were received at Accutest on 10/27/2011 properly preserved, at 1.1 Dcg. C and intact. These Samples received an Accutest job number of MC4964. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. 1-Chlorohexane, Benzenethiol, Dibenz(a,h)acridine, Indene, and Quinoline were searched in the library search reported only if detections were found

### Volatiles by GCMS By Method SW846 8260B

Matrix AQ	Batch ID: MSN2139
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- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC5097-4MS, MC5097-4MSD were used as the QC samples indicated.
- Blank Spike Recovery(s) for 2,2-Dichloropropane, 2-Butanone (MEK), 2-Hexanone, Acetone, Carbon tetrachloride, Dibromochloromethane, Methyl Tert Butyl Ether, trans-1,3-Dichloropropene, Vinyl Acetate are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for 2,2-Dichloropropane, Acetone, Bromomethane, Chloromethane, Methyl Tert Butyl Ether are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 2,2-Dichloropropane, Acetone, Methyl Tert Butyl Ether, trans-1,3-Dichloropropene, Bromomethane are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- MS/MSD Recovery(s) for p-Isopropyltoluene are outside control limits. Outside control limits due to high level in sample relative to spike amount.
- RPD(s) for MSD for Bromomethane are outside control limits for sample MC5097-4MSD. High RPD due to possible matrix interference and/or sample non-homogeneity.
- MSN2139-BS for Acrolein, Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.
- MC5097-4MS/MSD for Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.

Matrix AQ	Batch ID: MSP1844
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- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC5024-8MS, MC5024-8MSD were used as the QC samples indicated.
- Blank Spike Recovery(s) for 1,2,3-Trichlorobenzene, Acetone, Chloromethane, Naphthalene are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for 2,2-Dichloropropane, Acrolein, Chloroethane are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 2,2-Dichloropropane, Acrolein, Chloromethane, Naphthalene, 2-Chloroethyl vinyl ether are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- RPD(s) for MSD for 2-Chloroethyl vinyl ether, Chloroethane are outside control limits for sample MC5024-8MSD. High RPD due to possible matrix interference and/or sample non-homogeneity.
- MSP1844-BS for Acrolein: Outside control limits. Associated samples are non-detect for this compound.

### Extractables by GCMS By Method SW846 8270C

Matrix	AQ	Batch ID:	OP26777
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- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC5071-6MS, MC5071-6MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for Aniline, Hexachlorocyclopentadiene are outside control limits. Blank Spike meets program technical requirements.
- MS/MSD Recovery(s) for Hexachlorocyclopentadiene are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- OP26777-MS/MSD for Aniline: Outside control limits. Blank Spike meets program technical requirements.

### Extractables by GCMS By Method SW846 8270C BY SIM

Matrix	AQ	Batch ID:	OP26778
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- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC5071-5MS, MC5071-5MSD were used as the QC samples indicated.

### Volatiles by GC By Method SW846 8011

Matrix	AQ	Batch ID:	OP26798
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- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC5062-13MS, MC5062-13MSD were used as the QC samples indicated.
- Matrix Spike Duplicate Recovery(s) for 1,2-Dibromo-3-chloropropane are outside control limits. Outside control limits due to possible matrix interference.
- RPD(s) for MSD for 1,2-Dibromo-3-chloropropane, 1,2-Dibromoethane are outside control limits for sample OP26798-MSD. Outside control limits due to possible matrix interference.
- MC4964-2 for Bromofluorobenzene (S): Outside control limits due to possible matrix interference.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report be used in its entirety. The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC4964).



**Sample Results**

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**Report of Analysis**

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Report of Analysis



Client Sample ID:	P93A-ROX-102611	Date Sampled:	10/26/11
Lab Sample ID:	MC4964-1	Date Received:	10/27/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N57067.D	1	11/09/11	JP	n/a	n/a	MSN2139
Run #2	P56524.D	5000	11/09/11	AMY	n/a	n/a	MSP1844

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

VOA Special List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	u5
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	543000 a	2500	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	6.0	5.0	ug/l	
98-06-6	tert-Butylbenzene	15.0	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID:	P93A-ROX-102611	Date Sampled:	10/26/11
Lab Sample ID:	MC4964-1	Date Received:	10/27/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	304	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	18.9	5.0	ug/l	
99-87-6	p-Isopropyltoluene	8.1	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	40.5	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	108	5.0	ug/l	
103-65-1	n-Propylbenzene	17.2	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	43.8	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	UJ
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	171	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	39.9	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	482	1.0	ug/l	
95-47-6	o-Xylene	61.4	1.0	ug/l	
1330-20-7	Xylene (total)	543	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis



Client Sample ID:	P93A-ROX-102611	Date Sampled:	10/26/11
Lab Sample ID:	MC4964-1	Date Received:	10/27/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

**VOA Special List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	85%	99%	70-130%
2037-26-5	Toluene-D8	88%	91%	70-130%
460-00-4	4-Bromofluorobenzene	84%	112%	70-130%

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

(a) Result is from Run# 2

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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



## Report of Analysis

Client Sample ID: P93A-ROX-102611	Date Sampled: 10/26/11
Lab Sample ID: MC4964-1	Date Received: 10/27/11
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8270C SW846 3510C	
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F53459.D	1	11/04/11	PR	11/01/11	OP26777	MSF2574
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

## ABN Special List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	10	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	ug/l	
51-28-5	2,4-Dinitrophenol	ND	20	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	ug/l	
95-48-7	2-Methylphenol	ND	10	ug/l	
	3&4-Methylphenol	ND	10	ug/l	
88-75-5	2-Nitrophenol	ND	10	ug/l	
100-02-7	4-Nitrophenol	ND	20	ug/l	
87-86-5	Pentachlorophenol	ND	10	ug/l	
108-95-2	Phenol	193	5.0	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	10	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	ug/l	
62-53-3	Aniline	ND	10	ug/l	UJ
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	ug/l	
100-51-6	Benzyl Alcohol	ND	10	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	ug/l	
106-47-8	4-Chloroaniline	ND	10	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	10	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.0	ug/l	
132-64-9	Dibenzofuran	ND	5.0	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

### Report of Analysis

3

Client Sample ID:	P93A-ROX-102611	Date Sampled:	10/26/11
Lab Sample ID:	MC4964-1	Date Received:	10/27/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
84-66-2	Diethyl phthalate	ND	5.0	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	7.5	2.0	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	ug/l	UJ
67-72-1	Hexachloroethane	ND	5.0	ug/l	
78-59-1	Isophorone	ND	5.0	ug/l	
88-74-4	2-Nitroaniline	ND	10	ug/l	
99-09-2	3-Nitroaniline	ND	10	ug/l	
100-01-6	4-Nitroaniline	ND	10	ug/l	
98-95-3	Nitrobenzene	ND	5.0	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	ug/l	
110-86-1	Pyridine	ND	10	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	49%		15-110%
4165-62-2	Phenol-d5	30%		15-110%
118-79-6	2,4,6-Tribromophenol	91%		15-110%
4165-60-0	Nitrobenzene-d5	85%		30-130%
321-60-8	2-Fluorobiphenyl	85%		30-130%
1718-51-0	Terphenyl-d14	92%		30-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis



<b>Client Sample ID:</b> P93A-ROX-102611 <b>Lab Sample ID:</b> MC4964-1 <b>Matrix:</b> AQ - Ground Water <b>Method:</b> SW846 8270C BY SIM SW846 3510C <b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	<b>Date Sampled:</b> 10/26/11 <b>Date Received:</b> 10/27/11 <b>Percent Solids:</b> n/a
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Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I76206.D	1	11/09/11	KR	11/01/11	OP26778	MSI2795
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

**BN PAH List**

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	0.24	0.10	ug/l	
208-96-8	Acenaphthylene	ND	0.10	ug/l	
120-12-7	Anthracene	ND	0.10	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.050	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.050	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	ug/l	
218-01-9	Chrysene	ND	0.10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	ug/l	
206-44-0	Fluoranthene	ND	0.10	ug/l	
86-73-7	Fluorene	0.33	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	ug/l	
90-12-0	1-Methylnaphthalene	16.2	0.20	ug/l	
91-57-6	2-Methylnaphthalene	25.8	0.20	ug/l	
91-20-3	Naphthalene	89.1	0.10	ug/l	
85-01-8	Phenanthrene	0.32	0.050	ug/l	
129-00-0	Pyrene	ND	0.10	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	128%		30-130%
321-60-8	2-Fluorobiphenyl	92%		30-130%
1718-51-0	Terphenyl-d14	96%		30-130%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

3.1  
3

Client Sample ID:	P93A-ROX-102611	Date Sampled:	10/26/11
Lab Sample ID:	MC4964-1	Date Received:	10/27/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8011 SW846 8011	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39304.D	1	11/03/11	AP	11/02/11	OP26798	GBB2445
Run #2							

Run #	Initial Volume	Final Volume
Run #1	32.9 ml	2.0 ml
Run #2		

**VOA Special List**

CAS No.	Compound	Result	RL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.016	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	145%		36-173%
460-00-4	Bromofluorobenzene (S)	147%		36-173%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID: P93B-ROX-102611 Lab Sample ID: MC4964-2 Matrix: AQ - Ground Water Method: SW846 8260B Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	Date Sampled: 10/26/11 Date Received: 10/27/11 Percent Solids: n/a
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Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N57068.D	1	11/09/11	JP	n/a	n/a	MSN2139
Run #2	P56525.D	5000	11/09/11	AMY	n/a	n/a	MSP1844

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

**VOA Special List**

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	UJ
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	590000 <sup>a</sup>	2500	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	P93B-ROX-102611	Date Sampled:	10/26/11
Lab Sample ID:	MC4964-2	Date Received:	10/27/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	53.3	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	29.2	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	12.0	5.0	ug/l	
103-65-1	n-Propylbenzene	35.9	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	85.9	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	uJ
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	30.3	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	8.2	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	167	1.0	ug/l	
95-47-6	o-Xylene	35.2	1.0	ug/l	
1330-20-7	Xylene (total)	202	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis



Client Sample ID: P93B-ROX-102611	
Lab Sample ID: MC4964-2	Date Sampled: 10/26/11
Matrix: AQ - Ground Water	Date Received: 10/27/11
Method: SW846 8260B	Percent Solids: n/a
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

**VOA Special List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	81%	92%	70-130%
2037-26-5	Toluene-D8	87%	90%	70-130%
460-00-4	4-Bromofluorobenzene	81%	102%	70-130%

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

(a) Result is from Run# 2

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID: P93B-ROX-102611	Date Sampled: 10/26/11
Lab Sample ID: MC4964-2	Date Received: 10/27/11
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8270C SW846 3510C	
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F53460.D	1	11/04/11	PR	11/01/11	OP26777	MSF2574
Run #2							

Run #	Initial Volume	Final Volume
Run #1	970 ml	1.0 ml
Run #2		

## ABN Special List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	10	ug/l	
95-57-8	2-Chlorophenol	ND	5.2	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	ug/l	
51-28-5	2,4-Dinitrophenol	ND	21	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	ug/l	
95-48-7	2-Methylphenol	ND	10	ug/l	
	3&4-Methylphenol	ND	10	ug/l	
88-75-5	2-Nitrophenol	ND	10	ug/l	
100-02-7	4-Nitrophenol	ND	21	ug/l	
87-86-5	Pentachlorophenol	ND	10	ug/l	
108-95-2	Phenol	122	5.2	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	10	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	ug/l	
62-53-3	Aniline	ND	10	ug/l	UJ
101-55-3	4-Bromophenyl phenyl ether	ND	5.2	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.2	ug/l	
100-51-6	Benzyl Alcohol	ND	10	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.2	ug/l	
106-47-8	4-Chloroaniline	ND	10	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.2	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.2	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.2	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.2	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.2	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	10	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.2	ug/l	
132-64-9	Dihenzofuran	ND	5.2	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.2	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.2	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



## Report of Analysis



Client Sample ID:	P93B-ROX-102611	Date Sampled:	10/26/11
Lab Sample ID:	MC4964-2	Date Received:	10/27/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

**ABN Special List**

CAS No.	Compound	Result	RL	Units	Q
84-66-2	Diethyl phthalate	ND	5.2	ug/l	
131-11-3	Dimethyl phthalate	ND	5.2	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	10.3	2.1	ug/l	
118-74-1	Hexachlorobenzene	ND	5.2	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	ug/l	UJ
67-72-1	Hexachloroethane	ND	5.2	ug/l	
78-59-1	Isophorone	ND	5.2	ug/l	
88-74-4	2-Nitroaniline	ND	10	ug/l	
99-09-2	3-Nitroaniline	ND	10	ug/l	
100-01-6	4-Nitroaniline	ND	10	ug/l	
98-95-3	Nitrobenzene	ND	5.2	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.2	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.2	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.2	ug/l	
110-86-1	Pyridine	ND	10	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	47%		15-110%
4165-62-2	Phenol-d5	30%		15-110%
118-79-6	2,4,6-Tribromophenol	86%		15-110%
4165-60-0	Nitrobenzene-d5	82%		30-130%
321-60-8	2-Fluorobiphenyl	82%		30-130%
1718-51-0	Terphenyl-d14	88%		30-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

Report of Analysis



Client Sample ID:	P93B-ROX-102611	Date Sampled:	10/26/11
Lab Sample ID:	MC4964-2	Date Received:	10/27/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C BY SIM SW846 3510C	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I76207.D	1	11/10/11	KR	11/01/11	OP26778	MSI2795
Run #2							

Run #	Initial Volume	Final Volume
Run #1	970 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	0.10	ug/l	
208-96-8	Acenaphthylene	ND	0.10	ug/l	
120-12-7	Anthracene	ND	0.10	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.052	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.052	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	ug/l	
218-01-9	Chrysene	ND	0.10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	ug/l	
206-44-0	Fluoranthene	ND	0.10	ug/l	
86-73-7	Fluorene	ND	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.21	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.21	ug/l	
91-20-3	Naphthalene	3.7	0.10	ug/l	
85-01-8	Phenanthrene	ND	0.052	ug/l	
129-00-0	Pyrene	ND	0.10	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	115%		30-130%
321-60-8	2-Fluorobiphenyl	84%		30-130%
1718-51-0	Terphenyl-d14	93%		30-130%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

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<b>Client Sample ID:</b> P93B-ROX-102611	<b>Date Sampled:</b> 10/26/11
<b>Lab Sample ID:</b> MC4964-2	<b>Date Received:</b> 10/27/11
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8011 SW846 8011	
<b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39305.D	1	11/04/11	AP	11/02/11	OP26798	GBB2445
Run #2							

Run #	Initial Volume	Final Volume
Run #1	34.6 ml	2.0 ml
Run #2		

**VOA Special List**

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

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	151%		36-173%
460-00-4	Bromofluorobenzene (S)	180% <sup>a</sup>		36-173%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID: P93C-ROX-102611	Date Sampled: 10/26/11
Lab Sample ID: MC4964-3	Date Received: 10/27/11
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8260B	
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P56521.D	1	11/09/11	AMY	n/a	n/a	MSP1844
Run #2							

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

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	UJ
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	1.4	0.50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	P93C-ROX-102611	Date Sampled:	10/26/11
Lab Sample ID:	MC4964-3	Date Received:	10/27/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	9.6	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methyleue chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	UJ
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	P93C-ROX-102611	Date Sampled:	10/26/11
Lab Sample ID:	MC4964-3	Date Received:	10/27/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

**VOA Special List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		70-130%
2037-26-5	Toluene-D8	98%		70-130%
460-00-4	4-Bromofluorobenzene	110%		70-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis



<b>Client Sample ID:</b> P93C-ROX-102611 <b>Lab Sample ID:</b> MC4964-3 <b>Matrix:</b> AQ - Ground Water <b>Method:</b> SW846 8270C SW846 3510C <b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	<b>Date Sampled:</b> 10/26/11 <b>Date Received:</b> 10/27/11 <b>Percent Solids:</b> n/a
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Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F53461.D	1	11/04/11	PR	11/01/11	OP26777	MSF2574
Run #2							

Run #	Initial Volume	Final Volume
Run #1	960 ml	1.0 ml
Run #2		

**ABN Special List**

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	10	ug/l	
95-57-8	2-Chlorophenol	ND	5.2	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	ug/l	
51-28-5	2,4-Dinitrophenol	ND	21	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	ug/l	
95-48-7	2-Methylphenol	ND	10	ug/l	
	3&4-Methylphenol	ND	10	ug/l	
88-75-5	2-Nitrophenol	ND	10	ug/l	
100-02-7	4-Nitrophenol	ND	21	ug/l	
87-86-5	Pentachlorophenol	ND	10	ug/l	
108-95-2	Phenol	ND	5.2	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	10	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	ug/l	
62-53-3	Aniline	ND	10	ug/l	UJ
101-55-3	4-Bromophenyl phenyl ether	ND	5.2	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.2	ug/l	
100-51-6	Benzyl Alcohol	ND	10	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.2	ug/l	
106-47-8	4-Chloroaniline	ND	10	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.2	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.2	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.2	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.2	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.2	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	10	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.2	ug/l	
132-64-9	Dibenzofuran	ND	5.2	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.2	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.2	ug/l	

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis



Client Sample ID: P93C-ROX-102611		
Lab Sample ID: MC4964-3		Date Sampled: 10/26/11
Matrix: AQ - Ground Water		Date Received: 10/27/11
Method: SW846 8270C SW846 3510C		Percent Solids: n/a
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

**ABN Special List**

CAS No.	Compound	Result	RL	Units	Q
84-66-2	Diethyl phthalate	ND	5.2	ug/l	
131-11-3	Dimethyl phthalate	ND	5.2	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.1	ug/l	
118-74-1	Hexachlorobenzene	ND	5.2	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	ug/l	UJ
67-72-1	Hexachloroethane	ND	5.2	ug/l	
78-59-1	Isophorone	ND	5.2	ug/l	
88-74-4	2-Nitroaniline	ND	10	ug/l	
99-09-2	3-Nitroaniline	ND	10	ug/l	
100-01-6	4-Nitroaniline	ND	10	ug/l	
98-95-3	Nitrobenzene	ND	5.2	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.2	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.2	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.2	ug/l	
110-86-1	Pyridine	ND	10	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	50%		15-110%
4165-62-2	Phenol-d5	33%		15-110%
118-79-6	2,4,6-Tribromophenol	91%		15-110%
4165-60-0	Nitrobenzene-d5	91%		30-130%
321-60-8	2-Fluorobiphenyl	88%		30-130%
1718-51-0	Terphenyl-d14	92%		30-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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



## Report of Analysis

Page 1 of 1

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Client Sample ID:	P93C-ROX-102611	Date Sampled:	10/26/11
Lab Sample ID:	MC4964-3	Date Received:	10/27/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C BY SIM SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I76208.D	1	11/10/11	KR	11/01/11	OP26778	MSI2795
Run #2							

Run #	Initial Volume	Final Volume
Run #1	960 ml	1.0 ml
Run #2		

## BN PAH List

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	0.10	ug/l	
208-96-8	Acenaphthylene	ND	0.10	ug/l	
120-12-7	Anthracene	ND	0.10	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.052	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.052	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	ug/l	
218-01-9	Chrysene	ND	0.10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	ug/l	
206-44-0	Fluoranthene	ND	0.10	ug/l	
86-73-7	Fluorene	ND	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.21	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.21	ug/l	
91-20-3	Naphthalene	ND	0.10	ug/l	
85-01-8	Phenanthrene	ND	0.052	ug/l	
129-00-0	Pyrene	ND	0.10	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	124%		30-130%
321-60-8	2-Fluorobiphenyl	92%		30-130%
1718-51-0	Terphenyl-d14	104%		30-130%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

### Report of Analysis



<b>Client Sample ID:</b> P93C-ROX-102611	
<b>Lab Sample ID:</b> MC4964-3	<b>Date Sampled:</b> 10/26/11
<b>Matrix:</b> AQ - Ground Water	<b>Date Received:</b> 10/27/11
<b>Method:</b> SW846 8011 SW846 8011	<b>Percent Solids:</b> n/a
<b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39314.D	1	11/04/11	AP	11/02/11	OP26798	GBB2447
Run #2							

Run #	Initial Volume	Final Volume
Run #1	34.1 ml	2.0 ml
Run #2		

**VOA Special List**

CAS No.	Compound	Result	RL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.015	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.015	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits	
460-00-4	Bromofluorobenzene (S)	133%		36-173%	
460-00-4	Bromofluorobenzene (S)	143%		36-173%	

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID:	TB-102611	Date Sampled:	10/26/11
Lab Sample ID:	MC4964-4	Date Received:	10/27/11
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N57053.D	1	11/08/11	JP	n/a	n/a	MSN2139
Run #2							

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

## VOA Special List

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

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	TB-102611	Date Sampled:	10/26/11
Lab Sample ID:	MC4964-4	Date Received:	10/27/11
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

## VOA Special List

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

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis



<b>Client Sample ID:</b> TB-102611 <b>Lab Sample ID:</b> MC4964-4 <b>Matrix:</b> AQ - Trip Blank Water <b>Method:</b> SW846 8260B <b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	<b>Date Sampled:</b> 10/26/11 <b>Date Received:</b> 10/27/11 <b>Percent Solids:</b> n/a
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**VOA Special List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	89%		70-130%
2037-26-5	Toluene-D8	93%		70-130%
460-00-4	4-Bromofluorobenzene	85%		70-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

### Report of Analysis



<b>Client Sample ID:</b> TB-102611	<b>Date Sampled:</b> 10/26/11
<b>Lab Sample ID:</b> MC4964-4	<b>Date Received:</b> 10/27/11
<b>Matrix:</b> AQ - Trip Blank Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8011 SW846 8011	
<b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39315.D	1	11/04/11	AP	11/02/11	OP26798	GBB2447
Run #2							

	Initial Volume	Final Volume
Run #1	34.9 ml	2.0 ml
Run #2		

**VOA Special List**

CAS No.	Compound	Result	RL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.015	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.015	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits	
460-00-4	Bromofluorobenzene (S)	144%		36-173%	
460-00-4	Bromofluorobenzene (S)	166%		36-173%	

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Misc. Forms

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## Custody Documents and Other Forms

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Includes the following where applicable:

- Certification Exceptions
- Certification Exceptions (IL)
- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody

LAB (LOCATION)

# Shell Oil Products Chain Of Custody Record

URS

CASUALTY  
 CASUALTY (Address: 195 Thompson Ct, W. Milford, MA 01152 (508-461-6900))  
 OTHER (Lab Vendor #)  
 IMA (Lab Vendor #)

Please Check Appropriate Box:

<input type="checkbox"/> REM. SERVICES	<input type="checkbox"/> MOTIVA AETAS	<input type="checkbox"/> SHELL RETAIL
<input type="checkbox"/> MOTIVA SALON	<input type="checkbox"/> CONSULTANT	<input type="checkbox"/> CURES
<input type="checkbox"/> SHELL PIPELINE	<input type="checkbox"/> OTHER	

Print Bill To Contact Name: WENDY PENNINGTON

INCIDENT # (ENV SERVICES): 9 7 2 1 8 4 0

DATE: 10/26/2011

PAGE: 1 of 1

COMPANY CONTACT: URS CORPORATION  
 ADDRESS: 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300, ST. LOUIS, MO 63110

SITE ADDRESS (Street and City): 900 South Central Ave, ROXANA, IL  
 STATE: IL

PROJECT CONTACT (Name and Phone #): WENDY PENNINGTON  
 TEL: 314-743-4166 or 341-432-8925  
 FAX: 314-429-0492

CONTRACT PROJECT NO: Roxana Quarterly GW / 21342593.00008  
 LAB USE ONLY: M4964

TURNAROUND TIME (CALENDAR DAYS):  
 STANDARD (10 DAY)  5 DAYS  3 DAYS  2 DAYS  24 HOURS

REQUESTED ANALYSIS

DELIVERABLES:  LEVEL 1  LEVEL 2  LEVEL 3  LEVEL 4  OTHER (SPECIFY) EDD  
 TEMPERATURE ON RECEIPT °C: \_\_\_\_\_ Cooler #1: \_\_\_\_\_ Cooler #2: \_\_\_\_\_ Cooler #3: \_\_\_\_\_

FIELD NOTES:  
 TEMPERATURE ON RECEIPT °C:  
 Contains PID Readings or Laboratory Notes

SPECIAL INSTRUCTIONS OR NOTES:

SHELL CONTRACT RATE APPLIES  
 CUST. REIMBURSEMENT RATE APPLIES  
 EDD NOT NEEDED  
 RECEIPT VERIFICATION REQUESTED  
 EXPLOSIVE LEAD BULK

LAB USE ONLY	Field Sample Identification	SAMPLING		MATERIAL	PRESERVATIVE						NO. OF CONT.	PID (ppm)
		DATE	TIME		HEX	HEX1	HEX2	HEX3	OTHER			
1	P93A-ROX-102611	10/26	1145	H <sub>2</sub> O	X				X	X	9	0
2	P93B-ROX-102611	10/26	1345	H <sub>2</sub> O					X	X	X	0
3	P93C-ROX-102611	10/26	1525	H <sub>2</sub> O					X	X	X	0
4	TR-102611	10/26	-	W					X	X	2	
	TR-102611	10/26	-	W					X	X	2	

Prepared by: (Signature) Date: 10/26/11 Time: 18:30	Received by: (Signature) Date: 10/27/11 Time: 09:20
---	---

FAC 1.1, 1.4  
 EVIDENCE REVIEW: GEM OK

4.1  
4



Accutest Job Number: MC4964      Client: URS      Immediate Client Services Action Required: No  
 Date / Time Received: 10/27/2011      Delivery Method: \_\_\_\_\_      Client Service Action Required at Login: No  
 Project: 900 SOUTH CENTRAL AVE      No. Coolers: 2      Airbill #'s: \_\_\_\_\_

**Cooler Security**      Y or N      Y or N  
 1. Custody Seals Present:        3. COC Present:    
 2. Custody Seals Intact:        4. Smp/Oates/Time OK:

**Cooler Temperature**      Y or N  
 1. Temp criteria achieved:    
 2. Cooler temp verification: Infrared gun  
 3. Cooler media: Ice (bag)

**Quality Control/Preservatio**      Y or N      N/A  
 1. Trip Blank present / cooler:     
 2. Trip Blank listed on COC:     
 3. Samples preserved properly:     
 4. VOCs headspace free:

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

**Sample Integrity - Condition**      Y or N  
 1. Sample recvd within HT:    
 2. All containers accounted for:    
 3. Condition of sample: Intact

**Sample Integrity - Instructions**      Y or N      N/A  
 1. Analysis requested is clear:    
 2. Bottles received for unspecified tests:    
 3. Sufficient volume recvd for analysis:    
 4. Compositing instructions clear:     
 5. Filtering instructions clear:

Comments

4.1  
4

### Internal Sample Tracking Chronicle

Shell Oil

Job No: MC4964

URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

4.2

4

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
MC4964-1 Collected: 26-OCT-11 11:45 By: MMMM Received: 27-OCT-11 By: JB P93A-ROX-102611						
MC4964-1	SW846 8011	03-NOV-11 23:46	AP	02-NOV-11	CA	V8011SL
MC4964-1	SW846 8270C	04-NOV-11 14:43	PR	01-NOV-11	AJ	AB8270SL+
MC4964-1	SW846 8260B	09-NOV-11 00:28	JP			V8260SL+
MC4964-1	SW846 8260B	09-NOV-11 15:24	AMY			V8260SL+
MC4964-1	SW846 8270C BY SIM	09-NOV-11 23:57	KR	01-NOV-11	AJ	B8270SIMPAAH
MC4964-2 Collected: 26-OCT-11 13:45 By: MMMM Received: 27-OCT-11 By: JB P93B-ROX-102611						
MC4964-2	SW846 8011	04-NOV-11 00:09	AP	02-NOV-11	CA	V8011SL
MC4964-2	SW846 8270C	04-NOV-11 15:10	PR	01-NOV-11	AJ	AB8270SL+
MC4964-2	SW846 8260B	09-NOV-11 00:56	JP			V8260SL+
MC4964-2	SW846 8260B	09-NOV-11 15:52	AMY			V8260SL+
MC4964-2	SW846 8270C BY SIM	10-NOV-11 00:29	KR	01-NOV-11	AJ	B8270SIMPAAH
MC4964-3 Collected: 26-OCT-11 15:25 By: MMMM Received: 27-OCT-11 By: JB P93C-ROX-102611						
MC4964-3	SW846 8011	04-NOV-11 12:22	AP	02-NOV-11	CA	V8011SL
MC4964-3	SW846 8270C	04-NOV-11 15:41	PR	01-NOV-11	AJ	AB8270SL+
MC4964-3	SW846 8260B	09-NOV-11 13:52	AMY			V8260SL+
MC4964-3	SW846 8270C BY SIM	10-NOV-11 01:00	KR	01-NOV-11	AJ	B8270SIMPAAH
MC4964-4 Collected: 26-OCT-11 00:00 By: MMMM Received: 27-OCT-11 By: JB TB-102611						
MC4964-4	SW846 8011	04-NOV-11 12:45	AP	02-NOV-11	CA	V8011SL
MC4964-4	SW846 8260B	08-NOV-11 17:53	JP			V8260SL+

# Accutest Internal Chain of Custody

Job Number: MC4964  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL  
 Received: 10/27/11

4.3

4

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
MC4964-1.4	Walk In Ref #22	Mahmoud Afzali	11/01/11 09:06	Retrieve from Storage
MC4964-1.4	Mahmoud Afzali		11/03/11 13:46	Depleted
MC4964-1.5	VOC Ref #4	Jugal Patel	11/08/11 14:41	Retrieve from Storage
MC4964-1.5	Jugal Patel	GCMSN	11/08/11 14:41	Load on Instrument
MC4964-1.5	GCMSN	Jugal Patel	11/09/11 16:35	Unload from Instrument
MC4964-1.5	Jugal Patel	VOC Ref #4	11/09/11 16:35	Return to Storage
MC4964-1.6	VOC Ref #4	Amy Min Yang	11/09/11 11:57	Retrieve from Storage
MC4964-1.6	Amy Min Yang	GCMSP	11/09/11 11:57	Load on Instrument
MC4964-1.6	GCMSP	Amy Min Yang	11/10/11 18:12	Unload from Instrument
MC4964-1.6	Amy Min Yang	VOC Ref #4	11/10/11 18:12	Return to Storage
MC4964-1.9	VOC Ref #4	Corey Aldoupolis	11/02/11 16:53	Retrieve from Storage
MC4964-1.9	Corey Aldoupolis		11/02/11 16:56	Depleted
MC4964-2.1	Walk In Ref #22	Mahmoud Afzali	11/01/11 09:06	Retrieve from Storage
MC4964-2.1	Mahmoud Afzali		11/03/11 13:46	Depleted
MC4964-2.5	VOC Ref #4	Jugal Patel	11/08/11 14:41	Retrieve from Storage
MC4964-2.5	Jugal Patel	GCMSN	11/08/11 14:41	Load on Instrument
MC4964-2.5	GCMSN	Jugal Patel	11/09/11 16:35	Unload from Instrument
MC4964-2.5	Jugal Patel	VOC Ref #4	11/09/11 16:35	Return to Storage
MC4964-2.7	VOC Ref #4	Amy Min Yang	11/09/11 11:57	Retrieve from Storage
MC4964-2.7	Amy Min Yang	GCMSP	11/09/11 11:57	Load on Instrument
MC4964-2.7	GCMSP	Amy Min Yang	11/10/11 18:12	Unload from Instrument
MC4964-2.7	Amy Min Yang	VOC Ref #4	11/10/11 18:12	Return to Storage
MC4964-2.8	VOC Ref #4	Corey Aldoupolis	11/02/11 16:53	Retrieve from Storage
MC4964-2.8	Corey Aldoupolis		11/02/11 16:56	Depleted
MC4964-3.1	Walk In Ref #22	Mahmoud Afzali	11/01/11 09:06	Retrieve from Storage
MC4964-3.1	Mahmoud Afzali		11/03/11 13:46	Depleted
MC4964-3.5	VOC Ref #4	Jugal Patel	11/08/11 14:41	Retrieve from Storage
MC4964-3.5	Jugal Patel	GCMSN	11/08/11 14:41	Load on Instrument
MC4964-3.5	GCMSN	Jugal Patel	11/09/11 16:35	Unload from Instrument
MC4964-3.5	Jugal Patel	VOC Ref #4	11/09/11 16:35	Return to Storage
MC4964-3.7	VOC Ref #4	Amy Min Yang	11/09/11 12:26	Retrieve from Storage
MC4964-3.7	Amy Min Yang	GCMSP	11/09/11 12:26	Load on Instrument
MC4964-3.7	GCMSP	Amy Min Yang	11/10/11 18:12	Unload from Instrument
MC4964-3.7	Amy Min Yang	VOC Ref #4	11/10/11 18:12	Return to Storage

# Accutest Internal Chain of Custody

**Job Number:** MC4964  
**Account:** SHELLWIC Shell Oil  
**Project:** URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL  
**Received:** 10/27/11

4.3  
4

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
MC4964-3.8	VOC Ref #4	Corey Aldoupolis	11/02/11 16:53	Retrieve from Storage
MC4964-3.8	Corey Aldoupolis		11/02/11 16:56	Depleted
MC4964-4.1	VOC Ref #4	Jugal Patel	11/08/11 14:41	Retrieve from Storage
MC4964-4.1	Jugal Patel	GCMSN	11/08/11 14:41	Load on Instrument
MC4964-4.1	GCMSN	Jugal Patel	11/09/11 16:35	Unload from Instrument
MC4964-4.1	Jugal Patel	VOC Ref #4	11/09/11 16:35	Return to Storage
MC4964-4.4	VOC Ref #4	Corey Aldoupolis	11/02/11 16:53	Retrieve from Storage
MC4964-4.4	Corey Aldoupolis		11/02/11 16:56	Depleted

## GC/MS Volatiles

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## QC Data Summaries

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Includes the following where applicable:

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

## Method Blank Summary

Page 1 of 3

Job Number: MC4964

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2139-MB	N57048.D	1	11/08/11	JP	n/a	n/a	MSN2139

The QC reported here applies to the following samples:

Method: SW846 8260B

MC4964-1, MC4964-2, MC4964-4

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	ND	0.50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	

5.1.1

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## Method Blank Summary

Page 2 of 3

Job Number: MC4964

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2139-MB	N57048.D	1	11/08/11	JP	n/a	n/a	MSN2139

The QC reported here applies to the following samples:

Method: SW846 8260B

MC4964-1, MC4964-2, MC4964-4

CAS No.	Compound	Result	RL	Units	Q
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	

5.1.1

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# Method Blank Summary

Job Number: MC4964

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2139-MB	N57048.D	1	11/08/11	JP	n/a	n/a	MSN2139

The QC reported here applies to the following samples:

Method: SW846 8260B

MC4964-1, MC4964-2, MC4964-4

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	94%	70-130%
2037-26-5	Toluene-D8	92%	70-130%
460-00-4	4-Bromofluorobenzene	86%	70-130%

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

5.1.1  
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## Method Blank Summary

Page 1 of 3

Job Number: MC4964

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSP1844-MB	P56517.D	1	11/09/11	AMY	n/a	n/a	MSP1844

The QC reported here applies to the following samples:

Method: SW846 8260B

MC4964-1, MC4964-2, MC4964-3

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	ND	0.50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	

5.1.2

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# Method Blank Summary

Job Number: MC4964  
Account: SHELLWIC Shell Oil  
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSP1844-MB	P56517.D	1	11/09/11	AMY	n/a	n/a	MSP1844

The QC reported here applies to the following samples:

Method: SW846 8260B

MC4964-1, MC4964-2, MC4964-3

CAS No.	Compound	Result	RL	Units	Q
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	

5.1.2

5

# Method Blank Summary

Job Number: MC4964

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSP1844-MB	P56517.D	1	11/09/11	AMY	n/a	n/a	MSP1844

The QC reported here applies to the following samples:

Method: SW846 8260B

MC4964-1, MC4964-2, MC4964-3

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	91%	70-130%
2037-26-5	Toluene-D8	96%	70-130%
460-00-4	4-Bromofluorobenzene	110%	70-130%

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

5.1.2  
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# Blank Spike Summary

Job Number: MC4964

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2139-BS	N57046.D	1	11/08/11	JP	n/a	n/a	MSN2139

The QC reported here applies to the following samples:

Method: SW846 8260B

MC4964-1, MC4964-2, MC4964-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	50	79.0	158* a	70-130
107-02-8	Acrolein	250	393	157* b	70-130
107-13-1	Acrylonitrile	50	297	594* b	70-130
71-43-2	Benzene	50	47.0	94	70-130
108-86-1	Bromobenzene	50	48.9	98	70-130
74-97-5	Bromochloromethane	50	48.7	97	70-130
75-27-4	Bromodichloromethane	50	59.0	118	70-130
75-25-2	Bromoform	50	59.0	118	70-130
74-83-9	Bromomethane	50	44.5	89	70-130
78-93-3	2-Butanone (MEK)	50	74.3	149* a	70-130
104-51-8	n-Butylbenzene	50	51.0	102	70-130
135-98-8	sec-Butylbenzene	50	49.8	100	70-130
98-06-6	tert-Butylbenzene	50	49.9	100	70-130
75-15-0	Carbon disulfide	50	47.7	95	70-130
56-23-5	Carbon tetrachloride	50	66.7	133* a	70-130
108-90-7	Chlorobenzene	50	51.3	103	70-130
75-00-3	Chloroethane	50	48.3	97	70-130
110-75-8	2-Chloroethyl vinyl ether	50	49.0	98	70-130
67-66-3	Chloroform	50	51.7	103	70-130
74-87-3	Chloromethane	50	41.0	82	70-130
95-49-8	o-Chlorotoluene	50	46.8	94	70-130
106-43-4	p-Chlorotoluene	50	49.7	99	70-130
124-48-1	Dibromochloromethane	50	66.0	132* a	70-130
95-50-1	1,2-Dichlorobenzene	50	50.8	102	70-130
541-73-1	1,3-Dichlorobenzene	50	49.4	99	70-130
106-46-7	1,4-Dichlorobenzene	50	49.8	100	70-130
75-71-8	Dichlorodifluoromethane	50	52.1	104	70-130
75-34-3	1,1-Dichloroethane	50	52.4	105	70-130
107-06-2	1,2-Dichloroethane	50	57.0	114	70-130
75-35-4	1,1-Dichloroethene	50	53.0	106	70-130
156-59-2	cis-1,2-Dichloroethene	50	45.6	91	70-130
156-60-5	trans-1,2-Dichloroethene	50	47.7	95	70-130
78-87-5	1,2-Dichloropropane	50	49.0	98	70-130
142-28-9	1,3-Dichloropropane	50	52.3	105	70-130
594-20-7	2,2-Dichloropropane	50	68.3	137* a	70-130
563-58-6	1,1-Dichloropropene	50	53.7	107	70-130

5.2.1  
5

# Blank Spike Summary

Job Number: MC4964  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2139-BS	N57046.D	1	11/08/11	JP	n/a	n/a	MSN2139

The QC reported here applies to the following samples:

Method: SW846 8260B

MC4964-1, MC4964-2, MC4964-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
10061-01-5	cis-1,3-Dichloropropene	50	53.2	106	70-130
10061-02-6	trans-1,3-Dichloropropene	50	69.7	139* a	70-130
123-91-1	1,4-Dioxane	250	288	115	70-130
97-63-2	Ethyl methacrylate	50	52.9	106	77-137
100-41-4	Ethylbenzene	50	50.6	101	70-130
87-68-3	Hexachlorobutadiene	50	55.2	110	70-130
591-78-6	2-Hexanone	50	75.9	152* a	70-130
98-82-8	Isopropylbenzene	50	56.0	112	70-130
99-87-6	p-Isopropyltoluene	50	53.9	108	70-130
1634-04-4	Methyl Tert Butyl Ether	50	69.5	139* a	70-130
108-10-1	4-Methyl-2-pentanone (MIBK)	50	61.2	122	70-130
74-95-3	Methylene bromide	50	54.2	108	70-130
75-09-2	Methylene chloride	50	49.5	99	70-130
91-20-3	Naphthalene	50	52.5	105	70-130
103-65-1	n-Propylbenzene	50	48.4	97	70-130
100-42-5	Styrene	50	53.1	106	70-130
630-20-6	1,1,1,2-Tetrachloroethane	50	59.2	118	70-130
79-34-5	1,1,2,2-Tetrachloroethane	50	52.4	105	70-130
127-18-4	Tetrachloroethene	50	52.0	104	70-130
108-88-3	Toluene	50	49.6	99	70-130
87-61-6	1,2,3-Trichlorobenzene	50	58.2	116	70-130
120-82-1	1,2,4-Trichlorobenzene	50	55.7	111	70-130
71-55-6	1,1,1-Trichloroethane	50	56.1	112	70-130
79-00-5	1,1,2-Trichloroethane	50	52.6	105	70-130
79-01-6	Trichloroethene	50	50.9	102	70-130
75-69-4	Trichlorofluoromethane	50	54.8	110	70-130
96-18-4	1,2,3-Trichloropropane	50	61.3	123	70-130
95-63-6	1,2,4-Trimethylbenzene	50	48.5	97	70-130
108-67-8	1,3,5-Trimethylbenzene	50	48.9	98	70-130
108-05-4	Vinyl Acetate	50	73.8	148* a	70-130
75-01-4	Vinyl chloride	50	40.8	82	70-130
	m,p-Xylene	100	101	101	70-130
95-47-6	o-Xylene	50	51.6	103	70-130
1330-20-7	Xylene (total)	150	153	102	70-130

5.2.1  
5

# Blank Spike Summary

Job Number: MC4964

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2139-BS	N57046.D	1	11/08/11	JP	n/a	n/a	MSN2139

The QC reported here applies to the following samples:

Method: SW846 8260B

MC4964-1, MC4964-2, MC4964-4

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	92%	70-130%
2037-26-5	Toluene-D8	93%	70-130%
460-00-4	4-Bromofluorobenzene	85%	70-130%

- (a) Outside control limits. Blank Spike meets program technical requirements.
- (b) Outside control limits. Associated samples are non-detect for this compound.

5.2.1  
5

# Blank Spike Summary

Job Number: MC4964

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSP1844-BS	P56516.D	1	11/09/11	AMY	n/a	n/a	MSP1844

The QC reported here applies to the following samples:

Method: SW846 8260B

MC4964-1, MC4964-2, MC4964-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	50	32.9	66* a	70-130
107-02-8	Acrolein	250	693	277* b	70-130
107-13-1	Acrylonitrile	50	58.0	116	70-130
71-43-2	Benzene	50	46.5	93	70-130
108-86-1	Bromobenzene	50	46.5	93	70-130
74-97-5	Bromochloromethane	50	47.6	95	70-130
75-27-4	Bromodichloromethane	50	48.6	97	70-130
75-25-2	Bromoform	50	42.7	85	70-130
74-83-9	Bromomethane	50	44.2	88	70-130
78-93-3	2-Butanone (MEK)	50	36.0	72	70-130
104-51-8	n-Butylbenzene	50	42.3	85	70-130
135-98-8	sec-Butylbenzene	50	43.4	87	70-130
98-06-6	tert-Butylbenzene	50	42.1	84	70-130
75-15-0	Carbon disulfide	50	54.0	108	70-130
56-23-5	Carbon tetrachloride	50	51.9	104	70-130
108-90-7	Chlorobenzene	50	43.7	87	70-130
75-00-3	Chloroethane	50	49.1	98	70-130
110-75-8	2-Chloroethyl vinyl ether	50	52.4	105	70-130
67-66-3	Chloroform	50	50.2	100	70-130
74-87-3	Chloromethane	50	66.6	133* a	70-130
95-49-8	o-Chlorotoluene	50	42.3	85	70-130
106-43-4	p-Chlorotoluene	50	43.8	88	70-130
124-48-1	Dibromochloromethane	50	44.8	90	70-130
95-50-1	1,2-Dichlorobenzene	50	42.4	85	70-130
541-73-1	1,3-Dichlorobenzene	50	45.3	91	70-130
106-46-7	1,4-Dichlorobenzene	50	44.1	88	70-130
75-71-8	Dichlorodifluoromethane	50	58.0	116	70-130
75-34-3	1,1-Dichloroethane	50	52.4	105	70-130
107-06-2	1,2-Dichloroethane	50	49.0	98	70-130
75-35-4	1,1-Dichloroethene	50	48.7	97	70-130
156-59-2	cis-1,2-Dichloroethene	50	48.0	96	70-130
156-60-5	trans-1,2-Dichloroethene	50	46.9	94	70-130
78-87-5	1,2-Dichloropropane	50	49.5	99	70-130
142-28-9	1,3-Dichloropropane	50	48.1	96	70-130
594-20-7	2,2-Dichloropropane	50	54.5	109	70-130
563-58-6	1,1-Dichloropropene	50	50.6	101	70-130

5.2.2  
5

# Blank Spike Summary

Job Number: MC4964  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSP1844-BS	P56516.D	1	11/09/11	AMY	n/a	n/a	MSP1844

The QC reported here applies to the following samples:

Method: SW846 8260B

MC4964-1, MC4964-2, MC4964-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
10061-01-5	cis-1,3-Dichloropropene	50	44.0	88	70-130
10061-02-6	trans-1,3-Dichloropropene	50	45.8	92	70-130
123-91-1	1,4-Dioxane	250	179	72	70-130
97-63-2	Ethyl methacrylate	50	42.1	84	77-137
100-41-4	Ethylbenzene	50	43.6	87	70-130
87-68-3	Hexachlorobutadiene	50	38.3	77	70-130
591-78-6	2-Hexanone	50	39.5	79	70-130
98-82-8	Isopropylbenzene	50	50.2	100	70-130
99-87-6	p-Isopropyltoluene	50	47.2	94	70-130
1634-04-4	Methyl Tert Butyl Ether	50	58.0	116	70-130
108-10-1	4-Methyl-2-pentanone (MIBK)	50	52.3	105	70-130
74-95-3	Methylene bromide	50	50.7	101	70-130
75-09-2	Methylene chloride	50	49.3	99	70-130
91-20-3	Naphthalene	50	27.7	55* a	70-130
103-65-1	n-Propylbenzene	50	44.4	89	70-130
100-42-5	Styrene	50	47.2	94	70-130
630-20-6	1,1,1,2-Tetrachloroethane	50	45.8	92	70-130
79-34-5	1,1,2,2-Tetrachloroethane	50	43.5	87	70-130
127-18-4	Tetrachloroethene	50	47.3	95	70-130
108-88-3	Toluene	50	49.4	99	70-130
87-61-6	1,2,3-Trichlorobenzene	50	34.4	69* a	70-130
120-82-1	1,2,4-Trichlorobenzene	50	36.4	73	70-130
71-55-6	1,1,1-Trichloroethane	50	51.5	103	70-130
79-00-5	1,1,2-Trichloroethane	50	47.8	96	70-130
79-01-6	Trichloroethene	50	47.7	95	70-130
75-69-4	Trichlorofluoromethane	50	51.1	102	70-130
96-18-4	1,2,3-Trichloropropane	50	46.7	93	70-130
95-63-6	1,2,4-Trimethylbenzene	50	42.1	84	70-130
108-67-8	1,3,5-Trimethylbenzene	50	43.6	87	70-130
108-05-4	Vinyl Acetate	50	41.9	84	70-130
75-01-4	Vinyl chloride	50	55.2	110	70-130
	m,p-Xylene	100	93.1	93	70-130
95-47-6	o-Xylene	50	48.3	97	70-130
1330-20-7	Xylene (total)	150	141	94	70-130

5.2.2  
5



# Blank Spike Summary

Job Number: MC4964

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSP1844-BS	P56516.D	1	11/09/11	AMY	n/a	n/a	MSP1844

The QC reported here applies to the following samples:

Method: SW846 8260B

MC4964-1, MC4964-2, MC4964-3

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	101%	70-130%
2037-26-5	Toluene-D8	97%	70-130%
460-00-4	4-Bromofluorobenzene	100%	70-130%

- (a) Outside control limits. Blank Spike meets program technical requirements.
- (b) Outside control limits. Associated samples are non-detect for this compound.

5.2.2

5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC4964

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5097-4MS	N57064.D	5	11/08/11	JP	n/a	n/a	MSN2139
MC5097-4MSD	N57065.D	5	11/08/11	JP	n/a	n/a	MSN2139
MC5097-4	N57063.D	1	11/08/11	JP	n/a	n/a	MSN2139

The QC reported here applies to the following samples:

Method: SW846 8260B

MC4964-1, MC4964-2, MC4964-4

CAS No.	Compound	MC5097-4 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND	250	378	151* a	388	155* a	3	70-130/30
107-02-8	Acrolein	ND	1250	1330	106	1420	114	7	70-130/30
107-13-1	Acrylonitrile	ND	250	1180	472* b	1270	508* b	7	70-130/30
71-43-2	Benzene	383	250	597	86	604	88	1	70-130/30
108-86-1	Bromobenzene	ND	250	237	95	253	101	7	70-130/30
74-97-5	Bromochloromethane	ND	250	220	88	234	94	6	70-130/30
75-27-4	Bromodichloromethane	ND	250	256	102	273	109	6	70-130/30
75-25-2	Bromoform	ND	250	255	102	270	108	6	70-130/30
74-83-9	Bromomethane	ND	250	66.4	27* a	111	44* a	50* c	70-130/30
78-93-3	2-Butanone (MEK)	14.9	250	228	85	247	93	8	70-130/30
104-51-8	n-Butylbenzene	ND	250	240	96	260	104	8	70-130/30
135-98-8	sec-Butylbenzene	ND	250	237	95	257	103	8	70-130/30
98-06-6	tert-Butylbenzene	ND	250	230	92	249	100	8	70-130/30
75-15-0	Carbon disulfide	4.4	250	232	91	249	98	7	70-130/30
56-23-5	Carbon tetrachloride	ND	250	282	113	305	122	8	70-130/30
108-90-7	Chlorobenzene	12.5	250	261	99	270	103	3	70-130/30
75-00-3	Chloroethane	1.6	250	225	89	241	96	7	70-130/30
110-75-8	2-Chloroethyl vinyl ether	ND	250	232	93	245	98	5	70-130/30
67-66-3	Chloroform	ND	250	231	92	243	97	5	70-130/30
74-87-3	Chloromethane	ND	250	163	65* a	180	72	10	70-130/30
95-49-8	o-Chlorotoluene	ND	250	223	89	240	96	7	70-130/30
106-43-4	p-Chlorotoluene	ND	250	230	92	249	100	8	70-130/30
124-48-1	Dibromochloromethane	ND	250	293	117	310	124	6	70-130/30
95-50-1	1,2-Dichlorobenzene	4.9	250	246	96	267	105	8	70-130/30
541-73-1	1,3-Dichlorobenzene	ND	250	236	94	257	103	9	70-130/30
106-46-7	1,4-Dichlorobenzene	ND	250	204	82	222	89	8	70-130/30
75-71-8	Dichlorodifluoromethane	ND	250	219	88	232	93	6	70-130/30
75-34-3	1,1-Dichloroethane	ND	250	238	95	252	101	6	70-130/30
107-06-2	1,2-Dichloroethane	1.0	250	241	96	253	101	5	70-130/30
75-35-4	1,1-Dichloroethene	ND	250	253	101	275	110	8	70-130/30
156-59-2	cis-1,2-Dichloroethene	ND	250	213	85	230	92	8	70-130/30
156-60-5	trans-1,2-Dichloroethene	ND	250	224	90	243	97	8	70-130/30
78-87-5	1,2-Dichloropropane	ND	250	232	93	245	98	5	70-130/30
142-28-9	1,3-Dichloropropane	ND	250	241	96	249	100	3	70-130/30
594-20-7	2,2-Dichloropropane	ND	250	330	132* a	344	138* a	4	70-130/30
563-58-6	1,1-Dichloropropene	ND	250	248	99	269	108	8	70-130/30

5.3.1  
5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC4964

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5097-4MS	N57064.D	5	11/08/11	JP	n/a	n/a	MSN2139
MC5097-4MSD	N57065.D	5	11/08/11	JP	n/a	n/a	MSN2139
MC5097-4	N57063.D	1	11/08/11	JP	n/a	n/a	MSN2139

The QC reported here applies to the following samples:

Method: SW846 8260B

MC4964-1, MC4964-2, MC4964-4

CAS No.	Compound	MC5097-4 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD	
10061-01-5	cis-1,3-Dichloropropene	ND		250	242	97	258	103	6	70-130/30
10061-02-6	trans-1,3-Dichloropropene	ND		250	316	126	334	134* a	6	70-130/30
123-91-1	1,4-Dioxane	ND		1250	1290	103	1380	110	7	70-130/30
97-63-2	Ethyl methacrylate	ND		250	256	102	270	108	5	72-139/30
100-41-4	Ethylbenzene	84.2		250	320	94	325	96	2	70-130/30
87-68-3	Hexachlorobutadiene	ND		250	257	103	284	114	10	70-130/30
591-78-6	2-Hexanone	ND		250	255	102	268	107	5	70-130/30
98-82-8	Isopropylbenzene	5.7		250	273	107	294	115	7	70-130/30
99-87-6	p-Isopropyltoluene	1540	E	250	3350	724* d	3390	740* d	1	70-130/30
1634-04-4	Methyl Tert Butyl Ether	ND		250	343	137* a	361	144* a	5	70-130/30
108-10-1	4-Methyl-2-pentanone (MIBK)	2.6		250	257	102	270	107	5	70-130/30
74-95-3	Methylene bromide	ND		250	245	98	258	103	5	70-130/30
75-09-2	Methylene chloride	ND		250	226	90	241	96	6	70-130/30
91-20-3	Naphthalene	27.2		250	280	101	300	109	7	70-130/30
103-65-1	n-Propylbenzene	13.7		250	241	91	258	98	7	70-130/30
100-42-5	Styrene	ND		250	255	102	267	107	5	70-130/30
630-20-6	1,1,1,2-Tetrachloroethane	ND		250	275	110	283	113	3	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	ND		250	233	93	245	98	5	70-130/30
127-18-4	Tetrachloroethene	ND		250	255	102	264	106	3	70-130/30
108-88-3	Toluene	70.9		250	305	94	310	96	2	70-130/30
87-61-6	1,2,3-Trichlorobenzene	ND		250	280	112	310	124	10	70-130/30
120-82-1	1,2,4-Trichlorobenzene	ND		250	269	108	296	118	10	70-130/30
71-55-6	1,1,1-Trichloroethane	ND		250	244	98	262	105	7	70-130/30
79-00-5	1,1,2-Trichloroethane	ND		250	235	94	249	100	6	70-130/30
79-01-6	Trichloroethene	ND		250	237	95	253	101	7	70-130/30
75-69-4	Trichlorofluoromethane	ND		250	232	93	250	100	7	70-130/30
96-18-4	1,2,3-Trichloropropane	ND		250	284	114	305	122	7	70-130/30
95-63-6	1,2,4-Trimethylbenzene	91.9		250	311	88	329	95	6	70-130/30
108-67-8	1,3,5-Trimethylbenzene	13.7		250	246	93	263	100	7	70-130/30
108-05-4	Vinyl Acetate	ND		250	296	118	304	122	3	70-130/30
75-01-4	Vinyl chloride	ND		250	192	77	208	83	8	70-130/30
	m,p-Xylene	102		500	584	96	601	100	3	70-130/30
95-47-6	o-Xylene	39.2		250	289	100	294	102	2	70-130/30
1330-20-7	Xylene (total)	142		750	873	97	895	100	2	70-130/30

5.3.1

5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC4964

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5097-4MS	N57064.D	5	11/08/11	JP	n/a	n/a	MSN2139
MC5097-4MSD	N57065.D	5	11/08/11	JP	n/a	n/a	MSN2139
MC5097-4	N57063.D	1	11/08/11	JP	n/a	n/a	MSN2139

The QC reported here applies to the following samples:

Method: SW846 8260B

MC4964-1, MC4964-2, MC4964-4

CAS No.	Surrogate Recoveries	MS	MSD	MC5097-4	Limits
1868-53-7	Dibromofluoromethane	88%	89%	90%	70-130%
2037-26-5	Toluene-D8	93%	92%	93%	70-130%
460-00-4	4-Bromofluorobenzene	83%	85%	87%	70-130%

- (a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
- (b) Outside control limits. Associated samples are non-detect for this compound.
- (c) High RPD due to possible matrix interference and/or sample non-homogeneity.
- (d) Outside control limits due to high level in sample relative to spike amount.

5.3.1



# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC4964

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5024-8MS	P56539.D	5	11/09/11	AMY	n/a	n/a	MSP1844
MC5024-8MSD	P56540.D	5	11/09/11	AMY	n/a	n/a	MSP1844
MC5024-8	P56527.D	1	11/09/11	AMY	n/a	n/a	MSP1844

The QC reported here applies to the following samples:

Method: SW846 8260B

MC4964-1, MC4964-2, MC4964-3

CAS No.	Compound	MC5024-8 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND	250	211	84	198	79	6	70-130/30
107-02-8	Acrolein	ND	1250	ND	0* a	ND	0* a	nc	70-130/30
107-13-1	Acrylonitrile	ND	250	326	130	319	128	2	70-130/30
71-43-2	Benzene	ND	250	281	112	268	107	5	70-130/30
108-86-1	Bromobenzene	ND	250	261	104	266	106	2	70-130/30
74-97-5	Bromochloromethane	ND	250	279	112	265	106	5	70-130/30
75-27-4	Bromodichloromethane	ND	250	288	115	283	113	2	70-130/30
75-25-2	Bromoform	ND	250	237	95	231	92	3	70-130/30
74-83-9	Bromomethane	ND	250	176	70	218	87	21	70-130/30
78-93-3	2-Butanone (MEK)	ND	250	216	86	199	80	8	70-130/30
104-51-8	n-Butylbenzene	ND	250	225	90	225	90	0	70-130/30
135-98-8	sec-Butylbenzene	ND	250	232	93	235	94	1	70-130/30
98-06-6	tert-Butylbenzene	ND	250	229	92	228	91	0	70-130/30
75-15-0	Carbon disulfide	ND	250	300	120	291	116	3	70-130/30
56-23-5	Carbon tetrachloride	ND	250	284	114	273	109	4	70-130/30
108-90-7	Chlorobenzene	ND	250	247	99	244	98	1	70-130/30
75-00-3	Chloroethane	ND	250	356	142* a	256	102	33* b	70-130/30
110-75-8	2-Chloroethyl vinyl ether	ND	250	303	121	157	63* a	63* b	70-130/30
67-66-3	Chloroform	ND	250	291	116	279	112	4	70-130/30
74-87-3	Chloromethane	ND	250	312	125	331	132* a	6	70-130/30
95-49-8	o-Chlorotoluene	ND	250	244	98	244	98	0	70-130/30
106-43-4	p-Chlorotoluene	ND	250	249	100	253	101	2	70-130/30
124-48-1	Dibromochloromethane	ND	250	256	102	257	103	0	70-130/30
95-50-1	1,2-Dichlorobenzene	ND	250	232	93	243	97	5	70-130/30
541-73-1	1,3-Dichlorobenzene	ND	250	254	102	259	104	2	70-130/30
106-46-7	1,4-Dichlorobenzene	ND	250	250	100	249	100	0	70-130/30
75-71-8	Dichlorodifluoromethane	ND	250	243	97	242	97	0	70-130/30
75-34-3	1,1-Dichloroethane	ND	250	311	124	294	118	6	70-130/30
107-06-2	1,2-Dichloroethane	ND	250	285	114	278	111	2	70-130/30
75-35-4	1,1-Dichloroethene	ND	250	290	116	280	112	4	70-130/30
156-59-2	cis-1,2-Dichloroethene	ND	250	287	115	280	112	2	70-130/30
156-60-5	trans-1,2-Dichloroethene	ND	250	260	104	263	105	1	70-130/30
78-87-5	1,2-Dichloropropane	ND	250	290	116	277	111	5	70-130/30
142-28-9	1,3-Dichloropropane	ND	250	268	107	266	106	1	70-130/30
594-20-7	2,2-Dichloropropane	ND	250	152	61* a	157	63* a	3	70-130/30
563-58-6	1,1-Dichloropropene	ND	250	284	114	271	108	5	70-130/30

5.3.2  
5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC4964

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5024-8MS	P56539.D	5	11/09/11	AMY	n/a	n/a	MSP1844
MC5024-8MSD	P56540.D	5	11/09/11	AMY	n/a	n/a	MSP1844
MC5024-8	P56527.D	1	11/09/11	AMY	n/a	n/a	MSP1844

The QC reported here applies to the following samples:

Method: SW846 8260B

MC4964-1, MC4964-2, MC4964-3

CAS No.	Compound	MC5024-8 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
10061-01-5	cis-1,3-Dichloropropene	ND	250	238	95	232	93	3	70-130/30
10061-02-6	trans-1,3-Dichloropropene	ND	250	242	97	239	96	1	70-130/30
123-91-1	1,4-Dioxane	ND	1250	1000	80	1080	86	8	70-130/30
97-63-2	Ethyl methacrylate	ND	250	227	91	223	89	2	72-139/30
100-41-4	Ethylbenzene	ND	250	254	102	244	98	4	70-130/30
87-68-3	Hexachlorobutadiene	ND	250	192	77	200	80	4	70-130/30
591-78-6	2-Hexanone	ND	250	202	81	205	82	1	70-130/30
98-82-8	Isopropylbenzene	ND	250	284	114	279	112	2	70-130/30
99-87-6	p-Isopropyltoluene	ND	250	247	99	252	101	2	70-130/30
1634-04-4	Methyl Tert Butyl Ether	ND	250	279	112	278	111	0	70-130/30
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	250	280	112	281	112	0	70-130/30
74-95-3	Methylene bromide	ND	250	289	116	282	113	2	70-130/30
75-09-2	Methylene chloride	ND	250	287	115	282	113	2	70-130/30
91-20-3	Naphthalene	ND	250	176	70	165	66* a	6	70-130/30
103-65-1	n-Propylbenzene	ND	250	249	100	247	99	1	70-130/30
100-42-5	Styrene	ND	250	264	106	259	104	2	70-130/30
630-20-6	1,1,1,2-Tetrachloroethane	ND	250	265	106	262	105	1	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	ND	250	241	96	241	96	0	70-130/30
127-18-4	Tetrachloroethene	ND	250	267	107	257	103	4	70-130/30
108-88-3	Toluene	ND	250	288	115	275	110	5	70-130/30
87-61-6	1,2,3-Trichlorobenzene	ND	250	186	74	193	77	4	70-130/30
120-82-1	1,2,4-Trichlorobenzene	ND	250	199	80	199	80	0	70-130/30
71-55-6	1,1,1-Trichloroethane	ND	250	279	112	270	108	3	70-130/30
79-00-5	1,1,2-Trichloroethane	ND	250	280	112	263	105	6	70-130/30
79-01-6	Trichloroethene	ND	250	279	112	264	106	6	70-130/30
75-69-4	Trichlorofluoromethane	ND	250	271	108	258	103	5	70-130/30
96-18-4	1,2,3-Trichloropropane	ND	250	246	98	247	99	0	70-130/30
95-63-6	1,2,4-Trimethylbenzene	ND	250	265	106	252	101	5	70-130/30
108-67-8	1,3,5-Trimethylbenzene	ND	250	244	98	246	98	1	70-130/30
108-05-4	Vinyl Acetate	ND	250	235	94	225	90	4	70-130/30
75-01-4	Vinyl chloride	ND	250	276	110	277	111	0	70-130/30
	m,p-Xylene	ND	500	534	107	513	103	4	70-130/30
95-47-6	o-Xylene	ND	250	269	108	267	107	1	70-130/30
1330-20-7	Xylene (total)	ND	750	803	107	780	104	3	70-130/30

5.3.2  
5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC4964

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5024-8MS	P56539.D	5	11/09/11	AMY	n/a	n/a	MSP1844
MC5024-8MSD	P56540.D	5	11/09/11	AMY	n/a	n/a	MSP1844
MC5024-8	P56527.D	1	11/09/11	AMY	n/a	n/a	MSP1844

The QC reported here applies to the following samples:

Method: SW846 8260B

MC4964-1, MC4964-2, MC4964-3

CAS No.	Surrogate Recoveries	MS	MSD	MC5024-8	Limits
1868-53-7	Dibromofluoromethane	99%	97%	98%	70-130%
2037-26-5	Toluene-D8	100%	96%	101%	70-130%
460-00-4	4-Bromofluorobenzene	101%	101%	117%	70-130%

- (a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
- (b) High RPD due to possible matrix interference and/or sample non-homogeneity.

5.3.2



# Volatile Internal Standard Area Summary

Job Number: MC4964  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSN2139-CC2093	Injection Date:	11/08/11
Lab File ID:	N57044.D	Injection Time:	13:38
Instrument ID:	GCMSN	Method:	SW846 8260B

	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
	AREA		AREA		AREA		AREA		AREA	
Check Std	274818	9.03	410451	9.90	194840	13.16	214719	15.72	127092	6.58
Upper Limit <sup>a</sup>	549636	9.53	820902	10.40	389680	13.66	429438	16.22	254184	7.08
Lower Limit <sup>b</sup>	137409	8.53	205226	9.40	97420	12.66	107360	15.22	63546	6.08

Lab Sample ID	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
	AREA		AREA		AREA		AREA		AREA	
MSN2139-BS	295546	9.03	441234	9.90	201741	13.16	224067	15.72	131508	6.58
MSN2139-MB	285524	9.03	429989	9.91	190644	13.16	201488	15.72	124119	6.58
ZZZZZZ	278506	9.03	419823	9.91	189103	13.16	196102	15.72	116015	6.58
ZZZZZZ	272677	9.03	409635	9.91	186820	13.16	195548	15.72	115182	6.58
ZZZZZZ	272031	9.03	404254	9.90	186901	13.16	204603	15.72	106277	6.58
ZZZZZZ	285253	9.03	426799	9.91	197050	13.16	222659	15.72	107922	6.58
MC4964-4	325209	9.03	474435	9.90	216412	13.16	237468	15.72	113278	6.58
ZZZZZZ	335555	9.03	488395	9.91	215388	13.16	239441	15.72	114143	6.58
ZZZZZZ	333144	9.03	493439	9.91	221177	13.16	245582	15.72	125345	6.58
ZZZZZZ	336773	9.03	492595	9.91	220237	13.16	242313	15.72	109543	6.58
ZZZZZZ	339182	9.03	495778	9.90	219734	13.16	245333	15.72	125726	6.58
ZZZZZZ	344782	9.03	506238	9.90	226788	13.16	249377	15.72	122237	6.58
ZZZZZZ	344246	9.03	503884	9.90	223008	13.16	252844	15.72	113364	6.58
ZZZZZZ	347218	9.03	511820	9.91	232913	13.16	262843	15.72	147121	6.57
ZZZZZZ	343082	9.06	512961	9.93	230504	13.17	252913	15.72	175998	6.68
ZZZZZZ	202626	9.09	296256	9.95	97334 <sup>c</sup>	13.17	257984	15.72	10966 <sup>c</sup>	6.50
MC5097-4	344229	9.03	507766	9.90	229940	13.16	259179	15.72	180483	6.58
MC5097-4MS	360198	9.03	527022	9.90	236164	13.16	265753	15.72	157761	6.58
MC5097-4MSD	363622	9.03	533508	9.90	244682	13.16	267581	15.72	144427	6.57
ZZZZZZ	374518	9.03	547655	9.90	251251	13.16	288452	15.72	190085	6.57
MC4964-1	385684	9.03	622689	9.95	260131	13.16	307183	15.72	151195	6.57
MC4964-2	403876	9.03	639102	9.96	268451	13.16	324531	15.72	159582	6.57

- IS 1 = Pentafluorobenzene
- IS 2 = 1,4-Difluorobenzene
- IS 3 = Chlorobenzene-D5
- IS 4 = 1,4-Dichlorobenzene-d4
- IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.  
 (c) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

5.4.1  
5



# Volatile Internal Standard Area Summary

Job Number: MC4964  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSP1844-CC1838	Injection Date:	11/09/11
Lab File ID:	P56516.D	Injection Time:	11:21
Instrument ID:	GCMSP	Method:	SW846 8260B

	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
	AREA		AREA		AREA		AREA		AREA	
Check Std	50495	8.49	89757	9.35	49934	12.56	44048	15.12	23730	6.21
Upper Limit <sup>a</sup>	100990	8.99	179514	9.85	99868	13.06	88096	15.62	47460	6.71
Lower Limit <sup>b</sup>	25248	7.99	44879	8.85	24967	12.06	22024	14.62	11865	5.71

Lab Sample ID	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
	AREA		AREA		AREA		AREA		AREA	
MSP1844-BS	50495	8.49	89757	9.35	49934	12.56	44048	15.12	23730	6.21
MSP1844-MB	44417	8.50	74543	9.35	39345	12.57	25908	15.13	20564	6.21
ZZZZZZ	43716	8.49	74966	9.35	38175	12.57	25637	15.12	20195	6.19
ZZZZZZ	41689	8.50	71981	9.35	38848	12.57	26744	15.12	20892	6.21
ZZZZZZ	41357	8.49	71653	9.35	40443	12.57	28998	15.12	21999	6.26
MC4964-3	39711	8.50	70668	9.35	38361	12.57	27116	15.12	23601	6.24
ZZZZZZ	44301	8.49	78939	9.34	41393	12.57	37148	15.12	29234	6.23
MC4964-1	40688	8.49	74602	9.35	35824	12.57	24383	15.12	25651	6.20
MC4964-2	42861	8.49	79658	9.35	39458	12.57	29266	15.12	28620	6.23
ZZZZZZ	39998	8.50	67336	9.35	36898	12.57	26135	15.12	20087	6.23
MC5024-8	38483	8.50	65806	9.35	35076	12.57	23903	15.12	17651	6.21
ZZZZZZ	39381	8.50	65673	9.35	35814	12.57	23855	15.12	21163	6.21
ZZZZZZ	39657	8.50	67379	9.35	37593	12.57	25277	15.13	18442	6.21
ZZZZZZ	46579	8.49	79360	9.35	41694	12.57	39439	15.12	20115	6.23
ZZZZZZ	49236	8.49	80667	9.35	41225	12.57	32050	15.12	24656	6.20
ZZZZZZ	54505	8.49	86496	9.35	42587	12.57	42835	15.12	23550	6.21
ZZZZZZ	43837	8.50	72888	9.35	40091	12.57	28232	15.12	20008	6.22
ZZZZZZ	49767	8.49	82248	9.35	43154	12.57	47755	15.12	21931	6.20
ZZZZZZ	43734	8.50	73354	9.35	38799	12.57	27376	15.12	19710	6.21
ZZZZZZ	42014	8.50	71766	9.35	38797	12.57	25393	15.13	17809	6.20
ZZZZZZ	53864	8.49	87685	9.35	44438	12.57	56434	15.12	21023	6.19
ZZZZZZ	49496	8.49	84977	9.35	42649	12.57	34593	15.12	22020	6.20
MC5024-8MS	53142	8.49	92412	9.34	52803	12.56	44639	15.12	21672	6.19
MC5024-8MSD	53138	8.49	92930	9.34	52126	12.56	43934	15.12	22116	6.19
MSP1845-BS	51511	8.49	91767	9.34	52659	12.56	45333	15.12	20395	6.24

- IS 1 = Pentafluorobenzene
- IS 2 = 1,4-Difluorobenzene
- IS 3 = Chlorobenzene-D5
- IS 4 = 1,4-Dichlorobenzene-d4
- IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

5.4.2

5

# Volatile Surrogate Recovery Summary

Job Number: MC4964

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Method: SW846 8260B

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
MC4964-1	N57067.D	85.0	88.0	84.0
MC4964-1	P56524.D	99.0	91.0	112.0
MC4964-2	N57068.D	81.0	87.0	81.0
MC4964-2	P56525.D	92.0	90.0	102.0
MC4964-3	P56521.D	98.0	98.0	110.0
MC4964-4	N57053.D	89.0	93.0	85.0
MC5024-8MS	P56539.D	99.0	100.0	101.0
MC5024-8MSD	P56540.D	97.0	96.0	101.0
MC5097-4MS	N57064.D	88.0	93.0	83.0
MC5097-4MSD	N57065.D	89.0	92.0	85.0
MSN2139-BS	N57046.D	92.0	93.0	85.0
MSN2139-MB	N57048.D	94.0	92.0	86.0
MSP1844-BS	P56516.D	101.0	97.0	100.0
MSP1844-MB	P56517.D	91.0	96.0	110.0

Surr ogate Compounds                      Recovery Limits

S1 = Dibromofluoromethane              70-130%  
S2 = Toluene-D8                              70-130%  
S3 = 4-Bromofluorobenzene              70-130%

5.5.1

5

## GC/MS Semi-volatiles

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## QC Data Summaries

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Includes the following where applicable:

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

# Method Blank Summary

Job Number: MC4964

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26777-MB	S28564.D	1	11/04/11	PR	11/01/11	OP26777	MSS1236

The QC reported here applies to the following samples:

Method: SW846 8270C

MC4964-1, MC4964-2, MC4964-3

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	10	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	ug/l	
51-28-5	2,4-Dinitrophenol	ND	20	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	ug/l	
95-48-7	2-Methylphenol	ND	10	ug/l	
	3&4-Methylphenol	ND	10	ug/l	
88-75-5	2-Nitrophenol	ND	10	ug/l	
100-02-7	4-Nitrophenol	ND	20	ug/l	
87-86-5	Pentachlorophenol	ND	10	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	10	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	ug/l	
62-53-3	Aniline	ND	10	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	ug/l	
85-68-7	Butyl benzyI phthalate	ND	5.0	ug/l	
100-51-6	Benzyl Alcohol	ND	10	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	ug/l	
106-47-8	4-Chloroaniline	ND	10	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	10	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.0	ug/l	
132-64-9	Dihenzofuran	ND	5.0	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	ug/l	
84-66-2	Diethyl phthalate	ND	5.0	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	ug/l	

6.1.1

6

# Method Blank Summary

Job Number: MC4964

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26777-MB	S28564.D	1	11/04/11	PR	11/01/11	OP26777	MSS1236

The QC reported here applies to the following samples:

Method: SW846 8270C

MC4964-1, MC4964-2, MC4964-3

6.1.1  
6

CAS No.	Compound	Result	RL	Units	Q
77-47-4	Hexachlorocyclopentadiene	ND	10	ug/l	
67-72-1	Hexachloroethane	ND	5.0	ug/l	
78-59-1	Isophorone	ND	5.0	ug/l	
88-74-4	2-Nitroaniline	ND	10	ug/l	
99-09-2	3-Nitroaniline	ND	10	ug/l	
100-01-6	4-Nitroaniline	ND	10	ug/l	
98-95-3	Nitrobenzene	ND	5.0	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	ug/l	
110-86-1	Pyridine	ND	10	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	48%	15-110%
4165-62-2	Phenol-d5	31%	15-110%
118-79-6	2,4,6-Tribromophenol	90%	15-110%
4165-60-0	Nitrobenzene-d5	102%	30-130%
321-60-8	2-Fluorobiphenyl	89%	30-130%
1718-51-0	Terphenyl-d14	102%	30-130%

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

## Method Blank Summary

Page 1 of 1

Job Number: MC4964

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26778-MB	I76182.D	1	11/07/11	KR	11/01/11	OP26778	MSI2794

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC4964-1, MC4964-2, MC4964-3

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	0.10	ug/l	
208-96-8	Acenaphthylene	ND	0.10	ug/l	
120-12-7	Anthracene	ND	0.10	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.050	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.050	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	ug/l	
218-01-9	Chrysene	ND	0.10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	ug/l	
206-44-0	Fluoranthene	ND	0.10	ug/l	
86-73-7	Fluorene	ND	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.20	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	0.10	ug/l	
85-01-8	Phenanthrene	ND	0.050	ug/l	
129-00-0	Pyrene	ND	0.10	ug/l	

CAS No.	Surrogate Recoveries		Limits
4165-60-0	Nitrobenzene-d5	99%	30-130%
321-60-8	2-Fluorobiphenyl	96%	30-130%
1718-51-0	Terphenyl-d14	104%	30-130%

6.1.2

6

# Blank Spike Summary

Job Number: MC4964  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26777-BS	S28565.D	1	11/04/11	PR	11/01/11	OP26777	MSS1236

The QC reported here applies to the following samples:

Method: SW846 8270C

MC4964-1, MC4964-2, MC4964-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
65-85-0	Benzoic Acid	100	34.7	35	30-130
95-57-8	2-Chlorophenol	100	79.9	80	30-130
59-50-7	4-Chloro-3-methyl phenol	100	98.9	99	30-130
120-83-2	2,4-Dichlorophenol	100	93.0	93	30-130
105-67-9	2,4-Dimethylphenol	100	85.3	85	30-130
51-28-5	2,4-Dinitrophenol	100	71.7	72	30-130
534-52-1	4,6-Dinitro-o-cresol	100	88.6	89	30-130
95-48-7	2-Methylphenol	100	70.7	71	30-130
	3&4-Methylphenol	200	131	66	30-130
88-75-5	2-Nitrophenol	100	95.2	95	30-130
100-02-7	4-Nitrophenol	100	48.6	49	30-130
87-86-5	Pentachlorophenol	100	81.3	81	30-130
108-95-2	Phenol	100	35.6	36	30-130
95-95-4	2,4,5-Trichlorophenol	100	100	100	30-130
88-06-2	2,4,6-Trichlorophenol	100	93.0	93	30-130
62-53-3	Aniline	50	17.2	34* a	40-140
101-55-3	4-Bromophenyl phenyl ether	50	51.8	104	40-140
85-68-7	Butyl benzyl phthalate	50	55.0	110	40-140
100-51-6	Benzyl Alcohol	50	36.6	73	40-140
91-58-7	2-Chloronaphthalene	50	47.3	95	40-140
106-47-8	4-Chloroaniline	50	23.9	48	40-140
111-91-1	bis(2-Chloroethoxy)methane	50	46.9	94	40-140
111-44-4	bis(2-Chloroethyl)ether	50	48.4	97	40-140
108-60-1	bis(2-Chloroisopropyl)ether	50	36.1	72	40-140
7005-72-3	4-Chlorophenyl phenyl ether	50	50.5	101	40-140
122-66-7	1,2-Diphenylhydrazine	50	52.1	104	40-140
121-14-2	2,4-Dinitrotoluene	50	50.6	101	40-140
606-20-2	2,6-Dinitrotoluene	50	45.9	92	40-140
91-94-1	3,3'-Dichlorobenzidine	50	39.1	78	40-140
132-64-9	Dibenzofuran	50	47.2	94	40-140
84-74-2	Di-n-butyl phthalate	50	52.4	105	40-140
117-84-0	Di-n-octyl phthalate	50	60.9	122	40-140
84-66-2	Diethyl phthalate	50	58.0	116	40-140
131-11-3	Dimethyl phthalate	50	52.6	105	40-140
117-81-7	bis(2-Ethylhexyl)phthalate	50	57.0	114	40-140
118-74-1	Hexachlorobenzene	50	47.0	94	40-140

6.2.1

6

# Blank Spike Summary

Job Number: MC4964  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26777-BS	S28565.D	1	11/04/11	PR	11/01/11	OP26777	MSS1236

The QC reported here applies to the following samples:

Method: SW846 8270C

MC4964-1, MC4964-2, MC4964-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
77-47-4	Hexachlorocyclopentadiene	50	11.3	23* a	40-140
67-72-1	Hexachloroethane	50	43.1	86	40-140
78-59-1	Isophorone	50	38.6	77	40-140
88-74-4	2-Nitroaniline	50	47.3	95	40-140
99-09-2	3-Nitroaniline	50	29.2	58	40-140
100-01-6	4-Nitroaniline	50	41.2	82	40-140
98-95-3	Nitrobenzene	50	50.2	100	40-140
62-75-9	n-Nitrosodimethylamine	50	27.1	54	40-140
621-64-7	N-Nitroso-di-n-propylamine	50	53.9	108	40-140
86-30-6	N-Nitrosodiphenylamine	50	49.0	98	40-140
110-86-1	Pyridine	50	26.1	52	40-140

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	49%	15-110%
4165-62-2	Phenol-d5	33%	15-110%
118-79-6	2,4,6-Tribromophenol	98%	15-110%
4165-60-0	Nitrobenzene-d5	102%	30-130%
321-60-8	2-Fluorobiphenyl	94%	30-130%
1718-51-0	Terphenyl-d14	99%	30-130%

(a) Outside control limits. Blank Spike meets program technical requirements.

6.2.1

6



# Blank Spike Summary

Job Number: MC4964

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26778-BS	I76183.D	1	11/07/11	KR	11/01/11	OP26778	MSI2794

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC4964-1, MC4964-2, MC4964-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
83-32-9	Acenaphthene	50	47.8	96	40-140
208-96-8	Acenaphthylene	50	39.4	79	40-140
120-12-7	Anthracene	50	49.8	100	40-140
56-55-3	Benzo(a)anthracene	50	59.4	119	40-140
50-32-8	Benzo(a)pyrene	50	45.2	90	40-140
205-99-2	Benzo(b)fluoranthene	50	49.4	99	40-140
191-24-2	Benzo(g,h,i)perylene	50	28.3	57	40-140
207-08-9	Benzo(k)fluoranthene	50	53.5	107	40-140
218-01-9	Chrysene	50	50.7	101	40-140
53-70-3	Dibenzo(a,h)anthracene	50	37.4	75	40-140
206-44-0	Fluoranthene	50	53.0	106	40-140
86-73-7	Fluorene	50	50.6	101	40-140
193-39-5	Indeno(1,2,3-cd)pyrene	50	35.2	70	40-140
90-12-0	1-Methylnaphthalene	50	45.4	91	40-140
91-57-6	2-Methylnaphthalene	50	48.1	96	40-140
91-20-3	Naphthalene	50	45.6	91	40-140
85-01-8	Phenanthrene	50	45.3	91	40-140
129-00-0	Pyrene	50	48.1	96	40-140

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	99%	30-130%
321-60-8	2-Fluorobiphenyl	92%	30-130%
1718-51-0	Terphenyl-d14	102%	30-130%

6.2.2

6

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC4964

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26777-MS	S28566.D	1	11/04/11	PR	11/01/11	OP26777	MSS1236
OP26777-MSD	S28567.D	1	11/04/11	PR	11/01/11	OP26777	MSS1236
MC5071-6	S28568.D	1	11/04/11	PR	11/01/11	OP26777	MSS1236

The QC reported here applies to the following samples:

Method: SW846 8270C

MC4964-1, MC4964-2, MC4964-3

CAS No.	Compound	MC5071-6 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic Acid	ND	100	35.1	35	36.0	36	3	30-130/20
95-57-8	2-Chlorophenol	ND	100	78.6	79	81.8	82	4	30-130/20
59-50-7	4-Chloro-3-methyl phenol	ND	100	95.6	96	100	100	4	30-130/20
120-83-2	2,4-Dichlorophenol	ND	100	92.1	92	96.0	96	4	30-130/20
105-67-9	2,4-Dimethylphenol	ND	100	81.3	81	87.2	87	7	30-130/20
51-28-5	2,4-Dinitrophenol	ND	100	75.2	75	79.0	79	5	30-130/20
534-52-1	4,6-Dinitro-o-cresol	ND	100	90.6	91	95.0	95	5	30-130/20
95-48-7	2-Methylphenol	ND	100	71.4	71	74.5	75	4	30-130/20
	3&4-Methylphenol	ND	200	133	67	141	71	6	30-130/20
88-75-5	2-Nitrophenol	ND	100	92.8	93	97.3	97	5	30-130/20
100-02-7	4-Nitrophenol	ND	100	51.6	52	55.4	55	7	30-130/20
87-86-5	Pentachlorophenol	ND	100	73.8	74	75.5	76	2	30-130/20
108-95-2	Phenol	ND	100	36.5	37	38.0	38	4	30-130/20
95-95-4	2,4,5-Trichlorophenol	ND	100	99.4	99	99.0	99	0	30-130/20
88-06-2	2,4,6-Trichlorophenol	ND	100	93.7	94	93.8	94	0	30-130/20
62-53-3	Aniline	ND	50	18.2	36* a	18.6	37* a	2	40-140/20
101-55-3	4-Bromophenyl phenyl ether	ND	50	48.8	98	51.4	103	5	40-140/20
85-68-7	Butyl benzyl phthalate	ND	50	54.5	109	56.8	114	4	40-140/20
100-51-6	Benzyl Alcohol	ND	50	36.5	73	38.5	77	5	40-140/20
91-58-7	2-Chloronaphthalene	ND	50	46.7	93	46.4	93	1	40-140/20
106-47-8	4-Chloroaniline	ND	50	27.0	54	26.5	53	2	40-140/20
111-91-1	bis(2-Chloroethoxy)methane	ND	50	45.3	91	47.6	95	5	40-140/20
111-44-4	bis(2-Chloroethyl)ether	ND	50	50.0	100	46.4	93	7	40-140/20
108-60-1	bis(2-Chloroisopropyl)ether	ND	50	35.1	70	36.7	73	4	40-140/20
7005-72-3	4-Chlorophenyl phenyl ether	ND	50	50.5	101	50.6	101	0	40-140/20
122-66-7	1,2-Diphenylhydrazine	ND	50	50.5	101	53.5	107	6	40-140/20
121-14-2	2,4-Dinitrotoluene	ND	50	50.6	101	50.7	101	0	40-140/20
606-20-2	2,6-Dinitrotoluene	ND	50	45.2	90	46.2	92	2	40-140/20
91-94-1	3,3'-Dichlorobenzidine	ND	50	42.1	84	40.5	81	4	40-140/20
132-64-9	Dibenzofuran	ND	50	46.8	94	47.8	96	2	40-140/20
84-74-2	Di-n-butyl phthalate	ND	50	52.0	104	53.7	107	3	40-140/20
117-84-0	Di-n-octyl phthalate	ND	50	62.2	124	61.9	124	0	40-140/20
84-66-2	Diethyl phthalate	ND	50	57.4	115	56.0	112	2	40-140/20
131-11-3	Dimethyl phthalate	ND	50	53.2	106	53.1	106	0	40-140/20
117-81-7	bis(2-Ethylhexyl)phthalate	ND	50	56.6	113	56.8	114	0	40-140/20
118-74-1	Hexachlorobenzene	ND	50	47.3	95	49.1	98	4	40-140/20

6.3.1

6

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC4964  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26777-MS	S28566.D	1	11/04/11	PR	11/01/11	OP26777	MSS1236
OP26777-MSD	S28567.D	1	11/04/11	PR	11/01/11	OP26777	MSS1236
MC5071-6	S28568.D	1	11/04/11	PR	11/01/11	OP26777	MSS1236

The QC reported here applies to the following samples:

Method: SW846 8270C

MC4964-1, MC4964-2, MC4964-3

CAS No.	Compound	MC5071-6 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
77-47-4	Hexachlorocyclopentadiene	ND	50	11.6	23* b	11.7	23* b	1	40-140/20
67-72-1	Hexachloroethane	ND	50	42.7	85	43.3	87	1	40-140/20
78-59-1	Isophorone	ND	50	37.4	75	39.1	78	4	40-140/20
88-74-4	2-Nitroaniline	ND	50	48.1	96	48.3	97	0	40-140/20
99-09-2	3-Nitroaniline	ND	50	32.8	66	29.8	60	10	40-140/20
100-01-6	4-Nitroaniline	ND	50	42.6	85	42.3	85	1	40-140/20
98-95-3	Nitrobenzene	ND	50	49.5	99	51.6	103	4	40-140/20
62-75-9	n-Nitrosodimethylamine	ND	50	28.3	57	28.8	58	2	40-140/20
621-64-7	N-Nitroso-di-n-propylamine	ND	50	53.8	108	54.2	108	1	40-140/20
86-30-6	N-Nitrosodiphenylamine	ND	50	47.3	95	50.0	100	6	40-140/20
110-86-1	Pyridine	ND	50	26.7	53	26.0	52	3	40-140/20

CAS No.	Surrogate Recoveries	MS	MSD	MC5071-6	Limits
367-12-4	2-Fluorophenol	51%	51%	48%	15-110%
4165-62-2	Phenol-d5	35%	36%	32%	15-110%
118-79-6	2,4,6-Tribromophenol	95%	97%	93%	15-110%
4165-60-0	Nitrobenzene-d5	99%	105%	101%	30-130%
321-60-8	2-Fluorobiphenyl	95%	94%	90%	30-130%
1718-51-0	Terphenyl-d14	99%	100%	101%	30-130%

- (a) Outside control limits. Blank Spike meets program technical requirements.
- (b) Outside control limits due to possible matrix interference. Refer to Blank Spike.

6.3.1

6

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC4964

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26778-MS	I76184.D	1	11/07/11	KR	11/01/11	OP26778	MSI2794
OP26778-MSD	I76185.D	1	11/07/11	KR	11/01/11	OP26778	MSI2794
MC5071-5	I76186.D	1	11/07/11	KR	11/01/11	OP26778	MSI2794

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC4964-1, MC4964-2, MC4964-3

CAS No.	Compound	MC5071-5 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND	50	47.2	94	48.4	97	3	40-140/20
208-96-8	Acenaphthylene	ND	50	39.0	78	40.0	80	3	40-140/20
120-12-7	Anthracene	ND	50	48.9	98	50.2	100	3	40-140/20
56-55-3	Benzo(a)anthracene	ND	50	59.2	118	61.0	122	3	40-140/20
50-32-8	Benzo(a)pyrene	ND	50	44.9	90	46.5	93	4	40-140/20
205-99-2	Benzo(b)fluoranthene	ND	50	48.8	98	52.1	104	7	40-140/20
191-24-2	Benzo(g,h,i)perylene	ND	50	28.3	57	25.9	52	9	40-140/20
207-08-9	Benzo(k)fluoranthene	ND	50	53.2	106	54.1	108	2	40-140/20
218-01-9	Chrysene	0.019	50	50.5	101	52.1	104	3	40-140/20
53-70-3	Dibenzo(a,h)anthracene	ND	50	37.2	74	35.2	70	6	40-140/20
206-44-0	Fluoranthene	0.019	50	53.1	106	56.2	112	6	40-140/20
86-73-7	Fluorene	ND	50	50.2	100	52.5	105	4	40-140/20
193-39-5	Indeno(1,2,3-cd)pyrene	ND	50	35.1	70	32.9	66	6	40-140/20
90-12-0	1-Methylnaphthalene	ND	50	45.4	91	46.2	92	2	40-140/20
91-57-6	2-Methylnaphthalene	0.027	50	47.5	95	47.7	95	0	40-140/20
91-20-3	Naphthalene	0.033	50	45.5	91	46.2	92	2	40-140/20
85-01-8	Phenanthrene	ND	50	44.4	89	47.0	94	6	40-140/20
129-00-0	Pyrene	0.024	50	46.6	93	46.9	94	1	40-140/20

CAS No.	Surrogate Recoveries	MS	MSD	MC5071-5	Limits
4165-60-0	Nitrobenzene-d5	98%	100%	99%	30-130%
321-60-8	2-Fluorobiphenyl	91%	93%	95%	30-130%
1718-51-0	Terphenyl-d14	99%	100%	106%	30-130%

6.3.2

6

# Semivolatiles Internal Standard Area Summary

Job Number: MC4964  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSF2574-CC2572	Injection Date:	11/04/11
Lab File ID:	F53456.D	Injection Time:	13:01
Instrument ID:	GCM5F	Method:	SW846 8270C

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	385658	5.10	1258435	6.36	700982	8.75	1164206	11.24	966983	16.17	931430	18.67
Upper Limit <sup>a</sup>	771316	5.60	2516870	6.86	1401964	9.25	2328412	11.74	1933966	16.67	1862860	19.17
Lower Limit <sup>b</sup>	192829	4.60	629218	5.86	350491	8.25	582103	10.74	483492	15.67	465715	18.17

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
ZZZZZZ	434863	5.09	1365984	6.36	774437	8.75	1226659	11.24	1045853	16.16	957773	18.67
MC4964-1	386353	5.10	1211278	6.35	678617	8.74	1079834	11.24	892494	16.16	840456	18.67
MC4964-2	454657	5.10	1392588	6.35	782132	8.74	1263830	11.24	1027404	16.16	941499	18.67
MC4964-3	390910	5.09	1203074	6.35	669764	8.74	1083882	11.23	927187	16.16	817060	18.67
ZZZZZZ	411767	5.09	1278035	6.36	711217	8.74	1146849	11.23	975644	16.16	854039	18.67
ZZZZZZ	402633	5.10	1273408	6.35	714716	8.75	1159645	11.24	993039	16.16	846737	18.67
OP26773-MB	506821	5.10	1587476	6.35	886889	8.75	1446865	11.24	1172097	16.17	951893	18.67
OP26773-BS	436980	5.10	1420679	6.36	807609	8.75	1338208	11.24	1086431	16.17	903489	18.67
OP26773-MS	474751	5.10	1507859	6.36	864689	8.75	1442744	11.24	1157632	16.17	963794	18.67
OP26773-MSD	413357	5.10	1315897	6.36	747927	8.75	1264179	11.24	1028968	16.17	836144	18.67
ZZZZZZ	326188	5.10	1012001	6.36	585351	8.76	1032071	11.28	641335	16.29	145877 <sup>c</sup>	18.72
ZZZZZZ	501696	5.10	1543091	6.36	870579	8.75	1391084	11.23	1095790	16.16	983358	18.67
ZZZZZZ	468434	5.10	1484968	6.35	815585	8.74	1324307	11.24	1043105	16.16	911835	18.67
MC4942-4	466392	5.10	1457456	6.36	820431	8.74	1315830	11.23	1060611	16.16	928539	18.67
ZZZZZZ	462113	5.10	1473492	6.36	824159	8.74	1278002	11.23	1003646	16.17	1361601	18.69
ZZZZZZ	494136	5.10	1536249	6.35	881635	8.74	1393448	11.24	1077590	16.16	1065604	18.67
ZZZZZZ	472623	5.10	1445396	6.35	805793	8.74	1273873	11.23	996394	16.16	905848	18.67
ZZZZZZ	527203	5.10	1576083	6.35	862375	8.74	1391999	11.24	1110277	16.16	1020761	18.67
ZZZZZZ	446754	5.10	1396459	6.36	774301	8.74	1244161	11.23	969587	16.16	882846	18.67

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.  
 (c) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

6.4.1  
**6**

# Semivolatiles Internal Standard Area Summary

Job Number: MC4964  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSI2794-CC2789	Injection Date:	11/07/11
Lab File ID:	I76171.D	Injection Time:	10:07
Instrument ID:	GCMSI	Method:	SW846 8270C BY SIM

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	211304	5.26	643887	6.52	393383	8.91	668722	11.41	770549	16.34	767542	18.85
Upper Limit <sup>a</sup>	422608	5.76	1287774	7.02	786766	9.41	1337444	11.91	1541098	16.84	1535084	19.35
Lower Limit <sup>b</sup>	105652	4.76	321944	6.02	196692	8.41	334361	10.91	385275	15.84	383771	18.35

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP26808-MB	205654	5.26	643458	6.52	378471	8.91	637635	11.39	670232	16.33	639828	18.85
OP26808-BS	221086	5.28	695530	6.52	407434	8.91	682974	11.41	764457	16.34	896919	18.86
OP26808-MS	198033	5.28	622940	6.52	363528	8.91	601379	11.41	704921	16.34	857176	18.86
OP26808-MSD	190530	5.28	597248	6.53	348463	8.92	581379	11.41	714301	16.34	867335	18.86
MC5062-13C	184060	5.26	581878	6.52	342346	8.91	585914	11.39	658443	16.33	690504	18.85
ZZZZZZ	170445	5.26	539104	6.52	313620	8.91	530066	11.39	577246	16.33	601835	18.85
ZZZZZZ	171211	5.26	543531	6.52	317639	8.91	542074	11.39	592704	16.33	611761	18.85
ZZZZZZ	165859	5.26	529517	6.52	306369	8.91	525922	11.39	581290	16.33	605633	18.85
ZZZZZZ	177256	5.26	563816	6.52	332574	8.91	576529	11.39	644205	16.33	681517	18.85
ZZZZZZ	170013	5.26	532120	6.52	310200	8.91	536285	11.39	599638	16.33	640585	18.85
OP26778-MB	171613	5.26	539693	6.52	312412	8.91	526651	11.39	571660	16.33	595660	18.85
OP26778-BS	189319	5.28	597285	6.53	349950	8.92	574993	11.41	631881	16.34	715538	18.86
OP26778-MS	180268	5.28	569998	6.53	330741	8.92	558757	11.41	637951	16.34	727550	18.86
OP26778-MSD	175170	5.28	557100	6.53	321388	8.92	541318	11.41	651091	16.34	735694	18.86
MC5071-5	156563	5.26	493525	6.52	286571	8.91	481613	11.39	520466	16.33	530353	18.85
ZZZZZZ	166628	5.26	523447	6.52	303859	8.91	512989	11.39	575032	16.33	621753	18.85
ZZZZZZ	155010	5.26	486390	6.52	285431	8.91	500152	11.39	533306	16.33	562616	18.85
ZZZZZZ	135579	5.26	427296	6.52	244679	8.91	421225	11.39	472919	16.33	494567	18.85
ZZZZZZ	142106	5.26	484338	6.52	314006	8.92	618888	11.42	907816	16.37	157079 <sup>c</sup>	18.86
ZZZZZZ	137309	5.28	446992	6.53	257969	8.91	449530	11.39	531841	16.33	534867	18.85
ZZZZZZ	136992	5.26	445758	6.52	268728	8.91	486674	11.40	570365	16.33	555577	18.85
ZZZZZZ	139827	5.26	448941	6.52	266879	8.91	464703	11.39	548546	16.33	540671	18.85

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.  
 (c) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

6.4.2

6

# Semivolatiles Internal Standard Area Summary

Job Number: MC4964  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSI2795-CC2789	Injection Date:	11/09/11
Lab File ID:	I76196.D	Injection Time:	18:43
Instrument ID:	GCMSI	Method:	SW846 8270C BY SIM

	IS 1	IS 2	IS 3	IS 4	IS 5	IS 6
	AREA	RT	AREA	RT	AREA	RT
Check Std	282280	5.44	827844	6.71	554841	9.16
Upper Limit <sup>a</sup>	564560	5.94	1655688	7.21	1109682	9.66
Lower Limit <sup>b</sup>	141140	4.94	413922	6.21	277421	8.66

Lab Sample ID	IS 1	IS 2	IS 3	IS 4	IS 5	IS 6
	AREA	RT	AREA	RT	AREA	RT
OP26793-MB	238922	5.44	789704	6.71	457386	9.16
OP26793-BS	265011	5.44	794196	6.72	457641	9.16
OP26793-MS	193512	5.44	601372	6.72	362995	9.16
OP26793-MSD	189186	5.44	597745	6.72	362883	9.16
ZZZZZZ	162348	5.44	510696	6.71	306102	9.16
ZZZZZZ	147720	5.44	512548	6.71	309560	9.16
MC5134-3	190557	5.44	648439	6.71	371954	9.16
MC4964-1	194263	5.44	671404	6.72	352770	9.16
MC4964-2	207076	5.44	672959	6.71	370761	9.16
MC4964-3	221868	5.44	706236	6.71	377547	9.16
ZZZZZZ	204132	5.44	696250	6.71	380548	9.16
ZZZZZZ	190027	5.44	626448	6.71	338469	9.16
ZZZZZZ	211074	5.44	692856	6.71	360317	9.16
ZZZZZZ	225360	5.44	724597	6.71	368173	9.16
ZZZZZZ	196612	5.44	648417	6.71	331127	9.16
ZZZZZZ	232135	5.44	744478	6.71	360952	9.16
ZZZZZZ	185876	5.44	617013	6.71	317695	9.15
ZZZZZZ	199492	5.44	663581	6.71	340976	9.16
ZZZZZZ	227091	5.44	742137	6.71	377896	9.16

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.  
 (c) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

6.4.3  
6

# Semivolatile Internal Standard Area Summary

Job Number: MC4964  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSS1236-CC1193	Injection Date:	11/03/11
Lab File ID:	S28546.D	Injection Time:	16:40
Instrument ID:	GCMSS	Method:	SW846 8270C

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	80216	5.38	270350	6.75	159253	8.79	271202	10.88	254558	15.16	229296	17.37
Upper Limit <sup>a</sup>	160432	5.88	540700	7.25	318506	9.29	542404	11.38	509116	15.66	458592	17.87
Lower Limit <sup>b</sup>	40108	4.88	135175	6.25	79627	8.29	135601	10.38	127279	14.66	114648	16.87

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP26735-MS	71268	5.38	245648	6.75	138712	8.79	238017	10.88	220473	15.16	208212	17.37
OP26735-MSD	68751	5.38	242362	6.75	136308	8.79	243475	10.88	225272	15.16	197845	17.37
MC4820-1	67289	5.38	230407	6.74	132595	8.79	237035	10.87	219229	15.16	197455	17.37
ZZZZZZ	71145	5.38	244725	6.74	138269	8.79	236067	10.87	227738	15.16	206003	17.37
ZZZZZZ	66717	5.38	238422	6.74	139547	8.79	237899	10.87	218343	15.16	200172	17.37
ZZZZZZ	54230	5.38	190638	6.74	112913	8.79	195304	10.87	185956	15.16	170437	17.37
ZZZZZZ	62462	5.38	219704	6.74	122509	8.79	225639	10.88	207004	15.16	188944	17.37
ZZZZZZ	66666	5.38	233738	6.75	135076	8.79	244414	10.88	227027	15.16	193161	17.37
ZZZZZZ	75122	5.38	264134	6.74	152029	8.79	281334	10.88	260529	15.16	221427	17.37
ZZZZZZ	64439	5.38	224009	6.74	128937	8.79	242676	10.88	227950	15.16	194807	17.37
ZZZZZZ	62177	5.38	217778	6.74	126942	8.79	222624	10.87	208600	15.16	179956	17.37
ZZZZZZ	61146	5.38	212874	6.75	119414	8.79	229690	10.88	215272	15.16	183029	17.37
ZZZZZZ	65758	5.38	224482	6.75	129346	8.79	235126	10.88	227331	15.16	193845	17.37
ZZZZZZ	69489	5.39	232965	6.75	137582	8.79	245213	10.88	234307	15.16	196121	17.37
ZZZZZZ	55896	5.39	198155	6.75	117465	8.79	204375	10.88	194590	15.16	162588	17.37
ZZZZZZ	50098	5.38	182228	6.75	101101	8.79	174925	10.89	181427	15.16	171514	17.37
ZZZZZZ	54845	5.38	192703	6.75	113011	8.79	198192	10.88	197426	15.16	181696	17.37
OP26780-MB	54053	5.38	191705	6.75	114304	8.79	200359	10.88	192412	15.16	176605	17.37
OP26777-MB	54053	5.38	191705	6.75	114304	8.79	200359	10.88	192412	15.16	176605	17.37
OP26777-BS	59316	5.38	201631	6.75	117161	8.79	209561	10.88	207305	15.16	183564	17.37
OP26780-BS	59316	5.38	201631	6.75	117161	8.79	209561	10.88	207305	15.16	183564	17.37
OP26777-MS	58464	5.38	202126	6.75	114582	8.79	210637	10.88	206923	15.16	178786	17.37
OP26777-MSD	57352	5.38	194852	6.75	115724	8.79	205749	10.88	206432	15.16	182422	17.37
MC5071-6	53637	5.38	187006	6.75	107087	8.79	192654	10.88	188836	15.16	173338	17.37
ZZZZZZ	55590	5.38	193087	6.75	112396	8.79	203661	10.88	195285	15.16	178827	17.37
ZZZZZZ	55590	5.38	193087	6.75	112396	8.79	203661	10.88	195773	15.16	178827	17.37
ZZZZZZ	54943	5.38	191462	6.74	112027	8.79	199843	10.87	191002	15.16	180294	17.37

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

6.4.4  
6



# Semivolatile Internal Standard Area Summary

Job Number: MC4964

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSS1236-CC1193	Injection Date:	11/03/11
Lab File ID:	S28546.D	Injection Time:	16:40
Instrument ID:	GCMSS	Method:	SW846 8270C

Lab	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
Sample ID	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT

- (a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
- (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.4.4

6

# Semivolatiles Internal Standard Area Summary

Job Number: MC4964  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSS1237-CC1204	Injection Date:	11/03/11
Lab File ID:	S28546A.D	Injection Time:	16:40
Instrument ID:	GCMSS	Method:	SW846 8270C

	IS 1	IS 2	IS 3	IS 4	IS 5	IS 6
	AREA	RT	AREA	RT	AREA	RT
Check Std	80216	5.38	270350	6.75	159253	8.79
Upper Limit <sup>a</sup>	160432	5.88	540700	7.25	318506	9.29
Lower Limit <sup>b</sup>	40108	4.88	135175	6.25	79627	8.29

Lab	IS 1	IS 2	IS 3	IS 4	IS 5	IS 6
Sample ID	AREA	RT	AREA	RT	AREA	RT
OP26735-MS	71268	5.38	245648	6.75	138712	8.79
OP26735-MSD	68751	5.38	242362	6.75	136308	8.79
MC4820-1	67289	5.38	230407	6.74	132595	8.79
ZZZZZZ	71145	5.38	244725	6.74	138269	8.79
ZZZZZZ	66717	5.38	238422	6.74	139547	8.79
ZZZZZZ	54230	5.38	190638	6.74	112913	8.79
ZZZZZZ	62462	5.38	219704	6.74	122509	8.79
ZZZZZZ	66666	5.38	233738	6.75	135076	8.79
ZZZZZZ	75122	5.38	264134	6.74	152029	8.79
ZZZZZZ	64439	5.38	224009	6.74	128937	8.79
ZZZZZZ	62177	5.38	217778	6.74	126942	8.79
ZZZZZZ	61146	5.38	212874	6.75	119414	8.79
ZZZZZZ	65758	5.38	224482	6.75	129346	8.79
ZZZZZZ	69489	5.39	232965	6.75	137582	8.79
ZZZZZZ	55896	5.39	198155	6.75	117465	8.79
ZZZZZZ	50098	5.38	182228	6.75	101101	8.79
ZZZZZZ	54845	5.38	192703	6.75	113011	8.79
OP26780-MB	54053	5.38	191705	6.75	114304	8.79
OP26777-MB	54053	5.38	191705	6.75	114304	8.79
OP26777-BS	59316	5.38	201631	6.75	117161	8.79
OP26780-BS	59316	5.38	201631	6.75	117161	8.79
OP26777-MS	58464	5.38	202126	6.75	114582	8.79
OP26777-MSD	57352	5.38	194852	6.75	115724	8.79
MC5071-6	53637	5.38	187006	6.75	107087	8.79
ZZZZZZ	55590	5.38	193087	6.75	112396	8.79
ZZZZZZ	55590	5.38	193087	6.75	112396	8.79
ZZZZZZ	54943	5.38	191462	6.74	112027	8.79

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

6.4.5

6

# Semivolatile Internal Standard Area Summary

Job Number: MC4964

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSS1237-CC1204	Injection Date:	11/03/11
Lab File ID:	S28546A.D	Injection Time:	16:40
Instrument ID:	GCMSS	Method:	SW846 8270C

Lab	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
Sample ID	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.4.5

6

# Semivolatiles Surrogate Recovery Summary

Job Number: MC4964

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Method: SW846 8270C

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4	S5	S6
MC4964-1	F53459.D	49.0	30.0	91.0	85.0	85.0	92.0
MC4964-2	F53460.D	47.0	30.0	86.0	82.0	82.0	88.0
MC4964-3	F53461.D	50.0	33.0	91.0	91.0	88.0	92.0
OP26777-BS	S28565.D	49.0	33.0	98.0	102.0	94.0	99.0
OP26777-MB	S28564.D	48.0	31.0	90.0	102.0	89.0	102.0
OP26777-MS	S28566.D	51.0	35.0	95.0	99.0	95.0	99.0
OP26777-MSD	S28567.D	51.0	36.0	97.0	105.0	94.0	100.0

Surrogate Compounds	Recovery Limits
S1 = 2-Fluorophenol	15-110%
S2 = Phenol-d5	15-110%
S3 = 2,4,6-Tribromophenol	15-110%
S4 = Nitrobenzene-d5	30-130%
S5 = 2-Fluorobiphenyl	30-130%
S6 = Terphenyl-d14	30-130%

6.5.1

6



## GC Volatiles

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## QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary

Job Number: MC4964

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26798-MB	BB39291.D	1	11/03/11	AP	11/02/11	OP26798	GBB2445

The QC reported here applies to the following samples:

Method: SW846 8011

MC4964-1, MC4964-2, MC4964-3, MC4964-4

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

CAS No.	Surrogate Recoveries		Limits
460-00-4	Bromofluorobenzene (S)	126%	36-173%
460-00-4	Bromofluorobenzene (S)	126%	36-173%

7.1.1

7

# Blank Spike Summary

Job Number: MC4964

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26798-BS	BB39292.D	1	11/03/11	AP	11/02/11	OP26798	GBB2445

The QC reported here applies to the following samples:

Method: SW846 8011

MC4964-1, MC4964-2, MC4964-3, MC4964-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
96-12-8	1,2-Dibromo-3-chloropropane	0.071	0.079	111	60-140
106-93-4	1,2-Dibromoethane	0.071	0.080	113	60-140

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	Bromofluorobenzene (S)	127%	36-173%
460-00-4	Bromofluorobenzene (S)	128%	36-173%

7.2.1

7



# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC4964

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26798-MS	BB39293.D	1	11/03/11	AP	11/02/11	OP26798	GBB2445
OP26798-MSD	BB39294.D	1	11/03/11	AP	11/02/11	OP26798	GBB2445
MC5062-13	BB39301.D	1	11/03/11	AP	11/02/11	OP26798	GBB2445

The QC reported here applies to the following samples:

Method: SW846 8011

MC4964-1, MC4964-2, MC4964-3, MC4964-4

CAS No.	Compound	MC5062-13 ug/l	Spike Q	ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.0681	0.088	129	0.13	154* <sup>a</sup>	39* <sup>a</sup>		64-141/29
106-93-4	1,2-Dibromoethane	ND	0.0681	0.073	107	0.10	118	31* <sup>a</sup>		63-163/27

CAS No.	Surrogate Recoveries	MS	MSD	MC5062-13	Limits
460-00-4	Bromofluorobenzene (S)	134%	136%	141%	36-173%
460-00-4	Bromofluorobenzene (S)	143%	144%	157%	36-173%

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

7.3.1

7

# Volatile Surrogate Recovery Summary

Job Number: MC4964

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Method: SW846 8011

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 <sup>a</sup>	S1 <sup>b</sup>
MC4964-1	BB39304.D	145.0	147.0
MC4964-2	BB39305.D	151.0	180.0* <sup>c</sup>
MC4964-3	BB39314.D	133.0	143.0
MC4964-4	BB39315.D	144.0	166.0
OP26798-BS	BB39292.D	127.0	128.0
OP26798-MB	BB39291.D	126.0	126.0
OP26798-MS	BB39293.D	134.0	143.0
OP26798-MSD	BB39294.D	136.0	144.0

Surrogate  
Compounds

Recovery  
Limits

S1 = Bromofluorobenzene (S) 36-173%

(a) Recovery from GC signal #1

(b) Recovery from GC signal #2

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

7.4.1

7

# GC Surrogate Retention Time Summary

Job Number: MC4964  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	GBB2445-CC2445	Injection Date:	11/03/11
Lab File ID:	BB39287.D	Injection Time:	17:22
Instrument ID:	GCBB	Method:	SW846 8011

	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
Check Std	3.97	3.91

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
ZZZZZZ	BB39288.D	11/03/11	17:44	3.98	3.92
ZZZZZZ	BB39289.D	11/03/11	18:07	3.97	3.92
ZZZZZZ	BB39290.D	11/03/11	18:30	3.97	3.92
OP26798-MB	BB39291.D	11/03/11	18:52	3.97	3.91
OP26798-BS	BB39292.D	11/03/11	19:14	3.97	3.91
OP26798-MS	BB39293.D	11/03/11	19:37	3.97	3.92
OP26798-MSD	BB39294.D	11/03/11	19:59	3.98	3.92
ZZZZZZ	BB39295.D	11/03/11	20:22	3.97	3.92
ZZZZZZ	BB39296.D	11/03/11	20:44	3.98	3.92
ZZZZZZ	BB39297.D	11/03/11	21:07	3.98	3.92

**Surrogate  
Compounds**

S1 = Bromofluorobenzene (S)

- (a) Retention time from GC signal #1
- (b) Retention time from GC signal #2

7.5.1  
7

# GC Surrogate Retention Time Summary

Job Number: MC4964

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	GBB2447-CC2445	Injection Date:	11/04/11
Lab File ID:	BB39313.D	Injection Time:	11:59
Instrument ID:	GCBB	Method:	SW846 8011

	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
Check Std	3.97	3.91

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
MC4964-3	BB39314.D	11/04/11	12:22	3.98	3.92
MC4964-4	BB39315.D	11/04/11	12:45	3.98	3.92
ZZZZZZ	BB39316.D	11/04/11	13:07	3.98	3.92
ZZZZZZ	BB39317.D	11/04/11	13:30	3.98	3.92
ZZZZZZ	BB39318.D	11/04/11	13:52	3.98	3.92
ZZZZZZ	BB39319.D	11/04/11	14:15	3.98	3.92
ZZZZZZ	BB39320.D	11/04/11	14:37	3.98	3.92
ZZZZZZ	BB39321.D	11/04/11	14:59	3.98	3.92
ZZZZZZ	BB39322.D	11/04/11	15:22	3.98	3.92

**Surrogate  
Compounds**

S1 = Bromofluorobenzene (S)

- (a) Retention time from GC signal #1
- (b) Retention time from GC signal #2

7.5.2  
7

# GC Surrogate Retention Time Summary

Job Number: MC4964  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	GBB2445-CC2445	Injection Date:	11/03/11
Lab File ID:	BB39298.D	Injection Time:	21:29
Instrument ID:	GCBB	Method:	SW846 8011

	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
Check Std	3.97	3.91

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
ZZZZZZ	BB39299.D	11/03/11	21:52	3.98	3.92
ZZZZZZ	BB39300.D	11/03/11	22:15	3.98	3.92
MC5062-13	BB39301.D	11/03/11	22:38	3.98	3.92
ZZZZZZ	BB39302.D	11/03/11	23:01	3.98	3.92
ZZZZZZ	BB39303.D	11/03/11	23:23	3.98	3.92
MC4964-1	BB39304.D	11/03/11	23:46	3.97	3.92
MC4964-2	BB39305.D	11/04/11	00:09	3.98	3.92
GBB2445-ECC244	BB39306.D	11/04/11	06:31	3.97	3.91

**Surrogate  
Compounds**

S1 = Bromofluorobenzene (S)

- (a) Retention time from GC signal #1
- (b) Retention time from GC signal #2

7.5.3  
7

# Roxana Groundwater Quarterly – 4<sup>th</sup> Quarter 2011 Data Review

Laboratory SDG: MC5041

Data Reviewer: Elizabeth Kunkel

Peer Reviewer: Tony Sedlacek

Date Reviewed: 12/1/2011

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

Sample Identification	Sample Identification
P93D-ROX-102711	T12-ROX-102711
P56-ROX-102711	P59-ROX-102711
TB-102711-1	TB-102711-2
P58-ROX-102811	P114-ROX-102811

## 1.0 Data Package Completeness

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

Yes

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

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

Yes, the laboratory case narrative indicated sample P56-ROX-102711 was diluted and re-analyzed for ethyl benzene outside hold time criteria. VOC and SVOC LCS recoveries were outside evaluation criteria. VOC method 8011 surrogate recoveries were outside evaluation criteria in sample P56-ROX-102711 and trip blank TB-102711-2. A VOC method 8260 surrogate recovery was outside evaluation criteria in sample P114-ROX-102811. Several samples were diluted due to high levels of VOCs. These issues are addressed further in the appropriate sections below.

The cooler receipt form indicated two of three coolers were received by the laboratory at temperatures of 0.4°C and 0.5°C which are outside the 4°C ± 2°C criteria. Samples were received in good condition; therefore, no qualification of data was required.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

No, sample P56-ROX-102711 was diluted and re-analyzed for ethylbenzene approximately four days outside the 14 day hold time for VOC analysis.

Sample ID	Parameter	Analyte	Qualification
P56-ROX-102711	VOCs	Ethylbenzene	J

#### 4.0 Blank Contamination

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

No

#### 5.0 Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

No

LCS/ LCSD ID	Parameter	Analyte	LCS/LCSD Recovery	RPD	LCS/LCSD /RPD Criteria
MSN2143-BS	VOC	Acetone	159/NA	NA	70-130
MSN2143-BS	VOC	Acrolein	134/NA	NA	70-130
MSN2143-BS	VOC	Acrylonitrile	484/NA	NA	70-130
MSN2143-BS	VOC	2-Butanone	161/NA	NA	70-130
MSN2143-BS	VOC	Carbon tetrachloride	131/NA	NA	70-130
MSN2143-BS	VOC	2,2-Dichloropropane	138/NA	NA	70-130
MSN2143-BS	VOC	trans-1,3- Dichloropropane	136/NA	NA	70-130
MSN2143-BS	VOC	2-Hexanone	165/NA	NA	70-130
MSN2143-BS	VOC	Methyl tert-butyl ether	133/NA	NA	70-130
MSN2142- BS/BSD	VOC	Acrolein	135/136	1	70-130/25
MSN2142- BS/BSD	VOC	Acrylonitrile	508/510	0	70-130/25
MSN2142- BS/BSD	VOC	Carbon tetrachloride	140/131	7	70-130/25
MSN2142- BS/BSD	VOC	2,2-Dichloropropane	135/141	4	70-130/25
MSN2142- BS/BSD	VOC	trans-1,3- Dichloropropane	136/136	0	70-130/25
MSN2142- BS/BSD	VOC	Methyl tert-butyl ether	132/136	3	70-130/25
OP26792-BS	SVOC	Aniline	35/NA	NA	40-140
OP26792-BS	SVOC	Pyridine	39/NA	NA	40-140

Analytical data that required qualification based on LCS data are included in the table below. Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification.

Sample ID	Parameter	Analyte	Qualification
P93D-ROX-102711	VOCs	Methyl tert-butyl ether	J
P114-ROX-102811	VOCs	Methyl tert-butyl ether	J
P93D-ROX-102711	SVOCs	Aniline	UJ
P93D-ROX-102711	SVOCs	Pyridine	UJ

Sample ID	Parameter	Analyte	Qualification
T12-ROX-102711	SVOCs	Aniline	UJ
T12-ROX-102711	SVOCs	Pyridine	UJ
P56-ROX-102711	SVOCs	Aniline	UJ
P56-ROX-102711	SVOCs	Pyridine	UJ
P59-ROX-102711	SVOCs	Aniline	UJ
P59-ROX-102711	SVOCs	Pyridine	UJ
P58-ROX-102811	SVOCs	Aniline	UJ
P58-ROX-102811	SVOCs	Pyridine	UJ
P114-ROX-102811	SVOCs	Aniline	UJ
P114-ROX-102811	SVOCs	Pyridine	UJ

## 6.0 Surrogate Recoveries

*Were surrogate recoveries within evaluation criteria?*

No

Sample ID	Parameter	Surrogate	Recovery	Criteria
P56-ROX-102711	8011 VOCs	Bromofluorobenzene	<b>185</b>	36-173
TB-102711-2	8011 VOCs	Bromofluorobenzene	<b>174</b>	36-173
P114-ROX-102811	VOCs	4-Bromofluorobenzene	<b>161</b>	70-130

A

Analytical data that required qualification based on surrogate data are included in the table below. Analytical data reported as non-detect and associated with surrogate recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. The compound methyl tert-butyl ether was previously qualified due to LCS recovery outside evaluation criteria. No further qualification of data is required.

## 7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

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

No

## 8.0 Internal Standard (IS) Recoveries

*Were internal standard area recoveries within evaluation criteria?*

Yes

## 9.0 Laboratory Duplicate Results

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

No



**10.0 Field Duplicate Results**

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

No

**11.0 Sample Dilutions**

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

Not applicable; analytes were detected in samples that were diluted.

**12.0 Additional Qualifications**

*Were additional qualifications applied?*

No



12/16/11

## Technical Report for

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### Shell Oil

URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana,

Accutest Job Number: MC5041

Sampling Dates: 10/27/11 - 10/28/11

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### Report to:

URS Corporation

Elizabeth\_Kunkel@URSCorp.com

ATTN: Elizabeth Kunkel

Total number of pages in report: 115

Reviewed  
on  
12/16/2011



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

*Reza Fard*  
Reza Fard  
Lab Director

Client Service contact: Jeremy Vienneau 508-481-6200

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

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Test results relate only to samples analyzed.

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### Sample Summary

Shell Oil

Job No: MC5041

URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
MC5041-1	10/27/11	11:40 LRBC	10/29/11	AQ	Ground Water	P93D-ROX-102711 ✓
MC5041-2	10/27/11	16:15 LRBC	10/29/11	AQ	Ground Water	T12-ROX-102711 ✓
MC5041-3	10/27/11	12:17 LRBC	10/29/11	AQ	Ground Water	P56-ROX-102711 ✓
MC5041-4	10/27/11	15:40 LRBC	10/29/11	AQ	Ground Water	P59-ROX-102711 ✓
MC5041-5	10/27/11	00:00 LRBC	10/29/11	AQ	Trip Blank Water	TB-102711-1 ✓
MC5041-6	10/27/11	00:00 LRBC	10/29/11	AQ	Trip Blank Water	TB-102711-2 ✓
MC5041-7	10/28/11	10:30 LRBC	10/29/11	AQ	Ground Water	P58-ROX-102811 ✓
MC5041-8	10/28/11	10:37 LRBC	10/29/11	AQ	Ground Water	P114-ROX-102811 ✓

**SAMPLE DELIVERY GROUP CASE NARRATIVE**

**Client:** Shell Oil

**Job No** MC5041

**Site:** URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central

**Report Date** 11/18/2011 12:42:25 PM

6 Sample(s), 2 Trip Blank(s) were collected on between 10/27/2011 and 10/28/2011 and were received at Accutest on 10/29/2011 properly preserved, at 2.3 Deg. C and intact. These Samples received an Accutest job number of MC5041. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report. 1-Chlorohexane, Benzenethiol, Dibenz(a,h)acridine, Indene, and Quinoline were searched in the library search and reported only if detections were found.

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

**Volatiles by GCMS By Method SW846 8260B**

<b>Matrix</b> AQ	<b>Batch ID:</b> MSN2142
------------------	--------------------------

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC5203-2MS, MC5203-2MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- BS/BSD Recovery(s) for 2,2-Dichloropropane, Acrolein, Carbon tetrachloride, Methyl Tert Butyl Ether, trans-1,3-Dichloropropene are outside control limits. Blank Spike meets program technical requirements
- MS/MSD Recovery(s) for Acetone, Benzene, Bromomethane, Chloromethane, Dichlorodifluoromethane, Vinyl chloride, Acrylonitrile are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- MSN2142-BS/BSD/MS/MSD for Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.

<b>Matrix</b> AQ	<b>Batch ID:</b> MSN2143
------------------	--------------------------

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC5203-16MS, MC5203-16MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for 2-Butanone (MEK), 2,2-Dichloropropane, Acrolein, Carbon tetrachloride, Methyl Tert Butyl Ether, trans-1,3-Dichloropropene are outside control limits. Blank Spike meets program technical requirements.
- MS/MSD Recovery(s) for Acetone, Bromomethane, Carbon tetrachloride, Dibromochloromethane are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Blank Spike Recovery(s) for 2-Butanone (MEK), 2-Hexanone, Acetone, Acrylonitrile are outside control limits. Associated samples are non-detect for this compound.
- MC5203-16MS/MSD for Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.
- MC5041-8 for 4-Bromofluorobenzene: Outside control limits. Associated target analytes are non-detect.

<b>Matrix</b> AQ	<b>Batch ID:</b> MSN2145
------------------	--------------------------

- Sample(s) MC5220-IMS, MC5220-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- MC5041-3: Sample re-analysis is outside of holding time.

### Extractables by GCMS By Method SW846 8270C

Matrix	AQ	Batch ID:	OP26792
--------	----	-----------	---------

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC5134-4MS, MC5134-4MSD were used as the QC samples indicated.
- Blank Spike Recovery(s) for Aniline, Pyridine are outside control limits. Blank Spike meets program technical requirements.
- OP26792-MS for Aniline: Outside control limits. Blank Spike meets program technical requirements.
- OP26792-MSD has internal standard outside control limits. Outside control limits due to possible matrix interference. Confirmed by MS/MSD.

### Extractables by GCMS By Method SW846 8270C BY SIM

Matrix	AQ	Batch ID:	OP26793
--------	----	-----------	---------

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC5134-3MS, MC5134-3MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- OP26793-MS/MSD for Nitrobenzene-d5: Outside control limits. Individual spike recoveries within acceptance limits.
- Calibration standard MSI2789-ICC2789 utilized the same files as MSI2801-ICC2801.
- Calibration standard MSI2801-ICC2801, MSI2801-ICV2801, MSI2800-CC2801 not associated with this job.

### Volatiles by GC By Method SW846 8011

Matrix	AQ	Batch ID:	OP26798
--------	----	-----------	---------

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC5062-13MS, MC5062-13MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Matrix Spike Duplicate Recovery(s) for 1,2-Dibromo-3-chloropropane are outside control limits. Outside control limits due to possible matrix interference.
- RPD(s) for MSD for 1,2-Dibromo-3-chloropropane, 1,2-Dibromoethane are outside control limits for sample OP26798-MSD. Outside control limits due to possible matrix interference.
- MC5041-3,6 for Bromofluorobenzene (S): Outside control limits due to possible matrix interference.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety. The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC5041).

Sample Results

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Report of Analysis

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## Report of Analysis

Client Sample ID:	P93D-ROX-102711	Date Sampled:	10/27/11
Lab Sample ID:	MC5041-1	Date Received:	10/29/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N57154.D	1	11/10/11	JP	n/a	n/a	MSN2142
Run #2							

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

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	0.97	0.50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



## Report of Analysis

Client Sample ID:	P93D-ROX-102711	Date Sampled:	10/27/11
Lab Sample ID:	MC5041-1	Date Received:	10/29/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	4.0	1.0	ug/l	J
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

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3

Client Sample ID:	P93D-ROX-102711	Date Sampled:	10/27/11
Lab Sample ID:	MC5041-1	Date Received:	10/29/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

**VOA Special List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		70-130%
2037-26-5	Toluene-D8	92%		70-130%
460-00-4	4-Bromofluorobenzene	85%		70-130%

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

ND = Not detected  
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 E = Indicates value exceeds calibration range

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 N = Indicates presumptive evidence of a compound

Report of Analysis



Client Sample ID:	P93D-ROX-102711	Date Sampled:	10/27/11
Lab Sample ID:	MC5041-1	Date Received:	10/29/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F53446.D	1	11/03/11	PR	11/02/11	OP26792	MSF2573
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	10	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	ug/l	
51-28-5	2,4-Dinitrophenol	ND	20	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	ug/l	
95-48-7	2-Methylphenol	ND	10	ug/l	
	3&4-Methylphenol	ND	10	ug/l	
88-75-5	2-Nitrophenol	ND	10	ug/l	
100-02-7	4-Nitrophenol	ND	20	ug/l	
87-86-5	Pentachlorophenol	ND	10	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	10	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	ug/l	
62-53-3	Aniline	ND	10	ug/l	uJ
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	ug/l	
100-51-6	Benzyl Alcohol	ND	10	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	ug/l	
106-47-8	4-Chloroaniline	ND	10	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	10	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.0	ug/l	
132-64-9	Dibenzofuran	ND	5.0	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	ug/l	

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

Report of Analysis



Client Sample ID:	P93D-ROX-102711	Date Sampled:	10/27/11
Lab Sample ID:	MC5041-1	Date Received:	10/29/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
84-66-2	Diethyl phthalate	ND	5.0	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	ug/l	
67-72-1	Hexachloroethane	ND	5.0	ug/l	
78-59-1	Isophorone	ND	5.0	ug/l	
88-74-4	2-Nitroaniline	ND	10	ug/l	
99-09-2	3-Nitroaniline	ND	10	ug/l	
100-01-6	4-Nitroaniline	ND	10	ug/l	
98-95-3	Nitrobenzene	ND	5.0	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	ug/l	
110-86-1	Pyridine	ND	10	ug/l	UJ

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	51%		15-110%
4165-62-2	Phenol-d5	33%		15-110%
118-79-6	2,4,6-Tribromophenol	88%		15-110%
4165-60-0	Nitrobenzene-d5	91%		30-130%
321-60-8	2-Fluorobiphenyl	85%		30-130%
1718-51-0	Terphenyl-d14	79%		30-130%

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

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 E = Indicates value exceeds calibration range

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

Report of Analysis



Client Sample ID:	P93D-ROX-102711	Date Sampled:	10/27/11
Lab Sample ID:	MC5041-1	Date Received:	10/29/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C BY SIM SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I76287.D	1	11/12/11	PR	11/02/11	OP26793	MSI2799
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	0.10	ug/l	
208-96-8	Acenaphthylene	ND	0.10	ug/l	
120-12-7	Anthracene	ND	0.10	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.050	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.050	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	ug/l	
218-01-9	Chrysene	ND	0.10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	ug/l	
206-44-0	Fluoranthene	ND	0.10	ug/l	
86-73-7	Fluorene	ND	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.20	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	0.10	ug/l	
85-01-8	Phenanthrene	ND	0.050	ug/l	
129-00-0	Pyrene	ND	0.10	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	111%		30-130%
321-60-8	2-Fluorobiphenyl	84%		30-130%
1718-51-0	Terphenyl-d14	86%		30-130%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis



Client Sample ID:	P93D-ROX-102711	Date Sampled:	10/27/11
Lab Sample ID:	MC5041-1	Date Received:	10/29/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8011 SW846 8011	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39316.D	1	11/04/11	AP	11/02/11	OP26798	GBB2447
Run #2							

Run #	Initial Volume	Final Volume
Run #1	33.7 ml	2.0 ml
Run #2		

**VOA Special List**

CAS No.	Compound	Result	RL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.016	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	141%		36-173%
460-00-4	Bromofluorobenzene (S)	169%		36-173%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID:	T12-ROX-102711	Date Sampled:	10/27/11
Lab Sample ID:	MC5041-2	Date Received:	10/29/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N57155.D	10	11/10/11	JP	n/a	n/a	MSN2142
Run #2							

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

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
107-02-8	Acrolein	ND	250	ug/l	
107-13-1	Acrylonitrile	ND	50	ug/l	
71-43-2	Benzene	1090	5.0	ug/l	
108-86-1	Bromobenzene	ND	50	ug/l	
74-97-5	Bromochloromethane	ND	50	ug/l	
75-27-4	Bromodichloromethane	ND	10	ug/l	
75-25-2	Bromoform	ND	10	ug/l	
74-83-9	Bromomethane	ND	20	ug/l	
78-93-3	2-Butanone (MEK)	ND	50	ug/l	
104-51-8	n-Butylbenzene	ND	50	ug/l	
135-98-8	sec-Butylbenzene	ND	50	ug/l	
98-06-6	tert-Butylbenzene	ND	50	ug/l	
75-15-0	Carbon disulfide	ND	50	ug/l	
56-23-5	Carbon tetrachloride	ND	10	ug/l	
108-90-7	Chlorobenzene	ND	10	ug/l	
75-00-3	Chloroethane	ND	20	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	50	ug/l	
67-66-3	Chloroform	ND	10	ug/l	
74-87-3	Chloromethane	ND	20	ug/l	
95-49-8	o-Chlorotoluene	ND	50	ug/l	
106-43-4	p-Chlorotoluene	ND	50	ug/l	
124-48-1	Dibromochloromethane	ND	10	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	10	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	10	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	10	ug/l	
75-71-8	Dichlorodifluoromethane	ND	20	ug/l	
75-34-3	1,1-Dichloroethane	ND	10	ug/l	
107-06-2	1,2-Dichloroethane	ND	10	ug/l	
75-35-4	1,1-Dichloroethene	ND	10	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	10	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	10	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	T12-ROX-102711	Date Sampled:	10/27/11
Lab Sample ID:	MC5041-2	Date Received:	10/29/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
78-87-5	1,2-Dichloropropane	ND	20	ug/l	
142-28-9	1,3-Dichloropropane	ND	50	ug/l	
594-20-7	2,2-Dichloropropane	ND	50	ug/l	
563-58-6	1,1-Dichloropropene	ND	50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	5.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	5.0	ug/l	
123-91-1	1,4-Dioxane	ND	250	ug/l	
97-63-2	Ethyl methacrylate	ND	50	ug/l	
100-41-4	Ethylbenzene	648	10	ug/l	
87-68-3	Hexachlorobutadiene	ND	50	ug/l	
591-78-6	2-Hexanone	ND	50	ug/l	
98-82-8	Isopropylbenzene	ND	50	ug/l	
99-87-6	p-Isopropyltoluene	ND	50	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	10	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	50	ug/l	
74-95-3	Methylene bromide	ND	50	ug/l	
75-09-2	Methylene chloride	ND	20	ug/l	
91-20-3	Naphthalene	105	50	ug/l	
103-65-1	n-Propylbenzene	ND	50	ug/l	
100-42-5	Styrene	ND	50	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	50	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	10	ug/l	
127-18-4	Tetrachloroethene	ND	10	ug/l	
108-88-3	Toluene	233	10	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	10	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	10	ug/l	
79-01-6	Trichloroethene	ND	10	ug/l	
75-69-4	Trichlorofluoromethane	ND	10	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	50	ug/l	
95-63-6	1,2,4-Trimethylbenzene	358	50	ug/l	
108-67-8	1,3,5-Trimethylbenzene	52.7	50	ug/l	
108-05-4	Vinyl Acetate	ND	50	ug/l	
75-01-4	Vinyl chloride	ND	10	ug/l	
	m,p-Xylene	1130	10	ug/l	
95-47-6	o-Xylene	108	10	ug/l	
1330-20-7	Xylene (total)	1240	10	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



Report of Analysis

3.2  
3

Client Sample ID:	T12-ROX-102711	Date Sampled:	10/27/11
Lab Sample ID:	MC5041-2	Date Received:	10/29/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		70-130%
2037-26-5	Toluene-D8	94%		70-130%
460-00-4	4-Bromofluorobenzene	85%		70-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID:	T12-ROX-102711	Date Sampled:	10/27/11
Lab Sample ID:	MC5041-2	Date Received:	10/29/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	F53447.D	1	11/03/11	PR	11/02/11	OP26792	MSF2573

Run #1	Initial Volume	Final Volume
Run #2	990 ml	1.0 ml

## ABN Special List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	10	ug/l	
95-57-8	2-Chlorophenol	ND	5.1	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	ug/l	
105-67-9	2,4-Dimethylphenol	10.9	10	ug/l	
51-28-5	2,4-Dinitrophenol	ND	20	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	ug/l	
95-48-7	2-Methylphenol	ND	10	ug/l	
	3&4-Methylphenol	ND	10	ug/l	
88-75-5	2-Nitrophenol	ND	10	ug/l	
100-02-7	4-Nitrophenol	ND	20	ug/l	
87-86-5	Pentachlorophenol	ND	10	ug/l	
108-95-2	Phenol	16.7	5.1	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	10	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	ug/l	
62-53-3	Aniline	ND	10	ug/l	uJ
101-55-3	4-Bromophenyl phenyl ether	ND	5.1	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.1	ug/l	
100-51-6	Benzyl Alcohol	ND	10	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.1	ug/l	
106-47-8	4-Chloroaniline	ND	10	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.1	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.1	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.1	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.1	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.1	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	10	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.1	ug/l	
132-64-9	Dibenzofuran	ND	5.1	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.1	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.1	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> T12-ROX-102711	
<b>Lab Sample ID:</b> MC5041-2	<b>Date Sampled:</b> 10/27/11
<b>Matrix:</b> AQ - Ground Water	<b>Date Received:</b> 10/29/11
<b>Method:</b> SW846 8270C SW846 3510C	<b>Percent Solids:</b> n/a
<b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

## ABN Special List

CAS No.	Compound	Result	RL	Units	Q
84-66-2	Diethyl phthalate	ND	5.1	ug/l	
131-11-3	Dimethyl phthalate	ND	5.1	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	2.5	2.0	ug/l	
118-74-1	Hexachlorobenzene	ND	5.1	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	ug/l	
67-72-1	Hexachloroethane	ND	5.1	ug/l	
78-59-1	Isophorone	ND	5.1	ug/l	
88-74-4	2-Nitroaniline	ND	10	ug/l	
99-09-2	3-Nitroaniline	ND	10	ug/l	
100-01-6	4-Nitroaniline	ND	10	ug/l	
98-95-3	Nitrobenzene	ND	5.1	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.1	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.1	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.1	ug/l	
110-86-1	Pyridine	ND	10	ug/l	UJ

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	51%		15-110%
4165-62-2	Phenol-d5	35%		15-110%
118-79-6	2,4,6-Tribromophenol	93%		15-110%
4165-60-0	Nitrobenzene-d5	91%		30-130%
321-60-8	2-Fluorobiphenyl	87%		30-130%
1718-51-0	Terphenyl-d14	90%		30-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

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Client Sample ID:	T12-ROX-102711	Date Sampled:	10/27/11
Lab Sample ID:	MC5041-2	Date Received:	10/29/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C BY SIM SW846 3510C	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I76288.D	1	11/12/11	PR	11/02/11	OP26793	MSI2799
Run #2							

Run #	Initial Volume	Final Volume
Run #1	990 ml	1.0 ml
Run #2		

## BN PAH List

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	0.79	0.10	ug/l	
208-96-8	Acenaphthylene	0.12	0.10	ug/l	
120-12-7	Anthracene	0.17	0.10	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.051	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.051	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	ug/l	
218-01-9	Chrysene	ND	0.10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	ug/l	
206-44-0	Fluoranthene	ND	0.10	ug/l	
86-73-7	Fluorene	0.60	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	ug/l	
90-12-0	1-Methylnaphthalene	26.4	0.20	ug/l	
91-57-6	2-Methylnaphthalene	41.5	0.20	ug/l	
91-20-3	Naphthalene	70.2	0.10	ug/l	
85-01-8	Phenanthrene	1.5	0.051	ug/l	
129-00-0	Pyrene	0.10	0.10	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	120%		30-130%
321-60-8	2-Fluorobiphenyl	85%		30-130%
1718-51-0	Terphenyl-d14	95%		30-130%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

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Client Sample ID:	T12-ROX-102711	Date Sampled:	10/27/11
Lab Sample ID:	MC5041-2	Date Received:	10/29/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8011 SW846 8011		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39317.D	1	11/04/11	AP	11/02/11	OP26798	GBB2447
Run #2							

Run #	Initial Volume	Final Volume
Run #1	33.5 ml	2.0 ml
Run #2		

**VOA Special List**

CAS No.	Compound	Result	RL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.016	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.016	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits	
460-00-4	Bromofluorobenzene (S)	135%		36-173%	
460-00-4	Bromofluorobenzene (S)	147%		36-173%	

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

Report of Analysis



Client Sample ID:	P56-ROX-102711	Date Sampled:	10/27/11
Lab Sample ID:	MC5041-3	Date Received:	10/29/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N57157.D	1	11/10/11	JP	n/a	n/a	MSN2142
Run #2 <sup>a</sup>	N57258.D	5	11/14/11	JP	n/a	n/a	MSN2145

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

VOA Special List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	144	0.50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID:	P56-ROX-102711	Date Sampled:	10/27/11
Lab Sample ID:	MC5041-3	Date Received:	10/29/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	457 <sup>b</sup>	5.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	51.2	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	67.0	5.0	ug/l	
103-65-1	n-Propylbenzene	46.3	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	42.2	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	96.2	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	22.6	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	476	1.0	ug/l	
95-47-6	o-Xylene	33.2	1.0	ug/l	
1330-20-7	Xylene (total)	509	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis



<b>Client Sample ID:</b> P56-ROX-102711 <b>Lab Sample ID:</b> MC5041-3 <b>Matrix:</b> AQ - Ground Water <b>Method:</b> SW846 8260B <b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	<b>Date Sampled:</b> 10/27/11 <b>Date Received:</b> 10/29/11 <b>Percent Solids:</b> n/a
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**VOA Special List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	88%	94%	70-130%
2037-26-5	Toluene-D8	94%	95%	70-130%
460-00-4	4-Bromofluorobenzene	83%	86%	70-130%

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

- (a) Sample analyzed past recommended hold time.
- (b) Result is from Run# 2

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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



## Report of Analysis

Client Sample ID:	P56-ROX-102711	Date Sampled:	10/27/11
Lab Sample ID:	MC5041-3	Date Received:	10/29/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	F53448.D	1	11/03/11	PR	11/02/11	OP26792	MSF2573

Run #1	Initial Volume	Final Volume
Run #2	970 ml	1.0 ml

## ABN Special List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	10	ug/l	
95-57-8	2-Chlorophenol	ND	5.2	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	ug/l	
51-28-5	2,4-Dinitrophenol	ND	21	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	ug/l	
95-48-7	2-Methylphenol	ND	10	ug/l	
	3&4-Methylphenol	ND	10	ug/l	
88-75-5	2-Nitrophenol	ND	10	ug/l	
100-02-7	4-Nitrophenol	ND	21	ug/l	
87-86-5	Pentachlorophenol	ND	10	ug/l	
108-95-2	Phenol	ND	5.2	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	10	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	ug/l	
62-53-3	Aniline	ND	10	ug/l	uJ
101-55-3	4-Bromophenyl phenyl ether	ND	5.2	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.2	ug/l	
100-51-6	Benzyl Alcohol	ND	10	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.2	ug/l	
106-47-8	4-Chloroaniline	ND	10	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.2	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.2	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.2	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.2	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.2	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	10	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.2	ug/l	
132-64-9	Dibenzofuran	ND	5.2	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.2	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.2	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis



Client Sample ID:	P56-ROX-102711	Date Sampled:	10/27/11
Lab Sample ID:	MC5041-3	Date Received:	10/29/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
84-66-2	Diethyl phthalate	ND	5.2	ug/l	
131-11-3	Dimethyl phthalate	ND	5.2	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	2.6	2.1	ug/l	
118-74-1	Hexachlorobenzene	ND	5.2	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	ug/l	
67-72-1	Hexachloroethane	ND	5.2	ug/l	
78-59-1	Isophorone	ND	5.2	ug/l	
88-74-4	2-Nitroaniline	ND	10	ug/l	
99-09-2	3-Nitroaniline	ND	10	ug/l	
100-01-6	4-Nitroaniline	ND	10	ug/l	
98-95-3	Nitrobenzene	ND	5.2	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.2	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.2	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.2	ug/l	
110-86-1	Pyridine	ND	10	ug/l	UJ

CAS No.	Surr ogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	52%		15-110%
4165-62-2	Phenol-d5	35%		15-110%
118-79-6	2,4,6-Tribromophenol	96%		15-110%
4165-60-0	Nitrobenzene-d5	94%		30-130%
321-60-8	2-Fluorobiphenyl	90%		30-130%
1718-51-0	Terphenyl-d14	90%		30-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

3.3  
3

<b>Client Sample ID:</b> P56-ROX-102711 <b>Lab Sample ID:</b> MC5041-3 <b>Matrix:</b> AQ - Ground Water <b>Method:</b> SW846 8270C BY SIM SW846 3510C <b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	<b>Date Sampled:</b> 10/27/11 <b>Date Received:</b> 10/29/11 <b>Percent Solids:</b> n/a
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Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I76238.D	1	11/10/11	KR	11/02/11	OP26793	MSI2796
Run #2							

Run #	Initial Volume	Final Volume
Run #1	970 ml	1.0 ml
Run #2		

**BN PAH List**

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	0.70	0.10	ug/l	
208-96-8	Acenaphthylene	0.13	0.10	ug/l	
120-12-7	Anthracene	0.13	0.10	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.052	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.052	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	ug/l	
218-01-9	Chrysene	ND	0.10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	ug/l	
206-44-0	Fluoranthene	ND	0.10	ug/l	
86-73-7	Fluorene	0.39	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	ug/l	
90-12-0	1-Methylnaphthalene	16.0	0.21	ug/l	
91-57-6	2-Methylnaphthalene	22.4	0.21	ug/l	
91-20-3	Naphthalene	50.8	0.10	ug/l	
85-01-8	Phenanthrene	1.1	0.052	ug/l	
129-00-0	Pyrene	ND	0.10	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	126%		30-130%
321-60-8	2-Fluorobiphenyl	95%		30-130%
1718-51-0	Terphenyl-d14	83%		30-130%

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



<b>Client Sample ID:</b> P56-ROX-102711 <b>Lab Sample ID:</b> MC5041-3 <b>Matrix:</b> AQ - Ground Water <b>Method:</b> SW846 8011 SW846 8011 <b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	<b>Date Sampled:</b> 10/27/11 <b>Date Received:</b> 10/29/11 <b>Percent Solids:</b> n/a
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Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39322.D	1	11/04/11	AP	11/02/11	OP26798	GBB2447
Run #2							

Run #	Initial Volume	Final Volume
Run #1	32.7 ml	2.0 ml
Run #2		

**VOA Special List**

CAS No.	Compound	Result	RL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.016	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	146%		36-173%
460-00-4	Bromofluorobenzene (S)	185% <sup>a</sup>		36-173%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

### Report of Analysis



Client Sample ID: P59-ROX-102711	Date Sampled: 10/27/11
Lab Sample ID: MC5041-4	Date Received: 10/29/11
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8260B	
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	N57156.D	50	11/10/11	JP	n/a	n/a	MSN2142

Run #1	Purge Volume
Run #2	5.0 ml

VOA Special List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	250	ug/l	
107-02-8	Acrolein	ND	1300	ug/l	
107-13-1	Acrylonitrile	ND	250	ug/l	
71-43-2	Benzene	6010	25	ug/l	
108-86-1	Bromobenzene	ND	250	ug/l	
74-97-5	Bromochloromethane	ND	250	ug/l	
75-27-4	Bromodichloromethane	ND	50	ug/l	
75-25-2	Bromoform	ND	50	ug/l	
74-83-9	Bromomethane	ND	100	ug/l	
78-93-3	2-Butanone (MEK)	ND	250	ug/l	
104-51-8	n-Butylbenzene	ND	250	ug/l	
135-98-8	sec-Butylbenzene	ND	250	ug/l	
98-06-6	tert-Butylbenzene	ND	250	ug/l	
75-15-0	Carbon disulfide	ND	250	ug/l	
56-23-5	Carbon tetrachloride	ND	50	ug/l	
108-90-7	Chlorobenzene	ND	50	ug/l	
75-00-3	Chloroethane	ND	100	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	250	ug/l	
67-66-3	Chloroform	ND	50	ug/l	
74-87-3	Chloromethane	ND	100	ug/l	
95-49-8	o-Chlorotoluene	ND	250	ug/l	
106-43-4	p-Chlorotoluene	ND	250	ug/l	
124-48-1	Dibromochloromethane	ND	50	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	50	ug/l	
75-71-8	Dichlorodifluoromethane	ND	100	ug/l	
75-34-3	1,1-Dichloroethane	ND	50	ug/l	
107-06-2	1,2-Dichloroethane	ND	50	ug/l	
75-35-4	1,1-Dichloroethene	ND	50	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	50	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	50	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	P59-ROX-102711	Date Sampled:	10/27/11
Lab Sample ID:	MC5041-4	Date Received:	10/29/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
78-87-5	1,2-Dichloropropane	ND	100	ug/l	
142-28-9	1,3-Dichloropropane	ND	250	ug/l	
594-20-7	2,2-Dichloropropane	ND	250	ug/l	
563-58-6	1,1-Dichloropropene	ND	250	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	25	ug/l	
123-91-1	1,4-Dioxane	ND	1300	ug/l	
97-63-2	Ethyl methacrylate	ND	250	ug/l	
100-41-4	Ethylbenzene	1490	50	ug/l	
87-68-3	Hexachlorobutadiene	ND	250	ug/l	
591-78-6	2-Hexanone	ND	250	ug/l	
98-82-8	Isopropylbenzene	ND	250	ug/l	
99-87-6	p-Isopropyltoluene	ND	250	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	50	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	250	ug/l	
74-95-3	Methylene bromide	ND	250	ug/l	
75-09-2	Methylene chloride	ND	100	ug/l	
91-20-3	Naphthalene	ND	250	ug/l	
103-65-1	n-Propylbenzene	ND	250	ug/l	
100-42-5	Styrene	ND	250	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	250	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	50	ug/l	
127-18-4	Tetrachloroethene	ND	50	ug/l	
108-88-3	Toluene	321	50	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	250	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	250	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	50	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	50	ug/l	
79-01-6	Trichloroethene	ND	50	ug/l	
75-69-4	Trichlorofluoromethane	ND	50	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	250	ug/l	
95-63-6	1,2,4-Trimethylbenzene	477	250	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	250	ug/l	
108-05-4	Vinyl Acetate	ND	250	ug/l	
75-01-4	Vinyl chloride	ND	50	ug/l	
	m,p-Xylene	3110	50	ug/l	
95-47-6	o-Xylene	312	50	ug/l	
1330-20-7	Xylene (total)	3420	50	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

3.4  
3

Client Sample ID: P59-ROX-102711	Date Sampled: 10/27/11
Lab Sample ID: MC5041-4	Date Received: 10/29/11
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8260B	
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

**VOA Special List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%		70-130%
2037-26-5	Toluene-D8	91%		70-130%
460-00-4	4-Bromofluorobenzene	83%		70-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis



<b>Client Sample ID:</b> P59-ROX-102711 <b>Lab Sample ID:</b> MC5041-4 <b>Matrix:</b> AQ - Ground Water <b>Method:</b> SW846 8270C SW846 3510C <b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	<b>Date Sampled:</b> 10/27/11 <b>Date Received:</b> 10/29/11 <b>Percent Solids:</b> n/a
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Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	F53449.D	1	11/03/11	PR	11/02/11	OP26792	MSF2573

Run #1	Initial Volume	Final Volume
Run #2	950 ml	1.0 ml

**ABN Special List**

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	11	ug/l	
95-57-8	2-Chlorophenol	ND	5.3	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	11	ug/l	
120-83-2	2,4-Dichlorophenol	ND	11	ug/l	
105-67-9	2,4-Dimethylphenol	ND	11	ug/l	
51-28-5	2,4-Dinitrophenol	ND	21	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	11	ug/l	
95-48-7	2-Methylphenol	ND	11	ug/l	
	3&4-Methylphenol	ND	11	ug/l	
88-75-5	2-Nitrophenol	ND	11	ug/l	
100-02-7	4-Nitrophenol	ND	21	ug/l	
87-86-5	Pentachlorophenol	ND	11	ug/l	
108-95-2	Phenol	38.3	5.3	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	11	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	11	ug/l	
62-53-3	Aniline	ND	11	ug/l	UJ
101-55-3	4-Bromophenyl phenyl ether	ND	5.3	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.3	ug/l	
100-51-6	Benzyl Alcohol	ND	11	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.3	ug/l	
106-47-8	4-Chloroaniline	ND	11	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.3	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.3	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.3	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.3	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.3	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	11	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	11	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.3	ug/l	
132-64-9	Dibenzofuran	ND	5.3	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.3	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.3	ug/l	

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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



## Report of Analysis

Client Sample ID:	P59-ROX-102711	Date Sampled:	10/27/11
Lab Sample ID:	MC5041-4	Date Received:	10/29/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

## ABN Special List

CAS No.	Compound	Result	RL	Units	Q
84-66-2	Diethyl phthalate	ND	5.3	ug/l	
131-11-3	Dimethyl phthalate	ND	5.3	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	2.8	2.1	ug/l	
118-74-1	Hexachlorobenzene	ND	5.3	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	11	ug/l	
67-72-1	Hexachloroethane	ND	5.3	ug/l	
78-59-1	Isophorone	ND	5.3	ug/l	
88-74-4	2-Nitroaniline	ND	11	ug/l	
99-09-2	3-Nitroaniline	ND	11	ug/l	
100-01-6	4-Nitroaniline	ND	11	ug/l	
98-95-3	Nitrobenzene	ND	5.3	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.3	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.3	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.3	ug/l	
110-86-1	Pyridine	ND	11	ug/l	UT

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	32%		15-110%
4165-62-2	Phenol-d5	24%		15-110%
118-79-6	2,4,6-Tribromophenol	70%		15-110%
4165-60-0	Nitrobenzene-d5	62%		30-130%
321-60-8	2-Fluorobiphenyl	65%		30-130%
1718-51-0	Terphenyl-d14	65%		30-130%

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

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID: P59-ROX-102711	Date Sampled: 10/27/11
Lab Sample ID: MC5041-4	Date Received: 10/29/11
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8270C BY SIM SW846 3510C	
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I76239.D	1	11/10/11	KR	11/02/11	OP26793	MSI2796
Run #2							

Run #	Initial Volume	Final Volume
Run #1	950 ml	1.0 ml
Run #2		

## BN PAH List

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	0.77	0.11	ug/l	
208-96-8	Acenaphthylene	0.12	0.11	ug/l	
120-12-7	Anthracene	0.46	0.11	ug/l	
56-55-3	Benzo(a)anthracene	0.19	0.053	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.11	ug/l	
205-99-2	Benzo(b)fluoranthene	0.073	0.053	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.11	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.11	ug/l	
218-01-9	Chrysene	0.34	0.11	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.11	ug/l	
206-44-0	Fluoranthene	0.35	0.11	ug/l	
86-73-7	Fluorene	1.2	0.11	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.11	ug/l	
90-12-0	1-Methylnaphthalene	12.1	0.21	ug/l	
91-57-6	2-Methylnaphthalene	18.4	0.21	ug/l	
91-20-3	Naphthalene	79.3	0.11	ug/l	
85-01-8	Phenanthrene	2.0	0.053	ug/l	
129-00-0	Pyrene	0.57	0.11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	80%		30-130%
321-60-8	2-Fluorobiphenyl	66%		30-130%
1718-51-0	Terphenyl-d14	57%		30-130%

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

### Report of Analysis

3.4  
3

Client Sample ID:	P59-ROX-102711	Date Sampled:	10/27/11
Lab Sample ID:	MC5041-4	Date Received:	10/29/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8011 SW846 8011	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39318.D	1	11/04/11	AP	11/02/11	OP26798	GBB2447
Run #2							

Run #	Initial Volume	Final Volume
Run #1	34.2 ml	2.0 ml
Run #2		

VOA Special List

CAS No.	Compound	Result	RL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.015	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.015	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits	
460-00-4	Bromofluorobenzene (S)	152%		36-173%	
460-00-4	Bromofluorobenzene (S)	166%		36-173%	

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID: TB-102711-1	Date Sampled: 10/27/11
Lab Sample ID: MC5041-5	Date Received: 10/29/11
Matrix: AQ - Trip Blank Water	Percent Solids: n/a
Method: SW846 8260B	
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N57149.D	1	11/10/11	JP	n/a	n/a	MSN2142
Run #2							

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

## VOA Special List

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

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID: TB-102711-1	Date Sampled: 10/27/11
Lab Sample ID: MC5041-5	Date Received: 10/29/11
Matrix: AQ - Trip Blank Water	Percent Solids: n/a
Method: SW846 8260B	
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

## VOA Special List

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

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

3.5  
3

Client Sample ID: TB-102711-1	Date Sampled: 10/27/11
Lab Sample ID: MC5041-5	Date Received: 10/29/11
Matrix: AQ - Trip Blank Water	Percent Solids: n/a
Method: SW846 8260B	
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

**VOA Special List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%		70-130%
2037-26-5	Toluene-D8	92%		70-130%
460-00-4	4-Bromofluorobenzene	85%		70-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

### Report of Analysis

3.6  
3

Client Sample ID:	TB-102711-2		Date Sampled:	10/27/11
Lab Sample ID:	MC5041-6		Date Received:	10/29/11
Matrix:	AQ - Trip Blank Water		Percent Solids:	n/a
Method:	SW846 8011 SW846 8011		Project:	
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL			

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39319.D	1	11/04/11	AP	11/02/11	OP26798	GBB2447
Run #2							

Run #	Initial Volume	Final Volume
Run #1	34.5 ml	2.0 ml
Run #2		

**VOA Special List**

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

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	153%		36-173%
460-00-4	Bromofluorobenzene (S)	174% <sup>a</sup>		36-173%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID:	P58-ROX-102811	Date Sampled:	10/28/11
Lab Sample ID:	MC5041-7	Date Received:	10/29/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N57159.D	1	11/10/11	JP	n/a	n/a	MSN2142
Run #2	N57202.D	5000	11/11/11	JP	n/a	n/a	MSN2143

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

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	430000 <sup>a</sup>	2500	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	14.8	5.0	ug/l	
98-06-6	tert-Butylbenzene	34.4	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	1.4	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



## Report of Analysis

Client Sample ID:	P58-ROX-102811	Date Sampled:	10/28/11
Lab Sample ID:	MC5041-7	Date Received:	10/29/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana 4QI1 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	ND <sup>a</sup>	5000	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	73.4	5.0	ug/l	
99-87-6	p-Isopropyltoluene	11.3	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	204	5.0	ug/l	
103-65-1	n-Propylbenzene	86.2	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	130	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND <sup>a</sup>	25000	ug/l	
108-67-8	1,3,5-Trimethylbenzene	104	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	575	1.0	ug/l	
95-47-6	o-Xylene	101	1.0	ug/l	
1330-20-7	Xylene (total)	677	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

3.7  
3

Client Sample ID: P58-ROX-102811	Date Sampled: 10/28/11
Lab Sample ID: MC5041-7	Date Received: 10/29/11
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8260B	
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

**VOA Special List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	90%	92%	70-130%
2037-26-5	Toluene-D8	89%	91%	70-130%
460-00-4	4-Bromofluorobenzene	80%	85%	70-130%

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

(a) Result is from Run# 2

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

Report of Analysis



Client Sample ID: P58-ROX-102811	Date Sampled: 10/28/11
Lab Sample ID: MC5041-7	Date Received: 10/29/11
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8270C SW846 3510C	
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	F53450.D	1	11/03/11	PR	11/02/11	OP26792	MSF2573

Run #1	Initial Volume	Final Volume
Run #2	1030 ml	1.0 ml

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	9.7	ug/l	
95-57-8	2-Chlorophenol	ND	4.9	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	9.7	ug/l	
120-83-2	2,4-Dichlorophenol	ND	9.7	ug/l	
105-67-9	2,4-Dimethylphenol	ND	9.7	ug/l	
51-28-5	2,4-Dinitrophenol	ND	19	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	9.7	ug/l	
95-48-7	2-Methylphenol	ND	9.7	ug/l	
	3&4-Methylphenol	34.7	9.7	ug/l	
88-75-5	2-Nitrophenol	ND	9.7	ug/l	
100-02-7	4-Nitrophenol	ND	19	ug/l	
87-86-5	Pentachlorophenol	ND	9.7	ug/l	
108-95-2	Phenol	137	4.9	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	9.7	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	9.7	ug/l	
62-53-3	Aniline	ND	9.7	ug/l	UJ
101-55-3	4-Bromophenyl phenyl ether	ND	4.9	ug/l	
85-68-7	Butyl benzyl phthalate	ND	4.9	ug/l	
100-51-6	Benzyl Alcohol	ND	9.7	ug/l	
91-58-7	2-Chloronaphthalene	ND	4.9	ug/l	
106-47-8	4-Chloroaniline	ND	9.7	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	4.9	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	4.9	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	4.9	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	4.9	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	4.9	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	9.7	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	9.7	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	4.9	ug/l	
132-64-9	Dibenzofuran	ND	4.9	ug/l	
84-74-2	Di-n-butyl phthalate	ND	4.9	ug/l	
117-84-0	Di-n-octyl phthalate	ND	4.9	ug/l	

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

### Report of Analysis

3.7  
3

Client Sample ID: P58-ROX-102811	Date Sampled: 10/28/11
Lab Sample ID: MC5041-7	Date Received: 10/29/11
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8270C SW846 3510C	
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
84-66-2	Diethyl phthalate	ND	4.9	ug/l	
131-11-3	Dimethyl phthalate	ND	4.9	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	3.0	1.9	ug/l	
118-74-1	Hexachlorobenzene	ND	4.9	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	9.7	ug/l	
67-72-1	Hexachloroethane	ND	4.9	ug/l	
78-59-1	Isophorone	ND	4.9	ug/l	
88-74-4	2-Nitroaniline	ND	9.7	ug/l	
99-09-2	3-Nitroaniline	ND	9.7	ug/l	
100-01-6	4-Nitroaniline	ND	9.7	ug/l	
98-95-3	Nitrobenzene	ND	4.9	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	4.9	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	4.9	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	4.9	ug/l	
110-86-1	Pyridine	ND	9.7	ug/l	UJ

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	47%		15-110%
4165-62-2	Phenol-d5	31%		15-110%
118-79-6	2,4,6-Tribromophenol	96%		15-110%
4165-60-0	Nitrobenzene-d5	89%		30-130%
321-60-8	2-Fluorobiphenyl	85%		30-130%
1718-51-0	Terphenyl-d14	78%		30-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID: P58-ROX-102811	Date Sampled: 10/28/11
Lab Sample ID: MC5041-7	Date Received: 10/29/11
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8270C BY SIM SW846 3510C	
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I76240.D	1	11/10/11	KR	11/02/11	OP26793	MSI2796
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1030 ml	1.0 ml
Run #2		

## BN PAH List

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	1.1	0.097	ug/l	
208-96-8	Acenaphthylene	ND	0.097	ug/l	
120-12-7	Anthracene	ND	0.097	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.049	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.097	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.049	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.097	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.097	ug/l	
218-01-9	Chrysene	ND	0.097	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.097	ug/l	
206-44-0	Fluoranthene	ND	0.097	ug/l	
86-73-7	Fluorene	1.6	0.097	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.097	ug/l	
90-12-0	1-Methylnaphthalene	49.0	0.19	ug/l	
91-57-6	2-Methylnaphthalene	71.7	0.19	ug/l	
91-20-3	Naphthalene	113	0.097	ug/l	
85-01-8	Phenanthrene	0.85	0.049	ug/l	
129-00-0	Pyrene	0.12	0.097	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	118%		30-130%
321-60-8	2-Fluorobiphenyl	91%		30-130%
1718-51-0	Terphenyl-d14	62%		30-130%

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

3.7  
**3**

Client Sample ID: P58-ROX-102811 Lab Sample ID: MC5041-7 Matrix: AQ - Ground Water Method: SW846 8011 SW846 8011 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	Date Sampled: 10/28/11 Date Received: 10/29/11 Percent Solids: n/a
--	--

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39320.D	1	11/04/11	AP	11/02/11	OP26798	GBB2447
Run #2							

Run #	Initial Volume	Final Volume
Run #1	34.9 ml	2.0 ml
Run #2		

**VOA Special List**

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

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	155%		36-173%
460-00-4	Bromofluorobenzene (S)	131%		36-173%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis



Client Sample ID: P114-ROX-102811	Date Sampled: 10/28/11
Lab Sample ID: MC5041-8	Date Received: 10/29/11
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8260B	
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N57201.D	1	11/11/11	JP	n/a	n/a	MSN2143
Run #2							

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

## VOA Special List

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

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis



Client Sample ID:	P114-ROX-102811	Date Sampled:	10/28/11
Lab Sample ID:	MC5041-8	Date Received:	10/29/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	3.6	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



## Report of Analysis

3.8  
3

Client Sample ID: P114-ROX-102811 Lab Sample ID: MC5041-8 Matrix: AQ - Ground Water Method: SW846 8260B Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	Date Sampled: 10/28/11 Date Received: 10/29/11 Percent Solids: n/a
---	--

**VOA Special List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	90%		70-130%
2037-26-5	Toluene-D8	92%		70-130%
460-00-4	4-Bromofluorobenzene	161% <sup>a</sup>		70-130%

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

(a) Outside control limits. Associated target analytes are non-detect.

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis



<b>Client Sample ID:</b> P114-ROX-102811 <b>Lab Sample ID:</b> MC5041-8 <b>Matrix:</b> AQ - Ground Water <b>Method:</b> SW846 8270C SW846 3510C <b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	<b>Date Sampled:</b> 10/28/11 <b>Date Received:</b> 10/29/11 <b>Percent Solids:</b> n/a
--	---

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F53451.D	1	11/03/11	PR	11/02/11	OP26792	MSF2573
Run #2							

Run #1	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

**ABN Special List**

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	9.5	ug/l	
95-57-8	2-Chlorophenol	ND	4.8	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	9.5	ug/l	
120-83-2	2,4-Dichlorophenol	ND	9.5	ug/l	
105-67-9	2,4-Dimethylphenol	ND	9.5	ug/l	
51-28-5	2,4-Dinitrophenol	ND	19	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	9.5	ug/l	
95-48-7	2-Methylphenol	ND	9.5	ug/l	
	3&4-Methylphenol	ND	9.5	ug/l	
88-75-5	2-Nitrophenol	ND	9.5	ug/l	
100-02-7	4-Nitrophenol	ND	19	ug/l	
87-86-5	Pentachlorophenol	ND	9.5	ug/l	
108-95-2	Phenol	ND	4.8	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	9.5	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	9.5	ug/l	
62-53-3	Aniline	ND	9.5	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	4.8	ug/l	
85-68-7	Butyl benzyl phthalate	ND	4.8	ug/l	
100-51-6	Benzyl Alcohol	ND	9.5	ug/l	
91-58-7	2-Chloronaphthalene	ND	4.8	ug/l	
106-47-8	4-Chloroaniline	ND	9.5	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	4.8	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	4.8	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	4.8	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	4.8	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	4.8	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	9.5	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	9.5	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	4.8	ug/l	
132-64-9	Dibenzofuran	ND	4.8	ug/l	
84-74-2	Di-n-butyl phthalate	ND	4.8	ug/l	
117-84-0	Di-n-octyl phthalate	ND	4.8	ug/l	

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



Client Sample ID:	P114-ROX-102811	Date Sampled:	10/28/11
Lab Sample ID:	MC5041-8	Date Received:	10/29/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

## ABN Special List

CAS No.	Compound	Result	RL	Units	Q
84-66-2	Diethyl phthalate	ND	4.8	ug/l	
131-11-3	Dimethyl phthalate	ND	4.8	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	5.3	1.9	ug/l	
118-74-1	Hexachlorobenzene	ND	4.8	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	9.5	ug/l	
67-72-1	Hexachloroethane	ND	4.8	ug/l	
78-59-1	Isophorone	ND	4.8	ug/l	
88-74-4	2-Nitroaniline	ND	9.5	ug/l	
99-09-2	3-Nitroaniline	ND	9.5	ug/l	
100-01-6	4-Nitroaniline	ND	9.5	ug/l	
98-95-3	Nitrobenzene	ND	4.8	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	4.8	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	4.8	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	4.8	ug/l	
110-86-1	Pyridine	ND	9.5	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	50%		15-110%
4165-62-2	Phenol-d5	34%		15-110%
118-79-6	2,4,6-Tribromophenol	93%		15-110%
4165-60-0	Nitrobenzene-d5	91%		30-130%
321-60-8	2-Fluorobiphenyl	88%		30-130%
1718-51-0	Terphenyl-d14	91%		30-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID:	P114-ROX-102811	Date Sampled:	10/28/11
Lab Sample ID:	MC5041-8	Date Received:	10/29/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C BY SIM SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I76241.D	1	11/11/11	KR	11/02/11	OP26793	MSI2796
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

## BN PAH List

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	0.095	ug/l	
208-96-8	Acenaphthylene	ND	0.095	ug/l	
120-12-7	Anthracene	ND	0.095	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.048	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.095	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.048	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.095	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.095	ug/l	
218-01-9	Chrysene	ND	0.095	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.095	ug/l	
206-44-0	Fluoranthene	ND	0.095	ug/l	
86-73-7	Fluorene	ND	0.095	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.095	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.19	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.19	ug/l	
91-20-3	Naphthalene	ND	0.095	ug/l	
85-01-8	Phenanthrene	ND	0.048	ug/l	
129-00-0	Pyrene	ND	0.095	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	117%		30-130%
321-60-8	2-Fluorobiphenyl	93%		30-130%
1718-51-0	Terphenyl-d14	80%		30-130%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

3.8  
3

<b>Client Sample ID:</b> P114-ROX-102811 <b>Lab Sample ID:</b> MC5041-8 <b>Matrix:</b> AQ - Ground Water <b>Method:</b> SW846 8011 SW846 8011 <b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	<b>Date Sampled:</b> 10/28/11 <b>Date Received:</b> 10/29/11 <b>Percent Solids:</b> n/a
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Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39321.D	1	11/04/11	AP	11/02/11	OP26798	GBB2447
Run #2							

Run #	Initial Volume	Final Volume
Run #1	36.3 ml	2.0 ml
Run #2		

**VOA Special List**

CAS No.	Compound	Result	RL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.014	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.014	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	134%		36-173%
460-00-4	Bromofluorobenzene (S)	135%		36-173%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Misc. Forms

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## Custody Documents and Other Forms

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Includes the following where applicable:

- Certification Exceptions
- Certification Exceptions (IL)
- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody

LAB (LOCATION)  
 0 CALS/CEN  
 0 OTHER  
 0 SA  
 Lab Vendor #



Shell Oil Products Chain Of Custody Record

URS

Please Check Appropriate Box:

<input type="checkbox"/> OILY SERVICES	<input type="checkbox"/> MOTIVE OIL	<input type="checkbox"/> SHELL REPAIR
<input type="checkbox"/> OILY SDRCH	<input type="checkbox"/> CONSULTANT	<input type="checkbox"/> CLUES
<input type="checkbox"/> SHELL PIPELINE	<input type="checkbox"/> OTHER	

Print Bill To Contact Name: WENDY PENNINGTON  
 INCIDENT # 102711  
 DATE: 10/27/11  
 PAGE: 1 of 2

URS CORPORATION  
 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300, ST. LOUIS, MO 63110

575 ADDRESS IN STATE AND CITY  
 500 South Central Ave, ROXANA  
 ILL. 62451-1000

WENDY PENNINGTON  
 314-743-1166 or 314-452-8928  
 314-429-0462

LAB USE ONLY  
 L. Rathrow, B. Crofton  
 MC 5041

DELIVERABLES:  LEVEL 1  LEVEL 2  LEVEL 3  LEVEL 4  OTHER (SPECIFY) EDO

REQUESTED ANALYSIS

SPECIAL INSTRUCTIONS OR NOTES:  
 \* Please include "J" values on Reports.  
 \* Please provide sample receipt upon login.

FIELD NOTES:  
 TEMPERATURE ON RECEIPT C:  
 Contains PID Readings or Laboratory Notes

LAB USE ONLY	Field Sample Identification	SAMPLING		MATERIAL	PRESERVATION					NO. OF CONT.	VOC B200B SL+TICS	VOC B011	SVOC B270C SL+TICS	PAH B270L	PID (ppm)
		DATE	TIME		REF	FRAS	NOXON	NONE	OTHER						
1	P93H-ROX-1027H	10/27/11	1140	Water	X			X	X	9	X	X	X		0
2	T12-ROX-1027H		1615												
3	P50-ROX-1027H		1217												
4	P39-ROX-1027H		1540	Water											
5	TB-1027H-1			Water						2					
6	TB-1027H-2			Water				X		2	X				

Released by (Signature): [Signature] Accepted by (Signature): [Signature]  
 Date: 10/28/11 Time: 1600  
 Released by (Signature): [Signature] Accepted by (Signature): [Signature]  
 Date: 10/29/11 Time: 1140  
 Released by (Signature): [Signature] Accepted by (Signature): [Signature]

0.4, 05

4.1  
4



# Shell Oil Products Chain Of Custody Record

**URS**

LAB (LOCATION) \_\_\_\_\_

INCIDENT # (ENV SERVICES) \_\_\_\_\_

DATE 10/28/11

PAGE: 2 of 2

Print-Bill To Contact-Name: WENDY PENNINGTON

PO # \_\_\_\_\_

SAP # \_\_\_\_\_

LAB USE ONLY: \_\_\_\_\_

URS CORPORATION  
1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300, ST. LOUIS, MO 63110

300 South Central Ave. ROXANA, ILL.

CONSULTANT PROJECT NO: Roxana Quarterly GW 1  
21562993.00066

WENDY PENNINGTON  
314-743-4166 or 341-452-8928 / 314-429-0482

LAB USE ONLY: MC 5041

Requested by: M. Mansker, B. Crafton, Jackson, Marquez

TEMPERATURE ON RECEIPT °C: \_\_\_\_\_

DELIVERABLES:  LEVEL 1  LEVEL 2  LEVEL 3  LEVEL 4  OTHER (SPECIFY) EDD

SPECIAL INSTRUCTIONS OR NOTES:  
\* Please include "J" values on Reports.  
\* Please provide sample receipt upon login.

FIELD NOTES:  
TEMPERATURE ON RECEIPT °C: \_\_\_\_\_

Contains PID Readings or Lab/Moby Notes

LAP USE ONLY	Field Sample Identification	SAMPLING		MATRIX	PRESERVATIVE					NO. OF CONT.	VOC B260B	VOC B011	SVOC B270C	PAH B270LL	PID (ppm)
		DATE	TIME		HEX	PROP	NOBON	NONC	OTHER						
	<u>P58-ROX-102811</u>	<u>10/28/11</u>	<u>1030</u>	<u>Water</u>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<u>9</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<u>0</u>
	<u>P114-ROX-102811</u>	<u>10/28/11</u>	<u>1037</u>	<u>↓</u>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<u>↓</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<u>↓</u>

Requested by (Signature): [Signature] Date: 10/28/11 Time: 1600

Received by (Signature): \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

Requested by (Signature): Felt Date: 10/29/11 Time: 1140

Received by (Signature): Will Hill Date: \_\_\_\_\_ Time: \_\_\_\_\_

Mode: FED EX

4.1  
4MC5041: Chain of Custody  
Page 2 of 3



## Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC5041      Client: URS      Immediate Client Services Action Required: No  
 Date / Time Received: 10/29/2011      Delivery Method: \_\_\_\_\_      Client Service Action Required at Login: No  
 Project: ROXANA      No. Coolers: 3      Airbill #'s: \_\_\_\_\_

**Cooler Security**      Y or N      Y or N  
 1. Custody Seals Present:        3. COC Present:    
 2. Custody Seals Intact:        4. SmpI Dates/Time OK:

**Cooler Temperature**      Y or N  
 1. Temp criteria achieved:    
 2. Cooler temp verification: Infrared gun  
 3. Cooler media: Ice (bag)

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

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

**Sample Integrity - Condition**      Y or N  
 1. Sample recvd within HT:    
 2. All containers accounted for:    
 3. Condition of sample: Intact

**Sample Integrity - Instructions**      Y or N      N/A  
 1. Analysis requested is clear:    
 2. Bottles received for unspecified tests:    
 3. Sufficient volume recvd for analysis:    
 4. Compositing instructions clear:     
 5. Filtering instructions clear:

Comments

4.1  
4

### Internal Sample Tracking Chronicle

Shell Oil

Job No: MC5041

URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

4.2  
4

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
MC5041-1 Collected: 27-OCT-11 11:40 By: LRBC Received: 29-OCT-11 By: JB P93D-ROX-102711						
MC5041-1	SW846 8270C	03-NOV-11 15:58	PR	02-NOV-11 SC		AB8270SL+
MC5041-1	SW846 8011	04-NOV-11 13:07	AP	02-NOV-11 CA		V8011SL
MC5041-1	SW846 8260B	10-NOV-11 17:56	JP			V8260SL+
MC5041-1	SW846 8270C BY SIM	12-NOV-11 12:55	PR	02-NOV-11 SC		B8270SIMPAAH
MC5041-2 Collected: 27-OCT-11 16:15 By: LRBC Received: 29-OCT-11 By: JB T12-ROX-102711						
MC5041-2	SW846 8270C	03-NOV-11 16:31	PR	02-NOV-11 SC		AB8270SL+
MC5041-2	SW846 8011	04-NOV-11 13:30	AP	02-NOV-11 CA		V8011SL
MC5041-2	SW846 8260B	10-NOV-11 18:24	JP			V8260SL+
MC5041-2	SW846 8270C BY SIM	12-NOV-11 13:26	PR	02-NOV-11 SC		B8270SIMPAAH
MC5041-3 Collected: 27-OCT-11 12:17 By: LRBC Received: 29-OCT-11 By: JB P56-ROX-102711						
MC5041-3	SW846 8270C	03-NOV-11 17:03	PR	02-NOV-11 SC		AB8270SL+
MC5041-3	SW846 8011	04-NOV-11 15:22	AP	02-NOV-11 CA		V8011SL
MC5041-3	SW846 8260B	10-NOV-11 19:21	JP			V8260SL+
MC5041-3	SW846 8270C BY SIM	10-NOV-11 22:33	KR	02-NOV-11 SC		B8270SIMPAAH
MC5041-3	SW846 8260B	14-NOV-11 15:02	JP			V8260SL+
MC5041-4 Collected: 27-OCT-11 15:40 By: LRBC Received: 29-OCT-11 By: JB P59-ROX-102711						
MC5041-4	SW846 8270C	03-NOV-11 17:34	PR	02-NOV-11 SC		AB8270SL+
MC5041-4	SW846 8011	04-NOV-11 13:52	AP	02-NOV-11 CA		V8011SL
MC5041-4	SW846 8260B	10-NOV-11 18:52	JP			V8260SL+
MC5041-4	SW846 8270C BY SIM	10-NOV-11 23:05	KR	02-NOV-11 SC		B8270SIMPAAH
MC5041-5 Collected: 27-OCT-11 00:00 By: LRBC Received: 29-OCT-11 By: JB TB-102711-1						
MC5041-5	SW846 8260B	10-NOV-11 15:34	JP			V8260SL+

### Internal Sample Tracking Chronicle

Shell Oil

Job No: MC5041

URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

4.2  
4

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
MC5041-6 Collected: 27-OCT-11 00:00 By: LRBC Received: 29-OCT-11 By: JB TB-102711-2						
MC5041-6	SW846 8011	04-NOV-11 14:15	AP	02-NOV-11 CA		V8011SL
MC5041-7 Collected: 28-OCT-11 10:30 By: LRBC Received: 29-OCT-11 By: JB P58-ROX-102811						
MC5041-7	SW846 8270C	03-NOV-11 18:09	PR	02-NOV-11 SC		AB8270SL+
MC5041-7	SW846 8011	04-NOV-11 14:37	AP	02-NOV-11 CA		V8011SL
MC5041-7	SW846 8260B	10-NOV-11 20:17	JP			V8260SL+
MC5041-7	SW846 8270C BY SIM	10-NOV-11 23:36	KR	02-NOV-11 SC		B8270SIMPAAH
MC5041-7	SW846 8260B	11-NOV-11 16:32	JP			V8260SL+
MC5041-8 Collected: 28-OCT-11 10:37 By: LRBC Received: 29-OCT-11 By: JB P114-ROX-102811						
MC5041-8	SW846 8270C	03-NOV-11 18:35	PR	02-NOV-11 SC		AB8270SL+
MC5041-8	SW846 8011	04-NOV-11 14:59	AP	02-NOV-11 CA		V8011SL
MC5041-8	SW846 8270C BY SIM	11-NOV-11 00:08	KR	02-NOV-11 SC		B8270SIMPAAH
MC5041-8	SW846 8260B	11-NOV-11 16:04	JP			V8260SL+

# Accutest Internal Chain of Custody

Job Number: MC5041  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL  
 Received: 10/29/11

4.3  
**4**

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
MC5041-1.4	Walk In Ref #22	Bijan Jafari	11/02/11 17:10	Retrieve from Storage
MC5041-1.4	Bijan Jafari		11/15/11 09:44	Depleted
MC5041-1.5	VOC Ref #5	Corey Aldoupolis	11/02/11 16:55	Retrieve from Storage
MC5041-1.5	Corey Aldoupolis		11/02/11 16:56	Depleted
MC5041-1.7	VOC Ref #5	Jugal Patel	11/10/11 12:49	Retrieve from Storage
MC5041-1.7	Jugal Patel	GCMSN	11/10/11 12:49	Load on Instrument
MC5041-1.7	GCMSN	Jugal Patel	11/11/11 10:44	Unload from Instrument
MC5041-1.7	Jugal Patel	VOC Ref #5	11/11/11 10:44	Return to Storage
MC5041-2.1	Walk In Ref #22	Bijan Jafari	11/02/11 17:10	Retrieve from Storage
MC5041-2.1	Bijan Jafari		11/15/11 09:44	Depleted
MC5041-2.5	VOC Ref #5	Corey Aldoupolis	11/02/11 16:55	Retrieve from Storage
MC5041-2.5	Corey Aldoupolis		11/02/11 16:56	Depleted
MC5041-2.6	VOC Ref #5	Jugal Patel	11/10/11 12:49	Retrieve from Storage
MC5041-2.6	Jugal Patel	GCMSN	11/10/11 12:49	Load on Instrument
MC5041-2.6	GCMSN	Jugal Patel	11/10/11 13:10	Unload from Instrument
MC5041-2.6	Jugal Patel	VOC Ref #5	11/10/11 13:10	Return to Storage
MC5041-2.7	VOC Ref #5	Jugal Patel	11/11/11 10:45	Retrieve from Storage
MC5041-2.7	Jugal Patel	GCMSN	11/11/11 10:45	Load on Instrument
MC5041-2.7	GCMSN	Jugal Patel	11/11/11 10:45	Unload from Instrument
MC5041-2.7	Jugal Patel	VOC Ref #5	11/11/11 10:45	Return to Storage
MC5041-3.3	Walk In Ref #22	Bijan Jafari	11/02/11 17:10	Retrieve from Storage
MC5041-3.3	Bijan Jafari		11/15/11 09:44	Depleted
MC5041-3.5	VOC Ref #5	Corey Aldoupolis	11/02/11 16:55	Retrieve from Storage
MC5041-3.5	Corey Aldoupolis		11/02/11 16:56	Depleted
MC5041-3.7	VOC Ref #5	Jugal Patel	11/10/11 12:49	Retrieve from Storage
MC5041-3.7	Jugal Patel	GCMSN	11/10/11 12:49	Load on Instrument
MC5041-3.7	GCMSN	Jugal Patel	11/11/11 10:44	Unload from Instrument
MC5041-3.7	Jugal Patel	VOC Ref #5	11/11/11 10:44	Return to Storage
MC5041-3.8	VOC Ref #5	Jugal Patel	11/14/11 13:28	Retrieve from Storage
MC5041-3.8	Jugal Patel	GCMSN	11/14/11 13:28	Load on Instrument
MC5041-3.8	GCMSN	Jugal Patel	11/15/11 13:44	Unload from Instrument
MC5041-3.8	Jugal Patel	VOC Ref #5	11/15/11 13:44	Return to Storage
MC5041-4.1	Walk In Ref #22	Bijan Jafari	11/02/11 17:10	Retrieve from Storage

# Accutest Internal Chain of Custody

Job Number: MC5041  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL  
 Received: 10/29/11

4.3  
**4**

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
MC5041-4.1	Bijan Jafari		11/15/11 09:44	Depleted
MC5041-4.6	VOC Ref #5	Corey Aldoupolis	11/02/11 16:55	Retrieve from Storage
MC5041-4.6	Corey Aldoupolis		11/02/11 16:56	Depleted
MC5041-4.7	VOC Ref #5	Jugal Patel	11/10/11 12:49	Retrieve from Storage
MC5041-4.7	Jugal Patel	GCMSN	11/10/11 12:49	Load on Instrument
MC5041-4.7	GCMSN	Jugal Patel	11/11/11 10:44	Unload from Instrument
MC5041-4.7	Jugal Patel	VOC Ref #5	11/11/11 10:44	Return to Storage
MC5041-5.1	VOC Ref #5	Jugal Patel	11/10/11 12:49	Retrieve from Storage
MC5041-5.1	Jugal Patel	GCMSN	11/10/11 12:49	Load on Instrument
MC5041-5.1	GCMSN	Jugal Patel	11/11/11 10:44	Unload from Instrument
MC5041-5.1	Jugal Patel	VOC Ref #5	11/11/11 10:44	Return to Storage
MC5041-6.1	VOC Ref #5	Corey Aldoupolis	11/02/11 16:55	Retrieve from Storage
MC5041-6.1	Corey Aldoupolis		11/02/11 16:56	Depleted
MC5041-7.2	Walk In Ref #22	Bijan Jafari	11/02/11 17:10	Retrieve from Storage
MC5041-7.2	Bijan Jafari		11/15/11 09:44	Depleted
MC5041-7.5	VOC Ref #5	Corey Aldoupolis	11/02/11 16:55	Retrieve from Storage
MC5041-7.5	Corey Aldoupolis		11/02/11 16:56	Depleted
MC5041-7.7	VOC Ref #5	Jugal Patel	11/10/11 17:40	Retrieve from Storage
MC5041-7.7	Jugal Patel	GCMSN	11/10/11 17:40	Load on Instrument
MC5041-7.7	GCMSN	Jugal Patel	11/11/11 10:44	Unload from Instrument
MC5041-7.7	Jugal Patel	VOC Ref #5	11/11/11 10:44	Return to Storage
MC5041-7.8	VOC Ref #5	Jugal Patel	11/11/11 14:43	Retrieve from Storage
MC5041-7.8	Jugal Patel	GCMSN	11/11/11 14:43	Load on Instrument
MC5041-7.8	GCMSN	Jugal Patel	11/14/11 10:23	Unload from Instrument
MC5041-7.8	Jugal Patel	VOC Ref #5	11/14/11 10:23	Return to Storage
MC5041-8.2	Walk In Ref #22	Bijan Jafari	11/02/11 17:10	Retrieve from Storage
MC5041-8.2	Bijan Jafari		11/15/11 09:44	Depleted
MC5041-8.5	VOC Ref #5	Corey Aldoupolis	11/02/11 16:55	Retrieve from Storage
MC5041-8.5	Corey Aldoupolis		11/02/11 16:56	Depleted
MC5041-8.7	VOC Ref #5	Jugal Patel	11/10/11 17:40	Retrieve from Storage
MC5041-8.7	Jugal Patel	GCMSN	11/10/11 17:40	Load on Instrument
MC5041-8.7	GCMSN	Jugal Patel	11/11/11 10:44	Unload from Instrument
MC5041-8.7	Jugal Patel	VOC Ref #5	11/11/11 10:44	Return to Storage

# Accutest Internal Chain of Custody

Job Number: MC5041  
Account: SHELLWIC Shell Oil  
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL  
Received: 10/29/11

4.3  
4

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
MC5041-8.8	VOC Ref #5	Jugal Patel	11/11/11 14:43	Retrieve from Storage
MC5041-8.8	Jugal Patel	GCMSN	11/11/11 14:43	Load on Instrument
MC5041-8.8	GCMSN	Jugal Patel	11/14/11 10:23	Unload from Instrument
MC5041-8.8	Jugal Patel	VOC Ref #5	11/14/11 10:23	Return to Storage

## GC/MS Volatiles

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## QC Data Summaries

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Includes the following where applicable:

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

# Method Blank Summary

Job Number: MC5041  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2142-MB	N57143.D	1	11/10/11	JP	n/a	n/a	MSN2142

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5041-1, MC5041-2, MC5041-3, MC5041-4, MC5041-5, MC5041-7

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	ND	0.50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	

5.1.1

5



## Method Blank Summary

Job Number: MC5041

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2142-MB	N57143.D	1	11/10/11	JP	n/a	n/a	MSN2142

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5041-1, MC5041-2, MC5041-3, MC5041-4, MC5041-5, MC5041-7

CAS No.	Compound	Result	RL	Units	Q
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	

5.1.1

5

# Method Blank Summary

Job Number: MC5041

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2142-MB	N57143.D	1	11/10/11	JP	n/a	n/a	MSN2142

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5041-1, MC5041-2, MC5041-3, MC5041-4, MC5041-5, MC5041-7

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	93%	70-130%
2037-26-5	Toluene-D8	91%	70-130%
460-00-4	4-Bromofluorobenzene	85%	70-130%

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

5.1.1  
5

# Method Blank Summary

Job Number: MC5041

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2143-MB	N57200.D	1	11/11/11	JP	n/a	n/a	MSN2143

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5041-7, MC5041-8

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	

# Method Blank Summary

Job Number: MC5041

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2143-MB	N57200.D	1	11/11/11	JP	n/a	n/a	MSN2143

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5041-7, MC5041-8

CAS No.	Compound	Result	RL	Units	Q
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	

5.1.2  
5

# Method Blank Summary

Job Number: MC5041

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2143-MB	N57200.D	1	11/11/11	JP	n/a	n/a	MSN2143

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5041-7, MC5041-8

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	91%	70-130%
2037-26-5	Toluene-D8	91%	70-130%
460-00-4	4-Bromofluorobenzene	83%	70-130%

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

5.1.2

5

Method Blank Summary

Job Number: MC5041

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2145-MB	N57253.D	1	11/14/11	JP	n/a	n/a	MSN2145

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5041-3

CAS No.	Compound	Result	RL	Units	Q
100-41-4	Ethylbenzene	ND	1.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	96%	70-130%
2037-26-5	Toluene-D8	90%	70-130%
460-00-4	4-Bromofluorobenzene	86%	70-130%

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

5.1.3  
5

## Method Blank Summary

Job Number: MC5041

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2143-MB1	N57171.D	1	11/11/11	JP	n/a	n/a	MSN2143

The QC reported here applies to the following samples:

Method: SW846 8260B

MSN2143-BS, MC5203-16MS, MC5203-16MSD

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	4.6	0.50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	

# Method Blank Summary

Job Number: MC5041

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2143-MB1	N57171.D	1	11/11/11	JP	n/a	n/a	MSN2143

The QC reported here applies to the following samples:

Method: SW846 8260B

MSN2143-BS, MC5203-16MS, MC5203-16MSD

CAS No.	Compound	Result	RL	Units	Q
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	



# Method Blank Summary

Job Number: MC5041

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2143-MB1	N57171.D	1	11/11/11	JP	n/a	n/a	MSN2143

The QC reported here applies to the following samples:

Method: SW846 8260B

MSN2143-BS, MC5203-16MS, MC5203-16MSD

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	82%	70-130%
2037-26-5	Toluene-D8	90%	70-130%
460-00-4	4-Bromofluorobenzene	81%	70-130%

5.1.4

5

# Blank Spike Summary

Job Number: MC5041

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2143-BS	N57197.D	1	11/11/11	JP	n/a	n/a	MSN2143

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5041-7, MC5041-8

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	50	79.6	159* a	70-130
107-02-8	Acrolein	250	334	134* b	70-130
107-13-1	Acrylonitrile	50	242	484* a	70-130
71-43-2	Benzene	50	46.5	93	70-130
108-86-1	Bromobenzene	50	48.8	98	70-130
74-97-5	Bromochloromethane	50	47.9	96	70-130
75-27-4	Bromodichloromethane	50	56.5	113	70-130
75-25-2	Bromoform	50	55.4	111	70-130
74-83-9	Bromomethane	50	36.2	72	70-130
78-93-3	2-Butanone (MEK)	50	80.4	161* a	70-130
104-51-8	n-Butylbenzene	50	49.8	100	70-130
135-98-8	sec-Butylbenzene	50	48.4	97	70-130
98-06-6	tert-Butylbenzene	50	49.2	98	70-130
75-15-0	Carbon disulfide	50	43.1	86	70-130
56-23-5	Carbon tetrachloride	50	65.7	131* b	70-130
108-90-7	Chlorobenzene	50	50.1	100	70-130
75-00-3	Chloroethane	50	43.0	86	70-130
110-75-8	2-Chloroethyl vinyl ether	50	46.5	93	70-130
67-66-3	Chloroform	50	49.2	98	70-130
74-87-3	Chloromethane	50	41.7	83	70-130
95-49-8	o-Chlorotoluene	50	44.4	89	70-130
106-43-4	p-Chlorotoluene	50	47.3	95	70-130
124-48-1	Dibromochloromethane	50	63.7	127	70-130
95-50-1	1,2-Dichlorobenzene	50	50.0	100	70-130
541-73-1	1,3-Dichlorobenzene	50	48.6	97	70-130
106-46-7	1,4-Dichlorobenzene	50	49.1	98	70-130
75-71-8	Dichlorodifluoromethane	50	48.9	98	70-130
75-34-3	1,1-Dichloroethane	50	47.7	95	70-130
107-06-2	1,2-Dichloroethane	50	54.4	109	70-130
75-35-4	1,1-Dichloroethene	50	51.3	103	70-130
156-59-2	cis-1,2-Dichloroethene	50	43.1	86	70-130
156-60-5	trans-1,2-Dichloroethene	50	43.8	88	70-130
78-87-5	1,2-Dichloropropane	50	46.5	93	70-130
142-28-9	1,3-Dichloropropane	50	49.1	98	70-130
594-20-7	2,2-Dichloropropane	50	69.1	138* b	70-130
563-58-6	1,1-Dichloropropene	50	52.7	105	70-130

5.2.1  
5

# Blank Spike Summary

Job Number: MC5041  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2143-BS	N57197.D	1	11/11/11	JP	n/a	n/a	MSN2143

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5041-7, MC5041-8

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
10061-01-5	cis-1,3-Dichloropropene	50	51.2	102	70-130
10061-02-6	trans-1,3-Dichloropropene	50	67.9	136* b	70-130
123-91-1	1,4-Dioxane	250	262	105	70-130
97-63-2	Ethyl methacrylate	50	47.8	96	77-137
100-41-4	Ethylbenzene	50	50.2	100	70-130
87-68-3	Hexachlorobutadiene	50	60.8	122	70-130
591-78-6	2-Hexanone	50	82.3	165* a	70-130
98-82-8	Isopropylbenzene	50	54.0	108	70-130
99-87-6	p-Isopropyltoluene	50	52.7	105	70-130
1634-04-4	Methyl Tert Butyl Ether	50	66.6	133* b	70-130
108-10-1	4-Methyl-2-pentanone (MIBK)	50	54.6	109	70-130
74-95-3	Methylene bromide	50	52.6	105	70-130
75-09-2	Methylene chloride	50	45.5	91	70-130
91-20-3	Naphthalene	50	43.2	86	70-130
103-65-1	n-Propylbenzene	50	46.2	92	70-130
100-42-5	Styrene	50	52.5	105	70-130
630-20-6	1,1,1,2-Tetrachloroethane	50	59.5	119	70-130
79-34-5	1,1,2,2-Tetrachloroethane	50	45.2	90	70-130
127-18-4	Tetrachloroethene	50	54.5	109	70-130
108-88-3	Toluene	50	49.2	98	70-130
87-61-6	1,2,3-Trichlorobenzene	50	51.9	104	70-130
120-82-1	1,2,4-Trichlorobenzene	50	54.3	109	70-130
71-55-6	1,1,1-Trichloroethane	50	54.7	109	70-130
79-00-5	1,1,2-Trichloroethane	50	49.9	100	70-130
79-01-6	Trichloroethene	50	51.1	102	70-130
75-69-4	Trichlorofluoromethane	50	52.3	105	70-130
96-18-4	1,2,3-Trichloropropane	50	54.6	109	70-130
95-63-6	1,2,4-Trimethylbenzene	50	46.9	94	70-130
108-67-8	1,3,5-Trimethylbenzene	50	47.8	96	70-130
108-05-4	Vinyl Acetate	50	59.5	119	70-130
75-01-4	Vinyl chloride	50	39.9	80	70-130
	m,p-Xylene	100	99.6	100	70-130
95-47-6	o-Xylene	50	50.7	101	70-130
1330-20-7	Xylene (total)	150	150	100	70-130

5.2.1  
5

# Blank Spike Summary

Job Number: MC5041

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2143-BS	N57197.D	1	11/11/11	JP	n/a	n/a	MSN2143

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5041-7, MC5041-8

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	89%	70-130%
2037-26-5	Toluene-D8	91%	70-130%
460-00-4	4-Bromofluorobenzene	80%	70-130%

- (a) Outside control limits. Associated samples are non-detect for this compound.
- (b) Outside control limits. Blank Spike meets program technical requirements.

5.2.1

5

# Blank Spike Summary

Job Number: MC5041

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2145-BS	N57251.D	1	11/14/11	JP	n/a	n/a	MSN2145

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5041-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
100-41-4	Ethylbenzene	50	47.3	95	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	94%	70-130%
2037-26-5	Toluene-D8	92%	70-130%
460-00-4	4-Bromofluorobenzene	83%	70-130%

5.2.2

5

# Blank Spike/Blank Spike Duplicate Summary

Job Number: MC5041

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2142-BS	N57140.D	1	11/10/11	JP	n/a	n/a	MSN2142
MSN2142-BSD	N57141.D	1	11/10/11	JP	n/a	n/a	MSN2142

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5041-1, MC5041-2, MC5041-3, MC5041-4, MC5041-5, MC5041-7

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	50	62.8	126	59.0	118	6	70-130/25
107-02-8	Acrolein	250	337	135* a	339	136* a	1	70-130/25
107-13-1	Acrylonitrile	50	254	508* b	255	510* b	0	70-130/25
71-43-2	Benzene	50	46.1	92	44.2	88	4	70-130/25
108-86-1	Bromobenzene	50	47.3	95	47.6	95	1	70-130/25
74-97-5	Bromochloromethane	50	46.2	92	45.8	92	1	70-130/25
75-27-4	Bromodichloromethane	50	58.7	117	56.7	113	3	70-130/25
75-25-2	Bromoform	50	56.0	112	56.5	113	1	70-130/25
74-83-9	Bromomethane	50	35.4	71	36.3	73	3	70-130/25
78-93-3	2-Butanone (MEK)	50	62.2	124	59.0	118	5	70-130/25
104-51-8	n-Butylbenzene	50	50.2	100	49.6	99	1	70-130/25
135-98-8	sec-Butylbenzene	50	48.4	97	47.6	95	2	70-130/25
98-06-6	tert-Butylbenzene	50	48.8	98	48.1	96	1	70-130/25
75-15-0	Carbon disulfide	50	44.6	89	42.6	85	5	70-130/25
56-23-5	Carbon tetrachloride	50	69.9	140* a	65.3	131* a	7	70-130/25
108-90-7	Chlorobenzene	50	47.8	96	47.6	95	0	70-130/25
75-00-3	Chloroethane	50	43.8	88	42.7	85	3	70-130/25
110-75-8	2-Chloroethyl vinyl ether	50	45.9	92	45.9	92	0	70-130/25
67-66-3	Chloroform	50	50.9	102	49.1	98	4	70-130/25
74-87-3	Chloromethane	50	38.5	77	37.9	76	2	70-130/25
95-49-8	o-Chlorotoluene	50	45.2	90	44.3	89	2	70-130/25
106-43-4	p-Chlorotoluene	50	47.1	94	47.2	94	0	70-130/25
124-48-1	Dibromochloromethane	50	62.9	126	63.5	127	1	70-130/25
95-50-1	1,2-Dichlorobenzene	50	48.4	97	49.0	98	1	70-130/25
541-73-1	1,3-Dichlorobenzene	50	48.2	96	47.9	96	1	70-130/25
106-46-7	1,4-Dichlorobenzene	50	48.5	97	48.4	97	0	70-130/25
75-71-8	Dichlorodifluoromethane	50	47.5	95	43.9	88	8	70-130/25
75-34-3	1,1-Dichloroethane	50	49.4	99	47.9	96	3	70-130/25
107-06-2	1,2-Dichloroethane	50	55.7	111	54.5	109	2	70-130/25
75-35-4	1,1-Dichloroethene	50	51.6	103	48.6	97	6	70-130/25
156-59-2	cis-1,2-Dichloroethene	50	42.4	85	41.9	84	1	70-130/25
156-60-5	trans-1,2-Dichloroethene	50	45.7	91	43.2	86	6	70-130/25
78-87-5	1,2-Dichloropropane	50	45.9	92	45.9	92	0	70-130/25
142-28-9	1,3-Dichloropropane	50	47.2	94	47.7	95	1	70-130/25
594-20-7	2,2-Dichloropropane	50	67.5	135* a	70.5	141* a	4	70-130/25
563-58-6	1,1-Dichloropropene	50	53.4	107	50.9	102	5	70-130/25

5.3.1

5

# Blank Spike/Blank Spike Duplicate Summary

Job Number: MC5041

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2142-BS	N57140.D	1	11/10/11	JP	n/a	n/a	MSN2142
MSN2142-BSD	N57141.D	1	11/10/11	JP	n/a	n/a	MSN2142

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5041-1, MC5041-2, MC5041-3, MC5041-4, MC5041-5, MC5041-7

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
10061-01-5	cis-1,3-Dichloropropene	50	51.8	104	51.0	102	2	70-130/25
10061-02-6	trans-1,3-Dichloropropene	50	68.2	136* a	68.0	136* a	0	70-130/25
123-91-1	1,4-Dioxane	250	270	108	259	104	4	70-130/25
97-63-2	Ethyl methacrylate	50	48.1	96	48.8	98	1	77-137/25
100-41-4	Ethylbenzene	50	47.8	96	47.6	95	0	70-130/25
87-68-3	Hexachlorobutadiene	50	60.5	121	59.7	119	1	70-130/25
591-78-6	2-Hexanone	50	58.4	117	57.4	115	2	70-130/25
98-82-8	Isopropylbenzene	50	53.5	107	53.0	106	1	70-130/25
99-87-6	p-Isopropyltoluene	50	52.5	105	52.2	104	1	70-130/25
1634-04-4	Methyl Tert Butyl Ether	50	66.1	132* a	68.1	136* a	3	70-130/25
108-10-1	4-Methyl-2-pentanone (MIBK)	50	52.6	105	52.2	104	1	70-130/25
74-95-3	Methylene bromide	50	52.0	104	51.9	104	0	70-130/25
75-09-2	Methylene chloride	50	46.5	93	45.6	91	2	70-130/25
91-20-3	Naphthalene	50	46.8	94	47.4	95	1	70-130/25
103-65-1	n-Propylbenzene	50	46.4	93	45.8	92	1	70-130/25
100-42-5	Styrene	50	49.6	99	49.8	100	0	70-130/25
630-20-6	1,1,1,2-Tetrachloroethane	50	56.9	114	57.0	114	0	70-130/25
79-34-5	1,1,2,2-Tetrachloroethane	50	46.7	93	46.7	93	0	70-130/25
127-18-4	Tetrachloroethene	50	51.5	103	50.1	100	3	70-130/25
108-88-3	Toluene	50	48.8	98	47.3	95	3	70-130/25
87-61-6	1,2,3-Trichlorobenzene	50	55.0	110	56.9	114	3	70-130/25
120-82-1	1,2,4-Trichlorobenzene	50	56.0	112	55.7	111	1	70-130/25
71-55-6	1,1,1-Trichloroethane	50	57.2	114	54.4	109	5	70-130/25
79-00-5	1,1,2-Trichloroethane	50	50.0	100	49.2	98	2	70-130/25
79-01-6	Trichloroethene	50	50.2	100	48.6	97	3	70-130/25
75-69-4	Trichlorofluoromethane	50	55.9	112	51.7	103	8	70-130/25
96-18-4	1,2,3-Trichloropropane	50	54.8	110	55.9	112	2	70-130/25
95-63-6	1,2,4-Trimethylbenzene	50	46.8	94	46.4	93	1	70-130/25
108-67-8	1,3,5-Trimethylbenzene	50	47.7	95	46.7	93	2	70-130/25
108-05-4	Vinyl Acetate	50	62.0	124	61.9	124	0	70-130/25
75-01-4	Vinyl chloride	50	40.6	81	37.9	76	7	70-130/25
	m,p-Xylene	100	95.2	95	94.5	95	1	70-130/25
95-47-6	o-Xylene	50	48.0	96	48.4	97	1	70-130/25
1330-20-7	Xylene (total)	150	143	95	143	95	0	70-130/25

5.3.1  
5

# Blank Spike/Blank Spike Duplicate Summary

Job Number: MC5041

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2142-BS	N57140.D	1	11/10/11	JP	n/a	n/a	MSN2142
MSN2142-BSD	N57141.D	1	11/10/11	JP	n/a	n/a	MSN2142

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5041-1, MC5041-2, MC5041-3, MC5041-4, MC5041-5, MC5041-7

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	93%	92%	70-130%
2037-26-5	Toluene-D8	94%	92%	70-130%
460-00-4	4-Bromofluorobenzene	83%	83%	70-130%

- (a) Outside control limits. Blank Spike meets program technical requirements.
- (b) Outside control limits. Associated samples are non-detect for this compound.

5.3.1  
5



# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5041

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5203-2MS	N57162.D	1	11/10/11	JP	n/a	n/a	MSN2142
MC5203-2MSD	N57163.D	1	11/10/11	JP	n/a	n/a	MSN2142
MC5203-2	N57161.D	1	11/10/11	JP	n/a	n/a	MSN2142

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5041-1, MC5041-2, MC5041-3, MC5041-4, MC5041-5, MC5041-7

CAS No.	Compound	MC5203-2 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND	50	22.1	44* a	21.6	43* a	2	70-130/30
107-02-8	Acrolein	ND	250	255	102	246	98	4	70-130/30
107-13-1	Acrylonitrile	ND	50	216	432* b	211	422* b	2	70-130/30
71-43-2	Benzene	83.1	50	85.6	5* a	68.5	-29* a	22	70-130/30
108-86-1	Bromobenzene	ND	50	49.9	100	48.7	97	2	70-130/30
74-97-5	Bromochloromethane	ND	50	43.7	87	43.3	87	1	70-130/30
75-27-4	Bromodichloromethane	ND	50	52.2	104	52.0	104	0	70-130/30
75-25-2	Bromoform	ND	50	57.6	115	58.2	116	1	70-130/30
74-83-9	Bromomethane	ND	50	25.4	51* a	30.3	61* a	18	70-130/30
78-93-3	2-Butanone (MEK)	ND	50	41.7	83	41.1	82	1	70-130/30
104-51-8	n-Butylbenzene	ND	50	48.2	96	47.5	95	1	70-130/30
135-98-8	sec-Butylbenzene	ND	50	48.1	96	46.8	94	3	70-130/30
98-06-6	tert-Butylbenzene	ND	50	47.6	95	46.1	92	3	70-130/30
75-15-0	Carbon disulfide	ND	50	39.1	78	38.0	76	3	70-130/30
56-23-5	Carbon tetrachloride	ND	50	59.7	119	57.8	116	3	70-130/30
108-90-7	Chlorobenzene	ND	50	51.8	104	51.0	102	2	70-130/30
75-00-3	Chloroethane	ND	50	37.8	76	35.8	72	5	70-130/30
110-75-8	2-Chloroethyl vinyl ether	ND	50	43.5	87	42.7	85	2	70-130/30
67-66-3	Chloroform	ND	50	43.5	87	42.6	85	2	70-130/30
74-87-3	Chloromethane	ND	50	30.3	61* a	31.3	63* a	3	70-130/30
95-49-8	o-Chlorotoluene	ND	50	43.9	88	43.2	86	2	70-130/30
106-43-4	p-Chlorotoluene	ND	50	46.1	92	45.0	90	2	70-130/30
124-48-1	Dibromochloromethane	ND	50	62.9	126	62.9	126	0	70-130/30
95-50-1	1,2-Dichlorobenzene	ND	50	49.9	100	49.2	98	1	70-130/30
541-73-1	1,3-Dichlorobenzene	ND	50	48.6	97	48.2	96	1	70-130/30
106-46-7	1,4-Dichlorobenzene	ND	50	49.0	98	48.8	98	0	70-130/30
75-71-8	Dichlorodifluoromethane	ND	50	34.5	69* a	32.9	66* a	5	70-130/30
75-34-3	1,1-Dichloroethane	ND	50	42.9	86	41.8	84	3	70-130/30
107-06-2	1,2-Dichloroethane	ND	50	47.0	94	46.0	92	2	70-130/30
75-35-4	1,1-Dichloroethene	ND	50	47.5	95	45.4	91	5	70-130/30
156-59-2	cis-1,2-Dichloroethene	ND	50	40.6	81	39.4	79	3	70-130/30
156-60-5	trans-1,2-Dichloroethene	ND	50	42.7	85	41.3	83	3	70-130/30
78-87-5	1,2-Dichloropropane	ND	50	43.5	87	42.7	85	2	70-130/30
142-28-9	1,3-Dichloropropane	ND	50	48.0	96	48.2	96	0	70-130/30
594-20-7	2,2-Dichloropropane	ND	50	64.6	129	61.7	123	5	70-130/30
563-58-6	1,1-Dichloropropene	ND	50	49.9	100	48.6	97	3	70-130/30

5.4.1  
5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5041

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5203-2MS	N57162.D	1	11/10/11	JP	n/a	n/a	MSN2142
MC5203-2MSD	N57163.D	1	11/10/11	JP	n/a	n/a	MSN2142
MC5203-2	N57161.D	1	11/10/11	JP	n/a	n/a	MSN2142

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5041-1, MC5041-2, MC5041-3, MC5041-4, MC5041-5, MC5041-7

CAS No.	Compound	MC5203-2 ug/l	Spike Q	ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
10061-01-5	cis-1,3-Dichloropropene	ND		50	49.0	98	48.2	96	2	70-130/30
10061-02-6	trans-1,3-Dichloropropene	ND		50	63.1	126	63.0	126	0	70-130/30
123-91-1	1,4-Dioxane	ND		250	270	108	250	100	8	70-130/30
97-63-2	Ethyl methacrylate	ND		50	46.5	93	46.8	94	1	72-139/30
100-41-4	Ethylbenzene	ND		50	51.0	102	49.7	99	3	70-130/30
87-68-3	Hexachlorobutadiene	ND		50	61.0	122	60.4	121	1	70-130/30
591-78-6	2-Hexanone	ND		50	47.6	95	47.9	96	1	70-130/30
98-82-8	Isopropylbenzene	ND		50	54.2	108	52.5	105	3	70-130/30
99-87-6	p-Isopropyltoluene	ND		50	51.6	103	50.7	101	2	70-130/30
1634-04-4	Methyl Tert Butyl Ether	ND		50	61.8	124	59.9	120	3	70-130/30
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		50	47.4	95	47.7	95	1	70-130/30
74-95-3	Methylene bromide	ND		50	48.7	97	47.8	96	2	70-130/30
75-09-2	Methylene chloride	ND		50	42.8	86	41.8	84	2	70-130/30
91-20-3	Naphthalene	4.2	J	50	46.7	85	47.3	86	1	70-130/30
103-65-1	n-Propylbenzene	ND		50	45.5	91	44.9	90	1	70-130/30
100-42-5	Styrene	ND		50	53.2	106	53.0	106	0	70-130/30
630-20-6	1,1,1,2-Tetrachloroethane	ND		50	59.9	120	58.8	118	2	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	ND		50	44.7	89	44.2	88	1	70-130/30
127-18-4	Tetrachloroethene	0.52	J	50	58.9	117	56.9	113	3	70-130/30
108-88-3	Toluene	ND		50	48.2	96	46.9	94	3	70-130/30
87-61-6	1,2,3-Trichlorobenzene	ND		50	55.5	111	56.0	112	1	70-130/30
120-82-1	1,2,4-Trichlorobenzene	ND		50	56.4	113	56.0	112	1	70-130/30
71-55-6	1,1,1-Trichloroethane	ND		50	47.8	96	46.2	92	3	70-130/30
79-00-5	1,1,2-Trichloroethane	ND		50	46.8	94	47.0	94	0	70-130/30
79-01-6	Trichloroethene	ND		50	49.2	98	47.6	95	3	70-130/30
75-69-4	Trichlorofluoromethane	ND		50	44.5	89	42.9	86	4	70-130/30
96-18-4	1,2,3-Trichloropropane	ND		50	52.0	104	52.3	105	1	70-130/30
95-63-6	1,2,4-Trimethylbenzene	ND		50	46.6	93	45.4	91	3	70-130/30
108-67-8	1,3,5-Trimethylbenzene	ND		50	47.2	94	45.9	92	3	70-130/30
108-05-4	Vinyl Acetate	ND		50	51.1	102	50.4	101	1	70-130/30
75-01-4	Vinyl chloride	ND		50	31.9	64* a	31.2	62* a	2	70-130/30
	m,p-Xylene	ND		100	103	103	101	101	2	70-130/30
95-47-6	o-Xylene	ND		50	51.8	104	50.5	101	3	70-130/30
1330-20-7	Xylene (total)	ND		150	155	103	151	101	3	70-130/30

5.4.1

5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5041

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5203-2MS	N57162.D	1	11/10/11	JP	n/a	n/a	MSN2142
MC5203-2MSD	N57163.D	1	11/10/11	JP	n/a	n/a	MSN2142
MC5203-2	N57161.D	1	11/10/11	JP	n/a	n/a	MSN2142

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5041-1, MC5041-2, MC5041-3, MC5041-4, MC5041-5, MC5041-7

CAS No.	Surrogate Recoveries	MS	MSD	MC5203-2	Limits
1868-53-7	Dibromofluoromethane	81%	80%	80%	70-130%
2037-26-5	Toluene-D8	90%	90%	90%	70-130%
460-00-4	4-Bromofluorobenzene	80%	79%	79%	70-130%

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

(b) Outside control limits. Associated samples are non-detect for this compound.

5.4.1  
5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5041

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5203-16MS	N57183.D	1	11/11/11	JP	n/a	n/a	MSN2143
MC5203-16MSD	N57184.D	1	11/11/11	JP	n/a	n/a	MSN2143
MC5203-16	N57210.D	1	11/11/11	JP	n/a	n/a	MSN2143

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5041-7, MC5041-8

CAS No.	Compound	MC5203-16 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND	50	26.5	53* a	25.1	50* a	5	70-130/30
107-02-8	Acrolein	ND	250	254	102	256	102	1	70-130/30
107-13-1	Acrylonitrile	ND	50	225	450* b	226	452* b	0	70-130/30
71-43-2	Benzene	0.54	50	46.9	93	46.1	91	2	70-130/30
108-86-1	Bromobenzene	ND	50	48.3	97	48.3	97	0	70-130/30
74-97-5	Bromochloromethane	ND	50	46.1	92	46.1	92	0	70-130/30
75-27-4	Bromodichloromethane	ND	50	58.3	117	57.2	114	2	70-130/30
75-25-2	Bromoform	ND	50	58.6	117	59.5	119	2	70-130/30
74-83-9	Bromomethane	ND	50	28.9	58* a	33.2	66* a	14	70-130/30
78-93-3	2-Butanone (MEK)	ND	50	41.3	83	42.3	85	2	70-130/30
104-51-8	n-Butylbenzene	ND	50	47.2	94	46.9	94	1	70-130/30
135-98-8	sec-Butylbenzene	ND	50	47.1	94	46.7	93	1	70-130/30
98-06-6	tert-Butylbenzene	ND	50	48.3	97	47.5	95	2	70-130/30
75-15-0	Carbon disulfide	ND	50	41.4	83	40.4	81	2	70-130/30
56-23-5	Carbon tetrachloride	ND	50	67.8	136* a	66.4	133* a	2	70-130/30
108-90-7	Chlorobenzene	ND	50	51.1	102	50.9	102	0	70-130/30
75-00-3	Chloroethane	ND	50	40.6	81	39.1	78	4	70-130/30
110-75-8	2-Chloroethyl vinyl ether	ND	50	44.9	90	44.4	89	1	70-130/30
67-66-3	Chloroform	ND	50	48.7	97	47.7	95	2	70-130/30
74-87-3	Chloromethane	ND	50	34.9	70	35.3	71	1	70-130/30
95-49-8	o-Chlorotoluene	ND	50	44.0	88	43.9	88	0	70-130/30
106-43-4	p-Chlorotoluene	ND	50	46.2	92	46.1	92	0	70-130/30
124-48-1	Dibromochloromethane	ND	50	66.5	133* a	67.1	134* a	1	70-130/30
95-50-1	1,2-Dichlorobenzene	ND	50	48.9	98	50.1	100	2	70-130/30
541-73-1	1,3-Dichlorobenzene	ND	50	47.7	95	48.0	96	1	70-130/30
106-46-7	1,4-Dichlorobenzene	ND	50	48.6	97	48.9	98	1	70-130/30
75-71-8	Dichlorodifluoromethane	ND	50	39.3	79	37.8	76	4	70-130/30
75-34-3	1,1-Dichloroethane	ND	50	46.9	94	46.6	93	1	70-130/30
107-06-2	1,2-Dichloroethane	ND	50	54.2	108	52.9	106	2	70-130/30
75-35-4	1,1-Dichloroethene	ND	50	48.8	98	47.9	96	2	70-130/30
156-59-2	cis-1,2-Dichloroethene	ND	50	42.4	85	41.5	83	2	70-130/30
156-60-5	trans-1,2-Dichloroethene	ND	50	44.1	88	43.5	87	1	70-130/30
78-87-5	1,2-Dichloropropane	ND	50	44.9	90	44.4	89	1	70-130/30
142-28-9	1,3-Dichloropropane	ND	50	49.1	98	49.3	99	0	70-130/30
594-20-7	2,2-Dichloropropane	ND	50	55.7	111	54.4	109	2	70-130/30
563-58-6	1,1-Dichloropropene	ND	50	52.5	105	50.8	102	3	70-130/30

5.4.2  
5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5041

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5203-16MS	N57183.D	1	11/11/11	JP	n/a	n/a	MSN2143
MC5203-16MSD	N57184.D	1	11/11/11	JP	n/a	n/a	MSN2143
MC5203-16	N57210.D	1	11/11/11	JP	n/a	n/a	MSN2143

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5041-7, MC5041-8

CAS No.	Compound	MC5203-16 ug/l	Spike Q	ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
10061-01-5	cis-1,3-Dichloropropene	ND	50	49.1	98	49.1	98	0	70-130/30	
10061-02-6	trans-1,3-Dichloropropene	ND	50	64.3	129	64.3	129	0	70-130/30	
123-91-1	1,4-Dioxane	ND	250	239	96	249	100	4	70-130/30	
97-63-2	Ethyl methacrylate	ND	50	45.4	91	45.5	91	0	72-139/30	
100-41-4	Ethylbenzene	ND	50	50.5	101	50.1	100	1	70-130/30	
87-68-3	Hexachlorobutadiene	ND	50	58.1	116	58.4	117	1	70-130/30	
591-78-6	2-Hexanone	ND	50	45.3	91	46.0	92	2	70-130/30	
98-82-8	Isopropylbenzene	ND	50	52.9	106	52.7	105	0	70-130/30	
99-87-6	p-Isopropyltoluene	ND	50	51.0	102	50.9	102	0	70-130/30	
1634-04-4	Methyl Tert Butyl Ether	ND	50	64.0	128	64.7	129	1	70-130/30	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	50	47.4	95	47.1	94	1	70-130/30	
74-95-3	Methylene bromide	ND	50	51.9	104	51.3	103	1	70-130/30	
75-09-2	Methylene chloride	ND	50	44.9	90	44.9	90	0	70-130/30	
91-20-3	Naphthalene	ND	50	41.3	83	45.1	90	9	70-130/30	
103-65-1	n-Propylbenzene	ND	50	45.0	90	44.9	90	0	70-130/30	
100-42-5	Styrene	ND	50	53.0	106	52.7	105	1	70-130/30	
630-20-6	1,1,1,2-Tetrachloroethane	ND	50	61.2	122	61.3	123	0	70-130/30	
79-34-5	1,1,2,2-Tetrachloroethane	ND	50	44.3	89	44.7	89	1	70-130/30	
127-18-4	Tetrachloroethene	15.7	50	68.5	106	67.8	104	1	70-130/30	
108-88-3	Toluene	ND	50	48.9	98	47.7	95	2	70-130/30	
87-61-6	1,2,3-Trichlorobenzene	ND	50	51.2	102	54.0	108	5	70-130/30	
120-82-1	1,2,4-Trichlorobenzene	ND	50	52.3	105	54.7	109	4	70-130/30	
71-55-6	1,1,1-Trichloroethane	ND	50	55.4	111	53.2	106	4	70-130/30	
79-00-5	1,1,2-Trichloroethane	ND	50	48.3	97	48.6	97	1	70-130/30	
79-01-6	Trichloroethene	ND	50	50.8	102	48.5	97	5	70-130/30	
75-69-4	Trichlorofluoromethane	ND	50	51.1	102	49.2	98	4	70-130/30	
96-18-4	1,2,3-Trichloropropane	ND	50	50.9	102	51.5	103	1	70-130/30	
95-63-6	1,2,4-Trimethylbenzene	ND	50	46.2	92	46.0	92	0	70-130/30	
108-67-8	1,3,5-Trimethylbenzene	ND	50	46.8	94	46.5	93	1	70-130/30	
108-05-4	Vinyl Acetate	ND	50	49.2	98	49.6	99	1	70-130/30	
75-01-4	Vinyl chloride	ND	50	36.3	73	35.4	71	3	70-130/30	
	m,p-Xylene	ND	100	101	101	101	101	0	70-130/30	
95-47-6	o-Xylene	ND	50	51.5	103	51.3	103	0	70-130/30	
1330-20-7	Xylene (total)	ND	150	153	102	152	101	1	70-130/30	

5.4.2  
5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5041

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5203-16MS	N57183.D	1	11/11/11	JP	n/a	n/a	MSN2143
MC5203-16MSD	N57184.D	1	11/11/11	JP	n/a	n/a	MSN2143
MC5203-16	N57210.D	1	11/11/11	JP	n/a	n/a	MSN2143

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5041-7, MC5041-8

CAS No.	Surrogate Recoveries	MS	MSD	MC5203-16	Limits
1868-53-7	Dibromofluoromethane	89%	88%	95%	70-130%
2037-26-5	Toluene-D8	92%	93%	91%	70-130%
460-00-4	4-Bromofluorobenzene	81%	82%	84%	70-130%

- (a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
- (b) Outside control limits. Associated samples are non-detect for this compound.

5.4.2  
5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5041

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5220-1MS	N57264.D	1	11/14/11	JP	n/a	n/a	MSN2145
MC5220-1MSD	N57265.D	1	11/14/11	JP	n/a	n/a	MSN2145
MC5220-1	N57263.D	1	11/14/11	JP	n/a	n/a	MSN2145

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5041-3

CAS No.	Compound	MC5220-1 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
100-41-4	Ethylbenzene	ND	.50	46.2	92	47.9	96	4	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	MC5220-1	Limits
1868-53-7	Dibromofluoromethane	96%	94%	96%	70-130%
2037-26-5	Toluene-D8	94%	93%	94%	70-130%
460-00-4	4-Bromofluorobenzene	82%	82%	86%	70-130%

5.4.3  
5

# Volatile Internal Standard Area Summary

Job Number: MC5041

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSN2142-CC2093	Injection Date:	11/10/11
Lab File ID:	N57139.D	Injection Time:	10:41
Instrument ID:	GCMSEN	Method:	SW846 8260B

	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
	AREA		AREA		AREA		AREA		AREA	
Check Std	260109	9.03	380816	9.91	180253	13.16	213566	15.72	102179	6.58
Upper Limit <sup>a</sup>	520218	9.53	761632	10.41	360506	13.66	427132	16.22	204358	7.08
Lower Limit <sup>b</sup>	130055	8.53	190408	9.41	90127	12.66	106783	15.22	51090	6.08

Lab	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
Sample ID	AREA		AREA		AREA		AREA		AREA	
MSN2142-BS	279899	9.03	410398	9.90	199076	13.16	222817	15.72	109570	6.57
MSN2142-BSD	291374	9.03	429113	9.90	202972	13.16	227346	15.72	120178	6.58
MSN2142-MB	281842	9.03	412595	9.91	184723	13.16	195529	15.72	118420	6.58
ZZZZZZ	270967	9.03	397459	9.91	179968	13.16	206583	15.72	102719	6.58
ZZZZZZ	282435	9.03	408937	9.90	186473	13.16	206465	15.72	108978	6.58
ZZZZZZ	278755	9.03	403103	9.91	182569	13.16	200410	15.72	108047	6.58
ZZZZZZ	271161	9.03	392628	9.90	179342	13.16	194779	15.72	99277	6.58
ZZZZZZ	265759	9.03	387821	9.91	176598	13.16	190829	15.72	96995	6.58
MC5041-5	264564	9.03	383184	9.91	173991	13.16	188572	15.72	102637	6.58
MC5041-1	252179	9.03	367551	9.91	167071	13.16	180076	15.72	93460	6.58
MC5041-2	260547	9.03	383334	9.91	175720	13.16	200611	15.72	96814	6.58
MC5041-4	266983	9.03	392666	9.91	177220	13.16	198536	15.72	111236	6.58
MC5041-3	289585	9.03	422968	9.90	202344	13.16	233510	15.72	97354	6.58
MC5041-7	308321	9.03	532592	9.96	232628	13.16	283727	15.72	112326	6.58
MC5203-2	379348	9.03	517757	9.91	216159	13.16	257317	15.72	129728	6.58
MC5203-2MS	378324	9.03	522387	9.90	229829	13.16	269595	15.72	145312	6.58
MC5203-2MSD	380553	9.03	524850	9.90	230365	13.16	274137	15.72	131864	6.58

- IS 1 = Pentafluorobenzene
- IS 2 = 1,4-Difluorobenzene
- IS 3 = Chlorobenzene-D5
- IS 4 = 1,4-Dichlorobenzene-d4
- IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

5.5.1

5



# Volatile Internal Standard Area Summary

Job Number: MC5041

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSN2143-CC2093	Injection Date:	11/11/11
Lab File ID:	N57167.D	Injection Time:	00:03
Instrument ID:	GCMSEN	Method:	SW846 8260B

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	372290	9.03	516785	9.91	231397	13.16	270082	15.72	131050	6.58
Upper Limit <sup>a</sup>	744580	9.53	1033570	10.41	462794	13.66	540164	16.22	262100	7.08
Lower Limit <sup>b</sup>	186145	8.53	258393	9.41	115699	12.66	135041	15.22	65525	6.08

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
MSN2143-BS1	377340	9.03	521048	9.91	224120	13.16	267018	15.72	132496	6.58
MSN2143-MB1	379907	9.03	529890	9.91	223204	13.16	254877	15.72	139899	6.58
MC5203-16MS	305481	9.03	434195	9.91	198073	13.16	236440	15.72	108047	6.58
MC5203-16MSD	314323	9.03	447203	9.90	201146	13.16	238090	15.72	110009	6.58

- IS 1 = Pentafluorobenzene
- IS 2 = 1,4-Difluorobenzene
- IS 3 = Chlorobenzene-D5
- IS 4 = 1,4-Dichlorobenzene-d4
- IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

5.5.2  
5

# Volatile Internal Standard Area Summary

Job Number: MC5041  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSN2143-CC2093	Injection Date:	11/11/11
Lab File ID:	N57196.D	Injection Time:	13:43
Instrument ID:	GCMSN	Method:	SW846 8260B

	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
	AREA		AREA		AREA		AREA		AREA	
Check Std	300436	9.03	439240	9.90	206812	13.16	235189	15.72	116819	6.57
Upper Limit <sup>a</sup>	600872	9.53	878480	10.40	413624	13.66	470378	16.22	233638	7.07
Lower Limit <sup>b</sup>	150218	8.53	219620	9.40	103406	12.66	117595	15.22	58410	6.07

Lab	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
Sample ID	AREA		AREA		AREA		AREA		AREA	
MSN2143-BS	315227	9.03	451371	9.90	209093	13.16	243120	15.72	128069	6.58
MSN2143-MB	304239	9.03	438188	9.90	191196	13.16	213876	15.72	123593	6.58
MC5041-8	293973	9.03	418552	9.90	186345	13.16	207288	15.72	98841	6.58
MC5041-7	296137	9.03	427632	9.90	190854	13.16	204505	15.72	108053	6.58
ZZZZZZ	288260	9.03	412909	9.91	184979	13.16	203396	15.72	104428	6.58
ZZZZZZ	282984	9.03	406107	9.90	184226	13.16	201448	15.72	101118	6.58
ZZZZZZ	282964	9.03	407506	9.90	179850	13.16	199805	15.72	108721	6.58
ZZZZZZ	283439	9.03	406454	9.91	179393	13.16	195308	15.72	101046	6.58
ZZZZZZ	270907	9.03	390774	9.91	175222	13.16	196713	15.72	103277	6.58
ZZZZZZ	277142	9.03	398007	9.91	179891	13.16	196043	15.72	100331	6.58
ZZZZZZ	272334	9.03	393567	9.91	177411	13.16	191641	15.72	97078	6.58
MC5203-16	265582	9.03	385933	9.90	175830	13.16	191598	15.72	95589	6.58
ZZZZZZ	261413	9.03	378874	9.90	171670	13.16	185849	15.72	88270	6.58
ZZZZZZ	262671	9.03	379705	9.91	172950	13.16	188338	15.72	94088	6.58
ZZZZZZ	261052	9.03	378647	9.90	171641	13.16	186497	15.72	88087	6.58
ZZZZZZ	258318	9.03	372664	9.91	169838	13.16	181582	15.72	90914	6.58
ZZZZZZ	260096	9.03	370484	9.91	169209	13.16	181469	15.72	91117	6.58
ZZZZZZ	255688	9.03	367961	9.91	167755	13.16	181218	15.72	87076	6.58
ZZZZZZ	251621	9.03	361597	9.91	161952	13.16	178726	15.72	88591	6.58
ZZZZZZ	247538	9.03	359699	9.91	162315	13.16	177020	15.72	91301	6.58
ZZZZZZ	247484	9.03	359758	9.91	162735	13.16	178899	15.72	83271	6.58

- IS 1 = Pentafluorobenzene
- IS 2 = 1,4-Difluorobenzene
- IS 3 = Chlorobenzene-D5
- IS 4 = 1,4-Dichlorobenzene-d4
- IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

5.5.3  
5

# Volatile Internal Standard Area Summary

Job Number: MC5041  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSN2145-CC2093	Injection Date:	11/14/11
Lab File ID:	N57249.D	Injection Time:	10:38
Instrument ID:	GCM5N	Method:	SW846 8260B

	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
	AREA		AREA		AREA		AREA		AREA	
Check Std	294754	9.03	410689	9.90	199996	13.16	236619	15.72	110117	6.58
Upper Limit <sup>a</sup>	589508	9.53	821378	10.40	399992	13.66	473238	16.22	220234	7.08
Lower Limit <sup>b</sup>	147377	8.53	205345	9.40	99998	12.66	118310	15.22	55059	6.08

Lab	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
Sample ID	AREA		AREA		AREA		AREA		AREA	
MSN2145-BS	334894	9.03	480044	9.91	231595	13.16	260757	15.72	144366	6.58
MSN2145-MB	329203	9.03	475101	9.90	211298	13.16	225563	15.72	139395	6.58
ZZZZZZ	318556	9.03	455329	9.90	205780	13.16	219680	15.72	127101	6.58
ZZZZZZ	315338	9.03	458735	9.91	209089	13.16	224303	15.72	148358	6.58
ZZZZZZ	311225	9.03	449418	9.91	205383	13.16	217704	15.72	133031	6.58
MC5041-3 <sup>c</sup>	323974	9.03	461651	9.90	216987	13.16	241469	15.72	144897	6.58
ZZZZZZ	322805	9.03	470452	9.90	212793	13.16	228612	15.72	127071	6.58
ZZZZZZ	319766	9.03	458618	9.91	210139	13.16	222559	15.72	139752	6.58
ZZZZZZ	311316	9.03	449249	9.91	205270	13.16	221902	15.72	121347	6.58
ZZZZZZ	309654	9.03	453105	9.91	205944	13.16	226121	15.72	138305	6.58
MC5220-1	315192	9.03	447315	9.91	209716	13.16	222378	15.72	129757	6.58
MC5220-1MS	327712	9.03	474390	9.91	236311	13.16	268822	15.72	139507	6.58
MC5220-1MSD	351984	9.03	503937	9.90	244621	13.16	275331	15.72	143720	6.58
ZZZZZZ	349154	9.03	501052	9.91	222680	13.16	245718	15.72	148562	6.58
ZZZZZZ	337515	9.03	479996	9.91	217999	13.16	238796	15.72	131081	6.58
ZZZZZZ	327564	9.03	465046	9.91	214549	13.16	233377	15.72	129444	6.58
ZZZZZZ	320749	9.03	463038	9.91	207467	13.16	227042	15.72	121234	6.58
ZZZZZZ	327916	9.03	469919	9.90	218963	13.16	243413	15.72	149220	6.58
ZZZZZZ	323122	9.03	464468	9.91	211418	13.16	232030	15.72	125878	6.58
ZZZZZZ	337316	9.03	484559	9.90	233766	13.16	273449	15.72	149158	6.58
ZZZZZZ	392890	9.03	556788	9.90	245585	13.16	283536	15.72	147706	6.58
ZZZZZZ	391157	9.03	555394	9.91	242275	13.16	265359	15.72	139324	6.58

- IS 1 = Pentafluorobenzene
- IS 2 = 1,4-Difluorobenzene
- IS 3 = Chlorobenzene-D5
- IS 4 = 1,4-Dichlorobenzene-d4
- IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.  
 (c) Sample analyzed past recommended hold time.

5.5.4  
5

# Volatile Surrogate Recovery Summary

Job Number: MC5041

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Method: SW846 8260B

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
MC5041-1	N57154.D	95.0	92.0	85.0
MC5041-2	N57155.D	96.0	94.0	85.0
MC5041-3	N57157.D	88.0	94.0	83.0
MC5041-3	N57258.D	94.0	95.0	86.0
MC5041-4	N57156.D	94.0	91.0	83.0
MC5041-5	N57149.D	94.0	92.0	85.0
MC5041-7	N57202.D	92.0	91.0	85.0
MC5041-7	N57159.D	90.0	89.0	80.0
MC5041-8	N57201.D	90.0	92.0	161.0* a
MC5203-16MS	N57183.D	89.0	92.0	81.0
MC5203-16MSD	N57184.D	88.0	93.0	82.0
MC5203-2MS	N57162.D	81.0	90.0	80.0
MC5203-2MSD	N57163.D	80.0	90.0	79.0
MC5220-1MS	N57264.D	96.0	94.0	82.0
MC5220-1MSD	N57265.D	94.0	93.0	82.0
MSN2142-BS	N57140.D	93.0	94.0	83.0
MSN2142-BSD	N57141.D	92.0	92.0	83.0
MSN2142-MB	N57143.D	93.0	91.0	85.0
MSN2143-BS	N57197.D	89.0	91.0	80.0
MSN2143-MB	N57200.D	91.0	91.0	83.0
MSN2145-BS	N57251.D	94.0	92.0	83.0
MSN2145-MB	N57253.D	96.0	90.0	86.0
MSN2143-MB1	N57171.D	82.0	90.0	81.0

**Surrogate Compounds**                      **Recovery Limits**

S1 = Dibromofluoromethane              70-130%  
 S2 = Toluene-D8                              70-130%  
 S3 = 4-Bromofluorobenzene              70-130%

(a) Outside control limits. Associated target analytes are non-detect.

5.6.1  
5

## GC/MS Semi-volatiles

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## QC Data Summaries

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Includes the following where applicable:

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



## Method Blank Summary

Job Number: MC5041

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26792-MB	F53441.D	1	11/03/11	PR	11/02/11	OP26792	MSF2573

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5041-1, MC5041-2, MC5041-3, MC5041-4, MC5041-7, MC5041-8

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	10	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	ug/l	
51-28-5	2,4-Dinitrophenol	ND	20	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	ug/l	
95-48-7	2-Methylphenol	ND	10	ug/l	
	3&4-Methylphenol	ND	10	ug/l	
88-75-5	2-Nitrophenol	ND	10	ug/l	
100-02-7	4-Nitrophenol	ND	20	ug/l	
87-86-5	Pentachlorophenol	ND	10	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	10	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	ug/l	
62-53-3	Aniline	ND	10	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	ug/l	
100-51-6	Benzyl Alcohol	ND	10	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	ug/l	
106-47-8	4-Chloroaniline	ND	10	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	10	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.0	ug/l	
132-64-9	Dibenzofuran	ND	5.0	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	ug/l	
84-66-2	Diethyl phthalate	ND	5.0	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	ug/l	

6.1.1



# Method Blank Summary

Job Number: MC5041

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26792-MB	F53441.D	1	11/03/11	PR	11/02/11	OP26792	MSF2573

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5041-1, MC5041-2, MC5041-3, MC5041-4, MC5041-7, MC5041-8

CAS No.	Compound	Result	RL	Units	Q
77-47-4	Hexachlorocyclopentadiene	ND	10	ug/l	
67-72-1	Hexachloroethane	ND	5.0	ug/l	
78-59-1	Isophorone	ND	5.0	ug/l	
88-74-4	2-Nitroaniline	ND	10	ug/l	
99-09-2	3-Nitroaniline	ND	10	ug/l	
100-01-6	4-Nitroaniline	ND	10	ug/l	
98-95-3	Nitrobenzene	ND	5.0	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	ug/l	
110-86-1	Pyridine	ND	10	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	57%	15-110%
4165-62-2	Phenol-d5	38%	15-110%
118-79-6	2,4,6-Tribromophenol	88%	15-110%
4165-60-0	Nitrobenzene-d5	94%	30-130%
321-60-8	2-Fluorobiphenyl	92%	30-130%
1718-51-0	Terphenyl-d14	104%	30-130%

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

6.1.1

6

# Method Blank Summary

Job Number: MC5041

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26793-MB	I76197.D	1	11/09/11	KR	11/02/11	OP26793	MSI2795

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC5041-1, MC5041-2, MC5041-3, MC5041-4, MC5041-7, MC5041-8

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	0.10	ug/l	
208-96-8	Acenaphthylene	ND	0.10	ug/l	
120-12-7	Anthracene	ND	0.10	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.050	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.050	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	ug/l	
218-01-9	Chrysene	ND	0.10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	ug/l	
206-44-0	Fluoranthene	ND	0.10	ug/l	
86-73-7	Fluorene	ND	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.20	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	0.10	ug/l	
85-01-8	Phenanthrene	ND	0.050	ug/l	
129-00-0	Pyrene	ND	0.10	ug/l	

CAS No.	Surrogate Recoveries		Limits
4165-60-0	Nitrobenzene-d5	129%	30-130%
321-60-8	2-Fluorobiphenyl	99%	30-130%
1718-51-0	Terphenyl-d14	124%	30-130%

6.1.2

6



# Blank Spike Summary

Job Number: MC5041  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26792-BS	F53442.D	1	11/03/11	PR	11/02/11	OP26792	MSF2573

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5041-1, MC5041-2, MC5041-3, MC5041-4, MC5041-7, MC5041-8

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
65-85-0	Benzoic Acid	100	33.3	33	30-130
95-57-8	2-Chlorophenol	100	76.9	77	30-130
59-50-7	4-Chloro-3-methyl phenol	100	84.2	84	30-130
120-83-2	2,4-Dichlorophenol	100	87.3	87	30-130
105-67-9	2,4-Dimethylphenol	100	83.6	84	30-130
51-28-5	2,4-Dinitrophenol	100	82.2	82	30-130
534-52-1	4,6-Dinitro-o-cresol	100	101	101	30-130
95-48-7	2-Methylphenol	100	70.0	70	30-130
	3&4-Methylphenol	200	137	69	30-130
88-75-5	2-Nitrophenol	100	91.0	91	30-130
100-02-7	4-Nitrophenol	100	47.0	47	30-130
87-86-5	Pentachlorophenol	100	97.7	98	30-130
108-95-2	Phenol	100	39.9	40	30-130
95-95-4	2,4,5-Trichlorophenol	100	90.1	90	30-130
88-06-2	2,4,6-Trichlorophenol	100	89.4	89	30-130
62-53-3	Aniline	50	17.5	35* a	40-140
101-55-3	4-Bromophenyl phenyl ether	50	48.5	97	40-140
85-68-7	Butyl benzyl phthalate	50	49.6	99	40-140
100-51-6	Benzyl Alcohol	50	36.1	72	40-140
91-58-7	2-Chloronaphthalene	50	45.0	90	40-140
106-47-8	4-Chloroaniline	50	31.1	62	40-140
111-91-1	bis(2-Chloroethoxy)methane	50	45.5	91	40-140
111-44-4	bis(2-Chloroethyl)ether	50	46.9	94	40-140
108-60-1	bis(2-Chloroisopropyl)ether	50	48.9	98	40-140
7005-72-3	4-Chlorophenyl phenyl ether	50	47.3	95	40-140
122-66-7	1,2-Diphenylhydrazine	50	44.1	88	40-140
121-14-2	2,4-Dinitrotoluene	50	47.8	96	40-140
606-20-2	2,6-Dinitrotoluene	50	45.6	91	40-140
91-94-1	3,3'-Dichlorobenzidine	50	33.1	66	40-140
132-64-9	Dibenzofuran	50	45.4	91	40-140
84-74-2	Di-n-butyl phthalate	50	50.7	101	40-140
117-84-0	Di-n-octyl phthalate	50	46.8	94	40-140
84-66-2	Diethyl phthalate	50	51.2	102	40-140
131-11-3	Dimethyl phthalate	50	47.7	95	40-140
117-81-7	bis(2-Ethylhexyl)phthalate	50	49.2	98	40-140
118-74-1	Hexachlorobenzene	50	45.2	90	40-140

6.2.1

6

# Blank Spike Summary

Job Number: MC5041

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26792-BS	F53442.D	1	11/03/11	PR	11/02/11	OP26792	MSF2573

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5041-1, MC5041-2, MC5041-3, MC5041-4, MC5041-7, MC5041-8

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
77-47-4	Hexachlorocyclopentadiene	50	27.2	54	40-140
67-72-1	Hexachloroethane	50	35.7	71	40-140
78-59-1	Isophorone	50	34.7	69	40-140
88-74-4	2-Nitroaniline	50	45.9	92	40-140
99-09-2	3-Nitroaniline	50	37.5	75	40-140
100-01-6	4-Nitroaniline	50	43.9	88	40-140
98-95-3	Nitrobenzene	50	45.7	91	40-140
62-75-9	n-Nitrosodimethylamine	50	24.2	48	40-140
621-64-7	N-Nitroso-di-n-propylamine	50	47.2	94	40-140
86-30-6	N-Nitrosodiphenylamine	50	46.8	94	40-140
110-86-1	Pyridine	50	19.7	39* a	40-140

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	55%	15-110%
4165-62-2	Phenol-d5	38%	15-110%
118-79-6	2,4,6-Tribromophenol	88%	15-110%
4165-60-0	Nitrobenzene-d5	91%	30-130%
321-60-8	2-Fluorobiphenyl	89%	30-130%
1718-51-0	Terphenyl-d14	97%	30-130%

(a) Outside control limits. Blank Spike meets program technical requirements.

6.2.1



# Blank Spike Summary

Job Number: MC5041

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26793-BS	I76198.D	1	11/09/11	KR	11/02/11	OP26793	MSI2795

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC5041-1, MC5041-2, MC5041-3, MC5041-4, MC5041-7, MC5041-8

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
83-32-9	Acenaphthene	50	43.9	88	40-140
208-96-8	Acenaphthylene	50	36.1	72	40-140
120-12-7	Anthracene	50	45.4	91	40-140
56-55-3	Benzo(a)anthracene	50	59.1	118	40-140
50-32-8	Benzo(a)pyrene	50	49.2	98	40-140
205-99-2	Benzo(b)fluoranthene	50	56.5	113	40-140
191-24-2	Benzo(g,h,i)perylene	50	46.1	92	40-140
207-08-9	Benzo(k)fluoranthene	50	58.1	116	40-140
218-01-9	Chrysene	50	47.1	94	40-140
53-70-3	Dibenzo(a,h)anthracene	50	52.0	104	40-140
206-44-0	Fluoranthene	50	50.5	101	40-140
86-73-7	Fluorene	50	55.3	111	40-140
193-39-5	Indeno(1,2,3-cd)pyrene	50	51.4	103	40-140
90-12-0	1-Methylnaphthalene	50	41.6	83	40-140
91-57-6	2-Methylnaphthalene	50	44.8	90	40-140
91-20-3	Naphthalene	50	41.3	83	40-140
85-01-8	Phenanthrene	50	41.9	84	40-140
129-00-0	Pyrene	50	52.3	105	40-140

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	124%	30-130%
321-60-8	2-Fluorobiphenyl	96%	30-130%
1718-51-0	Terphenyl-d14	108%	30-130%

6.2.2

6

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5041  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26792-MS	F53443.D	1	11/03/11	PR	11/02/11	OP26792	MSF2573
OP26792-MSD	F53444.D	1	11/03/11	PR	11/02/11	OP26792	MSF2573
MC5134-4	F53445.D	1	11/03/11	PR	11/02/11	OP26792	MSF2573

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5041-1, MC5041-2, MC5041-3, MC5041-4, MC5041-7, MC5041-8

CAS No.	Compound	MC5134-4 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic Acid	ND	100	36.5	37	36.9	37	1	30-130/20
95-57-8	2-Chlorophenol	ND	100	79.4	79	80.9	81	2	30-130/20
59-50-7	4-Chloro-3-methyl phenol	ND	100	92.8	93	89.1	89	4	30-130/20
120-83-2	2,4-Dichlorophenol	ND	100	92.1	92	91.9	92	0	30-130/20
105-67-9	2,4-Dimethylphenol	ND	100	84.1	84	85.2	85	1	30-130/20
51-28-5	2,4-Dinitrophenol	ND	100	86.6	87	88.1	88	2	30-130/20
534-52-1	4,6-Dinitro-o-cresol	ND	100	111	111	110	110	1	30-130/20
95-48-7	2-Methylphenol	ND	100	71.0	71	73.2	73	3	30-130/20
	3&4-Methylphenol	ND	200	137	69	137	69	0	30-130/20
88-75-5	2-Nitrophenol	ND	100	95.2	95	95.5	96	0	30-130/20
100-02-7	4-Nitrophenol	ND	100	50.0	50	51.1	51	2	30-130/20
87-86-5	Pentachlorophenol	ND	100	101	101	103	103	2	30-130/20
108-95-2	Phenol	ND	100	41.1	41	41.3	41	0	30-130/20
95-95-4	2,4,5-Trichlorophenol	ND	100	92.4	92	92.0	92	0	30-130/20
38-06-2	2,4,6-Trichlorophenol	ND	100	90.7	91	92.4	92	2	30-130/20
62-53-3	Aniline	ND	50	19.2	38* a	22.0	44	14	40-140/20
101-55-3	4-Bromophenyl phenyl ether	ND	50	49.5	99	50.2	100	1	40-140/20
85-68-7	Butyl benzyl phthalate	ND	50	51.9	104	55.3	111	6	40-140/20
100-51-6	Benzyl Alcohol	ND	50	37.0	74	39.1	78	6	40-140/20
91-58-7	2-Chloronaphthalene	ND	50	46.6	93	47.5	95	2	40-140/20
106-47-8	4-Chloroaniline	ND	50	31.6	63	33.9	68	7	40-140/20
111-91-1	bis(2-Chloroethoxy)methane	ND	50	47.8	96	47.0	94	2	40-140/20
111-44-4	bis(2-Chloroethyl)ether	ND	50	46.1	92	47.6	95	3	40-140/20
108-60-1	bis(2-Chloroisopropyl)ether	ND	50	47.4	95	48.5	97	2	40-140/20
7005-72-3	4-Chlorophenyl phenyl ether	ND	50	47.5	95	50.3	101	6	40-140/20
122-66-7	1,2-Diphenylhydrazine	ND	50	46.0	92	46.5	93	1	40-140/20
121-14-2	2,4-Dinitrotoluene	ND	50	48.6	97	49.0	98	1	40-140/20
606-20-2	2,6-Dinitrotoluene	ND	50	47.9	96	48.5	97	1	40-140/20
91-94-1	3,3'-Dichlorobenzidine	ND	50	29.9	60	29.9	60	0	40-140/20
132-64-9	Dibenzofuran	ND	50	46.2	92	46.5	93	1	40-140/20
84-74-2	Di-n-butyl phthalate	ND	50	53.8	108	54.3	109	1	40-140/20
117-84-0	Di-n-octyl phthalate	ND	50	49.6	99	51.5	103	4	40-140/20
84-66-2	Diethyl phthalate	0.98	50	51.0	100	53.1	104	4	40-140/20
131-11-3	Dimethyl phthalate	ND	50	49.0	98	49.8	100	2	40-140/20
117-81-7	bis(2-Ethylhexyl)phthalate	ND	50	50.1	100	52.2	104	4	40-140/20
118-74-1	Hexachlorobenzene	ND	50	47.2	94	49.5	99	5	40-140/20

6.3.1



# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5041

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26792-MS	F53443.D	1	11/03/11	PR	11/02/11	OP26792	MSF2573
OP26792-MSD	F53444.D	1	11/03/11	PR	11/02/11	OP26792	MSF2573
MC5134-4	F53445.D	1	11/03/11	PR	11/02/11	OP26792	MSF2573

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5041-1, MC5041-2, MC5041-3, MC5041-4, MC5041-7, MC5041-8

CAS No.	Compound	MC5134-4 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
77-47-4	Hexachlorocyclopentadiene	ND	50	28.3	57	28.8	58	2	40-140/20
67-72-1	Hexachloroethane	ND	50	35.3	71	35.6	71	1	40-140/20
78-59-1	Isophorone	ND	50	38.1	76	37.5	75	2	40-140/20
88-74-4	2-Nitroaniline	ND	50	49.0	98	49.2	98	0	40-140/20
99-09-2	3-Nitroaniline	ND	50	36.9	74	37.4	75	1	40-140/20
100-01-6	4-Nitroaniline	ND	50	43.5	87	46.5	93	7	40-140/20
98-95-3	Nitrobenzene	ND	50	47.0	94	47.7	95	1	40-140/20
62-75-9	n-Nitrosodimethylamine	ND	50	23.9	48	26.3	53	10	40-140/20
621-64-7	N-Nitroso-di-n-propylamine	ND	50	49.0	98	50.8	102	4	40-140/20
86-30-6	N-Nitrosodiphenylamine	ND	50	50.3	101	50.3	101	0	40-140/20
110-86-1	Pyridine	ND	50	21.8	44	25.1	50	14	40-140/20

CAS No.	Surrogate Recoveries	MS	MSD	MC5134-4	Limits
367-12-4	2-Fluorophenol	56%	57%	53%	15-110%
4165-62-2	Phenol-d5	40%	40%	36%	15-110%
118-79-6	2,4,6-Tribromophenol	100%	96%	83%	15-110%
4165-60-0	Nitrobenzene-d5	94%	94%	90%	30-130%
321-60-8	2-Fluorobiphenyl	91%	93%	86%	30-130%
1718-51-0	Terphenyl-d14	100%	103%	99%	30-130%

(a) Outside control limits. Blank Spike meets program technical requirements.

6.3.1

6

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5041

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26793-MS	I76199.D	1	11/09/11	KR	11/02/11	OP26793	MSI2795
OP26793-MSD	I76200.D	1	11/09/11	KR	11/02/11	OP26793	MSI2795
MC5134-3	I76203.D	1	11/09/11	KR	11/02/11	OP26793	MSI2795

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC5041-1, MC5041-2, MC5041-3, MC5041-4, MC5041-7, MC5041-8

CAS No.	Compound	MC5134-3 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND	50	46.2	92	46.4	93	0	40-140/20
208-96-8	Acenaphthylene	ND	50	38.4	77	38.7	77	1	40-140/20
120-12-7	Anthracene	ND	50	46.5	93	47.6	95	2	40-140/20
56-55-3	Benzo(a)anthracene	ND	50	61.5	123	61.1	122	1	40-140/20
50-32-8	Benzo(a)pyrene	ND	50	50.3	101	50.7	101	1	40-140/20
205-99-2	Benzo(b)fluoranthene	ND	50	58.2	116	59.9	120	3	40-140/20
191-24-2	Benzo(g,h,i)perylene	ND	50	47.7	95	48.5	97	2	40-140/20
207-08-9	Benzo(k)fluoranthene	ND	50	60.0	120	59.4	119	1	40-140/20
218-01-9	Chrysene	ND	50	48.7	97	48.5	97	0	40-140/20
53-70-3	Dibenzo(a,h)anthracene	ND	50	53.5	107	54.6	109	2	40-140/20
206-44-0	Fluoranthene	ND	50	53.8	108	54.7	109	2	40-140/20
86-73-7	Fluorene	ND	50	56.2	112	58.9	118	5	40-140/20
193-39-5	Indeno(1,2,3-cd)pyrene	ND	50	52.6	105	53.4	107	2	40-140/20
90-12-0	1-Methylnaphthalene	0.028	50	43.8	88	43.8	88	0	40-140/20
91-57-6	2-Methylnaphthalene	0.062	50	47.0	94	47.4	95	1	40-140/20
91-20-3	Naphthalene	0.067	50	43.8	87	43.6	87	0	40-140/20
85-01-8	Phenanthrene	ND	50	43.5	87	43.5	87	0	40-140/20
129-00-0	Pyrene	ND	50	51.7	103	51.4	103	1	40-140/20

CAS No.	Surrogate Recoveries	MS	MSD	MC5134-3	Limits
4165-60-0	Nitrobenzene-d5	133%* a	133%* a	128%	30-130%
321-60-8	2-Fluorobiphenyl	98%	97%	91%	30-130%
1718-51-0	Terphenyl-d14	108%	108%	122%	30-130%

(a) Outside control limits. Individual spike recoveries within acceptance limits.

6.3.2  
6

# Semivolatiles Internal Standard Area Summary

Job Number: MC5041  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSF2573-CC2572	Injection Date:	11/03/11
Lab File ID:	F53440.D	Injection Time:	12:46
Instrument ID:	GCMSF	Method:	SW846 8270C

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	220498	5.09	710326	6.35	399594	8.74	687890	11.23	648961	16.16	570700	18.67
Upper Limit <sup>a</sup>	440996	5.59	1420652	6.85	799188	9.24	1375780	11.73	1297922	16.66	1141400	19.17
Lower Limit <sup>b</sup>	110249	4.59	355163	5.85	199797	8.24	343945	10.73	324481	15.66	285350	18.17

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP26792-MB	374607	5.09	1214393	6.35	689798	8.74	1149311	11.23	945170	16.16	794359	18.67
OP26792-BS	408061	5.10	1321218	6.36	743869	8.75	1269651	11.24	1051486	16.17	913520	18.67
OP26792-MS	434484	5.10	1349392	6.36	780047	8.75	1278044	11.24	1073022	16.17	918460	18.67
OP26792-MSD	445788 <sup>c</sup>	5.10	1429228 <sup>c</sup>	6.36	808976 <sup>c</sup>	8.75	1331318	11.24	1088320	16.17	934352	18.67
MC5134-4	357012	5.09	1155056	6.35	650949	8.74	1089601	11.23	908947	16.16	766797	18.67
MC5041-1	392002	5.10	1268476	6.35	733894 <sup>c</sup>	8.74	1191902	11.24	1044721	16.17	864358	18.67
MC5041-2	351706	5.10	1128637	6.36	640820	8.74	1042713	11.23	907554	16.16	757249	18.67
MC5041-3	398289	5.10	1217188	6.36	682203	8.75	1120371	11.24	980820	16.16	852754	18.67
MC5041-4	375374	5.10	1155231	6.36	645317	8.75	1035183	11.24	902176	16.16	774463	18.67
MC5041-7	425876	5.10	1313321	6.36	721603	8.75	1123545	11.24	945384	16.16	868026	18.67
MC5041-8	401901	5.09	1279795	6.35	710967	8.74	1131418	11.23	963338	16.16	881522	18.67
ZZZZZZ	405202	5.09	1280109	6.35	701252	8.74	1131314	11.23	978801	16.16	855331	18.67
ZZZZZZ	400587	5.09	1269482	6.35	714940	8.74	1162181	11.23	947869	16.16	820269	18.67
ZZZZZZ	364583	5.10	1162727	6.35	657216	8.74	1071265	11.23	929784	16.16	789241	18.67

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.  
 (c) Outside control limits due to possible matrix interference. Confirmed by MS/MSD.

6.4.1  
6

# Semivolatiles Internal Standard Area Summary

Job Number: MC5041  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSI2795-CC2789	Injection Date:	11/09/11
Lab File ID:	I76196.D	Injection Time:	18:43
Instrument ID:	GCMSI	Method:	SW846 8270C BY SIM

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	282280	5.44	827844	6.71	554841	9.16	937892	11.67	941252	16.63	920401	19.17
Upper Limit <sup>a</sup>	564560	5.94	1655688	7.21	1109682	9.66	1875784	12.17	1882504	17.13	1840802	19.67
Lower Limit <sup>b</sup>	141140	4.94	413922	6.21	277421	8.66	468946	11.17	470626	16.13	460201	18.67

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP26793-MB	238922	5.44	789704	6.71	457386	9.16	739839	11.67	618884	16.62	514161	19.16
OP26793-BS	265011	5.44	794196	6.72	457641	9.16	783771	11.67	733237	16.63	562913	19.16
OP26793-MS	193512	5.44	601372	6.72	362995	9.16	642203	11.67	650532	16.63	521365	19.16
OP26793-MSD	189186	5.44	597745	6.72	362883	9.16	655549	11.67	677000	16.63	522272	19.16
ZZZZZZ	162348	5.44	510696	6.71	306102	9.16	474771	11.67	471924	16.63	563389	19.16
ZZZZZZ	147720	5.44	512548	6.71	309560	9.16	564170	11.67	536021	16.62	602153	19.16
MC5134-3	190557	5.44	648439	6.71	371954	9.16	610482	11.67	493175	16.62	496349	19.16
ZZZZZZ	194263	5.44	671404	6.72	352770	9.16	602795	11.67	589964	16.62	665215	19.15
ZZZZZZ	207076	5.44	672959	6.71	370761	9.16	665216	11.67	646469	16.63	726965	19.17
ZZZZZZ	221868	5.44	706236	6.71	377547	9.16	626538	11.67	600428	16.62	643471	19.16
ZZZZZZ	204132	5.44	696250	6.71	380548	9.16	622970	11.67	574561	16.62	581718	19.16
ZZZZZZ	190027	5.44	626448	6.71	338469	9.16	550230	11.67	495639	16.62	548278	19.16
ZZZZZZ	211074	5.44	692856	6.71	360317	9.16	558975	11.67	495044	16.62	537260	19.16
ZZZZZZ	225360	5.44	724597	6.71	368173	9.16	546674	11.67	474867	16.62	532186	19.16
ZZZZZZ	196612	5.44	648417	6.71	331127	9.16	516304	11.67	463090 <sup>c</sup>	16.62	558516	19.16
ZZZZZZ	232135	5.44	744478	6.71	360952	9.16	510063	11.67	438982 <sup>c</sup>	16.62	514381	19.16
ZZZZZZ	185876	5.44	617013	6.71	317695	9.15	522400	11.67	518396	16.62	633976	19.16
ZZZZZZ	199492	5.44	663581	6.71	340976	9.16	545892	11.67	518773	16.62	604916	19.16
ZZZZZZ	227091	5.44	742137	6.71	377896	9.16	585560	11.67	533858	16.62	605298	19.16

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.  
 (c) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

6.4.2  
6



# Semivolatiles Internal Standard Area Summary

Job Number: MC5041  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSI2796-CC2789	Injection Date:	11/10/11
Lab File ID:	I76219.D	Injection Time:	12:34
Instrument ID:	GCMSI	Method:	SW846 8270C BY SIM

	IS 1	IS 2	IS 3	IS 4	IS 5	IS 6
	AREA	RT	AREA	RT	AREA	RT
Check Std	631372	5.44	1763256	6.71	870305	9.16
Upper Limit <sup>a</sup>	1262744	5.94	3526512	7.21	1740610	9.66
Lower Limit <sup>b</sup>	315686	4.94	881628	6.21	435153	8.66

Lab Sample ID	IS 1	IS 2	IS 3	IS 4	IS 5	IS 6
	AREA	RT	AREA	RT	AREA	RT
OP26833-MB	398370	5.44	1233020	6.71	657317	9.15
OP26833-BS	520281	5.44	1507501	6.71	765758	9.16
OP26833-BSD	505502	5.44	1426676	6.71	708086	9.16
ZZZZZZ	401084	5.44	1225017	6.71	615156	9.15
ZZZZZZ	436719	5.44	1316873	6.71	650655	9.15
ZZZZZZ	423984	5.44	1286180	6.71	652284	9.15
ZZZZZZ	404236	5.44	1223775	6.71	609001	9.15
ZZZZZZ	436295	5.44	1305177	6.71	626320	9.15
ZZZZZZ	403097	5.44	1213344	6.71	582170	9.15
ZZZZZZ	373316	5.44	1159677	6.71	593783	9.15
ZZZZZZ	507702	5.44	1511921	6.71	782326	9.15
ZZZZZZ	468608	5.44	1380061	6.71	704869	9.15
ZZZZZZ	441845	5.44	1315376	6.71	660000	9.15
ZZZZZZ	381695	5.44	1169041	6.71	595713	9.15
ZZZZZZ	438878	5.44	1305704	6.71	666267	9.15
ZZZZZZ	512184	5.44	1507046	6.71	774099	9.15
ZZZZZZ	404951	5.44	1213137	6.71	609275	9.15
ZZZZZZ	422706	5.44	1282907	6.71	628019	9.15
MC5041-3	482994	5.44	1423251	6.71	725557	9.15
MC5041-4	455612	5.44	1366711	6.71	706978	9.16
MC5041-7	456827	5.44	1360579	6.71	662843	9.16
MC5041-8	516510	5.44	1474178	6.71	772093	9.16
ZZZZZZ	498045	5.44	1482492	6.71	774758	9.16
ZZZZZZ	408691	5.44	1232581	6.71	634687	9.15

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.4.3  
6

# Semivolatiles Internal Standard Area Summary

Job Number: MC5041  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSI2799-CC2789	Injection Date:	11/12/11
Lab File ID:	I76286.D	Injection Time:	12:24
Instrument ID:	GCM5I	Method:	SW846 8270C BY SIM

	IS 1	IS 2	IS 3	IS 4	IS 5	IS 6
	AREA	RT	AREA	RT	AREA	RT
Check Std	673843	5.43	1932459	6.70	1226238	9.14
Upper Limit <sup>a</sup>	1347686	5.93	3864918	7.20	2452476	9.64
Lower Limit <sup>b</sup>	336922	4.93	966230	6.20	613119	8.64

Lab	IS 1	IS 2	IS 3	IS 4	IS 5	IS 6
Sample ID	AREA	RT	AREA	RT	AREA	RT
MC5041-1	605715	5.43	1803891	6.70	1139064	9.14
MC5041-2	570125	5.43	1755962	6.70	1076004	9.14
ZZZZZ	533512	5.43	1621571	6.70	1016756	9.14
ZZZZZ	535986	5.43	1634847	6.70	1013446	9.14
OP26852-MB	451470	5.43	1406986	6.70	852861	9.13
OP26852-BS	515554	5.43	1550677	6.70	948796	9.14
OP26852-MS	468379	5.43	1425761	6.70	862407	9.14
OP26852-MSD	413424	5.43	1282118	6.70	768865	9.14
MC5256-2	365588	5.43	1177453	6.70	694433	9.13
ZZZZZ	344749	5.42	1118717	6.70	665789	9.13
OP26820-MB	531794	5.43	1623164	6.70	1021037	9.14
OP26820-BS	542246	5.43	1619519	6.70	1007074	9.14
OP26820-BSD	452447	5.43	1399129	6.70	861749	9.14
OP26820-MS	408017	5.43	1263444	6.70	778236	9.14
OP26820-MSD	409718	5.43	1268523	6.70	774269	9.14
MC5212-3	366939	5.43	1205885	6.70	741830	9.14

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.4.4  
6

# Semivolatiles Internal Standard Area Summary

Job Number: MC5041  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSI2800-CC2801	Injection Date:	11/12/11
Lab File ID:	I76286A.D	Injection Time:	12:24
Instrument ID:	GCMSI	Method:	SW846 8270C BY SIM

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	673703	5.43	1954117	6.70	1226238	9.14	2013526	11.66	2444872	16.61	2349605	19.14
Upper Limit <sup>a</sup>	1347406	5.93	3908234	7.20	2452476	9.64	4027052	12.16	4889744	17.11	4699210	19.64
Lower Limit <sup>b</sup>	336852	4.93	977059	6.20	613119	8.64	1006763	11.16	1222436	16.11	1174803	18.64

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
MC5041-1	605715	5.43	1803891	6.70	1139064	9.14	1899745	11.64	2095231	16.60	1967371	19.14
MC5041-2	570125	5.43	1755962	6.70	1076004	9.14	1818258	11.64	2032599	16.60	1855359	19.14
ZZZZZZ	533512	5.43	1621571	6.70	1016756	9.14	1730158	11.64	1831709	16.60	1572072	19.14
ZZZZZZ	535986	5.43	1634847	6.70	1013446	9.14	1689351	11.64	1872791	16.60	1518289	19.13
OP26852-MB	451470	5.43	1406986	6.70	852861	9.13	1448320	11.64	1540038	16.60	1555239	19.14
OP26852-BS	515554	5.43	1550677	6.70	948796	9.14	1562560	11.66	1806267	16.61	1763375	19.14
OP26852-MS	468379	5.43	1425761	6.70	862407	9.14	1419340	11.66	1670806	16.61	1653097	19.14
OP26852-MSD	413424	5.43	1282118	6.70	768865	9.14	1287450	11.66	1536248	16.61	1514822	19.14
MC5256-2	365588	5.43	1177453	6.70	694433	9.13	1189732	11.64	1238716	16.60	1250940	19.13
ZZZZZZ	344749	5.42	1118717	6.70	665789	9.13	1138051	11.64	1187336*16.60		1198642	19.13
OP26820-MB	531794	5.43	1623164	6.70	1021037	9.14	1652696	11.64	1856292	16.60	1818840	19.14
OP26820-BS	542246	5.43	1619519	6.70	1007074	9.14	1602069	11.66	1890060	16.61	1784299	19.14
OP26820-BSD	452447	5.43	1399129	6.70	861749	9.14	1399895	11.66	1679001	16.61	1561264	19.14
OP26820-MS	408017	5.43	1263444	6.70	778236	9.14	1326184	11.66	1512843	16.61	1407383	19.14
OP26820-MSD	409718	5.43	1268523	6.70	774269	9.14	1295420	11.66	1480542	16.61	1414653	19.14
MC5212-3	366939	5.43	1205885	6.70	741830	9.14	1269338	11.64	1429405	16.60	1413162	19.14

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.4.5  
6

# Semivolatile Surrogate Recovery Summary

Job Number: MC5041

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Method: SW846 8270C

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4	S5	S6
MC5041-1	F53446.D	51.0	33.0	88.0	91.0	85.0	79.0
MC5041-2	F53447.D	51.0	35.0	93.0	91.0	87.0	90.0
MC5041-3	F53448.D	52.0	35.0	96.0	94.0	90.0	90.0
MC5041-4	F53449.D	32.0	24.0	70.0	62.0	65.0	65.0
MC5041-7	F53450.D	47.0	31.0	96.0	89.0	85.0	78.0
MC5041-8	F53451.D	50.0	34.0	93.0	91.0	88.0	91.0
OP26792-BS	F53442.D	55.0	38.0	88.0	91.0	89.0	97.0
OP26792-MB	F53441.D	57.0	38.0	88.0	94.0	92.0	104.0
OP26792-MS	F53443.D	56.0	40.0	100.0	94.0	91.0	100.0
OP26792-MSD	F53444.D	57.0	40.0	96.0	94.0	93.0	103.0

**Surrogate Compounds**                      **Recovery Limits**

S1 = 2-Fluorophenol	15-110%
S2 = Phenol-d5	15-110%
S3 = 2,4,6-Tribromophenol	15-110%
S4 = Nitrobenzene-d5	30-130%
S5 = 2-Fluorobiphenyl	30-130%
S6 = Terphenyl-d14	30-130%

6.5.1

6

# Semivolatile Surrogate Recovery Summary

Job Number: MC5041

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Method: SW846 8270C BY SIM

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
MC5041-1	I76287.D	111.0	84.0	86.0
MC5041-2	I76288.D	120.0	85.0	95.0
MC5041-3	I76238.D	126.0	95.0	83.0
MC5041-4	I76239.D	80.0	66.0	57.0
MC5041-7	I76240.D	118.0	91.0	62.0
MC5041-8	I76241.D	117.0	93.0	80.0
OP26793-BS	I76198.D	124.0	96.0	108.0
OP26793-MB	I76197.D	129.0	99.0	124.0
OP26793-MS	I76199.D	133.0* <sup>a</sup>	98.0	108.0
OP26793-MSD	I76200.D	133.0* <sup>a</sup>	97.0	108.0

Surrogate Compounds                      Recovery Limits

S1 = Nitrobenzene-d5                      30-130%  
 S2 = 2-Fluorobiphenyl                      30-130%  
 S3 = Terphenyl-d14                      30-130%

(a) Outside control limits. Individual spike recoveries within acceptance limits.

6.5.2



## GC Volatiles

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## QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

7

# Method Blank Summary

Job Number: MC5041

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26798-MB	BB39291.D	1	11/03/11	AP	11/02/11	OP26798	GBB2445

The QC reported here applies to the following samples:

Method: SW846 8011

MC5041-1, MC5041-2, MC5041-3, MC5041-4, MC5041-6, MC5041-7, MC5041-8

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

CAS No.	Surrogate Recoveries		Limits
460-00-4	Bromofluorobenzene (S)	126%	36-173%
460-00-4	Bromofluorobenzene (S)	126%	36-173%

7.1.1

7

# Blank Spike Summary

Job Number: MC5041

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26798-BS	BB39292.D	1	11/03/11	AP	11/02/11	OP26798	GBB2445

The QC reported here applies to the following samples:

Method: SW846 8011

MC5041-1, MC5041-2, MC5041-3, MC5041-4, MC5041-6, MC5041-7, MC5041-8

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
96-12-8	1,2-Dibromo-3-chloropropane	0.071	0.079	111	60-140
106-93-4	1,2-Dibromoethane	0.071	0.080	113	60-140

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	Bromofluorobenzene (S)	127%	36-173%
460-00-4	Bromofluorobenzene (S)	128%	36-173%

7.2.1

7



# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5041

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26798-MS	BB39293.D	1	11/03/11	AP	11/02/11	OP26798	GBB2445
OP26798-MSD	BB39294.D	1	11/03/11	AP	11/02/11	OP26798	GBB2445
MC5062-13	BB39301.D	1	11/03/11	AP	11/02/11	OP26798	GBB2445

The QC reported here applies to the following samples:

Method: SW846 8011

MC5041-1, MC5041-2, MC5041-3, MC5041-4, MC5041-6, MC5041-7, MC5041-8

CAS No.	Compound	MC5062-13 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.0681	0.088	129	0.13	154* a	39* a	64-141/29
106-93-4	1,2-Dibromoethane	ND	0.0681	0.073	107	0.10	118	31* a	63-163/27

CAS No.	Surrogate Recoveries	MS	MSD	MC5062-13	Limits
460-00-4	Bromofluorobenzene (S)	134%	136%	141%	36-173%
460-00-4	Bromofluorobenzene (S)	143%	144%	157%	36-173%

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

7.3.1  
7

# Volatile Surrogate Recovery Summary

Job Number: MC5041

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Method: SW846 8011

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 <sup>a</sup>	S1 <sup>b</sup>
MC5041-1	BB39316.D	141.0	169.0
MC5041-2	BB39317.D	135.0	147.0
MC5041-3	BB39322.D	146.0	185.0* <sup>c</sup>
MC5041-4	BB39318.D	152.0	166.0
MC5041-6	BB39319.D	153.0	174.0* <sup>c</sup>
MC5041-7	BB39320.D	155.0	131.0
MC5041-8	BB39321.D	134.0	135.0
OP26798-BS	BB39292.D	127.0	128.0
OP26798-MB	BB39291.D	126.0	126.0
OP26798-MS	BB39293.D	134.0	143.0
OP26798-MSD	BB39294.D	136.0	144.0

Surrogate Compounds                      Recovery Limits

S1 = Bromofluorobenzene (S)              36-173%

- (a) Recovery from GC signal #1
- (b) Recovery from GC signal #2
- (c) Outside control limits due to possible matrix interference.

7.4.1

7

# GC Surrogate Retention Time Summary

Job Number: MC5041  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	GBB2445-CC2445	Injection Date:	11/03/11
Lab File ID:	BB39287.D	Injection Time:	17:22
Instrument ID:	GCBB	Method:	SW846 8011

	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
Check Std	3.97	3.91

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
ZZZZZZ	BB39288.D	11/03/11	17:44	3.98	3.92
ZZZZZZ	BB39289.D	11/03/11	18:07	3.97	3.92
ZZZZZZ	BB39290.D	11/03/11	18:30	3.97	3.92
OP26798-MB	BB39291.D	11/03/11	18:52	3.97	3.91
OP26798-BS	BB39292.D	11/03/11	19:14	3.97	3.91
OP26798-MS	BB39293.D	11/03/11	19:37	3.97	3.92
OP26798-MSD	BB39294.D	11/03/11	19:59	3.98	3.92
ZZZZZZ	BB39295.D	11/03/11	20:22	3.97	3.92
ZZZZZZ	BB39296.D	11/03/11	20:44	3.98	3.92
ZZZZZZ	BB39297.D	11/03/11	21:07	3.98	3.92

Surrogate  
Compounds

S1 = Bromofluorobenzene (S)

- (a) Retention time from GC signal #1
- (b) Retention time from GC signal #2

7.5.1  
7

# GC Surrogate Retention Time Summary

Job Number: MC5041  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL.

Check Std:	GBB2447-CC2445	Injection Date:	11/04/11
Lab File ID:	BB39313.D	Injection Time:	11:59
Instrument ID:	GCBB	Method:	SW846 80Ii

	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
Check Std	3.97	3.91

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
ZZZZZZ	BB39314.D	11/04/11	12:22	3.98	3.92
ZZZZZZ	BB39315.D	11/04/11	12:45	3.98	3.92
MC5041-1	BB39316.D	11/04/11	13:07	3.98	3.92
MC5041-2	BB39317.D	11/04/11	13:30	3.98	3.92
MC5041-4	BB39318.D	11/04/11	13:52	3.98	3.92
MC5041-6	BB39319.D	11/04/11	14:15	3.98	3.92
MC5041-7	BB39320.D	11/04/11	14:37	3.98	3.92
MC5041-8	BB39321.D	11/04/11	14:59	3.98	3.92
MC5041-3	BB39322.D	11/04/11	15:22	3.98	3.92

**Surrogate  
Compounds**

S1 = Bromofluorobenzene (S)

- (a) Retention time from GC signal #1
- (b) Retention time from GC signal #2

7.5.2  
7

## Roxana Groundwater Quarterly – 4<sup>th</sup> Quarter 2011 Data Review

Laboratory SDG: MC5149

Data Reviewer: Melissa Mansker

Peer Reviewer: Elizabeth Kunkel

Date Reviewed: 12/16/2011

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

Sample Identification	Sample Identification
P55-ROX-103111	P74-ROX-103111
TB-103111	TB-103111
P66-ROX-110111	MW10-ROX-110111
MW9-ROX-110111	

### 1.0 Data Package Completeness

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

Yes

### 2.0 Laboratory Case Narrative \ Cooler Receipt Form

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

Yes, the laboratory case narrative indicated that VOC and SVOC LCS recoveries and RPD recoveries were outside evaluation criteria. Although not mentioned in the laboratory case narrative, acetone was detected in the trip blank, and SVOCs and PAHs were detected in the method blank. Sample P74-ROX-103111 was diluted due to high levels of target analytes. These issues are addressed further in the appropriate sections below.

COC-designated samples TB-103111 were incorrectly transcribed by the laboratory as TB-10311. Results were reported using the correct sample IDs. The cooler receipt form indicated samples in two of three coolers were received by the laboratory at temperatures of 1.7°C and 1.6°C which are outside the 4°C ± 2°C criteria. Samples were received in good condition; therefore, no qualification of data was required.

### 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

Yes

### 4.0 Blank Contamination

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

Yes

Blank ID	Parameter	Analyte	Concentration/ Amount
TB-103111	VOCs	Acetone	5.5 ug/L
OP26819-MB	SVOCs	Di-n-butyl phthalate	0.54 ug/L
OP26819-MB	SVOCs	Diethyl phthalate	0.38 ug/L
OP26820-MB	PAHs	Benzo(a)anthracene	0.080 ug/L
OP26820-MB	PAHs	Benzo(b)fluoranthene	0.066 ug/L
OP26820-MB	PAHs	Benzo(k)fluoranthene	0.086 ug/L
OP26820-MB	PAHs	Chrysene	0.13 ug/L

Qualifications due to blank contamination are included in the table below. Analytical data that were reported non-detect or at concentrations greater than five times (5X) the associated blank concentration (10X for common laboratory contaminants) did not require qualification.

Sample ID	Parameter	Analyte	New Reporting Limit (RL)	Qualification
P66-ROX-110111	PAHs	Benzo(a)anthracene	0.095 ug/L	<b>U</b>
P66-ROX-110111	PAHs	Benzo(b)fluoranthene	0.088 ug/L	<b>U</b>
P66-ROX-110111	PAHs	Chrysene	0.11 ug/L	<b>U</b>

## 5.0 Laboratory Control Sample

*Were LCS recoveries within evaluation criteria?*

No

LCS/ LCSD ID	Parameter	Analyte	LCS/LCSD Recovery	RPD	LCS/LCSD /RPD Criteria
MSN2145-BS	VOCs	Acetone	<b>156</b>	NA	70-130
MSN2145-BS	VOCs	Acrolein	<b>138</b>	NA	70-130
MSN2145-BS	VOCs	Acrylonitrile	<b>488</b>	NA	70-130
MSN2145-BS	VOCs	2-Butanone (MEK)	<b>150</b>	NA	70-130
MSN2145-BS	VOCs	Carbon tetrachloride	<b>145</b>	NA	70-130
MSN2145-BS	VOCs	Chloromethane	<b>69</b>	NA	70-130
MSN2145-BS	VOCs	Dibromochloromethane	<b>137</b>	NA	70-130
MSN2145-BS	VOCs	2,2-Dichloropropane	<b>143</b>	NA	70-130
MSN2145-BS	VOCs	trans-1,3-Dichloropropene	<b>145</b>	NA	70-130
MSN2145-BS	VOCs	2-Hexanone	<b>148</b>	NA	70-130
MSN2145-BS	VOCs	Methyl Tert Butyl Ether	<b>137</b>	NA	70-130
MSN4145-BS	VOCs	Vinyl chloride	<b>64</b>	NA	70-130
MSL1960-BS/BSD	VOCs	Acrolein	<b>241/236</b>	2	70-130/25
MSL1960-BS/BSD	VOCs	2-Chloroethyl vinyl ether	<b>151/107</b>	<b>34</b>	70-130/25

LCS/LCSD ID	Parameter	Analyte	LCS/LCSD Recovery	RPD	LCS/LCSD /RPD Criteria
MSL1960-BS/BSD	VOCs	Dichlorodifluoromethane	67/65	3	70-130/25
MSL1960-BS/BSD	VOCs	Vinyl Acetate	55/57	4	70-130/25
OP26792-BS	SVOCs	Aniline	35	NA	40-140
OP26792-BS	SVOCs	Pyridine	39	NA	40-140
OP26819-BS/BSD	SVOCs	2,4-Dimethylphenol	84/61	31	30-130/20
OP26819-BS/BSD	SVOCs	4-Chloroaniline	37/46	23	40-140/20
OP26819-BS/BSD	SVOCs	Pyridine	37/47	22	40-140/20

Analytical data that required qualification based on LCS data are included in the table below. Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. LCS MSL1960-BS/BSD was associated with trip blank sample TB-103111. Trip blank samples are quality control samples and are not qualified. LCS samples are not qualified based on RPD alone and LCS recoveries were within acceptance criteria, therefore, did not require qualification.

Sample ID	Parameter	Analyte	Qualification
P55-ROX-103111	VOCs	Dichlorodifluoromethane	UJ
P55-ROX-103111	VOCs	Vinyl Acetate	UJ
P74-ROX-103111	VOCs	Dichlorodifluoromethane	UJ
P74-ROX-103111	VOCs	Vinyl Acetate	UJ
P66-ROX-110111	VOCs	Chloromethane	UJ
P66-ROX-110111	VOCs	Methyl Tert Butyl Ether	J
P66-ROX-110111	VOCs	Vinyl chloride	UJ
MW10-ROX-110111	VOCs	Chloromethane	UJ
MW10-ROX-110111	VOCs	Vinyl chloride	UJ
MW9-ROX-110111	VOCs	Chloromethane	UJ
MW9-ROX-110111	VOCs	Vinyl chloride	UJ
P55-ROX-103111	SVOCs	Aniline	UJ
P55-ROX-103111	SVOCs	Pyridine	UJ
P74-ROX-103111	SVOCs	Aniline	UJ
P74-ROX-103111	SVOCs	Pyridine	UJ
P66-ROX-110111	SVOCs	4-Chloroaniline	UJ
P66-ROX-110111	SVOCs	Pyridine	UJ
MW10-ROX-110111	SVOCs	4-Chloroaniline	UJ
MW10-ROX-110111	SVOCs	Pyridine	UJ
MW9-ROX-110111	SVOCs	4-Chloroaniline	UJ
MW9-ROX-110111	SVOCs	Pyridine	UJ

**6.0 Surrogate Recoveries**

*Were surrogate recoveries within evaluation criteria?*

Yes

**7.0 Matrix Spike and Matrix Spike Duplicate Recoveries**

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

No

**8.0 Internal Standard (IS) Recoveries**

*Were internal standard area recoveries within evaluation criteria?*

Yes

**9.0 Laboratory Duplicate Results**

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

No

**10.0 Field Duplicate Results**

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

No

**11.0 Sample Dilutions**

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

Not applicable; analytes were detected in samples that were diluted.

**12.0 Additional Qualifications**

*Were additional qualifications applied?*

No





12/16/11

Technical Report for

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Shell Oil

URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana,

Accutest Job Number: MC5149

Sampling Dates: 10/31/11 - 11/01/11

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Report to:

URS Corporation

Elizabeth\_Kunkel@URSCorp.com

ATTN: Elizabeth Kunkel

Reviewed  
on  
12/16/2011

Total number of pages in report: 124



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

*Reza Fand*  
Reza Fand  
Lab Director

Client Service contact: Jeremy Vienneau 508-481-6200

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

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Test results relate only to samples analyzed.

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### Sample Summary

Shell Oil

Job No: MC5149

URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
MC5149-1	10/31/11	10:50 BCLR	11/02/11	AQ	Ground Water	P55-ROX-103111 ✓
MC5149-2	10/31/11	14:40 BCLR	11/02/11	AQ	Ground Water	P74-ROX-103111 ✓
MC5149-3	10/31/11	00:00 BCLR	11/02/11	AQ	Trip Blank Water	TB-10311 ✓
MC5149-4	10/31/11	00:00 BCLR	11/02/11	AQ	Trip Blank Water	TB-10311 ✓
MC5149-5	11/01/11	11:20 BCLR	11/02/11	AQ	Ground Water	P66-ROX-110111 ✓
MC5149-6	11/01/11	15:45 BCLR	11/02/11	AQ	Ground Water	MW10-ROX-110111 ✓
MC5149-7	11/01/11	14:14 BCLR	11/02/11	AQ	Ground Water	MW9-ROX-110111 ✓

## SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Shell Oil Job No MC5149  
 Site: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Report Date 11/28/2011 4:22:03 PM

5 Sample(s), 1 Trip Blank(s) and 0 Field Blank(s) were collected on between 10/31/2011 and 11/01/2011 and were received at Accutest on 11/02/2011 properly preserved, at 1.6 Deg. C and intact. These Samples received an Accutest job number of MC5149. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. 1-Chlorohexane, Benzenethiol, Dibenz(a,h)acridine, Indene, and Quinoline were searched in the library search and reported only if detections were found.

### Volatiles by GCMS By Method SW846 8260B

<b>Matrix</b> AQ	<b>Batch ID:</b> MSL1960
------------------	--------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC5219-IMS, MC5219-IMSD were used as the QC samples indicated.
- Blank Spike Recovery(s) for 2-Chloroethyl vinyl ether, Dichlorodifluoromethane, Vinyl Acetate are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for 1,4-Dioxane, Acetone, Bromomethane, Chloromethane, Dichlorodifluoromethane are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for Acetone, Chloromethane, Dichlorodifluoromethane, Isopropylbenzene are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- RPD(s) for MSD for Bromomethane are outside control limits for sample MC5219-IMSD. High RPD due to possible matrix interference and/or sample non-homogeneity.
- RPD of MSL1960-BSD for 2-Chloroethyl vinyl ether: Outside control limits. Blank Spike meets program technical requirements.
- MSL1960-BS/BSD/MS/MSD for Acrolein: Outside control limits. Associated samples are non-detect for this compound.
- Blank Spike Duplicate Recovery(s) for Dichlorodifluoromethane, Vinyl Acetate are outside control limits. Blank Spike meets program technical requirements.

<b>Matrix</b> AQ	<b>Batch ID:</b> MSL1962
------------------	--------------------------

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC5248-IMS, MC5248-IMSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

<b>Matrix</b> AQ	<b>Batch ID:</b> MSN2145
------------------	--------------------------

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC5220-IMS, MC5220-IMSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for 2,2-Dichloropropane, 2-Butanone (MEK), 2-Hexanone, Acetone, Acrolein, Carbon tetrachloride, Chloromethane, Dibromochloromethane, Methyl Tert Butyl Ether, trans-1,3-Dichloropropene, Vinyl chloride are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for 2,2-Dichloropropane, Acetone, Bromomethane, Carbon tetrachloride, Chloromethane, Dibromochloromethane, trans-1,3-Dichloropropene, Vinyl chloride are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 2,2-Dichloropropane, Acetone, Carbon tetrachloride, Chloromethane, Dibromochloromethane, trans-1,3-Dichloropropene, Vinyl chloride, Bromomethane are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- RPD(s) for MSD for Bromomethane are outside control limits for sample MC5220-IMSD. High RPD due to possible matrix interference and/or sample non-homogeneity.

**Volatiles by GCMS By Method SW846 8260B**

<b>Matrix</b> AQ	<b>Batch ID:</b> MSN2145
------------------	--------------------------

- MSN2145-BS/MS/MSD for Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.

**Extractables by GCMS By Method SW846 8270C**

<b>Matrix</b> AQ	<b>Batch ID:</b> OP26792
------------------	--------------------------

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC5134-4MS, MC5134-4MSD were used as the QC samples indicated.
- Blank Spike Recovery(s) for Aniline, Pyridine are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for Aniline are outside control limits. Blank Spike meets program technical requirements.

<b>Matrix</b> AQ	<b>Batch ID:</b> OP26819
------------------	--------------------------

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC5173-2MS, MC5173-2MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for 4-Chloroaniline, Pyridine are outside control limits. Blank Spike meets program technical requirements.
- MS/MSD Recovery(s) for 3,3'-Dichlorobenzidine, Aniline are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- MS/MSD Recovery(s) for 2,4-Dimethylphenol, 4-Chloroaniline are outside control limits. Blank Spike meets program technical requirements.
- RPD(s) for MSD for 1,2-Diphenylhydrazine, 3,3'-Dichlorobenzidine, N-Nitrosodiphenylamine are outside control limits for sample OP26819-MSD. High RPD due to possible matrix interference and/or sample non-homogeneity.
- RPD of OP26819-MSD for 2,4-Dimethylphenol, 4-Chloroaniline, Pyridine: Outside control limits. Blank Spike meets program technical requirements.

**Extractables by GCMS By Method SW846 8270C BY SIM**

<b>Matrix</b> AQ	<b>Batch ID:</b> OP26793
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- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC5134-3MS, MC5134-3MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- OP26793-MS/MSD for Nitrobenzene-d5: Outside control limits. Individual spike recoveries within acceptance limits.

<b>Matrix</b> AQ	<b>Batch ID:</b> OP26820
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- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC5212-3MS, MC5212-3MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

## Volatiles by GC By Method SW846 8011

2

Matrix	AQ	Batch ID:	OP26812
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- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC5212-4MS, MC5212-4MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Continuing calibration check standard GBB2447-CC2445, file BB39334, BB39341 exceeded criteria (response bias high). Associated samples are non-detect for targets.

Matrix	AQ	Batch ID:	OP26934
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- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC5220-IMS, MC5220-IMSD were used as the QC samples indicated.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety. The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC5149).



**Sample Results**

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**Report of Analysis**

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## Report of Analysis

Client Sample ID:	P55-ROX-103111	Date Sampled:	10/31/11
Lab Sample ID:	MC5149-1	Date Received:	11/02/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prcp Date	Prep Batch	Analytical Batch
Run #1	L58221.D	1	11/11/11	EK	n/a	n/a	MSL1960
Run #2							

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

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	152	0.50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	UJ
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



## Report of Analysis

Client Sample ID:	P55-ROX-103111	Date Sampled:	10/31/11
Lab Sample ID:	MC5149-1	Date Received:	11/02/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	14.3	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	1.2	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	29.0	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	6.7	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	5.6	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	UJ
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	46.6	1.0	ug/l	
95-47-6	o-Xylene	16.3	1.0	ug/l	
1330-20-7	Xylene (total)	62.9	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

### Report of Analysis



<b>Client Sample ID:</b> P55-ROX-103111	<b>Date Sampled:</b> 10/31/11
<b>Lab Sample ID:</b> MC5149-1	<b>Date Received:</b> 11/02/11
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8260B	
<b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

**VOA Special List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	85%		70-130%
2037-26-5	Toluene-D8	88%		70-130%
460-00-4	4-Bromofluorobenzene	85%		70-130%

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

ND = Not detected  
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 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID:	P55-ROX-103111	Date Sampled:	10/31/11
Lab Sample ID:	MC5149-1	Date Received:	11/02/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I76318.D	1	11/14/11	KR	11/02/11	OP26792	MSI2802
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

## ABN Special List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	10	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	ug/l	
51-28-5	2,4-Dinitrophenol	ND	20	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	ug/l	
95-48-7	2-Methylphenol	ND	10	ug/l	
	3&4-Methylphenol	ND	10	ug/l	
88-75-5	2-Nitrophenol	ND	10	ug/l	
100-02-7	4-Nitrophenol	ND	20	ug/l	
87-86-5	Pentachlorophenol	ND	10	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	10	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	ug/l	
62-53-3	Aniline	ND	10	ug/l	UJ
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	ug/l	
100-51-6	Benzyl Alcohol	ND	10	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	ug/l	
106-47-8	4-Chloroaniline	ND	10	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	10	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.0	ug/l	
132-64-9	Dibenzofuran	ND	5.0	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis



Client Sample ID:	P55-ROX-103111	Date Sampled:	10/31/11
Lab Sample ID:	MC5149-1	Date Received:	11/02/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
84-66-2	Diethyl phthalate	ND	5.0	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	2.2	2.0	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	ug/l	
67-72-1	Hexachloroethane	ND	5.0	ug/l	
78-59-1	Isophorone	ND	5.0	ug/l	
88-74-4	2-Nitroaniline	ND	10	ug/l	
99-09-2	3-Nitroaniline	ND	10	ug/l	
100-01-6	4-Nitroaniline	ND	10	ug/l	
98-95-3	Nitrobenzene	ND	5.0	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	ug/l	
110-86-1	Pyridine	ND	10	ug/l	U J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	36%		15-110%
4165-62-2	Phenol-d5	25%		15-110%
118-79-6	2,4,6-Tribromophenol	61%		15-110%
4165-60-0	Nitrobenzene-d5	62%		30-130%
321-60-8	2-Fluorobiphenyl	61%		30-130%
1718-51-0	Terphenyl-d14	78%		30-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID:	P55-ROX-103111	Date Sampled:	10/31/11
Lab Sample ID:	MC5149-1	Date Received:	11/02/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C BY SIM SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I76289.D	1	11/12/11	PR	11/02/11	OP26793	MSI2799
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

## BN PAH List

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	0.10	ug/l	
208-96-8	Acenaphthylene	ND	0.10	ug/l	
120-12-7	Anthracene	ND	0.10	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.050	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.050	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	ug/l	
218-01-9	Chrysene	ND	0.10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	ug/l	
206-44-0	Fluoranthene	ND	0.10	ug/l	
86-73-7	Fluorene	ND	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	ug/l	
90-12-0	1-Methylnaphthalene	0.65	0.20	ug/l	
91-57-6	2-Methylnaphthalene	0.96	0.20	ug/l	
91-20-3	Naphthalene	1.5	0.10	ug/l	
85-01-8	Phenanthrene	0.16	0.050	ug/l	
129-00-0	Pyrene	ND	0.10	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	82%		30-130%
321-60-8	2-Fluorobiphenyl	65%		30-130%
1718-51-0	Terphenyl-d14	80%		30-130%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis



<b>Client Sample ID:</b> P55-ROX-103111 <b>Lab Sample ID:</b> MC5149-1 <b>Matrix:</b> AQ - Ground Water <b>Method:</b> SW846 8011 SW846 8011 <b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	<b>Date Sampled:</b> 10/31/11 <b>Date Received:</b> 11/02/11 <b>Percent Solids:</b> n/a
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Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39333.D	1	11/04/11	AP	11/03/11	OP26812	GBB2447
Run #2							

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

**VOA Special List**

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

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	129%		36-173%
460-00-4	Bromofluorobenzene (S)	161%		36-173%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

Report of Analysis



Client Sample ID: P74-ROX-103111	Date Sampled: 10/31/11
Lab Sample ID: MC5149-2	Date Received: 11/02/11
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8260B	
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L58220.D	1	11/11/11	EK	n/a	n/a	MSL1960
Run #2	L58271.D	100	11/14/11	EK	n/a	n/a	MSL1962

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

VOA Special List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	5020 <sup>a</sup>	50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	24.2	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	UJ
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID:	P74-ROX-103111	Date Sampled:	10/31/11
Lab Sample ID:	MC5149-2	Date Received:	11/02/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	229	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	12.3	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	22.2	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	67.3	5.0	ug/l	
103-65-1	n-Propylbenzene	22.2	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	669 <sup>a</sup>	100	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	587 <sup>a</sup>	500	ug/l	
108-67-8	1,3,5-Trimethylbenzene	162	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	UJ
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	177 <sup>a</sup>	100	ug/l	
95-47-6	o-Xylene	ND <sup>a</sup>	100	ug/l	
1330-20-7	Xylene (total)	177 <sup>a</sup>	100	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



## Report of Analysis



<b>Client Sample ID:</b> P74-ROX-103111	<b>Date Sampled:</b> 10/31/11
<b>Lab Sample ID:</b> MC5149-2	<b>Date Received:</b> 11/02/11
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8260B	
<b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

**VOA Special List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	84%	90%	70-130%
2037-26-5	Toluene-D8	92%	86%	70-130%
460-00-4	4-Bromofluorobenzene	97%	85%	70-130%

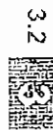
CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

(a) Result is from Run# 2

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis



Client Sample ID:	P74-ROX-103111	Date Sampled:	10/31/11
Lab Sample ID:	MC5149-2	Date Received:	11/02/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U3391.D	1	11/15/11	KR	11/02/11	OP26792	MSU205
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

## ABN Special List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	10	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	ug/l	
51-28-5	2,4-Dinitrophenol	ND	20	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	ug/l	
95-48-7	2-Methylphenol	ND	10	ug/l	
	3&4-Methylphenol	ND	10	ug/l	
88-75-5	2-Nitrophenol	ND	10	ug/l	
100-02-7	4-Nitrophenol	ND	20	ug/l	
87-86-5	Pentachlorophenol	ND	10	ug/l	
108-95-2	Phenol	12.7	5.0	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	10	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	ug/l	
62-53-3	Aniline	ND	10	ug/l	UJ
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	ug/l	
100-51-6	Benzyl Alcohol	ND	10	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	ug/l	
106-47-8	4-Chloroaniline	ND	10	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	10	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.0	ug/l	
132-64-9	Dibenzofuran	ND	5.0	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis



Client Sample ID:	P74-ROX-103111	Date Sampled:	10/31/11
Lab Sample ID:	MC5149-2	Date Received:	11/02/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
84-66-2	Diethyl phthalate	ND	5.0	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	ug/l	
67-72-1	Hexachloroethane	ND	5.0	ug/l	
78-59-1	Isophorone	ND	5.0	ug/l	
88-74-4	2-Nitroaniline	ND	10	ug/l	
99-09-2	3-Nitroaniline	ND	10	ug/l	
100-01-6	4-Nitroaniline	ND	10	ug/l	
98-95-3	Nitrobenzene	ND	5.0	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	ug/l	
110-86-1	Pyridine	ND	10	ug/l	UJ

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	34%		15-110%
4165-62-2	Phenol-d5	22%		15-110%
118-79-6	2,4,6-Tribromophenol	61%		15-110%
4165-60-0	Nitrobenzene-d5	70%		30-130%
321-60-8	2-Fluorobiphenyl	66%		30-130%
1718-51-0	Terphenyl-d14	59%		30-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

Report of Analysis



Client Sample ID: P74-ROX-103111	Date Sampled: 10/31/11
Lab Sample ID: MC5149-2	Date Received: 11/02/11
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8270C BY SIM SW846 3510C	
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I76290.D	1	11/12/11	PR	11/02/11	OP26793	MSI2799
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	0.33	0.10	ug/l	
208-96-8	Acenaphthylene	0.12	0.10	ug/l	
120-12-7	Anthracene	ND	0.10	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.050	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.050	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	ug/l	
218-01-9	Chrysene	ND	0.10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	ug/l	
206-44-0	Fluoranthene	ND	0.10	ug/l	
86-73-7	Fluorene	0.44	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	ug/l	
90-12-0	1-Methylnaphthalene	17.7	0.20	ug/l	
91-57-6	2-Methylnaphthalene	26.5	0.20	ug/l	
91-20-3	Naphthalene	44.3	0.10	ug/l	
85-01-8	Phenanthrene	0.25	0.050	ug/l	
129-00-0	Pyrene	ND	0.10	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	88%		30-130%
321-60-8	2-Fluorobiphenyl	65%		30-130%
1718-51-0	Terphenyl-d14	75%		30-130%

ND = Not detected  
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J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

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Client Sample ID:	P74-ROX-103111	Date Sampled:	10/31/11
Lab Sample ID:	MC5149-2	Date Received:	11/02/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8011 SW846 8011	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39335.D	1	11/04/11	AP	11/03/11	OP26812	GBB2447
Run #2							

Run #	Initial Volume	Final Volume
Run #1	32.5 ml	2.0 ml
Run #2		

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.016	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.016	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits	
460-00-4	Bromofluorobenzene (S)	127%		36-173%	
460-00-4	Bromofluorobenzene (S)	128%		36-173%	

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID:	TB-10311	Date Sampled:	10/31/11
Lab Sample ID:	MC5149-3	Date Received:	11/02/11
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L58210.D	1	11/11/11	EK	n/a	n/a	MSL1960
Run #2							

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

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	5.5	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	ND	0.50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	TB-10311	Date Sampled:	10/31/11
Lab Sample ID:	MC5149-3	Date Received:	11/02/11
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis



Client Sample ID: TB-10311		
Lab Sample ID: MC5149-3		Date Sampled: 10/31/11
Matrix: AQ - Trip Blank Water		Date Received: 11/02/11
Method: SW846 8260B		Percent Solids: n/a
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

**VOA Special List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	90%		70-130%
2037-26-5	Toluene-D8	89%		70-130%
460-00-4	4-Bromofluorobenzene	82%		70-130%
CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units Q
	Total TIC, Volatile		0	ug/l

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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



## Report of Analysis

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3.4

Client Sample ID:	TB-10311	Date Sampled:	10/31/11
Lab Sample ID:	MC5149-4	Date Received:	11/02/11
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8011 SW846 8011	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39336.D	1	11/04/11	AP	11/03/11	OP26812	GBB2447
Run #2							

Run #	Initial Volume	Final Volume
Run #1	36.6 ml	2.0 ml
Run #2		

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.014	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.014	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	135%		36-173%
460-00-4	Bromofluorobenzene (S)	151%		36-173%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID: P66-ROX-110111	Date Sampled: 11/01/11
Lab Sample ID: MC5149-5	Date Received: 11/02/11
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8260B	
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N57272.D	1	11/14/11	JP	n/a	n/a	MSN2145
Run #2							

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

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	17.1	0.50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	15.3	5.0	ug/l	
135-98-8	sec-Butylbenzene	18.5	5.0	ug/l	
98-06-6	tert-Butylbenzene	6.3	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	uJ
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	P66-ROX-110111	Date Sampled:	11/01/11
Lab Sample ID:	MC5149-5	Date Received:	11/02/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	1.6	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	158	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	84.5	1.0	ug/l	J
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	7.0	5.0	ug/l	
103-65-1	n-Propylbenzene	188	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	WJ
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis



Client Sample ID:	P66-ROX-110111	Date Sampled:	11/01/11
Lab Sample ID:	MC5149-5	Date Received:	11/02/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	93%		70-130%
2037-26-5	Toluene-D8	95%		70-130%
460-00-4	4-Bromofluorobenzene	83%		70-130%

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

ND = Not detected  
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J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	P66-ROX-110111	Date Sampled:	11/01/11
Lab Sample ID:	MC5149-5	Date Received:	11/02/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	S28787.D	1	11/14/11	PR	11/04/11	OP26819	MSS1251
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

## ABN Special List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	10	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	ug/l	
51-28-5	2,4-Dinitrophenol	ND	20	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	ug/l	
95-48-7	2-Methylphenol	ND	10	ug/l	
	3&4-Methylphenol	ND	10	ug/l	
88-75-5	2-Nitrophenol	ND	10	ug/l	
100-02-7	4-Nitrophenol	ND	20	ug/l	
87-86-5	Pentachlorophenol	ND	10	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	10	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	ug/l	
62-53-3	Aniline	ND	10	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	ug/l	
100-51-6	Benzyl Alcohol	ND	10	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	ug/l	
106-47-8	4-Chloroaniline	ND	10	ug/l	uJ
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	10	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.0	ug/l	
132-64-9	Dibenzofuran	ND	5.0	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	ug/l	

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Report of Analysis



Client Sample ID:	P66-ROX-110111	Date Sampled:	11/01/11
Lab Sample ID:	MC5149-5	Date Received:	11/02/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
84-66-2	Diethyl phthalate	ND	5.0	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	ug/l	
67-72-1	Hexachloroethane	ND	5.0	ug/l	
78-59-1	Isophorone	ND	5.0	ug/l	
88-74-4	2-Nitroaniline	ND	10	ug/l	
99-09-2	3-Nitroaniline	ND	10	ug/l	
100-01-6	4-Nitroaniline	ND	10	ug/l	
98-95-3	Nitrobenzene	ND	5.0	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	ug/l	
110-86-1	Pyridine	ND	10	ug/l	UJ

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	40%		15-110%
4165-62-2	Phenol-d5	26%		15-110%
118-79-6	2,4,6-Tribromophenol	69%		15-110%
4165-60-0	Nitrobenzene-d5	90%		30-130%
321-60-8	2-Fluorobiphenyl	79%		30-130%
1718-51-0	Terphenyl-d14	88%		30-130%

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

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 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID: P66-ROX-110111	Date Sampled: 11/01/11
Lab Sample ID: MC5149-5	Date Received: 11/02/11
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8270C BY SIM SW846 3510C	
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	I76340.D	1	11/15/11	KR	11/04/11	OP26820	MSI2803

Run #1	Initial Volume	Final Volume
Run #2	1000 ml	1.0 ml

## BN PAH List

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	1.8	0.10	ug/l	
208-96-8	Acenaphthylene	ND	0.10	ug/l	
120-12-7	Anthracene	ND	0.10	ug/l	
56-55-3	Benzo(a)anthracene	<del>0.005</del> u	<del>0.050</del>	ug/l	u
50-32-8	Benzo(a)pyrene	ND	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	<del>0.008</del> u	<del>0.050</del>	ug/l	u
191-24-2	Benzo(g,h,i)perylene	ND	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	ug/l	
218-01-9	Chrysene	<del>0.11</del> u	<del>0.10</del>	ug/l	u
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	ug/l	
206-44-0	Fluoranthene	0.17	0.10	ug/l	
86-73-7	Fluorene	3.0	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	ug/l	
90-12-0	1-Methylnaphthalene	93.0	0.20	ug/l	
91-57-6	2-Methylnaphthalene	29.5	0.20	ug/l	
91-20-3	Naphthalene	9.1	0.10	ug/l	
85-01-8	Phenanthrene	1.3	0.050	ug/l	
129-00-0	Pyrene	0.29	0.10	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	91%		30-130%
321-60-8	2-Fluorobiphenyl	84%		30-130%
1718-51-0	Terphenyl-d14	92%		30-130%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis



Client Sample ID:	P66-ROX-110111	Date Sampled:	11/01/11
Lab Sample ID:	MC5149-5	Date Received:	11/02/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8011 SW846 8011	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39337.D	1	11/04/11	AP	11/03/11	OP26812	GBB2447
Run #2							

Run #	Initial Volume	Final Volume
Run #1	35.9 ml	2.0 ml
Run #2		

**VOA Special List**

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

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	143%		36-173%
460-00-4	Bromofluorobenzene (S)	145%		36-173%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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



## Report of Analysis

Client Sample ID:	MW10-ROX-110111	Date Sampled:	11/01/11
Lab Sample ID:	MC5149-6	Date Received:	11/02/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N57273.D	1	11/14/11	JP	n/a	n/a	MSN2145
Run #2							

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

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	2.2	0.50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	UJ
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	MW10-ROX-110111	Date Sampled:	11/01/11
Lab Sample ID:	MC5149-6	Date Received:	11/02/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

## VOA Special List

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

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	MW10-ROX-110111	Date Sampled:	11/01/11
Lab Sample ID:	MC5149-6	Date Received:	11/02/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

## VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	90%		70-130%
2037-26-5	Toluene-D8	92%		70-130%
460-00-4	4-Bromofluorobenzene	83%		70-130%
CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units Q
	Total TIC, Volatile		0	ug/l

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID:	MW10-ROX-110111	Date Sampled:	11/01/11
Lab Sample ID:	MC5149-6	Date Received:	11/02/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	S28788.D	1	11/14/11	PR	11/04/11	OP26819	MSS1251
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

## ABN Special List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	10	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	ug/l	
51-28-5	2,4-Dinitrophenol	ND	20	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	ug/l	
95-48-7	2-Methylphenol	ND	10	ug/l	
	3&4-Methylphenol	ND	10	ug/l	
88-75-5	2-Nitrophenol	ND	10	ug/l	
100-02-7	4-Nitrophenol	ND	20	ug/l	
87-86-5	Pentachlorophenol	ND	10	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	10	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	ug/l	
62-53-3	Aniline	ND	10	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	ug/l	
100-51-6	Benzyl Alcohol	ND	10	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	ug/l	
106-47-8	4-Chloroaniline	ND	10	ug/l	UJ
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	10	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.0	ug/l	
132-64-9	Dibenzofuran	ND	5.0	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis



Client Sample ID: MW10-ROX-110111		Date Sampled: 11/01/11
Lab Sample ID: MC5149-6		Date Received: 11/02/11
Matrix: AQ - Ground Water		Percent Solids: n/a
Method: SW846 8270C SW846 3510C		
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

**ABN Special List**

CAS No.	Compound	Result	RL	Units	Q
84-66-2	Diethyl phthalate	ND	5.0	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	ug/l	
67-72-1	Hexachloroethane	ND	5.0	ug/l	
78-59-1	Isophorone	ND	5.0	ug/l	
88-74-4	2-Nitroaniline	ND	10	ug/l	
99-09-2	3-Nitroaniline	ND	10	ug/l	
100-01-6	4-Nitroaniline	ND	10	ug/l	
98-95-3	Nitrobenzene	ND	5.0	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	ug/l	
110-86-1	Pyridine	ND	10	ug/l	UJ

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	44%		15-110%
4165-62-2	Phenol-d5	29%		15-110%
118-79-6	2,4,6-Tribromophenol	77%		15-110%
4165-60-0	Nitrobenzene-d5	78%		30-130%
321-60-8	2-Fluorobiphenyl	79%		30-130%
1718-51-0	Terphenyl-d14	92%		30-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis



Client Sample ID:	MW10-ROX-110111	Date Sampled:	11/01/11
Lab Sample ID:	MC5149-6	Date Received:	11/02/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C BY SIM SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I76341.D	I	11/15/11	KR	11/04/11	OP26820	MSI2803
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

## BN PAH List

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	0.10	ug/l	
208-96-8	Acenaphthylene	ND	0.10	ug/l	
120-12-7	Anthracene	ND	0.10	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.050	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.050	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	ug/l	
218-01-9	Chrysene	ND	0.10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	ug/l	
206-44-0	Fluoranthene	ND	0.10	ug/l	
86-73-7	Fluorene	ND	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.20	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	0.10	ug/l	
85-01-8	Phenanthrene	ND	0.050	ug/l	
129-00-0	Pyrene	ND	0.10	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	87%		30-130%
321-60-8	2-Fluorobiphenyl	81%		30-130%
1718-51-0	Terphenyl-d14	98%		30-130%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis



Client Sample ID: MW10-ROX-110111	Date Sampled: 11/01/11
Lab Sample ID: MC5149-6	Date Received: 11/02/11
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8011 SW846 8011	
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39338.D	1	11/04/11	AP	11/03/11	OP26812	GBB2447
Run #2							

Run #	Initial Volume	Final Volume
Run #1	35.0 ml	2.0 ml
Run #2		

**VOA Special List**

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

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	121%		36-173%
460-00-4	Bromofluorobenzene (S)	151%		36-173%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID:	MW9-ROX-110111	Date Sampled:	11/01/11
Lab Sample ID:	MC5149-7	Date Received:	11/02/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N57274.D	1	11/14/11	JP	n/a	n/a	MSN2145
Run #2							

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

## VOA Special List

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

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



## Report of Analysis

Client Sample ID:	MW9-ROX-110111	Date Sampled:	11/01/11
Lab Sample ID:	MC5149-7	Date Received:	11/02/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (M1BK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	UJ
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW9-ROX-110111	Date Sampled: 11/01/11
Lab Sample ID: MC5149-7	Date Received: 11/02/11
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8260B	
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	90%		70-130%
2037-26-5	Toluene-D8	90%		70-130%
460-00-4	4-Bromofluorobenzene	84%		70-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

### Report of Analysis

Client Sample ID:	MW9-ROX-110111	Date Sampled:	11/01/11
Lab Sample ID:	MC5149-7	Date Received:	11/02/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	S28789.D	1	11/14/11	PR	11/04/11	OP26819	MSS1251
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	10	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	ug/l	
51-28-5	2,4-Dinitrophenol	ND	20	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	ug/l	
95-48-7	2-Methylphenol	ND	10	ug/l	
	3&4-Methylphenol	ND	10	ug/l	
88-75-5	2-Nitrophenol	ND	10	ug/l	
100-02-7	4-Nitrophenol	ND	20	ug/l	
87-86-5	Pentachlorophenol	ND	10	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	10	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	ug/l	
62-53-3	Aniline	ND	10	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	ug/l	
100-51-6	Benzyl Alcohol	ND	10	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	ug/l	
106-47-8	4-Chloroaniline	ND	10	ug/l	UT
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	10	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.0	ug/l	
132-64-9	Dibenzofuran	ND	5.0	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	ug/l	

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID:	MW9-ROX-110111	Date Sampled:	11/01/11
Lab Sample ID:	MC5149-7	Date Received:	11/02/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

## ABN Special List

CAS No.	Compound	Result	RL	Units	Q
84-66-2	Diethyl phthalate	ND	5.0	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	ug/l	
67-72-1	Hexachloroethane	ND	5.0	ug/l	
78-59-1	Isophorone	ND	5.0	ug/l	
88-74-4	2-Nitroaniline	ND	10	ug/l	
99-09-2	3-Nitroaniline	ND	10	ug/l	
100-01-6	4-Nitroaniline	ND	10	ug/l	
98-95-3	Nitrobenzene	ND	5.0	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	ug/l	
110-86-1	Pyridine	ND	10	ug/l	UJ

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	42%		15-110%
4165-62-2	Phenol-d5	29%		15-110%
118-79-6	2,4,6-Tribromophenol	63%		15-110%
4165-60-0	Nitrobenzene-d5	82%		30-130%
321-60-8	2-Fluorobiphenyl	80%		30-130%
1718-51-0	Terphenyl-d14	97%		30-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID:	MW9-ROX-110111	Date Sampled:	11/01/11
Lab Sample ID:	MC5149-7	Date Received:	11/02/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C BY SIM SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I76342.D	1	11/15/11	KR	11/04/11	OP26820	MSI2803
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

## BN PAH List

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	0.10	ug/l	
208-96-8	Acenaphthylene	ND	0.10	ug/l	
120-12-7	Anthracene	ND	0.10	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.050	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.050	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	ug/l	
218-01-9	Chrysene	ND	0.10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	ug/l	
206-44-0	Fluoranthene	ND	0.10	ug/l	
86-73-7	Fluorene	ND	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.20	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	0.10	ug/l	
85-01-8	Phenanthrene	ND	0.050	ug/l	
129-00-0	Pyrene	ND	0.10	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	90%		30-130%
321-60-8	2-Fluorobiphenyl	82%		30-130%
1718-51-0	Terphenyl-d14	101%		30-130%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

### Report of Analysis

3.7



Client Sample ID: MW9-ROX-110111	Date Sampled: 11/01/11
Lab Sample ID: MC5149-7	Date Received: 11/02/11
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8011 SW846 8011	
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39460.D	1	11/15/11	AP	11/14/11	OP26934	GBB2454
Run #2							

Run #	Initial Volume	Final Volume
Run #1	34.3 ml	2.0 ml
Run #2		

VOA Special List

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

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	66%		36-173%
460-00-4	Bromofluorobenzene (S)	84%		36-173%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

Misc. Forms

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Custody Documents and Other Forms

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Includes the following where applicable:

- Certification Exceptions
- Certification Exceptions (IL)
- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody



# Shell Oil Products Chain Of Custody Record

**URS**

LAB (LOCATION)  
 MEXICO  
 CALIFORNIA  
 OTHER  
 IXL

Please Check Appropriate Box:

<input type="checkbox"/> OILY SERVICE	<input type="checkbox"/> MOTIVE RETAIL	<input type="checkbox"/> SHELL RETAIL
<input type="checkbox"/> MOTIVE BOACH	<input type="checkbox"/> CONSULTANT	<input type="checkbox"/> OLIVES
<input type="checkbox"/> SKILL PIPELINE	<input type="checkbox"/> OTHER	

Print Bill To Contact Name: WENDY PENNINGTON  
 INCIDENT # (ENV SERVICES): 8 7 2 1 8 8 4 0  
 DATE: 10/31/11  
 PAGE: 1 of 1

LABORATORY COMPANY: URS CORPORATION  
 ADDRESS: 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300, ST. LOUIS, MO 63110  
 PHONE: 314-743-4168 or 314-452-8928  
 FAX: 314-428-0482  
 E-MAIL: [urs@urscorp.com](mailto:urs@urscorp.com)

LAB ADDRESS (BUSINESS ONLY): 900 South Central Ave, ROXANA, IL 62451  
 CONTACT PERSON: B. Crafton, L. Pathrow  
 LAB USE ONLY: MC5149

DELIVERABLES: LEVEL 1, LEVEL 2, LEVEL 3, LEVEL 4, OTHER (SPECIFY) EDD  
 SPECIAL INSTRUCTIONS OR NOTES:  
 \* Please include "J" values on Reports.  
 \* Please provide sample receipt upon login.

REQUESTED ANALYSIS:  
 VOC 8260B SLTICS  
 VOC 8011  
 SVOC 8270C SLTICS  
 PAH 8280LL

LAB USE ONLY	Field Sample Identification	SAMPLING		MATERIAL	PRESERVATIVE					NO. OF CONT.	PID (ppm)	FIELD NOTES:	
		DATE	TIME		PH	NO2	NO3	NO6	OTHER				
	P55-ROX-103111	10/31/11	10:50	Water	X	X	X	X	X	9	X	0	
	P74-ROX-103111		1440	Water	X	X	X	X	X	9	X	0	
	TP-103111			Water	X					2	X		
	TP-103111			Water	X					2	X		
	P100-ROX-110111	11/11/11	11:20		X	X	X	X	X	9	X	0	
	MW10-ROX-100111		1545										
	MW9-ROX-110111		1414										

Received by: (Signature) [Signature] Date: 11/1/11 Time: 9:15  
 Received by: (Signature) [Signature] Date: 11/2/11 Time: 9:15  
 Received by: (Signature) [Signature] Date: 1-7, 2-3, 1-6 Time: 9:15

4.1  
4

MC5149: Chain of Custody  
 Page 1 of 2





# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC5149 Client: URS Immediate Client Services Action Required: No  
 Date / Time Received: 11/2/2011 Delivery Method: \_\_\_\_\_ Client Service Action Required at Login: No  
 Project: 900 SOUTH CENTRAL AVE ROXANA No. Coolers: 3 Airbill #'s: N/A

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

**Cooler Temperature**      Y or N  
 1. Temp criteria achieved:    
 2. Cooler temp verification: Infrared gun  
 3. Cooler media: Ice (bag)

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

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

**Sample Integrity - Condition**      Y or N  
 1. Sample recvd within HT:    
 2. All containers accounted for:    
 3. Condition of sample: Intact

**Sample Integrity - Instructions**      Y or N      N/A  
 1. Analysis requested is clear:    
 2. Bottles received for unspecified tests:    
 3. Sufficient volume recvd for analysis:    
 4. Compositing instructions clear:     
 5. Filtering instructions clear:

Comments

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4.1  
4

### Internal Sample Tracking Chronicle

Shell Oil

Job No: MC5149

URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

4.2  
4

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
MC5149-1 Collected: 31-OCT-11 10:50 By: BCLR Received: 02-NOV-11 By: JB P55-ROX-103111						
MC5149-1	SW846 8011	04-NOV-11 19:33	AP	03-NOV-11 CA		V8011SL
MC5149-1	SW846 8260B	11-NOV-11 22:21	EK			V8260SL+
MC5149-1	SW846 8270C BY SIM	12-NOV-11 13:58	PR	02-NOV-11 SC		B8270SIMPAAH
MC5149-1	SW846 8270C	14-NOV-11 12:04	KR	02-NOV-11 SC		AB8270SL+
MC5149-2 Collected: 31-OCT-11 14:40 By: BCLR Received: 02-NOV-11 By: JB P74-ROX-103111						
MC5149-2	SW846 8011	04-NOV-11 20:17	AP	03-NOV-11 CA		V8011SL
MC5149-2	SW846 8260B	11-NOV-11 21:52	EK			V8260SL+
MC5149-2	SW846 8270C BY SIM	12-NOV-11 14:29	PR	02-NOV-11 SC		B8270SIMPAAH
MC5149-2	SW846 8260B	14-NOV-11 19:34	EK			V8260SL+
MC5149-2	SW846 8270C	15-NOV-11 12:23	KR	02-NOV-11 SC		AB8270SL+
MC5149-3 Collected: 31-OCT-11 00:00 By: BCLR Received: 02-NOV-11 By: JB TB-10311						
MC5149-3	SW846 8260B	11-NOV-11 17:08	EK			V8260SL+
MC5149-4 Collected: 31-OCT-11 00:00 By: BCLR Received: 02-NOV-11 By: JB TB-10311						
MC5149-4	SW846 8011	04-NOV-11 20:39	AP	03-NOV-11 CA		V8011SL
MC5149-5 Collected: 01-NOV-11 11:20 By: BCLR Received: 02-NOV-11 By: JB P66-ROX-110111						
MC5149-5	SW846 8011	04-NOV-11 21:01	AP	03-NOV-11 CA		V8011SL
MC5149-5	SW846 8270C	14-NOV-11 14:06	PR	04-NOV-11 MEW		AB8270SL+
MC5149-5	SW846 8260B	14-NOV-11 21:38	JP			V8260SL+
MC5149-5	SW846 8270C BY SIM	15-NOV-11 02:23	KR	04-NOV-11 MEW		B8270SIMPAAH
MC5149-6 Collected: 01-NOV-11 15:45 By: BCLR Received: 02-NOV-11 By: JB MW10-ROX-110111						
MC5149-6	SW846 8011	04-NOV-11 21:24	AP	03-NOV-11 CA		V8011SL
MC5149-6	SW846 8270C	14-NOV-11 14:34	PR	04-NOV-11 MEW		AB8270SL+

### Internal Sample Tracking Chronicle

Shell Oil

Job No: MC5149

URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
MC5149-6	SW846 8260B	14-NOV-11 22:06	JP			V8260SL+
MC5149-6	SW846 8270C BY SIM	15-NOV-11 02:55	KR	04-NOV-11	MEW	B8270SIMP AH
MC5149-7 Collected: 01-NOV-11 14:14 By: BCLR Received: 02-NOV-11 By: JB MW9-ROX-110111						
MC5149-7	SW846 8270C	14-NOV-11 15:03	PR	04-NOV-11	MEW	AB8270SL+
MC5149-7	SW846 8260B	14-NOV-11 22:34	JP			V8260SL+
MC5149-7	SW846 8270C BY SIM	15-NOV-11 03:27	KR	04-NOV-11	MEW	B8270SIMP AH
MC5149-7	SW846 8011	15-NOV-11 17:14	AP	14-NOV-11	BJ	V8011SL

# Accutest Internal Chain of Custody

Job Number: MC5149  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL  
 Received: 11/02/11

4.3  
**4**

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
MC5149-1.4	Walk In Ref #22	Amirhossein Farvardin	11/03/11 15:42	Retrieve from Storage
MC5149-1.4	Amirhossein Farvardin		11/06/11 09:32	Depleted
MC5149-1.7	VOC Ref #5	Emily Kozlowski	11/11/11 08:29	Retrieve from Storage
MC5149-1.7	Emily Kozlowski	GCMSL	11/11/11 08:29	Load on Instrument
MC5149-1.7	GCMSL	Emily Kozlowski	11/11/11 15:42	Unload from Instrument
MC5149-1.7	Emily Kozlowski	VOC Ref #5	11/11/11 15:43	Return to Storage
MC5149-1.9	VOC Ref #5	Corey Aldoupolis	11/03/11 17:19	Retrieve from Storage
MC5149-1.9	Corey Aldoupolis		11/03/11 17:20	Depleted
MC5149-2.4	Walk In Ref #22	Amirhossein Farvardin	11/03/11 15:42	Retrieve from Storage
MC5149-2.4	Amirhossein Farvardin		11/06/11 09:32	Depleted
MC5149-2.5	VOC Ref #5	Emily Kozlowski	11/11/11 08:29	Retrieve from Storage
MC5149-2.5	Emily Kozlowski	GCMSL	11/11/11 08:29	Load on Instrument
MC5149-2.5	GCMSL	Emily Kozlowski	11/11/11 15:42	Unload from Instrument
MC5149-2.5	Emily Kozlowski	VOC Ref #5	11/11/11 15:43	Return to Storage
MC5149-2.6	VOC Ref #5	Emily Kozlowski	11/14/11 13:26	Retrieve from Storage
MC5149-2.6	Emily Kozlowski	GCMSL	11/14/11 13:26	Load on Instrument
MC5149-2.6	GCMSL	Amy Min Yang	11/15/11 16:36	Unload from Instrument
MC5149-2.6	Amy Min Yang	VOC Ref #5	11/15/11 16:36	Return to Storage
MC5149-2.8	VOC Ref #5	Corey Aldoupolis	11/03/11 17:19	Retrieve from Storage
MC5149-2.8	Corey Aldoupolis		11/03/11 17:20	Depleted
MC5149-3.1	VOC Ref #5	Emily Kozlowski	11/11/11 08:29	Retrieve from Storage
MC5149-3.1	Emily Kozlowski	GCMSL	11/11/11 08:29	Load on Instrument
MC5149-3.1	GCMSL	Emily Kozlowski	11/11/11 15:42	Unload from Instrument
MC5149-3.1	Emily Kozlowski	VOC Ref #5	11/11/11 15:43	Return to Storage
MC5149-4.1	VOC Ref #5	Corey Aldoupolis	11/03/11 17:19	Retrieve from Storage
MC5149-4.1	Corey Aldoupolis		11/03/11 17:20	Depleted
MC5149-5.1	Walk In Ref #22	Mahmoud Afzali	11/04/11 17:27	Retrieve from Storage
MC5149-5.1	Mahmoud Afzali		11/05/11 13:22	Depleted
MC5149-5.3	Walk In Ref #22	Amirhossein Farvardin	11/03/11 15:42	Retrieve from Storage
MC5149-5.3	Amirhossein Farvardin	Walk In Ref #22	11/03/11 15:58	Return to Storage
MC5149-5.3	Walk In Ref #22	Mahmoud Afzali	11/04/11 17:27	Retrieve from Storage
MC5149-5.3	Mahmoud Afzali	Walk In Ref #22	11/04/11 17:39	Return to Storage
MC5149-5.5	VOC Ref #5	Jugal Patel	11/11/11 16:41	Retrieve from Storage

# Accutest Internal Chain of Custody

Job Number: MC5149  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL  
 Received: 11/02/11

4.3  
**4**

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
MC5149-5.5	Jugal Patel	GCMSN	11/11/11 16:41	Load on Instrument
MC5149-5.5	GCMSN	Jugal Patel	11/14/11 10:23	Unload from Instrument
MC5149-5.5	Jugal Patel	VOC Ref #5	11/14/11 10:23	Return to Storage
MC5149-5.7	VOC Ref #5	Jugal Patel	11/14/11 13:28	Retrieve from Storage
MC5149-5.7	Jugal Patel	GCMSN	11/14/11 13:28	Load on Instrument
MC5149-5.7	GCMSN	Jugal Patel	11/15/11 13:44	Unload from Instrument
MC5149-5.7	Jugal Patel	VOC Ref #5	11/15/11 13:44	Return to Storage
MC5149-5.9	VOC Ref #5	Corey Aldoupolis	11/03/11 17:19	Retrieve from Storage
MC5149-5.9	Corey Aldoupolis		11/03/11 17:20	Depleted
MC5149-6.1	Walk In Ref #22	Amirhossein Farvardin	11/03/11 15:42	Retrieve from Storage
MC5149-6.1	Amirhossein Farvardin	Walk In Ref #22	11/03/11 15:58	Return to Storage
MC5149-6.1	Walk In Ref #22	Mahmoud Afzali	11/04/11 17:27	Retrieve from Storage
MC5149-6.1	Mahmoud Afzali		11/05/11 13:22	Depleted
MC5149-6.5	VOC Ref #5	Jugal Patel	11/11/11 16:41	Retrieve from Storage
MC5149-6.5	Jugal Patel	GCMSN	11/11/11 16:41	Load on Instrument
MC5149-6.5	GCMSN	Jugal Patel	11/14/11 10:23	Unload from Instrument
MC5149-6.5	Jugal Patel	VOC Ref #5	11/14/11 10:23	Return to Storage
MC5149-6.7	VOC Ref #5	Jugal Patel	11/14/11 13:28	Retrieve from Storage
MC5149-6.7	Jugal Patel	GCMSN	11/14/11 13:28	Load on Instrument
MC5149-6.7	GCMSN	Jugal Patel	11/15/11 13:44	Unload from Instrument
MC5149-6.7	Jugal Patel	VOC Ref #5	11/15/11 13:44	Return to Storage
MC5149-6.8	VOC Ref #5	Corey Aldoupolis	11/03/11 17:19	Retrieve from Storage
MC5149-6.8	Corey Aldoupolis		11/03/11 17:20	Depleted
MC5149-7.1	Walk In Ref #22	Mahmoud Afzali	11/04/11 17:27	Retrieve from Storage
MC5149-7.1	Mahmoud Afzali		11/05/11 13:22	Depleted
MC5149-7.4	Walk In Ref #22	Amirhossein Farvardin	11/03/11 15:42	Retrieve from Storage
MC5149-7.4	Amirhossein Farvardin	Walk In Ref #22	11/03/11 15:58	Return to Storage
MC5149-7.5	VOC Ref #5	Jugal Patel	11/11/11 16:41	Retrieve from Storage
MC5149-7.5	Jugal Patel	GCMSN	11/11/11 16:41	Load on Instrument
MC5149-7.5	GCMSN	Jugal Patel	11/14/11 10:23	Unload from Instrument
MC5149-7.5	Jugal Patel	VOC Ref #5	11/14/11 10:23	Return to Storage
MC5149-7.7	VOC Ref #5	Jugal Patel	11/14/11 13:28	Retrieve from Storage
MC5149-7.7	Jugal Patel	GCMSN	11/14/11 13:28	Load on Instrument
MC5149-7.7	GCMSN	Jugal Patel	11/15/11 13:44	Unload from Instrument

# Accutest Internal Chain of Custody

Job Number: MC5149  
Account: SHELLWIC Shell Oil  
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL  
Received: 11/02/11

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
MC5149-7.7	Jugal Patel	VOC Ref #5	11/15/11 13:44	Return to Storage
MC5149-7.8	VOC Ref #5	Corey Aldoupolis	11/14/11 15:30	Retrieve from Storage
MC5149-7.8	Corey Aldoupolis		11/14/11 15:31	Depleted
MC5149-7.9	VOC Ref #5	Corey Aldoupolis	11/03/11 17:19	Retrieve from Storage
MC5149-7.9	Corey Aldoupolis		11/03/11 17:20	Depleted

4.3

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## GC/MS Volatiles

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5

## QC Data Summaries

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Includes the following where applicable:

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

# Method Blank Summary

Job Number: MC5149  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSL1960-MB	L58209.D	1	11/11/11	EK	n/a	n/a	MSL1960

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5149-1, MC5149-2, MC5149-3

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	ND	0.50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	

5.1.1  
5



## Method Blank Summary

Job Number: MC5149

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSL1960-MB	L58209.D	1	11/11/11	EK	n/a	n/a	MSL1960

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5149-1, MC5149-2, MC5149-3

CAS No.	Compound	Result	RL	Units	Q
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	

# Method Blank Summary

Job Number: MC5149

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSL1960-MB	L58209.D	1	11/11/11	EK	n/a	n/a	MSL1960

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5149-1, MC5149-2, MC5149-3

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	89%	70-130%
2037-26-5	Toluene-D8	88%	70-130%
460-00-4	4-Bromofluorobenzene	84%	70-130%

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

5.1.1

5

## Method Blank Summary

Page 1 of 3

Job Number: MC5149

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2145-MB	N57253.D	1	11/14/11	JP	n/a	n/a	MSN2145

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5149-5, MC5149-6, MC5149-7

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	ND	0.50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	

5.1.2

5

# Method Blank Summary

Job Number: MC5149  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2145-MB	N57253.D	1	11/14/11	JP	n/a	n/a	MSN2145

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5149-5, MC5149-6, MC5149-7

CAS No.	Compound	Result	RL	Units	Q
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	

5.1.2

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# Method Blank Summary

Job Number: MC5149

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2145-MB	N57253.D	1	11/14/11	JP	n/a	n/a	MSN2145

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5149-5, MC5149-6, MC5149-7

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	96%	70-130%
2037-26-5	Toluene-D8	90%	70-130%
460-00-4	4-Bromofluorobenzene	86%	70-130%

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

5.1.2

5

# Method Blank Summary

Job Number: MC5149

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSL1962-MB	L58260.D	1	11/14/11	EK	n/a	n/a	MSL1962

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5149-2

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.50	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	

CAS No.	Surrogate Recoveries	Result	Limits
1868-53-7	Dibromofluoromethane	95%	70-130%
2037-26-5	Toluene-D8	91%	70-130%
460-00-4	4-Bromofluorobenzene	89%	70-130%

5.1.3

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# Blank Spike Summary

Job Number: MC5149  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2145-BS	N57251.D	1	11/14/11	JP	n/a	n/a	MSN2145

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5149-5, MC5149-6, MC5149-7

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	50	78.0	156* a	70-130
107-02-8	Acrolein	250	346	138* a	70-130
107-13-1	Acrylonitrile	50	244	488* b	70-130
71-43-2	Benzene	50	43.4	87	70-130
108-86-1	Bromobenzene	50	48.4	97	70-130
74-97-5	Bromochloromethane	50	46.5	93	70-130
75-27-4	Bromodichloromethane	50	61.2	122	70-130
75-25-2	Bromoform	50	62.4	125	70-130
74-83-9	Bromomethane	50	39.3	79	70-130
78-93-3	2-Butanone (MEK)	50	75.1	150* a	70-130
104-51-8	n-Butylbenzene	50	49.7	99	70-130
135-98-8	sec-Butylbenzene	50	47.9	96	70-130
98-06-6	tert-Butylbenzene	50	50.0	100	70-130
75-15-0	Carbon disulfide	50	37.3	75	70-130
56-23-5	Carbon tetrachloride	50	72.5	145* a	70-130
108-90-7	Chlorobenzene	50	47.9	96	70-130
75-00-3	Chloroethane	50	35.7	71	70-130
110-75-8	2-Chloroethyl vinyl ether	50	44.3	89	70-130
67-66-3	Chloroform	50	50.7	101	70-130
74-87-3	Chloromethane	50	34.3	69* a	70-130
95-49-8	o-Chlorotoluene	50	45.0	90	70-130
106-43-4	p-Chlorotoluene	50	47.9	96	70-130
124-48-1	Dibromochloromethane	50	68.6	137* a	70-130
95-50-1	1,2-Dichlorobenzene	50	49.7	99	70-130
541-73-1	1,3-Dichlorobenzene	50	48.8	98	70-130
106-46-7	1,4-Dichlorobenzene	50	49.0	98	70-130
75-71-8	Dichlorodifluoromethane	50	42.1	84	70-130
75-34-3	1,1-Dichloroethane	50	46.4	93	70-130
107-06-2	1,2-Dichloroethane	50	58.4	117	70-130
75-35-4	1,1-Dichloroethene	50	43.9	88	70-130
156-59-2	cis-1,2-Dichloroethene	50	40.3	81	70-130
156-60-5	trans-1,2-Dichloroethene	50	41.1	82	70-130
78-87-5	1,2-Dichloropropane	50	44.3	89	70-130
142-28-9	1,3-Dichloropropane	50	47.8	96	70-130
594-20-7	2,2-Dichloropropane	50	71.4	143* a	70-130
563-58-6	1,1-Dichloropropene	50	51.6	103	70-130

5.2.1  
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# Blank Spike Summary

Job Number: MC5149  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2145-BS	N57251.D	1	11/14/11	JP	n/a	n/a	MSN2145

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5149-5, MC5149-6, MC5149-7

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
10061-01-5	cis-1,3-Dichloropropene	50	52.4	105	70-130
10061-02-6	trans-1,3-Dichloropropene	50	72.5	145* a	70-130
123-91-1	1,4-Dioxane	250	282	113	70-130
97-63-2	Ethyl methacrylate	50	48.9	98	77-137
100-41-4	Ethylbenzene	50	47.3	95	70-130
87-68-3	Hexachlorobutadiene	50	63.7	127	70-130
591-78-6	2-Hexanone	50	73.8	148* a	70-130
98-82-8	Isopropylbenzene	50	53.7	107	70-130
99-87-6	p-Isopropyltoluene	50	51.5	103	70-130
1634-04-4	Methyl Tert Butyl Ether	50	68.7	137* a	70-130
108-10-1	4-Methyl-2-pentanone (MIBK)	50	56.6	113	70-130
74-95-3	Methylene bromide	50	54.8	110	70-130
75-09-2	Methylene chloride	50	43.0	86	70-130
91-20-3	Naphthalene	50	47.4	95	70-130
103-65-1	n-Propylbenzene	50	46.0	92	70-130
100-42-5	Styrene	50	49.7	99	70-130
630-20-6	1,1,1,2-Tetrachloroethane	50	59.7	119	70-130
79-34-5	1,1,2,2-Tetrachloroethane	50	47.5	95	70-130
127-18-4	Tetrachloroethene	50	52.3	105	70-130
108-88-3	Toluene	50	47.4	95	70-130
87-61-6	1,2,3-Trichlorobenzene	50	55.9	112	70-130
120-82-1	1,2,4-Trichlorobenzene	50	56.6	113	70-130
71-55-6	1,1,1-Trichloroethane	50	57.4	115	70-130
79-00-5	1,1,2-Trichloroethane	50	50.3	101	70-130
79-01-6	Trichloroethene	50	49.5	99	70-130
75-69-4	Trichlorofluoromethane	50	50.3	101	70-130
96-18-4	1,2,3-Trichloropropane	50	59.1	118	70-130
95-63-6	1,2,4-Trimethylbenzene	50	46.5	93	70-130
108-67-8	1,3,5-Trimethylbenzene	50	47.7	95	70-130
108-05-4	Vinyl Acetate	50	62.1	124	70-130
75-01-4	Vinyl chloride	50	31.9	64* a	70-130
	m,p-Xylene	100	93.3	93	70-130
95-47-6	o-Xylene	50	48.1	96	70-130
1330-20-7	Xylene (total)	150	141	94	70-130



## Blank Spike Summary

Job Number: MC5149

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2145-BS	N57251.D	1	11/14/11	JP	n/a	n/a	MSN2145

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5149-5, MC5149-6, MC5149-7

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	94%	70-130%
2037-26-5	Toluene-D8	92%	70-130%
460-00-4	4-Bromofluorobenzene	83%	70-130%

- (a) Outside control limits. Blank Spike meets program technical requirements.
- (b) Outside control limits. Associated samples are non-detect for this compound.

5.2.1

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# Blank Spike/Blank Spike Duplicate Summary

Job Number: MC5149  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSL1960-BS	L58206.D	1	11/11/11	EK	n/a	n/a	MSL1960
MSL1960-BSD	L58207.D	1	11/11/11	EK	n/a	n/a	MSL1960

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5149-1, MC5149-2, MC5149-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	50	47.1	94	45.9	92	3	70-130/25
107-02-8	Acrolein	250	603	241* a	591	236* a	2	70-130/25
107-13-1	Acrylonitrile	50	46.3	93	45.9	92	1	70-130/25
71-43-2	Benzene	50	52.3	105	51.5	103	2	70-130/25
108-86-1	Bromobenzene	50	47.2	94	45.0	90	5	70-130/25
74-97-5	Bromochloromethane	50	52.4	105	52.1	104	1	70-130/25
75-27-4	Bromodichloromethane	50	49.7	99	49.3	99	1	70-130/25
75-25-2	Bromoform	50	48.0	96	46.9	94	2	70-130/25
74-83-9	Bromomethane	50	44.8	90	41.5	83	8	70-130/25
78-93-3	2-Butanone (MEK)	50	45.9	92	43.0	86	7	70-130/25
104-51-8	n-Butylbenzene	50	57.1	114	51.8	104	10	70-130/25
135-98-8	sec-Butylbenzene	50	54.2	108	49.0	98	10	70-130/25
98-06-6	tert-Butylbenzene	50	53.8	108	50.3	101	7	70-130/25
75-15-0	Carbon disulfide	50	49.6	99	47.0	94	5	70-130/25
56-23-5	Carbon tetrachloride	50	50.9	102	49.7	99	2	70-130/25
108-90-7	Chlorobenzene	50	54.9	110	52.2	104	5	70-130/25
75-00-3	Chloroethane	50	50.6	101	51.3	103	1	70-130/25
110-75-8	2-Chloroethyl vinyl ether	50	75.7	151* b	53.7	107	34* b	70-130/25
67-66-3	Chloroform	50	46.1	92	46.0	92	0	70-130/25
74-87-3	Chloromethane	50	35.9	72	35.5	71	1	70-130/25
95-49-8	o-Chlorotoluene	50	49.8	100	46.8	94	6	70-130/25
106-43-4	p-Chlorotoluene	50	52.9	106	48.0	96	10	70-130/25
96-12-8	1,2-Dibromo-3-chloropropane	50	48.9	98	47.5	95	3	70-130/25
124-48-1	Dibromochloromethane	50	55.4	111	55.2	110	0	70-130/25
106-93-4	1,2-Dibromoethane	50	52.9	106	52.5	105	1	70-130/25
95-50-1	1,2-Dichlorobenzene	50	49.2	98	45.7	91	7	70-130/25
541-73-1	1,3-Dichlorobenzene	50	50.2	100	46.4	93	8	70-130/25
106-46-7	1,4-Dichlorobenzene	50	53.6	107	49.6	99	8	70-130/25
75-71-8	Dichlorodifluoromethane	50	33.4	67* b	32.3	65* b	3	70-130/25
75-34-3	1,1-Dichloroethane	50	47.2	94	46.9	94	1	70-130/25
107-06-2	1,2-Dichloroethane	50	46.6	93	46.2	92	1	70-130/25
75-35-4	1,1-Dichloroethene	50	55.4	111	55.2	110	0	70-130/25
156-59-2	cis-1,2-Dichloroethene	50	46.9	94	45.1	90	4	70-130/25
156-60-5	trans-1,2-Dichloroethene	50	45.9	92	46.7	93	2	70-130/25
78-87-5	1,2-Dichloropropane	50	45.7	91	46.9	94	3	70-130/25
142-28-9	1,3-Dichloropropane	50	54.3	109	52.0	104	4	70-130/25

5.3.1  
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# Blank Spike/Blank Spike Duplicate Summary

Job Number: MC5149  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSL1960-BS	L58206.D	1	11/11/11	EK	n/a	n/a	MSL1960
MSL1960-BSD	L58207.D	1	11/11/11	EK	n/a	n/a	MSL1960

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5149-1, MC5149-2, MC5149-3

CAS No.	Compound	Spike ug/1	BSP ug/1	BSP %	BSD ug/1	BSD %	RPD	Limits Rec/RPD
594-20-7	2,2-Dichloropropane	50	53.9	108	52.7	105	2	70-130/25
563-58-6	1,1-Dichloropropene	50	52.1	104	50.4	101	3	70-130/25
10061-01-5	cis-1,3-Dichloropropene	50	48.4	97	49.4	99	2	70-130/25
10061-02-6	trans-1,3-Dichloropropene	50	52.4	105	52.1	104	1	70-130/25
123-91-1	1,4-Dioxane	250	231	92	232	93	0	70-130/25
97-63-2	Ethyl methacrylate	50	42.5	85	42.1	84	1	77-137/25
100-41-4	Ethylbenzene	50	52.5	105	50.9	102	3	70-130/25
87-68-3	Hexachlorobutadiene	50	50.8	102	47.5	95	7	70-130/25
591-78-6	2-Hexanone	50	47.7	95	45.2	90	5	70-130/25
98-82-8	Isopropylbenzene	50	61.5	123	56.8	114	8	70-130/25
99-87-6	p-Isopropyltoluene	50	54.8	110	49.6	99	10	70-130/25
1634-04-4	Methyl Tert Butyl Ether	50	47.9	96	46.3	93	3	70-130/25
108-10-1	4-Methyl-2-pentanone (MIBK)	50	46.9	94	47.5	95	1	70-130/25
74-95-3	Methylene bromide	50	52.2	104	49.5	99	5	70-130/25
75-09-2	Methylene chloride	50	52.0	104	51.3	103	1	70-130/25
91-20-3	Naphthalene	50	49.8	100	45.8	92	8	70-130/25
103-65-1	n-Propylbenzene	50	55.2	110	50.2	100	9	70-130/25
100-42-5	Styrene	50	53.7	107	52.2	104	3	70-130/25
630-20-6	1,1,1,2-Tetrachloroethane	50	48.3	97	46.4	93	4	70-130/25
79-34-5	1,1,2,2-Tetrachloroethane	50	54.1	108	50.8	102	6	70-130/25
127-18-4	Tetrachloroethene	50	50.9	102	49.5	99	3	70-130/25
108-88-3	Toluene	50	52.0	104	50.4	101	3	70-130/25
87-61-6	1,2,3-Trichlorobenzene	50	55.0	110	48.7	97	12	70-130/25
120-82-1	1,2,4-Trichlorobenzene	50	52.8	106	49.3	99	7	70-130/25
71-55-6	1,1,1-Trichloroethane	50	50.4	101	48.4	97	4	70-130/25
79-00-5	1,1,2-Trichloroethane	50	48.9	98	47.1	94	4	70-130/25
79-01-6	Trichloroethene	50	51.8	104	49.7	99	4	70-130/25
75-69-4	Trichlorofluoromethane	50	48.8	98	48.3	97	1	70-130/25
96-18-4	1,2,3-Trichloropropane	50	49.0	98	46.8	94	5	70-130/25
95-63-6	1,2,4-Trimethylbenzene	50	54.2	108	50.1	100	8	70-130/25
108-67-8	1,3,5-Trimethylbenzene	50	52.5	105	48.6	97	8	70-130/25
108-05-4	Vinyl Acetate	50	27.7	55* b	28.7	57* b	4	70-130/25
75-01-4	Vinyl chloride	50	36.7	73	36.5	73	1	70-130/25
	m,p-Xylene	100	114	114	108	108	5	70-130/25
95-47-6	o-Xylene	50	55.9	112	54.2	108	3	70-130/25
1330-20-7	Xylene (total)	150	170	113	163	109	4	70-130/25

5.3.1  
5

# Blank Spike/Blank Spike Duplicate Summary

Job Number: MC5149

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSL1960-BS	L58206.D	1	11/11/11	EK	n/a	n/a	MSL1960
MSL1960-BSD	L58207.D	1	11/11/11	EK	n/a	n/a	MSL1960

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5149-1, MC5149-2, MC5149-3

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	84%	85%	70-130%
2037-26-5	Toluene-D8	89%	89%	70-130%
460-00-4	4-Bromofluorobenzene	86%	84%	70-130%

- (a) Outside control limits. Associated samples are non-detect for this compound.
- (b) Outside control limits. Blank Spike meets program technical requirements.

5.3.1

5

# Blank Spike/Blank Spike Duplicate Summary

Job Number: MC5149

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSL1962-BS	L58257.D	1	11/14/11	EK	n/a	n/a	MSL1962
MSL1962-BSD	L58258.D	1	11/14/11	EK	n/a	n/a	MSL1962

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5149-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	50	50.2	100	47.6	95	5	70-130/25
108-88-3	Toluene	50	50.5	101	48.5	97	4	70-130/25
95-63-6	1,2,4-Trimethylbenzene	50	50.3	101	47.0	94	7	70-130/25
	m,p-Xylene	100	115	115	101	101	13	70-130/25
95-47-6	o-Xylene	50	55.2	110	51.1	102	8	70-130/25
1330-20-7	Xylene (total)	150	170	113	152	101	11	70-130/25

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	87%	90%	70-130%
2037-26-5	Toluene-D8	91%	92%	70-130%
460-00-4	4-Bromofluorobenzene	86%	85%	70-130%

5.3.2



# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5149  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5219-1MS	L58227.D	1	11/12/11	EK	n/a	n/a	MSL1960
MC5219-1MSD	L58228.D	1	11/12/11	EK	n/a	n/a	MSL1960
MC5219-1	L58222.D	1	11/11/11	EK	n/a	n/a	MSL1960

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5149-1, MC5149-2, MC5149-3

CAS No.	Compound	MC5219-1 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND	50	28.6	57* a	27.0	54* a	6	70-130/30
107-02-8	Acrolein	ND	250	405	162* b	470	188* b	15	70-130/30
107-13-1	Acrylonitrile	ND	50	42.1	84	45.7	91	8	70-130/30
71-43-2	Benzene	ND	50	50.4	101	54.6	109	8	70-130/30
108-86-1	Bromobenzene	ND	50	45.4	91	50.4	101	10	70-130/30
74-97-5	Bromochloromethane	ND	50	49.3	99	56.2	112	13	70-130/30
75-27-4	Bromodichloromethane	ND	50	46.6	93	50.2	100	7	70-130/30
75-25-2	Bromoform	ND	50	42.9	86	45.1	90	5	70-130/30
74-83-9	Bromomethane	ND	50	21.9	44* a	37.4	75	52* c	70-130/30
78-93-3	2-Butanone (MEK)	ND	50	36.1	72	39.1	78	8	70-130/30
104-51-8	n-Butylbenzene	ND	50	51.6	103	56.5	113	9	70-130/30
135-98-8	sec-Butylbenzene	ND	50	49.8	100	56.1	112	12	70-130/30
98-06-6	tert-Butylbenzene	ND	50	51.6	103	56.8	114	10	70-130/30
75-15-0	Carbon disulfide	ND	50	49.6	99	54.9	110	10	70-130/30
56-23-5	Carbon tetrachloride	ND	50	48.1	96	52.2	104	8	70-130/30
108-90-7	Chlorobenzene	ND	50	54.2	108	58.9	118	8	70-130/30
75-00-3	Chloroethane	ND	50	49.2	98	55.0	110	11	70-130/30
110-75-8	2-Chloroethyl vinyl ether	ND	50	53.9	108	61.1	122	13	70-130/30
67-66-3	Chloroform	ND	50	45.4	91	49.8	100	9	70-130/30
74-87-3	Chloromethane	ND	50	31.4	63* a	34.3	69* a	9	70-130/30
95-49-8	o-Chlorotoluene	ND	50	47.8	96	52.8	106	10	70-130/30
106-43-4	p-Chlorotoluene	ND	50	49.0	98	54.2	108	10	70-130/30
96-12-8	1,2-Dibromo-3-chloropropane	ND	50	42.0	84	44.9	90	7	70-130/30
124-48-1	Dibromochloromethane	ND	50	52.9	106	56.5	113	7	70-130/30
106-93-4	1,2-Dibromoethane	ND	50	49.4	99	53.1	106	7	70-130/30
95-50-1	1,2-Dichlorobenzene	ND	50	46.0	92	50.1	100	9	70-130/30
541-73-1	1,3-Dichlorobenzene	ND	50	46.8	94	51.5	103	10	70-130/30
106-46-7	1,4-Dichlorobenzene	ND	50	50.4	101	56.2	112	11	70-130/30
75-71-8	Dichlorodifluoromethane	ND	50	33.4	67* a	34.7	69* a	4	70-130/30
75-34-3	1,1-Dichloroethane	ND	50	46.3	93	49.6	99	7	70-130/30
107-06-2	1,2-Dichloroethane	ND	50	42.9	86	46.6	93	8	70-130/30
75-35-4	1,1-Dichloroethene	ND	50	55.3	111	59.8	120	8	70-130/30
156-59-2	cis-1,2-Dichloroethene	5.3	50	49.5	88	53.4	96	8	70-130/30
156-60-5	trans-1,2-Dichloroethene	ND	50	46.0	92	52.2	104	13	70-130/30
78-87-5	1,2-Dichloropropane	ND	50	44.5	89	47.7	95	7	70-130/30
142-28-9	1,3-Dichloropropane	ND	50	52.1	104	55.0	110	5	70-130/30

5.4.1  
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# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5149  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5219-1MS	L58227.D	1	11/12/11	EK	n/a	n/a	MSL1960
MC5219-1MSD	L58228.D	1	11/12/11	EK	n/a	n/a	MSL1960
MC5219-1	L58222.D	1	11/11/11	EK	n/a	n/a	MSL1960

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5149-1, MC5149-2, MC5149-3

CAS No.	Compound	MC5219-1 ug/l	Spike Q	ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
594-20-7	2,2-Dichloropropane	ND		50	44.3	89	49.0	98	10	70-130/30
563-58-6	1,1-Dichloropropene	ND		50	48.2	96	52.2	104	8	70-130/30
10061-01-5	cis-1,3-Dichloropropene	ND		50	46.2	92	49.5	99	7	70-130/30
10061-02-6	trans-1,3-Dichloropropene	ND		50	45.9	92	50.8	102	10	70-130/30
123-91-1	1,4-Dioxane	ND		250	166	66* a	195	78	16	70-130/30
97-63-2	Ethyl methacrylate	ND		50	42.3	85	45.7	91	8	72-139/30
100-41-4	Ethylbenzene	ND		50	55.2	110	57.9	116	5	70-130/30
87-68-3	Hexachlorobutadiene	ND		50	44.9	90	52.0	104	15	70-130/30
591-78-6	2-Hexanone	ND		50	35.5	71	38.3	77	8	70-130/30
98-82-8	Isopropylbenzene	ND		50	59.2	118	65.5	131* a	10	70-130/30
99-87-6	p-Isopropyltoluene	ND		50	51.6	103	57.3	115	10	70-130/30
1634-04-4	Methyl Tert Butyl Ether	ND		50	43.7	87	48.8	98	11	70-130/30
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		50	41.4	83	44.8	90	8	70-130/30
74-95-3	Methylene bromide	ND		50	46.6	93	52.2	104	11	70-130/30
75-09-2	Methylene chloride	ND		50	50.3	101	55.1	110	9	70-130/30
91-20-3	Naphthalene	ND		50	41.9	84	47.9	96	13	70-130/30
103-65-1	n-Propylbenzene	ND		50	52.3	105	57.9	116	10	70-130/30
100-42-5	Styrene	ND		50	50.4	101	54.2	108	7	70-130/30
630-20-6	1,1,1,2-Tetrachloroethane	ND		50	47.0	94	49.5	99	5	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	ND		50	47.2	94	51.0	102	8	70-130/30
127-18-4	Tetrachloroethene	ND		50	50.0	100	56.2	112	12	70-130/30
108-88-3	Toluene	0.61	J	50	49.9	99	55.0	109	10	70-130/30
87-61-6	1,2,3-Trichlorobenzene	ND		50	47.2	94	53.9	108	13	70-130/30
120-82-1	1,2,4-Trichlorobenzene	ND		50	47.3	95	52.6	105	11	70-130/30
71-55-6	1,1,1-Trichloroethane	ND		50	48.5	97	52.4	105	8	70-130/30
79-00-5	1,1,2-Trichloroethane	ND		50	44.2	88	47.8	96	8	70-130/30
79-01-6	Trichloroethene	ND		50	48.9	98	53.0	106	8	70-130/30
75-69-4	Trichlorofluoromethane	ND		50	47.6	95	52.5	105	10	70-130/30
96-18-4	1,2,3-Trichloropropane	ND		50	40.5	81	44.3	89	9	70-130/30
95-63-6	1,2,4-Trimethylbenzene	ND		50	53.3	107	56.7	113	6	70-130/30
108-67-8	1,3,5-Trimethylbenzene	ND		50	50.1	100	55.0	110	9	70-130/30
108-05-4	Vinyl Acetate	ND		50	38.4	77	40.9	82	6	70-130/30
75-01-4	Vinyl chloride	ND		50	35.7	71	40.6	81	13	70-130/30
	m,p-Xylene	ND		100	120	120	123	123	2	70-130/30
95-47-6	o-Xylene	ND		50	56.1	112	58.7	117	5	70-130/30
1330-20-7	Xylene (total)	ND		150	176	117	182	121	3	70-130/30

5.4.1

5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5149

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5219-1MS	L58227.D	1	11/12/11	EK	n/a	n/a	MSL1960
MC5219-1MSD	L58228.D	1	11/12/11	EK	n/a	n/a	MSL1960
MC5219-1	L58222.D	1	11/11/11	EK	n/a	n/a	MSL1960

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5149-1, MC5149-2, MC5149-3

CAS No.	Surrogate Recoveries	MS	MSD	MC5219-1	Limits
1868-53-7	Dibromofluoromethane	79%	83%	85%	70-130%
2037-26-5	Toluene-D8	84%	84%	85%	70-130%
460-00-4	4-Bromofluorobenzene	82%	82%	81%	70-130%

- (a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
- (b) Outside control limits. Associated samples are non-detect for this compound.
- (c) High RPD due to possible matrix interference and/or sample non-homogeneity.

5.4.1

5



# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5149  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5220-1MS	N57264.D	1	11/14/11	JP	n/a	n/a	MSN2145
MC5220-1MSD	N57265.D	1	11/14/11	JP	n/a	n/a	MSN2145
MC5220-1	N57263.D	1	11/14/11	JP	n/a	n/a	MSN2145

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5149-5, MC5149-6, MC5149-7

CAS No.	Compound	MC5220-1 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND	50	28.7	57* a	29.6	59* a	3	70-130/30
107-02-8	Acrolein	ND	250	273	109	286	114	5	70-130/30
107-13-1	Acrylonitrile	ND	50	249	498* b	248	496* b	0	70-130/30
71-43-2	Benzene	1.9	50	44.3	85	45.2	87	2	70-130/30
108-86-1	Bromobenzene	ND	50	46.7	93	49.0	98	5	70-130/30
74-97-5	Bromochloromethane	ND	50	45.4	91	46.5	93	2	70-130/30
75-27-4	Bromodichloromethane	ND	50	61.3	123	61.0	122	0	70-130/30
75-25-2	Bromoform	ND	50	58.4	117	60.9	122	4	70-130/30
74-83-9	Bromomethane	ND	50	23.1	46* a	32.9	66* a	35* c	70-130/30
78-93-3	2-Butanone (MEK)	ND	50	46.3	93	44.2	88	5	70-130/30
104-51-8	n-Butylbenzene	ND	50	47.8	96	49.6	99	4	70-130/30
135-98-8	sec-Butylbenzene	ND	50	45.9	92	47.6	95	4	70-130/30
98-06-6	tert-Butylbenzene	ND	50	47.5	95	48.9	98	3	70-130/30
75-15-0	Carbon disulfide	ND	50	36.9	74	37.3	75	1	70-130/30
56-23-5	Carbon tetrachloride	ND	50	67.6	135* a	67.4	135* a	0	70-130/30
108-90-7	Chlorobenzene	ND	50	46.4	93	48.4	97	4	70-130/30
75-00-3	Chloroethane	ND	50	34.9	70	35.4	71	1	70-130/30
110-75-8	2-Chloroethyl vinyl ether	ND	50	44.5	89	45.3	91	2	70-130/30
67-66-3	Chloroform	ND	50	51.3	103	50.8	102	1	70-130/30
74-87-3	Chloromethane	ND	50	27.4	55* a	29.5	59* a	7	70-130/30
95-49-8	o-Chlorotoluene	ND	50	43.2	86	45.0	90	4	70-130/30
106-43-4	p-Chlorotoluene	ND	50	45.7	91	48.0	96	5	70-130/30
124-48-1	Dibromochloromethane	ND	50	65.5	131* a	67.1	134* a	2	70-130/30
95-50-1	1,2-Dichlorobenzene	ND	50	48.3	97	50.0	100	3	70-130/30
541-73-1	1,3-Dichlorobenzene	ND	50	46.8	94	48.9	98	4	70-130/30
106-46-7	1,4-Dichlorobenzene	ND	50	47.4	95	49.6	99	5	70-130/30
75-71-8	Dichlorodifluoromethane	ND	50	38.2	76	38.2	76	0	70-130/30
75-34-3	1,1-Dichloroethane	ND	50	46.1	92	46.8	94	2	70-130/30
107-06-2	1,2-Dichloroethane	ND	50	58.7	117	57.4	115	2	70-130/30
75-35-4	1,1-Dichloroethene	ND	50	43.0	86	43.7	87	2	70-130/30
156-59-2	cis-1,2-Dichloroethene	ND	50	41.2	82	41.0	82	0	70-130/30
156-60-5	trans-1,2-Dichloroethene	ND	50	40.4	81	42.5	85	5	70-130/30
78-87-5	1,2-Dichloropropane	ND	50	44.5	89	45.3	91	2	70-130/30
142-28-9	1,3-Dichloropropane	ND	50	46.2	92	48.2	96	4	70-130/30
594-20-7	2,2-Dichloropropane	ND	50	72.4	145* a	70.3	141* a	3	70-130/30
563-58-6	1,1-Dichloropropene	ND	50	49.3	99	50.6	101	3	70-130/30

5.4.2  
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# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5149  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5220-1MS	N57264.D	1	11/14/11	JP	n/a	n/a	MSN2145
MC5220-1MSD	N57265.D	1	11/14/11	JP	n/a	n/a	MSN2145
MC5220-1	N57263.D	1	11/14/11	JP	n/a	n/a	MSN2145

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5149-5, MC5149-6, MC5149-7

CAS No.	Compound	MC5220-1 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
10061-01-5	cis-1,3-Dichloropropene	ND	50	51.6	103	53.0	106	3	70-130/30
10061-02-6	trans-1,3-Dichloropropene	ND	50	70.3	141* a	71.6	143* a	2	70-130/30
123-91-1	1,4-Dioxane	ND	250	280	112	278	111	1	70-130/30
97-63-2	Ethyl methacrylate	ND	50	52.3	105	53.5	107	2	72-139/30
100-41-4	Ethylbenzene	ND	50	46.2	92	47.9	96	4	70-130/30
87-68-3	Hexachlorobutadiene	ND	50	60.9	122	63.1	126	4	70-130/30
591-78-6	2-Hexanone	ND	50	50.1	100	50.9	102	2	70-130/30
98-82-8	Isopropylbenzene	ND	50	51.1	102	53.5	107	5	70-130/30
99-87-6	p-Isopropyltoluene	ND	50	49.7	99	51.9	104	4	70-130/30
1634-04-4	Methyl Tert Butyl Ether	3.0	50	64.5	123	64.4	123	0	70-130/30
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	50	55.3	111	56.2	112	2	70-130/30
74-95-3	Methylene bromide	ND	50	53.9	108	54.2	108	1	70-130/30
75-09-2	Methylene chloride	ND	50	42.7	85	43.2	86	1	70-130/30
91-20-3	Naphthalene	ND	50	43.8	88	47.9	96	9	70-130/30
103-65-1	n-Propylbenzene	ND	50	43.7	87	45.4	91	4	70-130/30
100-42-5	Styrene	ND	50	47.9	96	50.3	101	5	70-130/30
630-20-6	1,1,1,2-Tetrachloroethane	ND	50	57.9	116	59.6	119	3	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	ND	50	46.0	92	47.5	95	3	70-130/30
127-18-4	Tetrachloroethene	ND	50	48.8	98	51.2	102	5	70-130/30
108-88-3	Toluene	ND	50	47.6	95	48.1	96	1	70-130/30
87-61-6	1,2,3-Trichlorobenzene	ND	50	54.1	108	57.3	115	6	70-130/30
120-82-1	1,2,4-Trichlorobenzene	ND	50	53.8	108	57.7	115	7	70-130/30
71-55-6	1,1,1-Trichloroethane	ND	50	56.4	113	55.5	111	2	70-130/30
79-00-5	1,1,2-Trichloroethane	ND	50	49.8	100	51.2	102	3	70-130/30
79-01-6	Trichloroethene	ND	50	49.5	99	50.0	100	1	70-130/30
75-69-4	Trichlorofluoromethane	ND	50	48.6	97	47.6	95	2	70-130/30
96-18-4	1,2,3-Trichloropropane	ND	50	55.6	111	57.5	115	3	70-130/30
95-63-6	1,2,4-Trimethylbenzene	ND	50	45.6	91	47.0	94	3	70-130/30
108-67-8	1,3,5-Trimethylbenzene	ND	50	45.4	91	47.3	95	4	70-130/30
108-05-4	Vinyl Acetate	ND	50	55.8	112	56.0	112	0	70-130/30
75-01-4	Vinyl chloride	ND	50	28.9	58* a	31.2	62* a	8	70-130/30
	m,p-Xylene	ND	100	90.7	91	95.0	95	5	70-130/30
95-47-6	o-Xylene	ND	50	47.0	94	48.7	97	4	70-130/30
1330-20-7	Xylene (total)	ND	150	138	92	144	96	4	70-130/30

5.4.2  
5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5149

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5220-1MS	N57264.D	1	11/14/11	JP	n/a	n/a	MSN2145
MC5220-1MSD	N57265.D	1	11/14/11	JP	n/a	n/a	MSN2145
MC5220-1	N57263.D	1	11/14/11	JP	n/a	n/a	MSN2145

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5149-5, MC5149-6, MC5149-7

CAS No.	Surrogate Recoveries	MS	MSD	MC5220-1	Limits
1868-53-7	Dibromofluoromethane	96%	94%	96%	70-130%
2037-26-5	Toluene-D8	94%	93%	94%	70-130%
460-00-4	4-Bromofluorobenzene	82%	82%	86%	70-130%

- (a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
- (b) Outside control limits. Associated samples are non-detect for this compound.
- (c) High RPD due to possible matrix interference and/or sample non-homogeneity.

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5149

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5248-1MS	L58279.D	5	11/14/11	EK	n/a	n/a	MSL1962
MC5248-1MSD	L58280.D	5	11/14/11	EK	n/a	n/a	MSL1962
MC5248-1	L58261.D	1	11/14/11	EK	n/a	n/a	MSL1962

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5149-2

CAS No.	Compound	MC5248-1 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND	250	244	98	264	106	8	70-130/30
108-88-3	Toluene	ND	250	236	94	257	103	9	70-130/30
95-63-6	1,2,4-Trimethylbenzene	ND	250	262	105	274	110	4	70-130/30
	m,p-Xylene	ND	500	496	99	548	110	10	70-130/30
95-47-6	o-Xylene	ND	250	237	95	263	105	10	70-130/30
1330-20-7	Xylene (total)	ND	750	733	98	812	108	10	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	MC5248-1	Limits
1868-53-7	Dibromofluoromethane	87%	91%	95%	70-130%
2037-26-5	Toluene-D8	91%	90%	95%	70-130%
460-00-4	4-Bromofluorobenzene	91%	90%	85%	70-130%

5.4.3

5

# Volatile Internal Standard Area Summary

Job Number: MC5149  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSL1960-CC1951	Injection Date:	11/11/11
Lab File ID:	L58205.D	Injection Time:	14:48
Instrument ID:	GCMSL	Method:	SW846 8260B

	IS 1		IS 2		IS 3		IS 4		IS 5	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	196038	8.19	271193	9.02	143990	12.25	158212	14.81	75185	5.82
Upper Limit <sup>a</sup>	392076	8.69	542386	9.52	287980	12.75	316424	15.31	150370	6.32
Lower Limit <sup>b</sup>	98019	7.69	135597	8.52	71995	11.75	79106	14.31	37593	5.32

Lab	IS 1		IS 2		IS 3		IS 4		IS 5	
Sample ID	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
MSL1960-BS	197671	8.18	268786	9.01	140719	12.25	152356	14.81	67185	5.82
MSL1960-BSD	196913	8.18	264411	9.01	139315	12.25	156310	14.81	69083	5.82
MSL1960-MB	184866	8.18	251362	9.02	126271	12.26	130426	14.81	65180	5.83
MC5149-3	182970	8.18	246050	9.02	125401	12.26	130103	14.81	69109	5.83
ZZZZZZ	181937	8.18	248675	9.02	120469	12.26	125789	14.82	66765	5.83
ZZZZZZ	175545	8.19	242269	9.02	122200	12.26	122320	14.82	63009	5.84
ZZZZZZ	197226	8.18	273518	9.01	141866	12.25	177969	14.81	0 <sup>c</sup>	0.00*
ZZZZZZ	196926	8.18	256824	9.02	124527	12.25	147933	14.81	66120	5.84
ZZZZZZ	191024	8.18	253152	9.02	127172	12.25	135037	14.81	65264	5.83
ZZZZZZ	190583	8.18	258382	9.02	125608	12.26	134463	14.81	63952	5.83
ZZZZZZ	191952	8.18	270179	9.02	136959	12.25	170777	14.81	67834	5.82
ZZZZZZ	216357	8.18	287770	9.01	145526	12.25	174074	14.81	62525	5.83
MC5149-2	260575	8.18	355656	9.01	177758	12.25	180091	14.81	90004	5.83
MC5149-1	213614	8.18	285376	9.01	138241	12.25	150358	14.81	77090	5.83
MC5219-1	187120	8.18	252868	9.02	122301	12.25	127080	14.81	63565	5.82
ZZZZZZ	191608	8.18	258033	9.02	127874	12.25	132251	14.81	63214	5.83
ZZZZZZ	226558	8.19	306455	9.02	144618	12.26	167063	14.81	24963 <sup>c</sup>	5.95
ZZZZZZ	209271	8.18	279133	9.02	133333	12.25	137082	14.81	72869	5.94
ZZZZZZ	185503	8.18	256942	9.02	125402	12.25	152768	14.81	58385	5.84
MC5219-1MS	202351	8.18	277061	9.01	139924	12.25	157430	14.81	55034	5.83
MC5219-1MSD	203420	8.18	280827	9.01	145913	12.25	162665	14.81	55777	5.82

- IS 1 = Pentafluorobenzene
- IS 2 = 1,4-Difluorobenzene
- IS 3 = Chlorobenzene-D5
- IS 4 = 1,4-Dichlorobenzene-d4
- IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.  
 (c) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

5.5.1  
5

# Volatile Internal Standard Area Summary

Job Number: MC5149  
 Account: SHELLWIC Shell Oil  
 Project: URMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSL1962-CC1951	Injection Date:	11/14/11
Lab File ID:	L58256.D	Injection Time:	12:14
Instrument ID:	GCM5L	Method:	SW846 8260B

	IS 1		IS 2		IS 3		IS 4		IS 5	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	185216	8.18	256112	9.02	132549	12.25	147799	14.81	79377	5.82
Upper Limit <sup>a</sup>	370432	8.68	512224	9.52	265098	12.75	295598	15.31	158754	6.32
Lower Limit <sup>b</sup>	92608	7.68	128056	8.52	66275	11.75	73900	14.31	39689	5.32

Lab	IS 1		IS 2		IS 3		IS 4		IS 5	
Sample ID	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
MSL1962-BS	196824	8.18	265331	9.01	134758	12.25	156924	14.81	77744	5.82
MSL1962-BSD	191885	8.18	265687	9.01	142011	12.25	158561	14.81	74435	5.83
MSL1962-MB	178540	8.18	242857	9.02	120102	12.26	126361	14.81	70286	5.83
MC5248-1	176040	8.19	234817	9.02	121413	12.26	124604	14.81	70852	5.83
ZZZZZZ	174171	8.18	238080	9.02	116414	12.25	124894	14.81	68445	5.84
ZZZZZZ	171821	8.18	235419	9.02	119930	12.25	136242	14.81	75207	5.83
ZZZZZZ	173618	8.18	236464	9.02	121372	12.25	138768	14.81	79447	5.83
ZZZZZZ	229785	8.18	305046	9.01	162097	12.25	176491	14.81	83502	5.83
ZZZZZZ	206487	8.18	272921	9.01	135812	12.25	146418	14.81	77010	5.82
ZZZZZZ	197819	8.18	263767	9.02	131818	12.25	139871	14.81	83315	5.83
MC5149-2	196784	8.18	267352	9.01	129938	12.25	139228	14.81	76854	5.83
ZZZZZZ	194710	8.18	264605	9.01	132542	12.25	144773	14.81	79184	5.83
ZZZZZZ	202478	8.18	267608	9.01	139748	12.25	147973	14.81	74328	5.83
ZZZZZZ	211176	8.19	284756	9.02	145218	12.25	150616	14.81	84197	5.83
ZZZZZZ	207033	8.18	281261	9.02	139953	12.25	154299	14.81	81281	5.82
ZZZZZZ	194748	8.18	261171	9.02	131540	12.25	149084	14.81	74632	5.82
ZZZZZZ	187728	8.18	249680	9.01	129132	12.25	161077	14.81	79834	5.82
GP13779-LS2	224933	8.18	306384	9.01	160359	12.25	155982	14.81	81724	5.82
MC5248-1MS	204364	8.18	280584	9.01	144966	12.25	144993	14.81	81455	5.82
MC5248-1MSD	197828	8.18	272633	9.01	140074	12.25	142695	14.81	79280	5.82

- IS 1 = Pentafluorobenzene
- IS 2 = 1,4-Difluorobenzene
- IS 3 = Chlorobenzene-D5
- IS 4 = 1,4-Dichlorobenzene-d4
- IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

5.5.2  
5

# Volatile Internal Standard Area Summary

Job Number: MC5149  
 Account: SHELLWIC Shell Oil  
 Project: URMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSN2145-CC2093	Injection Date:	11/14/11
Lab File ID:	N57249.D	Injection Time:	10:38
Instrument ID:	GCMSN	Method:	SW846 8260B

	IS 1		IS 2		IS 3		IS 4		IS 5	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	294754	9.03	410689	9.90	199996	13.16	236619	15.72	110117	6.58
Upper Limit <sup>a</sup>	589508	9.53	821378	10.40	399992	13.66	473238	16.22	220234	7.08
Lower Limit <sup>b</sup>	147377	8.53	205345	9.40	99998	12.66	118310	15.22	55059	6.08

Lab	IS 1		IS 2		IS 3		IS 4		IS 5	
Sample ID	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
MSN2145-BS	334894	9.03	480044	9.91	231595	13.16	260757	15.72	144366	6.58
MSN2145-MB	329203	9.03	475101	9.90	211298	13.16	225563	15.72	139395	6.58
ZZZZZZ	318556	9.03	455329	9.90	205780	13.16	219680	15.72	127101	6.58
ZZZZZZ	315338	9.03	458735	9.91	209089	13.16	224303	15.72	148358	6.58
ZZZZZZ	311225	9.03	449418	9.91	205383	13.16	217704	15.72	133031	6.58
ZZZZZZ	323974	9.03	461651	9.90	216987	13.16	241469	15.72	144897	6.58
ZZZZZZ	322805	9.03	470452	9.90	212793	13.16	228612	15.72	127071	6.58
ZZZZZZ	319766	9.03	458618	9.91	210139	13.16	222559	15.72	139752	6.58
ZZZZZZ	311316	9.03	449249	9.91	205270	13.16	221902	15.72	121347	6.58
ZZZZZZ	309654	9.03	453105	9.91	205944	13.16	226121	15.72	138305	6.58
MC5220-1	315192	9.03	447315	9.91	209716	13.16	222378	15.72	129757	6.58
MC5220-1MS	327712	9.03	474390	9.91	236311	13.16	268822	15.72	139507	6.58
MC5220-1MSD	351984	9.03	503937	9.90	244621	13.16	275331	15.72	143720	6.58
ZZZZZZ	349154	9.03	501052	9.91	222680	13.16	245718	15.72	148562	6.58
ZZZZZZ	337515	9.03	479996	9.91	217999	13.16	238796	15.72	131081	6.58
ZZZZZZ	327564	9.03	465046	9.91	214549	13.16	233377	15.72	129444	6.58
ZZZZZZ	320749	9.03	463038	9.91	207467	13.16	227042	15.72	121234	6.58
ZZZZZZ	327916	9.03	469919	9.90	218963	13.16	243413	15.72	149220	6.58
ZZZZZZ	323122	9.03	464468	9.91	211418	13.16	232030	15.72	125878	6.58
MC5149-5	337316	9.03	484559	9.90	233766	13.16	273449	15.72	149158	6.58
MC5149-6	392890	9.03	556788	9.90	245585	13.16	283536	15.72	147706	6.58
MC5149-7	391157	9.03	555394	9.91	242275	13.16	265359	15.72	139324	6.59

- IS 1 = Pentafluorobenzene
- IS 2 = 1,4-Difluorobenzene
- IS 3 = Chlorobenzene-D5
- IS 4 = 1,4-Dichlorobenzene-d4
- IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

5.5.3

5

# Volatile Surrogate Recovery Summary

Job Number: MC5149

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Method: SW846 8260B	Matrix: AQ
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Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
MC5149-1	L58221.D	85.0	88.0	85.0
MC5149-2	L58271.D	90.0	86.0	85.0
MC5149-2	L58220.D	84.0	92.0	97.0
MC5149-3	L58210.D	90.0	89.0	82.0
MC5149-5	N57272.D	93.0	95.0	83.0
MC5149-6	N57273.D	90.0	92.0	83.0
MC5149-7	N57274.D	90.0	90.0	84.0
MC5219-1MS	L58227.D	79.0	84.0	82.0
MC5219-1MSD	L58228.D	83.0	84.0	82.0
MC5220-1MS	N57264.D	96.0	94.0	82.0
MC5220-1MSD	N57265.D	94.0	93.0	82.0
MC5248-1MS	L58279.D	87.0	91.0	91.0
MC5248-1MSD	L58280.D	91.0	90.0	90.0
MSL1960-BS	L58206.D	84.0	89.0	86.0
MSL1960-BSD	L58207.D	85.0	89.0	84.0
MSL1960-MB	L58209.D	89.0	88.0	84.0
MSL1962-BS	L58257.D	87.0	91.0	86.0
MSL1962-BSD	L58258.D	90.0	92.0	85.0
MSL1962-MB	L58260.D	95.0	91.0	89.0
MSN2145-BS	N57251.D	94.0	92.0	83.0
MSN2145-MB	N57253.D	96.0	90.0	86.0

Surrogate Compounds                      Recovery Limits

S1 = Dibromofluoromethane              70-130%  
 S2 = Toluene-D8                              70-130%  
 S3 = 4-Bromofluorobenzene              70-130%

5.6.1  
5



## GC/MS Semi-volatiles

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## QC Data Summaries

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Includes the following where applicable:

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

## Method Blank Summary

Page 1 of 2

Job Number: MC5149

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26792-MB	F53441.D	1	11/03/11	PR	11/02/11	OP26792	MSF2573

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5149-1, MC5149-2

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	10	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	ug/l	
51-28-5	2,4-Dinitrophenol	ND	20	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	ug/l	
95-48-7	2-Methylphenol	ND	10	ug/l	
	3&4-Methylphenol	ND	10	ug/l	
88-75-5	2-Nitrophenol	ND	10	ug/l	
100-02-7	4-Nitrophenol	ND	20	ug/l	
87-86-5	Pentachlorophenol	ND	10	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	10	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	ug/l	
62-53-3	Aniline	ND	10	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	ug/l	
100-51-6	Benzyl Alcohol	ND	10	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	ug/l	
106-47-8	4-Chloroaniline	ND	10	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	10	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.0	ug/l	
132-64-9	Dibenzofuran	ND	5.0	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	ug/l	
84-66-2	Diethyl phthalate	ND	5.0	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	ug/l	

6.1.1

6

# Method Blank Summary

Job Number: MC5149  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26792-MB	F53441.D	1	11/03/11	PR	11/02/11	OP26792	MSF2573

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5149-1, MC5149-2

CAS No.	Compound	Result	RL	Units	Q
77-47-4	Hexachlorocyclopentadiene	ND	10	ug/l	
67-72-1	Hexachloroethane	ND	5.0	ug/l	
78-59-1	Isophorone	ND	5.0	ug/l	
88-74-4	2-Nitroaniline	ND	10	ug/l	
99-09-2	3-Nitroaniline	ND	10	ug/l	
100-01-6	4-Nitroaniline	ND	10	ug/l	
98-95-3	Nitrobenzene	ND	5.0	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	ug/l	
110-86-1	Pyridine	ND	10	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	57%	15-110%
4165-62-2	Phenol-d5	38%	15-110%
118-79-6	2,4,6-Tribromophenol	88%	15-110%
4165-60-0	Nitrobenzene-d5	94%	30-130%
321-60-8	2-Fluorobiphenyl	92%	30-130%
1718-51-0	Terphenyl-d14	104%	30-130%

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

6.1.1

6

# Method Blank Summary

Job Number: MC5149  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26819-MB	U3290.D	1	11/07/11	KR	11/04/11	OP26819	MSU199

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5149-5, MC5149-6, MC5149-7

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	10	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	ug/l	
51-28-5	2,4-Dinitrophenol	ND	20	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	ug/l	
95-48-7	2-Methylphenol	ND	10	ug/l	
	3&4-Methylphenol	ND	10	ug/l	
88-75-5	2-Nitrophenol	ND	10	ug/l	
100-02-7	4-Nitrophenol	ND	20	ug/l	
87-86-5	Pentachlorophenol	ND	10	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	10	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	ug/l	
62-53-3	Aniline	ND	10	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	ug/l	
100-51-6	Benzyl Alcohol	ND	10	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	ug/l	
106-47-8	4-Chloroaniline	ND	10	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	10	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.0	ug/l	
132-64-9	Dibenzofuran	ND	5.0	ug/l	
84-74-2	Di-n-butyl phthalate	0.54	5.0	ug/l	J
117-84-0	Di-n-octyl phthalate	ND	5.0	ug/l	
84-66-2	Diethyl phthalate	0.38	5.0	ug/l	J
131-11-3	Dimethyl phthalate	ND	5.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	ug/l	

6.1.2

6

# Method Blank Summary

Job Number: MC5149  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26819-MB	U3290.D	1	11/07/11	KR	11/04/11	OP26819	MSU199

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5149-5, MC5149-6, MC5149-7

CAS No.	Compound	Result	RL	Units	Q
77-47-4	Hexachlorocyclopentadiene	ND	10	ug/l	
67-72-1	Hexachloroethane	ND	5.0	ug/l	
78-59-1	Isophorone	ND	5.0	ug/l	
88-74-4	2-Nitroaniline	ND	10	ug/l	
99-09-2	3-Nitroaniline	ND	10	ug/l	
100-01-6	4-Nitroaniline	ND	10	ug/l	
98-95-3	Nitrobenzene	ND	5.0	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	ug/l	
110-86-1	Pyridine	ND	10	ug/l	

CAS No.	Surrogate Recoveries	Limits
367-12-4	2-Fluorophenol	55% 15-110%
4165-62-2	Phenol-d5	34% 15-110%
118-79-6	2,4,6-Tribromophenol	105% 15-110%
4165-60-0	Nitrobenzene-d5	87% 30-130%
321-60-8	2-Fluorobiphenyl	90% 30-130%
1718-51-0	Terphenyl-d14	99% 30-130%

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

6.1.2



# Method Blank Summary

Job Number: MC5149  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26793-MB	I76197.D	1	11/09/11	KR	11/02/11	OP26793	MSI2795

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC5149-1, MC5149-2

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	0.10	ug/l	
208-96-8	Acenaphthylene	ND	0.10	ug/l	
120-12-7	Anthracene	ND	0.10	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.050	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.050	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	ug/l	
218-01-9	Chryseue	ND	0.10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	ug/l	
206-44-0	Fluoranthene	ND	0.10	ug/l	
86-73-7	Fluorene	ND	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	ug/l	
90-12-0	1-Methylnaphthaleue	ND	0.20	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	0.10	ug/l	
85-01-8	Phenanthrene	ND	0.050	ug/l	
129-00-0	Pyrene	ND	0.10	ug/l	

CAS No.	Surrogate Recoveries		Limits
4165-60-0	Nitrobenzene-d5	129%	30-130%
321-60-8	2-Fluorobiphenyl	99%	30-130%
1718-51-0	Terphenyl-d14	124%	30-130%

6.1.3  
6

# Method Blank Summary

Job Number: MC5149  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26820-MB	I76297.D	1	11/12/11	PR	11/04/11	OP26820	MSI2799

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC5149-5, MC5149-6, MC5149-7

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	0.10	ug/l	
208-96-8	Acenaphthylene	ND	0.10	ug/l	
120-12-7	Anthracene	ND	0.10	ug/l	
56-55-3	Benzo(a)anthracene	0.080	0.050	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	0.066	0.050	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	0.086	0.10	ug/l	J
218-01-9	Chrysene	0.13	0.10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	ug/l	
206-44-0	Fluoranthene	ND	0.10	ug/l	
86-73-7	Fluorene	ND	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.20	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	0.10	ug/l	
85-01-8	Phenanthrene	ND	0.050	ug/l	
129-00-0	Pyrene	ND	0.10	ug/l	

CAS No.	Surrogate Recoveries		Limits
4165-60-0	Nitrobenzene-d5	113%	30-130%
321-60-8	2-Fluorobiphenyl	89%	30-130%
1718-51-0	Terphenyl-d14	104%	30-130%

6.1.4

6

# Blank Spike Summary

Job Number: MC5149

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26792-BS	F53442.D	1	11/03/11	PR	11/02/11	OP26792	MSF2573

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5149-1, MC5149-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
65-85-0	Benzoic Acid	100	33.3	33	30-130
95-57-8	2-Chlorophenol	100	76.9	77	30-130
59-50-7	4-Chloro-3-methyl phenol	100	84.2	84	30-130
120-83-2	2,4-Dichlorophenol	100	87.3	87	30-130
105-67-9	2,4-Dimethylphenol	100	83.6	84	30-130
51-28-5	2,4-Dinitrophenol	100	82.2	82	30-130
534-52-1	4,6-Dinitro-o-cresol	100	101	101	30-130
95-48-7	2-Methylphenol	100	70.0	70	30-130
	3&4-Methylphenol	200	137	69	30-130
88-75-5	2-Nitrophenol	100	91.0	91	30-130
100-02-7	4-Nitrophenol	100	47.0	47	30-130
87-86-5	Pentachlorophenol	100	97.7	98	30-130
108-95-2	Phenol	100	39.9	40	30-130
95-95-4	2,4,5-Trichlorophenol	100	90.1	90	30-130
88-06-2	2,4,6-Trichlorophenol	100	89.4	89	30-130
62-53-3	Aniline	50	17.5	35* a	40-140
101-55-3	4-Bromophenyl phenyl ether	50	48.5	97	40-140
85-68-7	Butyl benzyl phthalate	50	49.6	99	40-140
100-51-6	Benzyl Alcohol	50	36.1	72	40-140
91-58-7	2-Chloronaphthalene	50	45.0	90	40-140
106-47-8	4-Chloroaniline	50	31.1	62	40-140
111-91-1	bis(2-Chloroethoxy)methane	50	45.5	91	40-140
111-44-4	bis(2-Chloroethyl)ether	50	46.9	94	40-140
108-60-1	bis(2-Chloroisopropyl)ether	50	48.9	98	40-140
7005-72-3	4-Chlorophenyl phenyl ether	50	47.3	95	40-140
122-66-7	1,2-Diphenylhydrazine	50	44.1	88	40-140
121-14-2	2,4-Dinitrotoluene	50	47.8	96	40-140
606-20-2	2,6-Dinitrotoluene	50	45.6	91	40-140
91-94-1	3,3'-Dichlorobenzidine	50	33.1	66	40-140
132-64-9	Dibenzofuran	50	45.4	91	40-140
84-74-2	Di-n-butyl phthalate	50	50.7	101	40-140
117-84-0	Di-n-octyl phthalate	50	46.8	94	40-140
84-66-2	Diethyl phthalate	50	51.2	102	40-140
131-11-3	Dimethyl phthalate	50	47.7	95	40-140
117-81-7	bis(2-Ethylhexyl)phthalate	50	49.2	98	40-140
118-74-1	Hexachlorobenzene	50	45.2	90	40-140

6.2.1





# Blank Spike Summary

Job Number: MC5149  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26792-BS	F53442.D	1	11/03/11	PR	11/02/11	OP26792	MSF2573

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5149-1, MC5149-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
77-47-4	Hexachlorocyclopentadiene	50	27.2	54	40-140
67-72-1	Hexachloroethane	50	35.7	71	40-140
78-59-1	Isophorone	50	34.7	69	40-140
88-74-4	2-Nitroaniline	50	45.9	92	40-140
99-09-2	3-Nitroaniline	50	37.5	75	40-140
100-01-6	4-Nitroaniline	50	43.9	88	40-140
98-95-3	Nitrobenzene	50	45.7	91	40-140
62-75-9	n-Nitrosodimethylamine	50	24.2	48	40-140
621-64-7	N-Nitroso-di-n-propylamine	50	47.2	94	40-140
86-30-6	N-Nitrosodiphenylamine	50	46.8	94	40-140
110-86-1	Pyridine	50	19.7	39* <sup>a</sup>	40-140

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	55%	15-110%
4165-62-2	Phenol-d5	38%	15-110%
118-79-6	2,4,6-Tribromophenol	88%	15-110%
4165-60-0	Nitrobenzene-d5	91%	30-130%
321-60-8	2-Fluorobiphenyl	89%	30-130%
1718-51-0	Terphenyl-d14	97%	30-130%

(a) Outside control limits. Blank Spike meets program technical requirements.

6.2.1

6

# Blank Spike Summary

Job Number: MC5149

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26793-BS	I76198.D	1	11/09/11	KR	11/02/11	OP26793	MSI2795

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC5149-1, MC5149-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
83-32-9	Acenaphthene	50	43.9	88	40-140
208-96-8	Acenaphthylene	50	36.1	72	40-140
120-12-7	Anthracene	50	45.4	91	40-140
56-55-3	Benzo(a)anthracene	50	59.1	118	40-140
50-32-8	Benzo(a)pyrene	50	49.2	98	40-140
205-99-2	Benzo(b)fluoranthene	50	56.5	113	40-140
191-24-2	Benzo(g,h,i)perylene	50	46.1	92	40-140
207-08-9	Benzo(k)fluoranthene	50	58.1	116	40-140
218-01-9	Chrysene	50	47.1	94	40-140
53-70-3	Dibenzo(a,h)anthracene	50	52.0	104	40-140
206-44-0	Fluoranthene	50	50.5	101	40-140
86-73-7	Fluorene	50	55.3	111	40-140
193-39-5	Indeno(1,2,3-cd)pyrene	50	51.4	103	40-140
90-12-0	1-Methylnaphthalene	50	41.6	83	40-140
91-57-6	2-Methylnaphthalene	50	44.8	90	40-140
91-20-3	Naphthalene	50	41.3	83	40-140
85-01-8	Phenanthrene	50	41.9	84	40-140
129-00-0	Pyrene	50	52.3	105	40-140

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	124%	30-130%
321-60-8	2-Fluorobiphenyl	96%	30-130%
1718-51-0	Terphenyl-d14	108%	30-130%

6.2.2



# Blank Spike/Blank Spike Duplicate Summary

Job Number: MC5149  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26819-BS	U3291.D	1	11/07/11	KR	11/04/11	OP26819	MSU199
OP26819-BSD	U3294.D	1	11/08/11	KR	11/04/11	OP26819	MSU200

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5149-5, MC5149-6, MC5149-7

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic Acid	100	42.6	43	42.7	43	0	30-130/20
95-57-8	2-Chlorophenol	100	83.2	83	79.2	79	5	30-130/20
59-50-7	4-Chloro-3-methyl phenol	100	88.7	89	86.1	86	3	30-130/20
120-83-2	2,4-Dichlorophenol	100	93.6	94	89.2	89	5	30-130/20
105-67-9	2,4-Dimethylphenol	100	83.9	84	61.1	61	31* a	30-130/20
51-28-5	2,4-Dinitrophenol	100	74.8	75	79.4	79	6	30-130/20
534-52-1	4,6-Dinitro-o-cresol	100	88.0	88	89.3	89	1	30-130/20
95-48-7	2-Methylphenol	100	78.4	78	71.3	71	9	30-130/20
	3&4-Methylphenol	200	143	72	134	67	6	30-130/20
88-75-5	2-Nitrophenol	100	96.4	96	95.2	95	1	30-130/20
100-02-7	4-Nitrophenol	100	49.4	49	47.9	48	3	30-130/20
87-86-5	Pentachlorophenol	100	117	117	110	110	6	30-130/20
108-95-2	Phenol	100	41.4	41	37.6	38	10	30-130/20
95-95-4	2,4,5-Trichlorophenol	100	99.7	100	98.0	98	2	30-130/20
88-06-2	2,4,6-Trichlorophenol	100	93.3	93	90.3	90	3	30-130/20
62-53-3	Aniline	50	26.5	53	25.4	51	4	40-140/20
101-55-3	4-Bromophenyl phenyl ether	50	51.2	102	49.5	99	3	40-140/20
85-68-7	Butyl benzyl phthalate	50	49.7	99	49.5	99	0	40-140/20
100-51-6	Benzyl Alcohol	50	37.8	76	37.7	75	0	40-140/20
91-58-7	2-Chloronaphthalene	50	47.3	95	45.5	91	4	40-140/20
106-47-8	4-Chloroaniline	50	18.4	37* a	23.2	46	23* a	40-140/20
111-91-1	bis(2-Chloroethoxy)methane	50	45.4	91	44.8	90	1	40-140/20
111-44-4	bis(2-Chloroethyl)ether	50	44.4	89	42.5	85	4	40-140/20
108-60-1	bis(2-Chloroisopropyl)ether	50	41.9	84	40.5	81	3	40-140/20
7005-72-3	4-Chlorophenyl phenyl ether	50	47.5	95	47.2	94	1	40-140/20
122-66-7	1,2-Diphenylhydrazine	50	47.3	95	45.5	91	4	40-140/20
121-14-2	2,4-Dinitrotoluene	50	47.2	94	47.4	95	0	40-140/20
606-20-2	2,6-Dinitrotoluene	50	48.4	97	47.4	95	2	40-140/20
91-94-1	3,3'-Dichlorobenzidine	50	34.3	69	35.4	71	3	40-140/20
132-64-9	Dibenzofuran	50	45.5	91	44.9	90	1	40-140/20
84-74-2	Di-n-butyl phthalate	50	47.5	95	47.3	95	0	40-140/20
117-84-0	Di-n-octyl phthalate	50	52.0	104	51.6	103	1	40-140/20
84-66-2	Diethyl phthalate	50	47.5	95	47.9	96	1	40-140/20
131-11-3	Dimethyl phthalate	50	47.9	96	48.5	97	1	40-140/20
117-81-7	bis(2-Ethylhexyl)phthalate	50	51.4	103	50.1	100	3	40-140/20
118-74-1	Hexachlorobenzene	50	47.2	94	46.2	92	2	40-140/20

6.3.1

6

# Blank Spike/Blank Spike Duplicate Summary

Job Number: MC5149

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26819-BS	U3291.D	1	11/07/11	KR	11/04/11	OP26819	MSU199
OP26819-BSD	U3294.D	1	11/08/11	KR	11/04/11	OP26819	MSU200

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5149-5, MC5149-6, MC5149-7

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
77-47-4	Hexachlorocyclopentadiene	50	22.5	45	21.2	42	6	40-140/20
67-72-1	Hexachloroethane	50	38.6	77	36.2	72	6	40-140/20
78-59-1	Isophorone	50	34.5	69	33.8	68	2	40-140/20
88-74-4	2-Nitroaniline	50	51.1	102	50.5	101	1	40-140/20
99-09-2	3-Nitroaniline	50	24.4	49	27.9	56	13	40-140/20
100-01-6	4-Nitroaniline	50	40.4	81	41.0	82	1	40-140/20
98-95-3	Nitrobenzene	50	43.2	86	41.8	84	3	40-140/20
62-75-9	n-Nitrosodimethylamine	50	26.1	52	25.1	50	4	40-140/20
621-64-7	N-Nitroso-di-n-propylamine	50	47.2	94	45.2	90	4	40-140/20
86-30-6	N-Nitrosodiphenylamine	50	47.5	95	47.6	95	0	40-140/20
110-86-1	Pyridine	50	18.7	37* a	23.4	47	22* a	40-140/20

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
367-12-4	2-Fluorophenol	62%	57%	15-110%
4165-62-2	Phenol-d5	40%	37%	15-110%
118-79-6	2,4,6-Tribromophenol	105%	101%	15-110%
4165-60-0	Nitrobenzene-d5	90%	87%	30-130%
321-60-8	2-Fluorobiphenyl	92%	89%	30-130%
1718-51-0	Terphenyl-d14	100%	96%	30-130%

(a) Outside control limits. Blank Spike meets program technical requirements.

6.3.1  
6

# Blank Spike/Blank Spike Duplicate Summary

Job Number: MC5149

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26820-BS	I76298.D	1	11/12/11	PR	11/04/11	OP26820	MSI2799
OP26820-BSD	I76299.D	1	11/12/11	PR	11/04/11	OP26820	MSI2799

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC5149-5, MC5149-6, MC5149-7

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	50	49.2	98	48.1	96	2	40-140/30
208-96-8	Acenaphthylene	50	39.3	79	38.8	78	1	40-140/30
120-12-7	Anthracene	50	48.0	96	48.3	97	1	40-140/30
56-55-3	Benzo(a)anthracene	50	56.8	114	55.0	110	3	40-140/30
50-32-8	Benzo(a)pyrene	50	42.5	85	41.9	84	1	40-140/30
205-99-2	Benzo(b)fluoranthene	50	51.6	103	48.8	98	6	40-140/30
191-24-2	Benzo(g,h,i)perylene	50	46.9	94	44.2	88	6	40-140/30
207-08-9	Benzo(k)fluoranthene	50	52.6	105	53.1	106	1	40-140/30
218-01-9	Chrysene	50	47.4	95	46.0	92	3	40-140/30
53-70-3	Dibenzo(a,h)anthracene	50	47.9	96	45.4	91	5	40-140/30
206-44-0	Fluoranthene	50	54.6	109	54.6	109	0	40-140/30
86-73-7	Fluorene	50	52.7	105	51.5	103	2	40-140/30
193-39-5	Indeno(1,2,3-cd)pyrene	50	47.5	95	44.8	90	6	40-140/30
90-12-0	1-Methylnaphthalene	50	47.3	95	45.8	92	3	40-140/30
91-57-6	2-Methylnaphthalene	50	50.0	100	47.8	96	4	40-140/30
91-20-3	Naphthalene	50	45.5	91	44.3	89	3	40-140/30
85-01-8	Phenanthrene	50	45.7	91	45.7	91	0	40-140/30
129-00-0	Pyrene	50	46.3	93	45.3	91	2	40-140/30

CAS No.	Surr ogate Recoveries	BSP	BSD	Limits
4165-60-0	Nitrobenzene-d5	117%	111%	30-130%
321-60-8	2-Fluorobiphenyl	89%	89%	30-130%
1718-51-0	Terphenyl-d14	99%	95%	30-130%

6.3.2  
6

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5149

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26792-MS	F53443.D	1	11/03/11	PR	11/02/11	OP26792	MSF2573
OP26792-MSD	F53444.D	1	11/03/11	PR	11/02/11	OP26792	MSF2573
MC5134-4	F53445.D	1	11/03/11	PR	11/02/11	OP26792	MSF2573

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5149-1, MC5149-2

CAS No.	Compound	MC5134-4		MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
		ug/l	Q						
65-85-0	Benzoic Acid	ND	100	36.5	37	36.9	37	1	30-130/20
95-57-8	2-Chlorophenol	ND	100	79.4	79	80.9	81	2	30-130/20
59-50-7	4-Chloro-3-methyl phenol	ND	100	92.8	93	89.1	89	4	30-130/20
120-83-2	2,4-Dichlorophenol	ND	100	92.1	92	91.9	92	0	30-130/20
105-67-9	2,4-Dimethylphenol	ND	100	84.1	84	85.2	85	1	30-130/20
51-28-5	2,4-Dinitrophenol	ND	100	86.6	87	88.1	88	2	30-130/20
534-52-1	4,6-Dinitro-o-cresol	ND	100	111	111	110	110	1	30-130/20
95-48-7	2-Methylphenol	ND	100	71.0	71	73.2	73	3	30-130/20
	3&4-Methylphenol	ND	200	137	69	137	69	0	30-130/20
88-75-5	2-Nitrophenol	ND	100	95.2	95	95.5	96	0	30-130/20
100-02-7	4-Nitrophenol	ND	100	50.0	50	51.1	51	2	30-130/20
87-86-5	Pentachlorophenol	ND	100	101	101	103	103	2	30-130/20
108-95-2	Phenol	ND	100	41.1	41	41.3	41	0	30-130/20
95-95-4	2,4,5-Trichlorophenol	ND	100	92.4	92	92.0	92	0	30-130/20
88-06-2	2,4,6-Trichlorophenol	ND	100	90.7	91	92.4	92	2	30-130/20
62-53-3	Aniline	ND	50	19.2	38* a	22.0	44	14	40-140/20
101-55-3	4-Bromophenyl phenyl ether	ND	50	49.5	99	50.2	100	1	40-140/20
85-68-7	Butyl benzyl phthalate	ND	50	51.9	104	55.3	111	6	40-140/20
100-51-6	Benzyl Alcohol	ND	50	37.0	74	39.1	78	6	40-140/20
91-58-7	2-Chloronaphthalene	ND	50	46.6	93	47.5	95	2	40-140/20
106-47-8	4-Chloroaniline	ND	50	31.6	63	33.9	68	7	40-140/20
111-91-1	bis(2-Chloroethoxy)methane	ND	50	47.8	96	47.0	94	2	40-140/20
111-44-4	bis(2-Chloroethyl)ether	ND	50	46.1	92	47.6	95	3	40-140/20
108-60-1	bis(2-Chloroisopropyl)ether	ND	50	47.4	95	48.5	97	2	40-140/20
7005-72-3	4-Chlorophenyl phenyl ether	ND	50	47.5	95	50.3	101	6	40-140/20
122-66-7	1,2-Diphenylhydrazine	ND	50	46.0	92	46.5	93	1	40-140/20
121-14-2	2,4-Dinitrotoluene	ND	50	48.6	97	49.0	98	1	40-140/20
606-20-2	2,6-Dinitrotoluene	ND	50	47.9	96	48.5	97	1	40-140/20
91-94-1	3,3'-Dichlorobenzidine	ND	50	29.9	60	29.9	60	0	40-140/20
132-64-9	Dibenzofuran	ND	50	46.2	92	46.5	93	1	40-140/20
84-74-2	Di-n-butyl phthalate	ND	50	53.8	108	54.3	109	1	40-140/20
117-84-0	Di-n-octyl phthalate	ND	50	49.6	99	51.5	103	4	40-140/20
84-66-2	Diethyl phthalate	0.98	50	51.0	100	53.1	104	4	40-140/20
131-11-3	Dimethyl phthalate	ND	50	49.0	98	49.8	100	2	40-140/20
117-81-7	bis(2-Ethylhexyl)phthalate	ND	50	50.1	100	52.2	104	4	40-140/20
118-74-1	Hexachlorobenzene	ND	50	47.2	94	49.5	99	5	40-140/20

6.4.1

6

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5149  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26792-MS	F53443.D	1	11/03/11	PR	11/02/11	OP26792	MSF2573
OP26792-MSD	F53444.D	1	11/03/11	PR	11/02/11	OP26792	MSF2573
MC5134-4	F53445.D	1	11/03/11	PR	11/02/11	OP26792	MSF2573

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5149-1, MC5149-2

CAS No.	Compound	MC5134-4 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
77-47-4	Hexachlorocyclopentadiene	ND	50	28.3	57	28.8	58	2	40-140/20
67-72-1	Hexachloroethane	ND	50	35.3	71	35.6	71	1	40-140/20
78-59-1	Isophorone	ND	50	38.1	76	37.5	75	2	40-140/20
88-74-4	2-Nitroaniline	ND	50	49.0	98	49.2	98	0	40-140/20
99-09-2	3-Nitroaniline	ND	50	36.9	74	37.4	75	1	40-140/20
100-01-6	4-Nitroaniline	ND	50	43.5	87	46.5	93	7	40-140/20
98-95-3	Nitrobenzene	ND	50	47.0	94	47.7	95	1	40-140/20
62-75-9	n-Nitrosodimethylamine	ND	50	23.9	48	26.3	53	10	40-140/20
621-64-7	N-Nitroso-di-n-propylamine	ND	50	49.0	98	50.8	102	4	40-140/20
86-30-6	N-Nitrosodiphenylamine	ND	50	50.3	101	50.3	101	0	40-140/20
110-86-1	Pyridine	ND	50	21.8	44	25.1	50	14	40-140/20

CAS No.	Surrogate Recoveries	MS	MSD	MC5134-4	Limits
367-12-4	2-Fluorophenol	56%	57%	53%	15-110%
4165-62-2	Phenol-d5	40%	40%	36%	15-110%
118-79-6	2,4,6-Tribromophenol	100%	96%	83%	15-110%
4165-60-0	Nitrobenzene-d5	94%	94%	90%	30-130%
321-60-8	2-Fluorobiphenyl	91%	93%	86%	30-130%
1718-51-0	Terphenyl-d14	100%	103%	99%	30-130%

(a) Outside control limits. Blank Spike meets program technical requirements.

6.4.1

6

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5149

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26819-MS	U3348.D	1	11/14/11	KR	11/04/11	OP26819	MSU203
OP26819-MSD	U3349.D	1	11/14/11	KR	11/04/11	OP26819	MSU203
MC5173-2	U3350.D	1	11/14/11	KR	11/04/11	OP26819	MSU203

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5149-5, MC5149-6, MC5149-7

CAS No.	Compound	MC5173-2 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic Acid	ND	109	45.6	42	40.2	40	13	30-130/20
95-57-8	2-Chlorophenol	ND	109	75.4	69	65.9	66	13	30-130/20
59-50-7	4-Chloro-3-methyl phenol	ND	109	79.0	73	74.3	74	6	30-130/20
120-83-2	2,4-Dichlorophenol	ND	109	80.2	74	71.0	71	12	30-130/20
105-67-9	2,4-Dimethylphenol	ND	109	23.2	21* a	20.7	21* a	11	30-130/20
51-28-5	2,4-Dinitrophenol	ND	109	79.9	74	75.6	76	6	30-130/20
534-52-1	4,6-Dinitro-o-cresol	ND	109	99.1	91	83.3	83	17	30-130/20
95-48-7	2-Methylphenol	ND	109	61.1	56	57.3	57	6	30-130/20
	3&4-Methylphenol	ND	217	115	53	112	56	3	30-130/20
88-75-5	2-Nitrophenol	ND	109	91.1	84	77.7	78	16	30-130/20
100-02-7	4-Nitrophenol	ND	109	49.3	45	45.4	45	8	30-130/20
87-86-5	Pentachlorophenol	ND	109	92.6	85	78.2	78	17	30-130/20
108-95-2	Phenol	ND	109	36.8	34	34.8	35	6	30-130/20
95-95-4	2,4,5-Trichlorophenol	ND	109	85.4	79	75.7	76	12	30-130/20
88-06-2	2,4,6-Trichlorophenol	ND	109	84.3	78	72.7	73	15	30-130/20
62-53-3	Aniline	ND	54.3	14.3	26* b	12.6	25* b	13	40-140/20
101-55-3	4-Bromophenyl phenyl ether	ND	54.3	49.3	91	42.7	85	14	40-140/20
85-68-7	Butyl benzyl phthalate	ND	54.3	44.4	82	40.6	81	9	40-140/20
100-51-6	Benzyl Alcohol	ND	54.3	38.3	70	34.7	69	10	40-140/20
91-58-7	2-Chloronaphthalene	ND	54.3	48.0	88	40.1	80	18	40-140/20
106-47-8	4-Chloroaniline	ND	54.3	17.3	32* a	14.5	29* a	18	40-140/20
111-91-1	bis(2-Chloroethoxy)methane	ND	54.3	47.4	87	40.5	81	16	40-140/20
111-44-4	bis(2-Chloroethyl)ether	ND	54.3	49.4	91	44.8	90	10	40-140/20
108-60-1	bis(2-Chloroisopropyl)ether	ND	54.3	53.2	98	46.8	94	13	40-140/20
7005-72-3	4-Chlorophenyl phenyl ether	ND	54.3	44.1	81	39.9	80	10	40-140/20
122-66-7	1,2-Diphenylhydrazine	ND	54.3	48.4	89	38.0	76	24* c	40-140/20
121-14-2	2,4-Dinitrotoluene	ND	54.3	42.3	78	39.5	79	7	40-140/20
606-20-2	2,6-Dinitrotoluene	ND	54.3	43.9	81	39.8	80	10	40-140/20
91-94-1	3,3'-Dichlorobenzidine	ND	54.3	18.7	34* b	12.3	25* b	41* c	40-140/20
132-64-9	Dibenzofuran	ND	54.3	44.9	83	39.0	78	14	40-140/20
84-74-2	Di-n-butyl phthalate	0.42	54.3	46.2	84	40.8	81	12	40-140/20
117-84-0	Di-n-octyl phthalate	ND	54.3	44.6	82	43.5	87	2	40-140/20
84-66-2	Diethyl phthalate	0.99	54.3	44.8	81	42.0	82	6	40-140/20
131-11-3	Dimethyl phthalate	ND	54.3	45.2	83	40.9	82	10	40-140/20
117-81-7	bis(2-Ethylhexyl)phthalate	0.75	54.3	46.6	84	43.7	86	6	40-140/20
118-74-1	Hexachlorobenzene	ND	54.3	44.8	82	37.0	74	19	40-140/20

6.4.2  
6



# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5149  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26819-MS	U3348.D	1	11/14/11	KR	11/04/11	OP26819	MSU203
OP26819-MSD	U3349.D	1	11/14/11	KR	11/04/11	OP26819	MSU203
MC5173-2	U3350.D	1	11/14/11	KR	11/04/11	OP26819	MSU203

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5149-5, MC5149-6, MC5149-7

CAS No.	Compound	MC5173-2 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
77-47-4	Hexachlorocyclopentadiene	ND	54.3	24.8	46	20.6	41	19	40-140/20
67-72-1	Hexachloroethane	ND	54.3	47.4	87	42.6	85	11	40-140/20
78-59-1	Isophorone	ND	54.3	37.5	69	33.0	66	13	40-140/20
88-74-4	2-Nitroaniline	ND	54.3	48.6	89	43.9	88	10	40-140/20
99-09-2	3-Nitroaniline	ND	54.3	28.7	53	27.4	55	5	40-140/20
100-01-6	4-Nitroaniline	ND	54.3	34.7	64	33.2	66	4	40-140/20
98-95-3	Nitrobenzene	ND	54.3	49.4	91	42.0	84	16	40-140/20
62-75-9	n-Nitrosodimethylamine	ND	54.3	31.8	59	26.7	53	17	40-140/20
621-64-7	N-Nitroso-di-n-propylamine	ND	54.3	48.7	90	44.9	90	8	40-140/20
86-30-6	N-Nitrosodiphenylamine	ND	54.3	48.3	89	37.8	76	24* c	40-140/20
110-86-1	Pyridine	ND	54.3	27.4	50	23.3	47	16	40-140/20

CAS No.	Surrogate Recoveries	MS	MSD	MC5173-2	Limits
367-12-4	2-Fluorophenol	51%	46%	45%	15-110%
4165-62-2	Phenol-d5	34%	35%	33%	15-110%
118-79-6	2,4,6-Tribromophenol	79%	68%	68%	15-110%
4165-60-0	Nitrobenzene-d5	90%	84%	84%	30-130%
321-60-8	2-Fluorobiphenyl	81%	73%	73%	30-130%
1718-51-0	Terphenyl-d14	64%	69%	69%	30-130%

- (a) Outside control limits. Blank Spike meets program technical requirements.
- (b) Outside control limits due to possible matrix interference. Refer to Blank Spike.
- (c) High RPD due to possible matrix interference and/or sample non-homogeneity.

6.4.2

6

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5149

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26793-MS	I76199.D	1	11/09/11	KR	11/02/11	OP26793	MSI2795
OP26793-MSD	I76200.D	1	11/09/11	KR	11/02/11	OP26793	MSI2795
MC5134-3	I76203.D	1	11/09/11	KR	11/02/11	OP26793	MSI2795

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC5149-1, MC5149-2

CAS No.	Compound	MC5134-3 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND	50	46.2	92	46.4	93	0	40-140/20
208-96-8	Acenaphthylene	ND	50	38.4	77	38.7	77	1	40-140/20
120-12-7	Anthracene	ND	50	46.5	93	47.6	95	2	40-140/20
56-55-3	Benzo(a)anthracene	ND	50	61.5	123	61.1	122	1	40-140/20
50-32-8	Benzo(a)pyrene	ND	50	50.3	101	50.7	101	1	40-140/20
205-99-2	Benzo(b)fluoranthene	ND	50	58.2	116	59.9	120	3	40-140/20
191-24-2	Benzo(g,h,i)perylene	ND	50	47.7	95	48.5	97	2	40-140/20
207-08-9	Benzo(k)fluoranthene	ND	50	60.0	120	59.4	119	1	40-140/20
218-01-9	Chrysene	ND	50	48.7	97	48.5	97	0	40-140/20
53-70-3	Dibenzo(a,h)anthracene	ND	50	53.5	107	54.6	109	2	40-140/20
206-44-0	Fluoranthene	ND	50	53.8	108	54.7	109	2	40-140/20
86-73-7	Fluorene	ND	50	56.2	112	58.9	118	5	40-140/20
193-39-5	Indeno(1,2,3-cd)pyrene	ND	50	52.6	105	53.4	107	2	40-140/20
90-12-0	1-Methylnaphthalene	0.028	50	43.8	88	43.8	88	0	40-140/20
91-57-6	2-Methylnaphthalene	0.062	50	47.0	94	47.4	95	1	40-140/20
91-20-3	Naphthalene	0.067	50	43.8	87	43.6	87	0	40-140/20
85-01-8	Phenanthrene	ND	50	43.5	87	43.5	87	0	40-140/20
129-00-0	Pyrene	ND	50	51.7	103	51.4	103	1	40-140/20

CAS No.	Surrogate Recoveries	MS	MSD	MC5134-3	Limits
4165-60-0	Nitrobenzene-d5	133%* <sup>a</sup>	133%* <sup>a</sup>	128%	30-130%
321-60-8	2-Fluorobiphenyl	98%	97%	91%	30-130%
1718-51-0	Terphenyl-d14	108%	108%	122%	30-130%

(a) Outside control limits. Individual spike recoveries within acceptance limits.

6.4.3

6

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5149

Account: SHELLWIC Shell Oil

Project: URMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26820-MS	I76300.D	1	11/12/11	PR	11/04/11	OP26820	MSI2799
OP26820-MSD	I76301.D	1	11/12/11	PR	11/04/11	OP26820	MSI2799
MC5212-3	I76302.D	1	11/12/11	PR	11/04/11	OP26820	MSI2799

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC5149-5, MC5149-6, MC5149-7

CAS No.	Compound	MC5212-3 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	0.16	54.3	49.4	91	41.7	83	17	40-140/20
208-96-8	Acenaphthylene	ND	54.3	39.0	72	33.4	67	15	40-140/20
120-12-7	Anthracene	0.11	54.3	47.0	86	40.3	80	15	40-140/20
56-55-3	Benzo(a)anthracene	0.025	54.3	55.6	102	48.9	98	13	40-140/20
50-32-8	Benzo(a)pyrene	ND	54.3	40.7	75	35.3	71	14	40-140/20
205-99-2	Benzo(b)fluoranthene	ND	54.3	49.1	90	42.4	85	15	40-140/20
191-24-2	Benzo(g,h,i)perylene	ND	54.3	46.8	86	41.2	82	13	40-140/20
207-08-9	Benzo(k)fluoranthene	ND	54.3	52.1	96	46.0	92	12	40-140/20
218-01-9	Chrysene	0.036	54.3	46.7	86	41.2	82	13	40-140/20
53-70-3	Dibenzo(a,h)anthracene	ND	54.3	45.2	83	40.1	80	12	40-140/20
206-44-0	Fluoranthene	0.042	54.3	53.5	98	46.5	93	14	40-140/20
86-73-7	Fluorene	0.35	54.3	52.4	96	44.4	88	17	40-140/20
193-39-5	Indeno(1,2,3-cd)pyrene	ND	54.3	44.7	82	39.8	80	12	40-140/20
90-12-0	1-Methylnaphthalene	5.3	54.3	50.9	84	44.6	79	13	40-140/20
91-57-6	2-Methylnaphthalene	3.6	54.3	52.3	90	45.3	83	14	40-140/20
91-20-3	Naphthalene	1.5	54.3	48.5	86	41.8	81	15	40-140/20
85-01-8	Phenanthrene	0.44	54.3	44.8	82	38.7	77	15	40-140/20
129-00-0	Pyrene	0.15	54.3	46.9	86	40.6	81	14	40-140/20

CAS No.	Surrogate Recoveries	MS	MSD	MC5212-3	Limits
4165-60-0	Nitrobenzene-d5	103%	94%	93%	30-130%
321-60-8	2-Fluorobiphenyl	83%	77%	77%	30-130%
1718-51-0	Terphenyl-d14	83%	79%	83%	30-130%

6.4.4



# Semivolatiles Internal Standard Area Summary

Job Number: MC5149  
 Account: SHELLWIC Shell Oil  
 Project: URMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSF2573-CC2572	Injection Date:	11/03/11
Lab File ID:	F53440.D	Injection Time:	12:46
Instrument ID:	GCMSF	Method:	SW846 8270C

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	220498	5.09	710326	6.35	399594	8.74	687890	11.23	648961	16.16	570700	18.67
Upper Limit <sup>a</sup>	440996	5.59	1420652	6.85	799188	9.24	1375780	11.73	1297922	16.66	1141400	19.17
Lower Limit <sup>b</sup>	110249	4.59	355163	5.85	199797	8.24	343945	10.73	324481	15.66	285350	18.17

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP26792-MB	374607	5.09	1214393	6.35	689798	8.74	1149311	11.23	945170	16.16	794359	18.67
OP26792-BS	408061	5.10	1321218	6.36	743869	8.75	1269651	11.24	1051486	16.17	913520	18.67
OP26792-MS	434484	5.10	1349392	6.36	780047	8.75	1278044	11.24	1073022	16.17	918460	18.67
OP26792-MSD	445788 <sup>c</sup>	5.10	1429228 <sup>c</sup>	6.36	808976 <sup>c</sup>	8.75	1331318	11.24	1088320	16.17	934352	18.67
MC5134-4	357012	5.09	1155056	6.35	650949	8.74	1089601	11.23	908947	16.16	766797	18.67
ZZZZZZ	392002	5.10	1268476	6.35	733894	8.74	1191902	11.24	1044721	16.17	864358	18.67
ZZZZZZ	351706	5.10	1128637	6.36	640820	8.74	1042713	11.23	907554	16.16	757249	18.67
ZZZZZZ	398289	5.10	1217188	6.36	682203	8.75	1120371	11.24	980820	16.16	852754	18.67
ZZZZZZ	375374	5.10	1155231	6.36	645317	8.75	1035183	11.24	902176	16.16	774463	18.67
ZZZZZZ	425876	5.10	1313321	6.36	721603	8.75	1123545	11.24	945384	16.16	868026	18.67
ZZZZZZ	401901	5.09	1279795	6.35	710967	8.74	1131418	11.23	963338	16.16	881522	18.67
ZZZZZZ	405202	5.09	1280109	6.35	701252	8.74	1131314	11.23	978801	16.16	855331	18.67
ZZZZZZ	400587	5.09	1269482	6.35	714940	8.74	1162181	11.23	947869	16.16	820269	18.67
ZZZZZZ	364583	5.10	1162727	6.35	657216	8.74	1071265	11.23	929784	16.16	789241	18.67

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.  
 (c) Outside control limits due to possible matrix interference. Confirmed by MS/MSD.

6.5.1  
6

# Semivolatile Internal Standard Area Summary

Job Number: MC5149  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSI2795-CC2789	Injection Date:	11/09/11
Lab File ID:	I76196.D	Injection Time:	18:43
Instrument ID:	GCMSI	Method:	SW846 8270C BY SIM

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	282280	5.44	827844	6.71	554841	9.16	937892	11.67	941252	16.63	920401	19.17
Upper Limit <sup>a</sup>	564560	5.94	1655688	7.21	1109682	9.66	1875784	12.17	1882504	17.13	1840802	19.67
Lower Limit <sup>b</sup>	141140	4.94	413922	6.21	277421	8.66	468946	11.17	470626	16.13	460201	18.67

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP26793-MB	238922	5.44	789704	6.71	457386	9.16	739839	11.67	618884	16.62	514161	19.16
OP26793-BS	265011	5.44	794196	6.72	457641	9.16	783771	11.67	733237	16.63	562913	19.16
OP26793-MS	193512	5.44	601372	6.72	362995	9.16	642203	11.67	650532	16.63	521365	19.16
OP26793-MSD	189186	5.44	597745	6.72	362883	9.16	655549	11.67	677000	16.63	522272	19.16
ZZZZZZ	162348	5.44	510696	6.71	306102	9.16	474771	11.67	471924	16.63	563389	19.16
ZZZZZZ	147720	5.44	512548	6.71	309560	9.16	564170	11.67	536021	16.62	602153	19.16
MC5134-3	190557	5.44	648439	6.71	371954	9.16	610482	11.67	493175	16.62	496349	19.16
ZZZZZZ	194263	5.44	671404	6.72	352770	9.16	602795	11.67	589964	16.62	665215	19.16
ZZZZZZ	207076	5.44	672959	6.71	370761	9.16	665216	11.67	646469	16.63	726965	19.17
ZZZZZZ	221868	5.44	706236	6.71	377547	9.16	626538	11.67	600428	16.62	643471	19.16
ZZZZZZ	204132	5.44	696250	6.71	380548	9.16	622970	11.67	574561	16.62	581718	19.16
ZZZZZZ	190027	5.44	626448	6.71	338469	9.16	550230	11.67	495639	16.62	548278	19.16
ZZZZZZ	211074	5.44	692856	6.71	360317	9.16	558975	11.67	495044	16.62	537260	19.16
ZZZZZZ	225360	5.44	724597	6.71	368173	9.16	546674	11.67	474867	16.62	532186	19.16
ZZZZZZ	196612	5.44	648417	6.71	331127	9.16	516304	11.67	463090 <sup>c</sup>	16.62	558516	19.16
ZZZZZZ	232135	5.44	744478	6.71	360952	9.16	510063	11.67	438982 <sup>c</sup>	16.62	514381	19.16
ZZZZZZ	185876	5.44	617013	6.71	317695	9.15	522400	11.67	518396	16.62	633976	19.16
ZZZZZZ	199492	5.44	663581	6.71	340976	9.16	545892	11.67	518773	16.62	604916	19.16
ZZZZZZ	227091	5.44	742137	6.71	377896	9.16	585560	11.67	533858	16.62	605298	19.16

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.  
 (c) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

6.5.2  
6

# Semivolatile Internal Standard Area Summary

Job Number: MC5149  
 Account: SHELLWIC Shell Oil  
 Project: URMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSI2800-CC2801	Injection Date:	11/12/11
Lab File ID:	I76286A.D	Injection Time:	12:24
Instrument ID:	GCMSI	Method:	SW846 8270C BY SIM

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	673703	5.43	1954117	6.70	1226238	9.14	2013526	11.66	2444872	16.61	2349605	19.14
Upper Limit <sup>a</sup>	1347406	5.93	3908234	7.20	2452476	9.64	4027052	12.16	4889744	17.11	4699210	19.64
Lower Limit <sup>b</sup>	336852	4.93	977059	6.20	613119	8.64	1006763	11.16	1222436	16.11	1174803	18.64

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
ZZZZZZ	605715	5.43	1803891	6.70	1139064	9.14	1899745	11.64	2095231	16.60	1967371	19.14
ZZZZZZ	570125	5.43	1755962	6.70	1076004	9.14	1818258	11.64	2032599	16.60	1855359	19.14
MC5149-1	533512	5.43	1621571	6.70	1016756	9.14	1730158	11.64	1831709	16.60	1572072	19.14
MC5149-2	535986	5.43	1634847	6.70	1013446	9.14	1689351	11.64	1872791	16.60	1518289	19.13
OP26852-MB	451470	5.43	1406986	6.70	852861	9.13	1448320	11.64	1540038	16.60	1555239	19.14
OP26852-BS	515554	5.43	1550677	6.70	948796	9.14	1562560	11.66	1806267	16.61	1763375	19.14
OP26852-MS	468379	5.43	1425761	6.70	862407	9.14	1419340	11.66	1670806	16.61	1653097	19.14
OP26852-MSD	413424	5.43	1282118	6.70	768865	9.14	1287450	11.66	1536248	16.61	1514822	19.14
MC5256-2	365588	5.43	1177453	6.70	694433	9.13	1189732	11.64	1238716	16.60	1250940	19.13
ZZZZZZ	344749	5.42	1118717	6.70	665789	9.13	1138051	11.64	1187336*	16.60	1198642	19.13
OP26820-MB	531794	5.43	1623164	6.70	1021037	9.14	1652696	11.64	1856292	16.60	1818840	19.14
OP26820-BS	542246	5.43	1619519	6.70	1007074	9.14	1602069	11.66	1890060	16.61	1784299	19.14
OP26820-BSD	452447	5.43	1399129	6.70	861749	9.14	1399895	11.66	1679001	16.61	1561264	19.14
OP26820-MS	408017	5.43	1263444	6.70	778236	9.14	1326184	11.66	1512843	16.61	1407383	19.14
OP26820-MSD	409718	5.43	1268523	6.70	774269	9.14	1295420	11.66	1480542	16.61	1414653	19.14
MC5212-3	366939	5.43	1205885	6.70	741830	9.14	1269338	11.64	1429405	16.60	1413162	19.14

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.5.3  
6

# Semivolatile Internal Standard Area Summary

Job Number: MC5149  
 Account: SHELLWIC Shell Oil  
 Project: URMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSI2799-CC2789	Injection Date:	11/12/11
Lab File ID:	I76286.D	Injection Time:	12:24
Instrument ID:	GCMSI	Method:	SW846 8270C BY SIM

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	673843	5.43	1932459	6.70	1226238	9.14	1986760	11.66	2444872	16.61	2333103	19.14
Upper Limit <sup>a</sup>	1347686	5.93	3864918	7.20	2452476	9.64	3973520	12.16	4889744	17.11	4666206	19.64
Lower Limit <sup>b</sup>	336922	4.93	966230	6.20	613119	8.64	993380	11.16	1222436	16.11	1166552	18.64

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
ZZZZZZ	605715	5.43	1803891	6.70	1139064	9.14	1899745	11.64	2095231	16.60	1967371	19.14
ZZZZZZ	570125	5.43	1755962	6.70	1076004	9.14	1818258	11.64	2032599	16.60	1855359	19.14
MC5149-1	533512	5.43	1621571	6.70	1016756	9.14	1730158	11.64	1831709	16.60	1572072	19.14
MC5149-2	535986	5.43	1634847	6.70	1013446	9.14	1689351	11.64	1872791	16.60	1518289	19.13
OP26852-MB	451470	5.43	1406986	6.70	852861	9.13	1448320	11.64	1540038	16.60	1555239	19.14
OP26852-BS	515554	5.43	1550677	6.70	948796	9.14	1562560	11.66	1806267	16.61	1763375	19.14
OP26852-MS	468379	5.43	1425761	6.70	862407	9.14	1419340	11.66	1670806	16.61	1653097	19.14
OP26852-MSD	413424	5.43	1282118	6.70	768865	9.14	1287450	11.66	1536248	16.61	1514822	19.14
MC5256-2	365588	5.43	1177453	6.70	694433	9.13	1189732	11.64	1238716	16.60	1250940	19.13
ZZZZZZ	344749	5.42	1118717	6.70	665789	9.13	1138051	11.64	1187336*16.60		1198642	19.13
OP26820-MB	531794	5.43	1623164	6.70	1021037	9.14	1652696	11.64	1856292	16.60	1818840	19.14
OP26820-BS	542246	5.43	1619519	6.70	1007074	9.14	1602069	11.66	1890060	16.61	1784299	19.14
OP26820-BSD	452447	5.43	1399129	6.70	861749	9.14	1399895	11.66	1679001	16.61	1561264	19.14
OP26820-MS	408017	5.43	1263444	6.70	778236	9.14	1326184	11.66	1512843	16.61	1407383	19.14
OP26820-MSD	409718	5.43	1268523	6.70	774269	9.14	1295420	11.66	1480542	16.61	1414653	19.14
MC5212-3	366939	5.43	1205885	6.70	741830	9.14	1269338	11.64	1429405	16.60	1413162	19.14

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.5.4  
6

# Semivolatile Internal Standard Area Summary

Job Number: MC5149  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSI2802-CC2797	Injection Date:	11/14/11
Lab File ID:	I76310.D	Injection Time:	07:50
Instrument ID:	GCMSI	Method:	SW846 8270C

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	101852	5.40	352296	6.70	199445	9.14	342352	11.66	477258	16.61	468764	19.14
Upper Limit <sup>a</sup>	203704	5.90	704592	7.20	398890	9.64	684704	12.16	954516	17.11	937528	19.64
Lower Limit <sup>b</sup>	50926	4.90	176148	6.20	99723	8.64	171176	11.16	238629	16.11	234382	18.64

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
ZZZZZZ	123700	5.41	429706	6.70	237489	9.14	419145	11.66	403805	16.60	404146	19.14
ZZZZZZ	116659	5.41	412691	6.70	228660	9.14	395515	11.66	398644	16.60	400207	19.14
ZZZZZZ	105809	5.40	371352	6.70	203175	9.14	364748	11.66	398032	16.60	445782	19.14
ZZZZZZ	113618	5.40	405117	6.70	226384	9.14	402040	11.66	451505	16.60	499042	19.14
ZZZZZZ	117758	5.41	436173	6.70	245128	9.14	448487	11.66	490302	16.60	513942	19.14
ZZZZZZ	124634	5.41	447377	6.70	257326	9.14	460535	11.66	485099	16.60	498001	19.14
ZZZZZZ	125410	5.40	447546	6.70	256871	9.14	465650	11.66	552459	16.60	566028	19.14
MC5149-1	133771	5.40	463504	6.70	271725	9.14	497532	11.66	543648	16.60	450771	19.14
ZZZZZZ	101848	5.40	356426	6.70	199402	9.14	365676	11.66	472525	16.60	560362	19.14
ZZZZZZ	108656	5.40	383584	6.70	220914	9.14	392281	11.66	476014	16.60	530727	19.14
ZZZZZZ	115662	5.40	414822	6.70	235463	9.14	426369	11.65	472994	16.60	491560	19.14
ZZZZZZ	111290	5.40	383494	6.70	216760	9.14	390821	11.65	452811	16.60	474324	19.14

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.5.5  
6



# Semivolatile Internal Standard Area Summary

Job Number: MC5149  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSI2809-ICC2809	Injection Date:	11/14/11
Lab File ID:	I76325A.D	Injection Time:	18:23
Instrument ID:	GCMSI	Method:	SW846 8270C BY SIM

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	162258	5.42	546020	6.70	370483	9.13	693217	11.64	957177	16.61	939614	19.14
Upper Limit <sup>a</sup>	324516	5.92	1092040	7.20	740966	9.63	1386434	12.14	1914354	17.11	1879228	19.64
Lower Limit <sup>b</sup>	81129	4.92	273010	6.20	185242	8.63	346609	11.14	478589	16.11	469807	18.64

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP26919-MB	138803	5.42	468251	6.70	314060	9.13	580449	11.64	690586	16.60	689127	19.13
OP26919-BS	135300	5.43	455350	6.70	299302	9.13	552846	11.64	738683	16.60	781697	19.14
ZZZZZZ	133784	5.42	453572	6.70	298602	9.13	567493	11.64	658092	16.60	674975	19.13
MC5149-5	182971	5.43	638301	6.70	427898	9.14	835317	11.64	1108649	16.61	983859	19.14
MC5149-6	179918	5.43	602130	6.70	405594	9.13	748180	11.64	911731	16.60	890082	19.14
MC5149-7	180430	5.43	603515	6.70	417907	9.13	768643	11.64	912801	16.60	841236	19.14
ZZZZZZ	149263	5.42	506435	6.70	343858	9.13	635839	11.64	771563	16.60	855129	19.13
ZZZZZZ	135021	5.42	466833	6.70	313826	9.13	592151	11.64	737702	16.60	786415	19.13
ZZZZZZ	172145	5.42	582968	6.70	391639	9.13	740005	11.64	912863	16.60	1022277	19.14
ZZZZZZ	159027	5.42	550936	6.70	368597	9.13	692496	11.64	828724	16.60	862191	19.14

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.5.6  


# Semivolatile Internal Standard Area Summary

Job Number: MC5149  
 Account: SHELLWIC Shell Oil  
 Project: URMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSS1251-CC1238	Injection Date:	11/14/11
Lab File ID:	S28779.D	Injection Time:	10:18
Instrument ID:	GCMSS	Method:	SW846 8270C

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	295554	6.31	1067359	7.70	583410	9.91	1041564	12.11	1048017	16.47	991244	18.69
Upper Limit <sup>a</sup>	591108	6.81	2134718	8.20	1166820	10.41	2083128	12.61	2096034	16.97	1982488	19.19
Lower Limit <sup>b</sup>	147777	5.81	533680	7.20	291705	9.41	520782	11.61	524009	15.97	495622	18.19

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
MC5317-1	260685	6.31	947998	7.70	520648	9.91	941914	12.10	839219	16.45	546865	18.69
OP26851-MB	257194	6.31	912517	7.70	504272	9.91	912007	12.10	903852	16.45	862760	18.69
OP26851-BS	280480	6.31	1019894	7.70	558705	9.91	996968	12.11	1016084	16.46	967180	18.69
OP26851-MS	280517	6.32	1014402	7.70	557510	9.91	995022	12.11	1007353	16.46	935277	18.69
OP26851-MSD	271175	6.32	954942	7.70	531827	9.91	954137	12.11	973091	16.46	929749	18.69
MC5256-1	251792	6.31	896773	7.70	497262	9.91	904996	12.10	862567	16.46	839229	18.69
MC5149-5	281697	6.32	1012013	7.70	552850	9.91	1026618	12.11	1040926	16.46	896469	18.69
MC5149-6	286017	6.32	1009638	7.70	554203	9.91	1001136	12.11	968630	16.46	837169	18.69
MC5149-7	312198	6.32	1112111	7.70	616434	9.91	1122587	12.11	1018845	16.46	839456	18.69
OP26918-MB	273385	6.32	973363	7.70	546727	9.91	987997	12.10	960384	16.46	883436	18.69
OP26918-BS	239133	6.32	834974	7.70	461334	9.91	813388	12.11	842349	16.46	767072	18.69
ZZZZZZ	262063	6.32	943557	7.70	524986	9.91	947723	12.10	906701	16.45	837673	18.69
OP26916-MB	262401	6.31	934165	7.70	512734	9.91	926050	12.10	889425	16.46	830759	18.69
OP26916-BS	250200	6.32	894710	7.70	485335	9.91	864488	12.11	896390	16.46	821251	18.69
OP26916-MS	246505	6.32	881484	7.70	481414	9.91	857572	12.11	887957	16.46	809130	18.69
OP26916-MSD	234648	6.32	851819	7.70	463625	9.91	837241	12.11	847417	16.46	776451	18.69
MC5282-10	242359	6.32	845286	7.70	471857	9.91	837617	12.10	783529	16.45	727316	18.69
ZZZZZZ	244252	6.32	850997	7.70	473670	9.91	841023	12.11	786106	16.45	735331	18.69
ZZZZZZ	226760	6.32	828618	7.70	452030	9.91	830058	12.11	820451	16.45	751410	18.69
ZZZZZZ	267020	6.32	973289	7.70	533870	9.91	967280	12.11	961951	16.46	904069	18.69
ZZZZZZ	295434	6.32	1054728	7.70	575087	9.91	1042513	12.11	1034254	16.46	980471	18.69
ZZZZZZ	329319	6.32	1184311	7.70	656811	9.91	1171607	12.11	1163100	16.46	1056165	18.69
ZZZZZZ	319333	6.32	1136659	7.70	622406	9.91	1116460	12.11	1124072	16.46	1023174	18.69
ZZZZZZ	327783	6.32	1174903	7.70	648401	9.91	1175049	12.11	982074	16.46	591024	18.69

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.5.7  
6

# Semivolatile Internal Standard Area Summary

Job Number: MC5149  
 Account: SHELLWIC Shell Oil  
 Project: URMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSS1252-CC1245	Injection Date:	11/14/11
Lab File ID:	S28779A.D	Injection Time:	10:18
Instrument ID:	GCMSS	Method:	SW846 8270C

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	295563	6.31	1067359	7.70	583410	9.91	1041564	12.11	1048017	16.47	991244	18.69
Upper Limit <sup>a</sup>	591126	6.81	2134718	8.20	1166820	10.41	2083128	12.61	2096034	16.97	1982488	19.19
Lower Limit <sup>b</sup>	147782	5.81	533680	7.20	291705	9.41	520782	11.61	524009	15.97	495622	18.19

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
MC5317-1	260685	6.31	947998	7.70	520648	9.91	941914	12.10	839219	16.45	546865	18.69
OP26851-MB	257194	6.31	912517	7.70	504272	9.91	912007	12.10	903852	16.45	862760	18.69
OP26851-BS	280480	6.31	1019894	7.70	558705	9.91	996968	12.11	1016084	16.46	967180	18.69
OP26851-MS	280517	6.32	1014402	7.70	557510	9.91	995022	12.11	1007353	16.46	935277	18.69
OP26851-MSD	271175	6.32	954942	7.70	531827	9.91	954137	12.11	973091	16.46	929749	18.69
MC5256-1	251792	6.31	896773	7.70	497262	9.91	904996	12.10	862567	16.46	839229	18.69
MC5149-5	281697	6.32	1012013	7.70	552850	9.91	1026618	12.11	1040926	16.46	896469	18.69
MC5149-6	286017	6.32	1009638	7.70	554203	9.91	1001136	12.11	968630	16.46	837169	18.69
MC5149-7	312198	6.32	1112111	7.70	616434	9.91	1122587	12.11	1018845	16.46	839456	18.69
OP26918-MB	273385	6.32	973363	7.70	546727	9.91	987997	12.10	960384	16.46	883436	18.69
OP26918-BS	239133	6.32	834974	7.70	461334	9.91	813388	12.11	842349	16.46	767072	18.69
ZZZZZZ	262063	6.32	943557	7.70	524986	9.91	947723	12.10	906701	16.45	837673	18.69
OP26916-MB	262401	6.31	934165	7.70	512734	9.91	926050	12.10	889425	16.46	830759	18.69
OP26916-BS	250200	6.32	894710	7.70	485335	9.91	864488	12.11	896390	16.46	821251	18.69
OP26916-MS	246505	6.32	881484	7.70	481414	9.91	857572	12.11	887957	16.46	809130	18.69
OP26916-MSD	234648	6.32	851819	7.70	463625	9.91	837241	12.11	847417	16.46	776451	18.69
MC5282-10	242359	6.32	845286	7.70	471857	9.91	837617	12.10	783529	16.45	727316	18.69
ZZZZZZ	244252	6.32	850997	7.70	473670	9.91	841023	12.11	786106	16.45	735331	18.69
ZZZZZZ	226760	6.32	828618	7.70	452030	9.91	830058	12.11	820451	16.45	751410	18.69
ZZZZZZ	267020	6.32	973289	7.70	533870	9.91	967280	12.11	961951	16.46	904069	18.69
ZZZZZZ	295434	6.32	1054728	7.70	575087	9.91	1042513	12.11	1034254	16.46	980471	18.69
ZZZZZZ	329319	6.32	1184311	7.70	656811	9.91	1171607	12.11	1163100	16.46	1056165	18.69
ZZZZZZ	319333	6.32	1136659	7.70	622406	9.91	1116460	12.11	1124072	16.46	1023174	18.69
ZZZZZZ	327783	6.32	1174903	7.70	648401	9.91	1175049	12.11	982074	16.46	591024	18.69

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.5.8  
6

# Semivolatile Internal Standard Area Summary

Job Number: MC5149  
 Account: SHELLWIC Shell Oil  
 Project: URMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSU199-CC194	Injection Date:	11/07/11
Lab File ID:	U3289.D	Injection Time:	16:47
Instrument ID:	GCMSU	Method:	SW846 8270C

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	74469	5.46	273090	6.76	141883	9.21	246311	11.73	267496	16.69	285789	19.22
Upper Limit <sup>a</sup>	148938	5.96	546180	7.26	283766	9.71	492622	12.23	534992	17.19	571578	19.72
Lower Limit <sup>b</sup>	37235	4.96	136545	6.26	70942	8.71	123156	11.23	133748	16.19	142895	18.72

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP26819-MB	82580	5.46	297331	6.76	150201	9.21	255178	11.73	257097	16.69	271804	19.22
OP26819-BS	90202	5.46	325462	6.76	168038	9.21	286627	11.73	282909	16.69	279746	19.22

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.5.9



# Semivolatile Internal Standard Area Summary

Job Number: MC5149  
 Account: SHELLWIC Shell Oil  
 Project: URMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSU200-CC194	Injection Date:	11/08/11
Lab File ID:	U3293.D	Injection Time:	07:32
Instrument ID:	GCMSU	Method:	SW846 8270C

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	69498	5.45	253046	6.76	128401	9.21	225385	11.73	246943	16.69	276612	19.22
Upper Limit <sup>a</sup>	138996	5.95	506092	7.26	256802	9.71	450770	12.23	493886	17.19	553224	19.72
Lower Limit <sup>b</sup>	34749	4.95	126523	6.26	64201	8.71	112693	11.23	123472	16.19	138306	18.72

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP26819-BSD	89083	5.46	317592	6.76	163841	9.21	283893	11.73	289580	16.69	282808	19.22
ZZZZZZ	85587	5.46	309780	6.76	160864	9.21	279651	11.73	264742	16.68	287330	19.22
ZZZZZZ	83445	5.46	307410	6.76	155428	9.21	268828	11.73	261265	16.68	281349	19.22
ZZZZZZ	98342	5.46	357483	6.76	181377	9.21	299074	11.73	277899	16.68	227455	19.22
ZZZZZZ	92159	5.46	333051	6.76	164588	9.21	276704	11.73	260257	16.68	214264	19.22
ZZZZZZ	97383	5.46	352271	6.76	176553	9.21	295172	11.73	267133	16.68	234319	19.22
ZZZZZZ	93700	5.46	334557	6.76	169426	9.21	285512	11.73	252417	16.68	226743	19.22
ZZZZZZ	96510	5.46	352800	6.76	178872	9.21	308182	11.73	286484	16.68	297730	19.22
ZZZZZZ	93772	5.46	349392	6.76	173332	9.21	294935	11.73	287132	16.68	294321	19.22
ZZZZZZ	90531	5.46	335960	6.76	174635	9.21	293160	11.73	271861	16.69	282019	19.22
ZZZZZZ	114477	5.46	419823	6.76	214122	9.21	373078	11.73	337221	16.68	340329	19.22

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.5.10  
6

# Semivolatile Internal Standard Area Summary

Job Number: MC5149  
 Account: SHELLWIC Shell Oil  
 Project: URMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSU203-CC202	Injection Date:	11/14/11
Lab File ID:	U3346.D	Injection Time:	07:30
Instrument ID:	GCMSU	Method:	SW846 8270C

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	123811	5.50	469007	6.81	239259	9.26	409923	11.79	441718	16.74	507800	19.28
Upper Limit <sup>a</sup>	247622	6.00	938014	7.31	478518	9.76	819846	12.29	883436	17.24	1015600	19.78
Lower Limit <sup>b</sup>	61906	5.00	234504	6.31	119630	8.76	204962	11.29	220859	16.24	253900	18.78

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP26819-MS	178313	5.50	586625	6.81	257837	9.26	376725	11.79	508317	16.74	664735	19.28
OP26819-MSD	150345	5.50	531196	6.81	257521	9.26	443067	11.78	553611	16.74	645205	19.28
MC5173-2	165935	5.50	608615	6.80	304644	9.26	521836	11.78	656173	16.74	721337	19.28
ZZZZZZ	140862	5.50	481091	6.80	225126	9.26	391507	11.78	548978	16.74	640477	19.28
ZZZZZZ	145480	5.50	539410	6.80	268961	9.26	460906	11.78	553263	16.74	622244	19.28
ZZZZZZ	160955	5.50	569718	6.80	289925	9.26	511364	11.78	631426	16.74	734290	19.28
ZZZZZZ	145734	5.50	490260	6.80	222148	9.26	389317	11.79	586081	16.74	664852	19.28
ZZZZZZ	132303	5.50	478308	6.81	239636	9.26	412661	11.78	520966	16.74	572881	19.28
ZZZZZZ	128807	5.50	480196	6.80	239519	9.26	412794	11.78	501837	16.74	578140	19.28
ZZZZZZ	171435	5.50	589749	6.80	271195	9.26	400920	11.78	547857	16.74	593975	19.28

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.5.11



# Semivolatile Internal Standard Area Summary

Job Number: MC5149  
 Account: SHELLWIC Shell Oil  
 Project: URMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSU205-CC202	Injection Date:	11/15/11
Lab File ID:	U3383.D	Injection Time:	08:01
Instrument ID:	GCMSU	Method:	SW846 8270C

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	156907	5.49	577947	6.80	270289	9.25	416657	11.78	462366	16.73	479648	19.26
Upper Limit <sup>a</sup>	313814	5.99	1155894	7.30	540578	9.75	833314	12.28	924732	17.23	959296	19.76
Lower Limit <sup>b</sup>	78454	4.99	288974	6.30	135145	8.75	208329	11.28	231183	16.23	239824	18.76

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
ZZZZZZ	130923	5.49	465877	6.80	207167	9.25	289913	11.77	288398	16.72	386304	19.26
ZZZZZZ	191721	5.49	663656	6.80	253714	9.25	309536	11.77	289157	16.72	413569	19.26
ZZZZZZ	174071	5.49	599689	6.80	226842	9.25	278980	11.77	312716	16.72	409419	19.26
ZZZZZZ	225785	5.49	726952	6.80	240896	9.25	278993	11.77	365486	16.73	412108	19.27
ZZZZZZ	120722	5.49	424783	6.80	192195	9.25	278270	11.77	329333	16.72	426994	19.26
ZZZZZZ	145687	5.49	508002	6.80	221479	9.25	288304	11.77	314099	16.72	441172	19.26
ZZZZZZ	135144	5.49	478927	6.80	212382	9.25	314483	11.77	413245	16.73	514972	19.26
MC5149-2	178787	5.49	649400	6.80	290448	9.25	410957	11.77	517642	16.73	504924	19.26
ZZZZZZ	133893	5.49	488141	6.80	223327	9.25	341269	11.77	435033	16.73	537815	19.26
ZZZZZZ	159085	5.49	559865	6.80	245662	9.25	345686	11.77	408920	16.73	554235	19.26
ZZZZZZ	163115	5.49	573531	6.80	237735	9.25	323263	11.77	467851	16.73	529441	19.26
ZZZZZZ	182466	5.49	637251	6.80	283944	9.25	384260	11.77	434287	16.73	557865	19.26

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.5.12  
6

# Semivolatile Surrogate Recovery Summary

Job Number: MC5149

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Method: SW846 8270C

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4	S5	S6
MC5149-1	I76318.D	36.0	25.0	61.0	62.0	61.0	78.0
MC5149-2	U3391.D	34.0	22.0	61.0	70.0	66.0	59.0
MC5149-5	S28787.D	40.0	26.0	69.0	90.0	79.0	88.0
MC5149-6	S28788.D	44.0	29.0	77.0	78.0	79.0	92.0
MC5149-7	S28789.D	42.0	29.0	63.0	82.0	80.0	97.0
OP26792-BS	F53442.D	55.0	38.0	88.0	91.0	89.0	97.0
OP26792-MB	F53441.D	57.0	38.0	88.0	94.0	92.0	104.0
OP26792-MS	F53443.D	56.0	40.0	100.0	94.0	91.0	100.0
OP26792-MSD	F53444.D	57.0	40.0	96.0	94.0	93.0	103.0
OP26819-BS	U3291.D	62.0	40.0	105.0	90.0	92.0	100.0
OP26819-BSD	U3294.D	57.0	37.0	101.0	87.0	89.0	96.0
OP26819-MB	U3290.D	55.0	34.0	105.0	87.0	90.0	99.0
OP26819-MS	U3348.D	51.0	34.0	79.0	90.0	81.0	64.0
OP26819-MSD	U3349.D	46.0	35.0	68.0	84.0	73.0	69.0

**Surrogate Compounds**                      **Recovery Limits**

S1 = 2-Fluorophenol	15-110%
S2 = Phenol-d5	15-110%
S3 = 2,4,6-Tribromophenol	15-110%
S4 = Nitrobenzene-d5	30-130%
S5 = 2-Fluorobiphenyl	30-130%
S6 = Terphenyl-d14	30-130%

6.6.1

6



# Semivolatile Surrogate Recovery Summary

Job Number: MC5149

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Method: SW846 8270C BY SIM

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
MC5149-1	I76289.D	82.0	65.0	80.0
MC5149-2	I76290.D	88.0	65.0	75.0
MC5149-5	I76340.D	91.0	84.0	92.0
MC5149-6	I76341.D	87.0	81.0	98.0
MC5149-7	I76342.D	90.0	82.0	101.0
OP26793-BS	I76198.D	124.0	96.0	108.0
OP26793-MB	I76197.D	129.0	99.0	124.0
OP26793-MS	I76199.D	133.0* a	98.0	108.0
OP26793-MSD	I76200.D	133.0* a	97.0	108.0
OP26820-BS	I76298.D	117.0	89.0	99.0
OP26820-BSD	I76299.D	111.0	89.0	95.0
OP26820-MB	I76297.D	113.0	89.0	104.0
OP26820-MS	I76300.D	103.0	83.0	83.0
OP26820-MSD	I76301.D	94.0	77.0	79.0

Surrogate Compounds                      Recovery Limits

S1 = Nitrobenzene-d5                      30-130%  
 S2 = 2-Fluorobiphenyl                      30-130%  
 S3 = Terphenyl-d14                      30-130%

(a) Outside control limits. Individual spike recoveries within acceptance limits.

6.6.2

6

## GC Volatiles

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## QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary

Job Number: MC5149

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26812-MB	BB39324A.D1		11/04/11	AP	11/03/11	OP26812	GBB2447

The QC reported here applies to the following samples:

Method: SW846 8011

MC5149-1, MC5149-2, MC5149-4, MC5149-5, MC5149-6

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

CAS No.	Surrogate Recoveries		Limits
460-00-4	Bromofluorobenzene (S)	116%	36-173%
460-00-4	Bromofluorobenzene (S)	133%	36-173%

7.1.1



# Method Blank Summary

Job Number: MC5149

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26934-MB	BB39458.D	1	11/15/11	AP	11/14/11	OP26934	GBB2454

The QC reported here applies to the following samples:

Method: SW846 8011

MC5149-7

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

CAS No.	Surrogate Recoveries		Limits
460-00-4	Bromofluorobenzene (S)	104%	36-173%
460-00-4	Bromofluorobenzene (S)	106%	36-173%

7.1.2

7

# Blank Spike Summary

Job Number: MC5149

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26812-BS	BB39325A.D1		11/04/11	AP	11/03/11	OP26812	GBB2447

The QC reported here applies to the following samples:

Method: SW846 8011

MC5149-1, MC5149-2, MC5149-4, MC5149-5, MC5149-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
96-12-8	1,2-Dibromo-3-chloropropane	0.071	0.080	113	60-140
106-93-4	1,2-Dibromoethane	0.071	0.076	107	60-140

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	Bromofluorobenzene (S)	127%	36-173%
460-00-4	Bromofluorobenzene (S)	143%	36-173%

7.2.1

7

# Blank Spike Summary

Job Number: MC5149

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26934-BS	BB39459.D	1	11/15/11	AP	11/14/11	OP26934	GBB2454

The QC reported here applies to the following samples:

Method: SW846 8011

MC5149-7

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
96-12-8	1,2-Dibromo-3-chloropropane	0.071	0.081	114	60-140
106-93-4	1,2-Dibromoethane	0.071	0.069	97	60-140

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	Bromofluorobenzene (S)	96%	36-173%
460-00-4	Bromofluorobenzene (S)	116%	36-173%

7.2.2

7

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5149

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26812-MS	BB39327.D	1	11/04/11	AP	11/03/11	OP26812	GBB2447
OP26812-MSD	BB39328.D	1	11/04/11	AP	11/03/11	OP26812	GBB2447
MC5212-4	BB39329.D	1	11/04/11	AP	11/03/11	OP26812	GBB2447

The QC reported here applies to the following samples:

Method: SW846 8011

MC5149-1, MC5149-2, MC5149-4, MC5149-5, MC5149-6

CAS No.	Compound	MC5212-4 ug/l	Spike Q	ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.071	0.085	120	0.085	120	0	64-141/29	
106-93-4	1,2-Dibromoethane	ND	0.071	0.080	113	0.079	111	1	63-163/27	

CAS No.	Surrogate Recoveries	MS	MSD	MC5212-4	Limits
460-00-4	Bromofluorobenzene (S)	127%	127%	128%	36-173%
460-00-4	Bromofluorobenzene (S)	142%	148%	161%	36-173%

7.3.1

7

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5149

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26934-MS	BB39461.D	1	11/15/11	AP	11/14/11	OP26934	GBB2454
OP26934-MSD	BB39462.D	1	11/15/11	AP	11/14/11	OP26934	GBB2454
MC5220-1	BB39463.D	1	11/15/11	AP	11/14/11	OP26934	GBB2454

The QC reported here applies to the following samples:

Method: SW846 8011

MC5149-7

CAS No.	Compound	MC5220-1 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.071	0.078	110	0.064	90	20	64-141/29
106-93-4	1,2-Dibromoethane	ND	0.071	0.065	92	0.055	77	17	63-163/27

CAS No.	Surrogate Recoveries	MS	MSD	MC5220-1	Limits
460-00-4	Bromofluorobenzene (S)	101%	76%	64%	36-173%
460-00-4	Bromofluorobenzene (S)	133%	94%	87%	36-173%

7.3.2  
7



# Volatile Surrogate Recovery Summary

Job Number: MC5149

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Method: SW846 8011	Matrix: AQ
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Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 <sup>a</sup>	S1 <sup>b</sup>
MC5149-1	BB39333.D	129.0	161.0
MC5149-2	BB39335.D	127.0	128.0
MC5149-4	BB39336.D	135.0	151.0
MC5149-5	BB39337.D	143.0	145.0
MC5149-6	BB39338.D	121.0	151.0
MC5149-7	BB39460.D	66.0	84.0
OP26812-BS	BB39325A.D	127.0	143.0
OP26812-MB	BB39324A.D	116.0	133.0
OP26812-MS	BB39327.D	127.0	142.0
OP26812-MSD	BB39328.D	127.0	148.0
OP26934-BS	BB39459.D	96.0	116.0
OP26934-MB	BB39458.D	104.0	106.0
OP26934-MS	BB39461.D	101.0	133.0
OP26934-MSD	BB39462.D	76.0	94.0

Surrogate Compounds                      Recovery Limits

S1 = Bromofluorobenzene (S)              36-173%

- (a) Recovery from GC signal #1
- (b) Recovery from GC signal #2

7.4.1  
7

# GC Surrogate Retention Time Summary

Job Number: MC5149  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	GBB2454-ICC2454	Injection Date:	11/15/11
Lab File ID:	BB39452.D	Injection Time:	13:49
Instrument ID:	GCBB	Method:	SW846 8011

S1<sup>a</sup>    S1<sup>b</sup>  
 RT      RT

Check Std	3.94	3.88
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Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
ZZZZZZ	BB39457.D	11/15/11	15:58	3.93	3.87
ZZZZZZ	BB39457A.D	11/15/11	15:58	3.93	3.87
OP26934-MB	BB39458.D	11/15/11	16:23	3.93	3.87
OP26934-BS	BB39459.D	11/15/11	16:49	3.93	3.87
MC5149-7	BB39460.D	11/15/11	17:14	3.93	3.87
OP26934-MS	BB39461.D	11/15/11	17:39	3.93	3.87
OP26934-MSD	BB39462.D	11/15/11	18:04	3.93	3.87
MC5220-1	BB39463.D	11/15/11	18:30	3.93	3.87
ZZZZZZ	BB39464.D	11/15/11	18:54	3.93	3.87
ZZZZZZ	BB39465.D	11/15/11	19:19	3.93	3.87
ZZZZZZ	BB39466.D	11/15/11	19:45	3.92	3.86

Surrogate  
 Compounds

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #1

(b) Retention time from GC signal #2

7.5.1  
**7**

# GC Surrogate Retention Time Summary

Job Number: MC5149  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	GBB2447-CC2445	Injection Date:	11/04/11
Lab File ID:	BB39323.D	Injection Time:	15:44
Instrument ID:	GCBB	Method:	SW846 8011

	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
Check Std	3.97	3.91

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
OP26811-MB	BB39324.D	11/04/11	16:07	3.98	3.92
OP26812-MB	BB39324A.D	11/04/11	16:07	3.98	3.92
OP26811-BS	BB39325.D	11/04/11	16:29	3.98	3.91
OP26812-BS	BB39325A.D	11/04/11	16:29	3.98	3.91
OP26811-BSD	BB39326.D	11/04/11	16:51	3.98	3.91
OP26812-MS	BB39327.D	11/04/11	17:19	3.98	3.91
OP26812-MSD	BB39328.D	11/04/11	17:42	3.98	3.91
MC5212-4	BB39329.D	11/04/11	18:04	3.98	3.91
ZZZZZZ	BB39330.D	11/04/11	18:26	3.98	3.92
ZZZZZZ	BB39331.D	11/04/11	18:48	3.98	3.92
ZZZZZZ	BB39332.D	11/04/11	19:10	3.98	3.92
MC5149-1	BB39333.D	11/04/11	19:33	3.98	3.92

**Surrogate  
Compounds**

S1 = Bromofluorobenzene (S)

- (a) Retention time from GC signal #1
- (b) Retention time from GC signal #2

7.5.2  
7

# GC Surrogate Retention Time Summary

Job Number: MC5149  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	GBB2447-CC2445	Injection Date:	11/04/11
Lab File ID:	BB39334.D	Injection Time:	19:55
Instrument ID:	GCBB	Method:	SW846 8011

	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
Check Std	3.98	3.91

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
MC5149-2	BB39335.D	11/04/11	20:17	3.98	3.92
MC5149-4	BB39336.D	11/04/11	20:39	3.98	3.92
MC5149-5	BB39337.D	11/04/11	21:01	3.98	3.92
MC5149-6	BB39338.D	11/04/11	21:24	3.98	3.92
ZZZZZ	BB39340.D	11/04/11	22:09	0.00	0.00
ZZZZZ	BB39340A.D	11/04/11	22:09	0.00	0.00
GBB2447-ECC244	BB39341.D	11/04/11	22:32	3.97	3.91

**Surrogate  
Compounds**

S1 = Bromofluorobenzene (S)

- (a) Retention time from GC signal #1
- (b) Retention time from GC signal #2

7.5.3  
7

# Roxana Groundwater Quarterly – 4<sup>th</sup> Quarter 2011 Data Review

Laboratory SDG: MC5220

Data Reviewer: Melissa Mansker

Peer Reviewer: Elizabeth Kunkel

Date Reviewed: 12/16/2011

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

Sample Identification	Sample Identification
MW-11-ROX-110211	MW-12-ROX-110211
MW-12-ROX-110211-Dup	MW-8-ROX-110211
MW-7-ROX-110211	TB-110211
TB-110211	MW6B-ROX-110311
MW6C-ROX-110311	MW6D-ROX-110311
MW13-ROX-110311	P54-ROX-110311

## 1.0 Data Package Completeness

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

Yes

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

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

Yes, the laboratory case narrative indicated that VOC and SVOC LCS recoveries and RPD recoveries were outside evaluation criteria. VOC and SVOC MS/MSD recoveries and RPD recoveries were outside evaluation criteria. Although not indicated in the laboratory case narrative, SVOCs and PAHs were detected in the method blank. These issues are addressed further in the appropriate sections below.

The cooler receipt form indicated samples in six of six coolers were received by the laboratory at temperatures of 1.2°C, 0.5°C, 1.9°C, 1.8°C, 1.1°C and 0.9°C which are outside the 4°C ± 2°C criteria. Samples were received in good condition; therefore, no qualification of data was required.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

Yes

## 4.0 Blank Contamination

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

Yes

Blank ID	Parameter	Analyte	Concentration/ Amount
OP26866-MB	SVOCs	Butyl benzyl phthalate	0.88 ug/L
OP26888-MB	SVOCs	Butyl benzyl phthalate	0.30 ug/L
OP26888-MB	SVOCs	Di-n-butyl phthalate	0.67 ug/L
OP26888-MB	SVOCs	Diethyl phthalate	0.43 ug/L
OP26874-MB	PAHs	Acenaphthene	0.81 ug/L
OP26874-MB	PAHs	Fluorene	1.6 ug/L
OP26874-MB	PAHs	1-Methylnaphthalene	3.1 ug/L
OP26874-MB	PAHs	2-Methylnaphthalene	4.4 ug/L
OP26874-MB	PAHs	Phenanthrene	1.2 ug/L
OP26874-MB	PAHs	Pyrene	0.52 ug/L

Qualifications due to blank contamination are included in the table below. Analytical data that were reported non-detect or at concentrations greater than five times (5X) the associated blank concentration did not require qualification.

Sample ID	Parameter	Analyte	New Reporting Limit (RL)	Qualification
MW-8-ROX-110211	PAHs	Acenaphthene	0.23 ug/L	<b>U</b>
MW-8-ROX-110211	PAHs	Fluorene	0.32 ug/L	<b>U</b>
MW-8-ROX-110211	PAHs	1-Methylnaphthalene	9.4 ug/L	<b>U</b>
MW-8-ROX-110211	PAHs	2-Methylnaphthalene	11.9 ug/L	<b>U</b>
MW-7-ROX-110211	PAHs	Acenaphthene	0.26 ug/L	<b>U</b>
MW-7-ROX-110211	PAHs	Fluorene	0.28 ug/L	<b>U</b>
MW-7-ROX-110211	PAHs	1-Methylnaphthalene	4.3 ug/L	<b>U</b>
MW-7-ROX-110211	PAHs	2-Methylnaphthalene	5.9 ug/L	<b>U</b>
MW-7-ROX-110211	PAHs	Phenanthrene	0.33 ug/L	<b>U</b>
MW6C-ROX-110311	PAHs	Phenanthrene	0.11 ug/L	<b>U</b>
MW13-ROX-110311	PAHs	Fluorene	0.33 ug/L	<b>U</b>
MW13-ROX-110311	PAHs	1-Methylnaphthalene	0.81 ug/L	<b>U</b>
MW13-ROX-110311	PAHs	2-Methylnaphthalene	0.30 ug/L	<b>U</b>
MW13-ROX-110311	PAHs	Pyrene	0.18 ug/L	<b>U</b>

## 5.0 Laboratory Control Sample

*Were LCS recoveries within evaluation criteria?*

No

LCS/ LCSD ID	Parameter	Analyte	LCS/LCSD Recovery	RPD	LCS/LCSD /RPD Criteria
MSN2144-BS	VOCs	Acetone	<b>133</b>	NA	70-130
MSN2144-BS	VOCs	Acrylonitrile	<b>460</b>	NA	70-130
MSN2144-BS	VOCs	2-Butanone (MEK)	<b>135</b>	NA	70-130

LCS/ LCSD ID	Parameter	Analyte	LCS/LCSD Recovery	RPD	LCS/LCSD /RPD Criteria
MSN2144-BS	VOCs	Carbon tetrachloride	136	NA	70-130
MSN2144-BS	VOCs	trans-1,3- Dichloropropene	133	NA	70-130
MSN2144-BS	VOCs	Methyl Tert Butyl Ether	131	NA	70-130
MSN2145-BS	VOCs	Acetone	156	NA	70-130
MSN2145-BS	VOCs	Acrolein	138	NA	70-130
MSN2145-BS	VOCs	Acrylonitrile	488	NA	70-130
MSN2145-BS	VOCs	2-Butanone (MEK)	150	NA	70-130
MSN2145-BS	VOCs	Carbon tetrachloride	145	NA	70-130
MSN2145-BS	VOCs	Chloromethane	69	NA	70-130
MSN2145-BS	VOCs	Dibromochloromethane	137	NA	70-130
MSN2145-BS	VOCs	2,2-Dichloropropane	143	NA	70-130
MSN2145-BS	VOCs	trans-1,3- Dichloropropene	145	NA	70-130
MSN2145-BS	VOCs	2-Hexanone	148	NA	70-130
MSN2145-BS	VOCs	Methyl Tert Butyl Ether	137	NA	70-130
MSN2145-BS	VOCs	Vinyl chloride	64	NA	70-130
OP26888-BS	SVOCs	Benzoic Acid	29	NA	30-130
OP26888-BS	SVOCs	Aniline	39	NA	40-140
OP26866- BS/BS	SVOCs	2,4-Dimethylphenol	81/28	97	30-130/20
OP26866- BS/BS	SVOCs	Aniline	6/47	155	40-140/20
OP26866- BS/BS	SVOCs	Benzyl Alcohol	70/90	25	40-140/20
OP26866- BS/BS	SVOCs	bis(2-Chloroisopropyl) ether	90/120	28	40-140/20
OP26866- BS/BS	SVOCs	1,2-Diphenylhydrazine	72/102	34	40-140/20
OP26866- BS/BS	SVOCs	3,3'-Dichlorobenzidine	82/44	61	40-140/20
OP26866- BS/BS	SVOCs	Hexachloroethane	62/87	34	40-140/20
OP26866- BS/BS	SVOCs	3-Nitroaniline	79/54	37	40-140/20
OP26866- BS/BS	SVOCs	Nitrobenzene	77/99	25	40-140/20
OP26866- BS/BS	SVOCs	n-Nitrosodimethylamine	42/60	36	40-140/20
OP26866- BS/BS	SVOCs	Pyridine	0/72	200	40-140/20

Analytical data that required qualification based on LCS data are included in the table below. Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification.

LCS samples are not qualified based on RPD alone and LCS recoveries were within acceptance criteria, therefore, did not require qualification.

Sample ID	Parameter	Analyte	Qualification
MW-11-ROX-110211	VOCs	Chloromethane	UJ
MW-11-ROX-110211	VOCs	Methyl Tert Butyl Ether	J
MW-11-ROX-110211	VOCs	Vinyl chloride	UJ
MW-12-ROX-110211	VOCs	Chloromethane	UJ
MW-12-ROX-110211	VOCs	Vinyl chloride	UJ
MW-12-ROX-110211-DUP	VOCs	Chloromethane	UJ
MW-12-ROX-110211-DUP	VOCs	Vinyl chloride	UJ
MW-8-ROX-110211	VOCs	Chloromethane	UJ
MW-8-ROX-110211	VOCs	Methyl Tert Butyl Ether	J
MW-8-ROX-110211	VOCs	Vinyl chloride	UJ
MW-7-ROX-110211	VOCs	Chloromethane	UJ
MW-7-ROX-110211	VOCs	Vinyl chloride	UJ
MW6B-ROX-110311	VOCs	Chloromethane	UJ
MW6B-ROX-110311	VOCs	Methyl Tert Butyl Ether	J
MW6B-ROX-110311	VOCs	Vinyl chloride	UJ
MW6C-ROX-110311	VOCs	Chloromethane	UJ
MW6C-ROX-110311	VOCs	Methyl Tert Butyl Ether	J
MW6C-ROX-110311	VOCs	Vinyl chloride	UJ
MW6D-ROX-110311	VOCs	Chloromethane	UJ
MW6D-ROX-110311	VOCs	Vinyl chloride	UJ
MW13-ROX-110311	VOCs	Chloromethane	UJ
MW13-ROX-110311	VOCs	Methyl Tert Butyl Ether	J
MW13-ROX-110311	VOCs	Vinyl chloride	UJ
P54-ROX-110311	VOCs	Chloromethane	UJ
P54-ROX-110311	VOCs	Vinyl chloride	UJ
MW-11-ROX-110211	SVOCs	2,4-Dimethylphenol	UJ
MW-11-ROX-110211	SVOCs	Aniline	UJ
MW-11-ROX-110211	SVOCs	Pyridine	UJ
MW-12-ROX-110211	SVOCs	2,4-Dimethylphenol	UJ
MW-12-ROX-110211	SVOCs	Aniline	UJ
MW-12-ROX-110211	SVOCs	Pyridine	UJ
MW-12-ROX-110211-DUP	SVOCs	2,4-Dimethylphenol	UJ
MW-12-ROX-110211-DUP	SVOCs	Aniline	UJ
MW-12-ROX-110211-DUP	SVOCs	Pyridine	UJ
MW-8-ROX-110211	SVOCs	2,4-Dimethylphenol	J
MW-8-ROX-110211	SVOCs	Aniline	UJ
MW-8-ROX-110211	SVOCs	Pyridine	UJ



Sample ID	Parameter	Analyte	Qualification
MW-7-ROX-110211	SVOCs	2,4-Dimethylphenol	UJ
MW-7-ROX-110211	SVOCs	Aniline	UJ
MW-7-ROX-110211	SVOCs	Pyridine	UJ
MW6B-ROX-110311	SVOCs	2,4-Dimethylphenol	UJ
MW6B-ROX-110311	SVOCs	Aniline	UJ
MW6B-ROX-110311	SVOCs	Pyridine	UJ
MW6C-ROX-110311	SVOCs	2,4-Dimethylphenol	UJ
MW6C-ROX-110311	SVOCs	Aniline	UJ
MW6C-ROX-110311	SVOCs	Pyridine	UJ
MW6D-ROX-110311	SVOCs	2,4-Dimethylphenol	UJ
MW6D-ROX-110311	SVOCs	Aniline	UJ
MW6D-ROX-110311	SVOCs	Pyridine	UJ
MW13-ROX-110311	SVOCs	2,4-Dimethylphenol	UJ
MW13-ROX-110311	SVOCs	Aniline	UJ
MW13-ROX-110311	SVOCs	Pyridine	UJ
P54-ROX-110311	SVOCs	Benzoic Acid	UJ
P54-ROX-110311	SVOCs	Aniline	UJ

## 6.0 Surrogate Recoveries

*Were surrogate recoveries within evaluation criteria?*

Yes

## 7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

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

Yes, sample MW-11-ROX-110211 was spiked and analyzed for VOCs, SVOCs, PAHs, and 8011 VOCs.

*Were MS/MSD recoveries within evaluation criteria?*

No

MS/MSD ID	Parameter	Analyte	MS/MSD Recovery (%)	RPD	MS/MSD/ RPD Criteria
MC5220-1MS/MSD	VOCs	Acetone	57/59	3	70-130/30
MC5220-1MS/MSD	VOCs	Acrylonitrile	498/496	0	70-130/30
MC5220-1MS/MSD	VOCs	Bromomethane	46/66	35	70-130/30
MC5220-1MS/MSD	VOCs	Carbon tetrachloride	135/135	0	70-130/30
MC5220-1MS/MSD	VOCs	Chloromethane	55/59	7	70-130/30

MS/MSD ID	Parameter	Analyte	MS/MSD Recovery (%)	RPD	MS/MSD/ RPD Criteria
MC5220-1MS/MSD	VOCs	Dibromochloromethane	131/134	2	70-130/30
MC5220-1MS/MSD	VOCs	2,2-Dichloropropane	145/141	3	70-130/30
MC5220-1MS/MSD	VOCs	trans-1,3-Dichloropropene	141/143	2	70-130/30
MC5220-1MS/MSD	VOCs	Vinyl chloride	58/62	8	70-130/30
OP26866-MS/MSD	SVOCs	2,4-Dimethyphenol	34/82	84	30-130/20
OP26866-MS/MSD	SVOCs	Aniline	44/55	22	40-140/20
OP26866-MS/MSD	SVOCs	4-Chloroaniline	34/49	34	40-140/20
OP26866-MS/MSD	SVOCs	3,3'-Dichlorobenzidine	49/68	33	40-140/20

Analytical results reported as non-detect and associated with MS/MSD recoveries above evaluation criteria, indicating a high bias, did not require qualification. USEPA National Functional Guidelines for Organic Data Review indicates that organic data does not require qualification based on MS/MSD data alone. LCS/LCSD recoveries were within evaluation criteria with the exception of compounds listed and qualified as appropriate in Section 5.0 of this data review. No further qualification of data was required.

## 8.0 Internal Standard (IS) Recoveries

*Were internal standard area recoveries within evaluation criteria?*

Yes

## 9.0 Laboratory Duplicate Results

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

No

## 10.0 Field Duplicate Results

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

Yes

Field ID	Field Duplicate ID
MW-12-ROX-110211	MW-12-ROX-110211-DUP

*Were field duplicates within evaluation criteria?*

Yes

**11.0 Sample Dilutions**

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

Not applicable; analytes were detected in samples that were diluted.

**12.0 Additional Qualifications**

*Were additional qualifications applied?*

No



12/16/11

**Technical Report for**

---

**Shell Oil**

URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana,

Accutest Job Number: MC5220

Sampling Dates: 11/02/11 - 11/03/11

---

**Report to:**

URS Corporation

Elizabeth\_Kunkel@URSCorp.com

ATTN: Elizabeth Kunkel

Total number of pages in report: 157

Reviewed  
on  
12/16/2011



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

*Reza Fand*  
Reza Fand  
Lab Director

Client Service contact: Jeremy Vienneau 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E8757S) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) ISO 17025-2005 (L2235)  
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### Sample Summary

Shell Oil

Job No: MC5220

URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
MC5220-1	11/02/11	09:35	LRBC 11/04/11	AQ	Ground Water	MW-11-ROX-110211 ✓
MC5220-1D	11/02/11	09:35	LRBC 11/04/11	AQ	Water Dup/MSD	MW-11-ROX-110211
MC5220-1S	11/02/11	09:35	LRBC 11/04/11	AQ	Water Matrix Spike	MW-11-ROX-110211
MC5220-2	11/02/11	11:55	LRBC 11/04/11	AQ	Ground Water	MW-12-ROX-110211 ✓
MC5220-3	11/02/11	11:55	LRBC 11/04/11	AQ	Ground Water	MW-12-ROX-110211-DUP ✓
MC5220-4	11/02/11	16:20	LRBC 11/04/11	AQ	Ground Water	MW-8-ROX-110211 ✓
MC5220-5	11/02/11	15:15	LRBC 11/04/11	AQ	Ground Water	MW-7-ROX-110211 ✓
MC5220-6	11/02/11	00:00	LRBC 11/04/11	AQ	Trip Blank Water	TB-110211 ✓
MC5220-7	11/02/11	00:00	LRBC 11/04/11	AQ	Trip Blank Water	TB-110211 ✓
MC5220-8	11/03/11	09:01	LRBC 11/04/11	AQ	Ground Water	MW6B-ROX-110311 ✓
MC5220-9	11/03/11	10:25	LRBC 11/04/11	AQ	Ground Water	MW6C-ROX-110311 ✓
MC5220-10	11/03/11	11:04	LRBC 11/04/11	AQ	Ground Water	MW6D-ROX-110311 ✓
MC5220-11	11/03/11	15:06	LRBC 11/04/11	AQ	Ground Water	MW13-ROX-110311 ✓



### Sample Summary (continued)

Shell Oil

Job No: MC5220

URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample Number	Collected Date	Time By	Received	Matrix Code Type	Client Sample ID
MC5220-12	11/03/11	16:17	LRBC 11/04/11	AQ Ground Water	P54-ROX-110311 ✓

**SAMPLE DELIVERY GROUP CASE NARRATIVE**

Client: Shell Oil Job No MC5220  
 Site: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Report Date 11/23/2011 12:33:02 PM

10 Sample(s), 1 Trip Blank(s) were collected on between 11/02/2011 and 11/03/2011 and were received at Accutest on 11/04/2011 properly preserved, at 0.9 Deg. C and intact. These Samples received an Accutest job number of MC5220. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report. 1-Chlorohexane, Benzenethiol, Dibenz(a,h)acridine, Indene, and Quinoline were searched in the library search and reported only if detections were found.

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

**Volatiles by GCMS By Method SW846 8260B**

Matrix AQ	Batch ID: MSN2144
-----------	-------------------

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC5203-22MS, MC5203-22MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for 2-Butanone (MEK), Acetone, Carbon tetrachloride, Methyl Tert Butyl Ether, trans-1,3-Dichloropropene are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for Acetone, Bromomethane, Carbon tetrachloride, Dibromochloromethane, Methyl Tert Butyl Ether, trans-1,3-Dichloropropene are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for Acetone, Carbon tetrachloride, Dibromochloromethane, Methyl Tert Butyl Ether, trans-1,3-Dichloropropene are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- MSN2144-BS/MS/MSD for Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.

Matrix AQ	Batch ID: MSN2145
-----------	-------------------

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC5220-1MS, MC5220-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for 2,2-Dichloropropane, 2-Butanone (MEK), 2-Hexanone, Acetone, Acrolein, Carbon tetrachloride, Chloromethane, Dibromochloromethane, Methyl Tert Butyl Ether, trans-1,3-Dichloropropene, Vinyl chloride are outside control limits. Blank Spike meets program technical requirements.
- MS/MSD Recovery(s) for 2,2-Dichloropropane, Acetone, Bromomethane, Carbon tetrachloride, Chloromethane, Dibromochloromethane, trans-1,3-Dichloropropene, Vinyl chloride are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- RPD(s) for MSD for Bromomethane are outside control limits for sample MC5220-1MSD. High RPD due to possible matrix interference and/or sample non-homogeneity.
- MSN2145-BS/MS/MSD for Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.



### Extractables by GCMS By Method SW846 8270C

<b>Matrix</b> AQ	<b>Batch ID:</b> OP26866
------------------	--------------------------

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC5220-1MS, MC5220-1MSD were used as the QC samples indicated.
- Blank Spike Recovery(s) for Aniline, Pyridine are outside control limits. Refer to Blank Spike Duplicate.
- Matrix Spike Recovery(s) for 4-Chloroaniline are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- RPD(s) for MSD for 2,4-Dimethylphenol, 3,3'-Dichlorobenzidine, 4-Chloroaniline, Aniline are outside control limits for sample OP26866-MSD. High RPD due to possible matrix interference and/or sample non-homogeneity.
- RPD of OP26866-BSD for Aniline, Benzyl Alcohol, 3-Nitroaniline, Pyridine, Nitrobenzene, 3,3'-Dichlorobenzidine, n-Nitrosodimethylamine, bis(2-Chloroisopropyl)ether, 2,4-Dimethylphenol, Hexachloroethane, 1,2-Diphenylhydrazine: Outside control limits. Associated samples are non-detect for this compound.
- OP26866-BSD for 2,4-Dimethylphenol: Outside control limits. Blank Spike meets program technical requirements.

<b>Matrix</b> AQ	<b>Batch ID:</b> OP26888
------------------	--------------------------

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC5235-4MS, MC5235-4MSD were used as the QC samples indicated.
- Blank Spike Recovery(s) for Aniline, Benzoic Acid are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for Hexachlorocyclopentadiene are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for Benzoic Acid, Hexachlorocyclopentadiene are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- OP26888-MS/MSD for Aniline: Outside control limits. Blank Spike meets program technical requirements.

### Extractables by GCMS By Method SW846 8270C BY SIM

<b>Matrix</b> AQ	<b>Batch ID:</b> OP26874
------------------	--------------------------

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC5220-1MS, MC5220-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

<b>Matrix</b> AQ	<b>Batch ID:</b> OP26889
------------------	--------------------------

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC5219-1MS, MC5219-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

### Volatiles by GC By Method SW846 8011

<b>Matrix</b> AQ	<b>Batch ID:</b> OP26934
------------------	--------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC5220-1MS, MC5220-1MSD were used as the QC samples indicated.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety. The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC5220).



Sample Results

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Report of Analysis

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## Report of Analysis

Client Sample ID:	MW-11-ROX-110211	Date Sampled:	11/02/11
Lab Sample ID:	MC5220-1	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N57263.D	1	11/14/11	JP	n/a	n/a	MSN2145
Run #2							

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

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	1.9	0.50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	UJ
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis



Client Sample ID:	MW-11-ROX-110211	Date Sampled:	11/02/11
Lab Sample ID:	MC5220-1	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	3.0	1.0	ug/l	J
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	UJ
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis



<b>Client Sample ID:</b> MW-11-ROX-110211		<b>Date Sampled:</b> 11/02/11
<b>Lab Sample ID:</b> MC5220-1		<b>Date Received:</b> 11/04/11
<b>Matrix:</b> AQ - Ground Water		<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8260B		
<b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

**VOA Special List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		70-130%
2037-26-5	Toluene-D8	94%		70-130%
460-00-4	4-Bromofluorobenzene	86%		70-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID:	MW-11-ROX-110211	Date Sampled:	11/02/11
Lab Sample ID:	MC5220-1	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U3363.D	1	11/14/11	KR	11/08/11	OP26866	MSU204
Run #2							

Run #	Initial Volume	Final Volume
Run #1	930 ml	1.0 ml
Run #2		

## ABN Special List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	11	ug/l	
95-57-8	2-Chlorophenol	ND	5.4	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	11	ug/l	
120-83-2	2,4-Dichlorophenol	ND	11	ug/l	
105-67-9	2,4-Dimethylphenol	ND	11	ug/l	UJ
51-28-5	2,4-Dinitrophenol	ND	22	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	11	ug/l	
95-48-7	2-Methylphenol	ND	11	ug/l	
	3&4-Methylphenol	ND	11	ug/l	
88-75-5	2-Nitrophenol	ND	11	ug/l	
100-02-7	4-Nitrophenol	ND	22	ug/l	
87-86-5	Pentachlorophenol	ND	11	ug/l	
108-95-2	Phenol	ND	5.4	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	11	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	11	ug/l	
62-53-3	Aniline	ND	11	ug/l	UJ
101-55-3	4-Bromophenyl phenyl ether	ND	5.4	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.4	ug/l	
100-51-6	Benzyl Alcohol	ND	11	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.4	ug/l	
106-47-8	4-Chloroaniline	ND	11	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.4	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.4	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.4	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.4	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.4	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	11	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	11	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.4	ug/l	
132-64-9	Dibenzofuran	ND	5.4	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.4	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.4	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	MW-11-ROX-110211	Date Sampled:	11/02/11
Lab Sample ID:	MC5220-1	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C	Project: URMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

## ABN Special List

CAS No.	Compound	Result	RL	Units	Q
84-66-2	Diethyl phthalate	ND	5.4	ug/l	
131-11-3	Dimethyl phthalate	ND	5.4	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.2	ug/l	
118-74-1	Hexachlorobenzene	ND	5.4	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	11	ug/l	
67-72-1	Hexachloroethane	ND	5.4	ug/l	
78-59-1	Isophorone	ND	5.4	ug/l	
88-74-4	2-Nitroaniline	ND	11	ug/l	
99-09-2	3-Nitroaniline	ND	11	ug/l	
100-01-6	4-Nitroaniline	ND	11	ug/l	
98-95-3	Nitrobenzene	ND	5.4	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.4	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.4	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.4	ug/l	
110-86-1	Pyridine	ND	11	ug/l	UJ

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	66%		15-110%
4165-62-2	Phenol-d5	43%		15-110%
118-79-6	2,4,6-Tribromophenol	95%		15-110%
4165-60-0	Nitrobenzene-d5	105%		30-130%
321-60-8	2-Fluorobiphenyl	94%		30-130%
1718-51-0	Terphenyl-d14	113%		30-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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



Report of Analysis

3.1  
3

Client Sample ID: MW-11-ROX-110211	Date Sampled: 11/02/11
Lab Sample ID: MC5220-1	Date Received: 11/04/11
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8270C BY SIM SW846 3510C	
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I76358.D	1	11/15/11	KR	11/09/11	OP26874	MSI2804
Run #2							

Run #	Initial Volume	Final Volume
Run #1	930 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	0.11	ug/l	
208-96-8	Acenaphthylene	ND	0.11	ug/l	
120-12-7	Anthracene	ND	0.11	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.054	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.11	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.054	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.11	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.11	ug/l	
218-01-9	Chrysene	ND	0.11	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.11	ug/l	
206-44-0	Fluoranthene	ND	0.11	ug/l	
86-73-7	Fluorene	ND	0.11	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.11	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.22	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.22	ug/l	
91-20-3	Naphthalene	ND	0.11	ug/l	
85-01-8	Phenanthrene	ND	0.054	ug/l	
129-00-0	Pyrene	ND	0.11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	97%		30-130%
321-60-8	2-Fluorobiphenyl	90%		30-130%
1718-51-0	Terphenyl-d14	129%		30-130%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

Report of Analysis

3.1  
3

Client Sample ID:	MW-11-ROX-110211	Date Sampled:	11/02/11
Lab Sample ID:	MC5220-1	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8011 SW846 8011	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39463.D	1	11/15/11	AP	11/14/11	OP26934	GBB2454
Run #2							

Run #	Initial Volume	Final Volume
Run #1	35.5 ml	2.0 ml
Run #2		

VOA Special List

CAS No.	Compound	Result	RL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.015	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.015	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits	
460-00-4	Bromofluorobenzene (S)	64%		36-173%	
460-00-4	Bromofluorobenzene (S)	87%		36-173%	

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID:	MW-12-ROX-110211	Date Sampled:	11/02/11
Lab Sample ID:	MC5220-2	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N57266.D	1	11/14/11	JP	n/a	n/a	MSN2145
Run #2							

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

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	1.2	0.50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	uJ
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	MW-12-ROX-110211	Date Sampled:	11/02/11
Lab Sample ID:	MC5220-2	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

## VOA Special List

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

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	MW-12-ROX-110211	Date Sampled:	11/02/11
Lab Sample ID:	MC5220-2	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

**VOA Special List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		70-130%
2037-26-5	Toluene-D8	91%		70-130%
460-00-4	4-Bromofluorobenzene	83%		70-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis



Client Sample ID:	MW-12-ROX-110211	Date Sampled:	11/02/11
Lab Sample ID:	MC5220-2	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	176313.D	1	11/14/11	KR	11/08/11	OP26866	MS12802
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

## ABN Special List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	9.5	ug/l	
95-57-8	2-Chlorophenol	ND	4.8	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	9.5	ug/l	
120-83-2	2,4-Dichlorophenol	ND	9.5	ug/l	
105-67-9	2,4-Dimethylphenol	ND	9.5	ug/l	uJ
51-28-5	2,4-Dinitrophenol	ND	19	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	9.5	ug/l	
95-48-7	2-Methylphenol	ND	9.5	ug/l	
	3&4-Methylphenol	ND	9.5	ug/l	
88-75-5	2-Nitrophenol	ND	9.5	ug/l	
100-02-7	4-Nitrophenol	ND	19	ug/l	
87-86-5	Pentachlorophenol	ND	9.5	ug/l	
108-95-2	Phenol	ND	4.8	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	9.5	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	9.5	ug/l	uJ
62-53-3	Aniline	ND	9.5	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	4.8	ug/l	
85-68-7	Butyl benzyl phthalate	ND	4.8	ug/l	
100-51-6	Benzyl Alcohol	ND	9.5	ug/l	
91-58-7	2-Chloronaphthalene	ND	4.8	ug/l	
106-47-8	4-Chloroaniline	ND	9.5	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	4.8	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	4.8	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	4.8	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	4.8	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	4.8	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	9.5	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	9.5	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	4.8	ug/l	
132-64-9	Dibenzofuran	ND	4.8	ug/l	
84-74-2	Di-n-butyl phthalate	ND	4.8	ug/l	
117-84-0	Di-n-octyl phthalate	ND	4.8	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	MW-12-ROX-110211	Date Sampled:	11/02/11
Lab Sample ID:	MC5220-2	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

## ABN Special List

CAS No.	Compound	Result	RL	Units	Q
84-66-2	Diethyl phthalate	ND	4.8	ug/l	
131-11-3	Dimethyl phthalate	ND	4.8	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	1.9	ug/l	
118-74-1	Hexachlorobenzene	ND	4.8	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	9.5	ug/l	
67-72-1	Hexachloroethane	ND	4.8	ug/l	
78-59-1	Isophorone	ND	4.8	ug/l	
88-74-4	2-Nitroaniline	ND	9.5	ug/l	
99-09-2	3-Nitroaniline	ND	9.5	ug/l	
100-01-6	4-Nitroaniline	ND	9.5	ug/l	
98-95-3	Nitrobenzene	ND	4.8	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	4.8	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	4.8	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	4.8	ug/l	
110-86-1	Pyridine	ND	9.5	ug/l	UJ

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	62%		15-110%
4165-62-2	Phenol-d5	37%		15-110%
118-79-6	2,4,6-Tribromophenol	87%		15-110%
4165-60-0	Nitrobenzene-d5	85%		30-130%
321-60-8	2-Fluorobiphenyl	85%		30-130%
1718-51-0	Terphenyl-d14	103%		30-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

Report of Analysis

Client Sample ID:	MW-12-ROX-110211	Date Sampled:	11/02/11
Lab Sample ID:	MC5220-2	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C BY SIM SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I76359.D	1	11/15/11	KR	11/09/11	OP26874	MSI2804
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	0.095	ug/l	
208-96-8	Acenaphthylene	ND	0.095	ug/l	
120-12-7	Anthracene	ND	0.095	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.048	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.095	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.048	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.095	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.095	ug/l	
218-01-9	Chrysene	ND	0.095	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.095	ug/l	
206-44-0	Fluoranthene	ND	0.095	ug/l	
86-73-7	Fluorene	ND	0.095	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.095	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.19	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.19	ug/l	
91-20-3	Naphthalene	ND	0.095	ug/l	
85-01-8	Phenanthrene	ND	0.048	ug/l	
129-00-0	Pyrene	ND	0.095	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	91%		30-130%
321-60-8	2-Fluorobiphenyl	86%		30-130%
1718-51-0	Terphenyl-d14	110%		30-130%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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



## Report of Analysis



<b>Client Sample ID:</b> MW-12-ROX-110211	
<b>Lab Sample ID:</b> MC5220-2	<b>Date Sampled:</b> 11/02/11
<b>Matrix:</b> AQ - Ground Water	<b>Date Received:</b> 11/04/11
<b>Method:</b> SW846 8011 SW846 8011	<b>Percent Solids:</b> n/a
<b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39464.D	1	11/15/11	AP	11/14/11	OP26934	GBB2454
Run #2							

Run #	Initial Volume	Final Volume
Run #1	36.3 ml	2.0 ml
Run #2		

**VOA Special List**

CAS No.	Compound	Result	RL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.014	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.014	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	74%		36-173%
460-00-4	Bromofluorobenzene (S)	86%		36-173%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID:	MW-12-ROX-110211-DUP	Date Sampled:	11/02/11
Lab Sample ID:	MC5220-3	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N57267.D	1	11/14/11	JP	n/a	n/a	MSN2145
Run #2							

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

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	1.4	0.50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	UT
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	MW-12-ROX-110211-DUP	Date Sampled:	11/02/11
Lab Sample ID:	MC5220-3	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

## VOA Special List

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

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis



<b>Client Sample ID:</b> MW-12-ROX-110211-DUP	<b>Date Sampled:</b> 11/02/11
<b>Lab Sample ID:</b> MC5220-3	<b>Date Received:</b> 11/04/11
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8260B	
<b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

**VOA Special List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%		70-130%
2037-26-5	Toluene-D8	91%		70-130%
460-00-4	4-Bromofluorobenzene	84%		70-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID:	MW-12-ROX-110211-DUP	Date Sampled:	11/02/11
Lab Sample ID:	MC5220-3	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I76314.D	1	11/14/11	KR	11/08/11	OP26866	MSI2802
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

## ABN Special List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	9.5	ug/l	
95-57-8	2-Chlorophenol	ND	4.8	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	9.5	ug/l	
120-83-2	2,4-Dichlorophenol	ND	9.5	ug/l	
105-67-9	2,4-Dimethylphenol	ND	9.5	ug/l	uJ
51-28-5	2,4-Dinitrophenol	ND	19	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	9.5	ug/l	
95-48-7	2-Methylphenol	ND	9.5	ug/l	
	3&4-Methylphenol	ND	9.5	ug/l	
88-75-5	2-Nitrophenol	ND	9.5	ug/l	
100-02-7	4-Nitrophenol	ND	19	ug/l	
87-86-5	Pentachlorophenol	ND	9.5	ug/l	
108-95-2	Phenol	ND	4.8	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	9.5	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	9.5	ug/l	uJ
62-53-3	Aniline	ND	9.5	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	4.8	ug/l	
85-68-7	Butyl benzyl phthalate	ND	4.8	ug/l	
100-51-6	Benzyl Alcohol	ND	9.5	ug/l	
91-58-7	2-Chloronaphthalene	ND	4.8	ug/l	
106-47-8	4-Chloroaniline	ND	9.5	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	4.8	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	4.8	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	4.8	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	4.8	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	4.8	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	9.5	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	9.5	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	4.8	ug/l	
132-64-9	Dibenzofuran	ND	4.8	ug/l	
84-74-2	Di-n-butyl phthalate	ND	4.8	ug/l	
117-84-0	Di-n-octyl phthalate	ND	4.8	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

### Report of Analysis



<b>Client Sample ID:</b>	MW-12-ROX-110211-DUP	<b>Date Sampled:</b>	11/02/11
<b>Lab Sample ID:</b>	MC5220-3	<b>Date Received:</b>	11/04/11
<b>Matrix:</b>	AQ - Ground Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	SW846 8270C SW846 3510C	<b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
84-66-2	Diethyl phthalate	ND	4.8	ug/l	
131-11-3	Dimethyl phthalate	ND	4.8	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	1.9	ug/l	
118-74-1	Hexachlorobenzene	ND	4.8	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	9.5	ug/l	
67-72-1	Hexachloroethane	ND	4.8	ug/l	
78-59-1	Isophorone	ND	4.8	ug/l	
88-74-4	2-Nitroaniline	ND	9.5	ug/l	
99-09-2	3-Nitroaniline	ND	9.5	ug/l	
100-01-6	4-Nitroaniline	ND	9.5	ug/l	
98-95-3	Nitrobenzene	ND	4.8	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	4.8	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	4.8	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	4.8	ug/l	
110-86-1	Pyridine	ND	9.5	ug/l	UJ

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	57%		15-110%
4165-62-2	Phenol-d5	35%		15-110%
118-79-6	2,4,6-Tribromophenol	85%		15-110%
4165-60-0	Nitrobenzene-d5	81%		30-130%
321-60-8	2-Fluorobiphenyl	77%		30-130%
1718-51-0	Terphenyl-d14	102%		30-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

### Report of Analysis

3.3  
3

<b>Client Sample ID:</b> MW-12-ROX-110211-DUP	<b>Date Sampled:</b> 11/02/11
<b>Lab Sample ID:</b> MC5220-3	<b>Date Received:</b> 11/04/11
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8270C BY SIM SW846 3510C	
<b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I76360.D	1	11/15/11	KR	11/09/11	OP26874	MSI2804
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

**BN PAH List**

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	0.095	ug/l	
208-96-8	Acenaphthylene	ND	0.095	ug/l	
120-12-7	Anthracene	ND	0.095	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.048	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.095	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.048	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.095	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.095	ug/l	
218-01-9	Chrysene	ND	0.095	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.095	ug/l	
206-44-0	Fluoranthene	ND	0.095	ug/l	
86-73-7	Fluorene	ND	0.095	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.095	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.19	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.19	ug/l	
91-20-3	Naphthalene	ND	0.095	ug/l	
85-01-8	Phenanthrene	ND	0.048	ug/l	
129-00-0	Pyrene	ND	0.095	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	86%		30-130%
321-60-8	2-Fluorobiphenyl	79%		30-130%
1718-51-0	Terphenyl-d14	109%		30-130%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

### Report of Analysis



Client Sample ID:	MW-12-ROX-110211-DUP	Date Sampled:	11/02/11
Lab Sample ID:	MC5220-3	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8011 SW846 8011	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39465.D	1	11/15/11	AP	11/14/11	OP26934	GBB2454
Run #2							

Run #	Initial Volume	Final Volume
Run #1	34.2 ml	2.0 ml
Run #2		

**VOA Special List**

CAS No.	Compound	Result	RL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.015	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.015	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits	
460-00-4	Bromofluorobenzene (S)	95%		36-173%	
460-00-4	Bromofluorobenzene (S)	97%		36-173%	

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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



## Report of Analysis

Client Sample ID:	MW-8-ROX-110211	Date Sampled:	11/02/11
Lab Sample ID:	MC5220-4	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N57239.D	1000	11/12/11	JP	n/a	n/a	MSN2144
Run #2	N57254.D	5000	11/14/11	JP	n/a	n/a	MSN2145

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

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5000	ug/l	
107-02-8	Acrolein	ND	25000	ug/l	
107-13-1	Acrylonitrile	ND	5000	ug/l	
71-43-2	Benzene	934000 <sup>a</sup>	2500	ug/l	
108-86-1	Bromobenzene	ND	5000	ug/l	
74-97-5	Bromochloromethane	ND	5000	ug/l	
75-27-4	Bromodichloromethane	ND	1000	ug/l	
75-25-2	Bromoform	ND	1000	ug/l	
74-83-9	Bromomethane	ND	2000	ug/l	
78-93-3	2-Butanone (MEK)	ND	5000	ug/l	
104-51-8	n-Butylbenzene	ND	5000	ug/l	
135-98-8	sec-Butylbenzene	ND	5000	ug/l	
98-06-6	tert-Butylbenzene	ND	5000	ug/l	
75-15-0	Carbon disulfide	ND	5000	ug/l	
56-23-5	Carbon tetrachloride	ND	1000	ug/l	
108-90-7	Chlorobenzene	ND	1000	ug/l	
75-00-3	Chloroethane	ND	2000	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5000	ug/l	
67-66-3	Chloroform	ND	1000	ug/l	
74-87-3	Chloromethane	ND	2000	ug/l	UJ
95-49-8	o-Chlorotoluene	ND	5000	ug/l	
106-43-4	p-Chlorotoluene	ND	5000	ug/l	
124-48-1	Dibromochloromethane	ND	1000	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1000	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1000	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1000	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2000	ug/l	
75-34-3	1,1-Dichloroethane	ND	1000	ug/l	
107-06-2	1,2-Dichloroethane	ND	1000	ug/l	
75-35-4	1,1-Dichloroethene	ND	1000	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1000	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1000	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	MW-8-ROX-110211	Date Sampled:	11/02/11
Lab Sample ID:	MC5220-4	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2000	ug/l	
142-28-9	1,3-Dichloropropane	ND	5000	ug/l	
594-20-7	2,2-Dichloropropane	ND	5000	ug/l	
563-58-6	1,1-Dichloropropene	ND	5000	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	500	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	500	ug/l	
123-91-1	1,4-Dioxane	ND	25000	ug/l	
97-63-2	Ethyl methacrylate	ND	5000	ug/l	
100-41-4	Ethylbenzene	ND	1000	ug/l	
87-68-3	Hexachlorobutadiene	ND	5000	ug/l	
591-78-6	2-Hexanone	ND	5000	ug/l	
98-82-8	Isopropylbenzene	ND	5000	ug/l	
99-87-6	p-Isopropyltoluene	ND	5000	ug/l	
1634-04-4	Methyl Tert Butyl Ether	4940	1000	ug/l	J
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5000	ug/l	
74-95-3	Methylene bromide	ND	5000	ug/l	
75-09-2	Methylene chloride	ND	2000	ug/l	
91-20-3	Naphthalene	ND	5000	ug/l	
103-65-1	n-Propylbenzene	ND	5000	ug/l	
100-42-5	Styrene	ND	5000	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5000	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1000	ug/l	
127-18-4	Tetrachloroethene	ND	1000	ug/l	
108-88-3	Toluene	ND	1000	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5000	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5000	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1000	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1000	ug/l	
79-01-6	Trichloroethene	ND	1000	ug/l	
75-69-4	Trichlorofluoromethane	ND	1000	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5000	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5000	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5000	ug/l	
108-05-4	Vinyl Acetate	ND	5000	ug/l	
75-01-4	Vinyl chloride	ND	1000	ug/l	u J
	m,p-Xylene	ND	1000	ug/l	
95-47-6	o-Xylene	ND	1000	ug/l	
1330-20-7	Xylene (total)	ND	1000	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis



Client Sample ID:	MW-8-ROX-110211	Date Sampled:	11/02/11
Lab Sample ID:	MC5220-4	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%	96%	70-130%
2037-26-5	Toluene-D8	90%	91%	70-130%
460-00-4	4-Bromofluorobenzene	86%	85%	70-130%

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

(a) Result is from Run# 2

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis



Client Sample ID:	MW-8-ROX-110211	Date Sampled:	11/02/11
Lab Sample ID:	MC5220-4	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I76315.D	1	11/14/11	KR	11/08/11	OP26866	MSI2802
Run #2	U3392.D	5	11/15/11	KR	11/08/11	OP26866	MSU205

Run #	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2	1050 ml	1.0 ml

## ABN Special List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	9.5	ug/l	
95-57-8	2-Chlorophenol	ND	4.8	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	9.5	ug/l	
120-83-2	2,4-Dichlorophenol	ND	9.5	ug/l	
105-67-9	2,4-Dimethylphenol	38.3	9.5	ug/l	J
51-28-5	2,4-Dinitrophenol	ND	19	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	9.5	ug/l	
95-48-7	2-Methylphenol	15.2	9.5	ug/l	
	3&4-Methylphenol	24.2	9.5	ug/l	
88-75-5	2-Nitrophenol	ND	9.5	ug/l	
100-02-7	4-Nitrophenol	ND	19	ug/l	
87-86-5	Pentachlorophenol	ND	9.5	ug/l	
108-95-2	Phenol	134 <sup>a</sup>	24	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	9.5	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	9.5	ug/l	
62-53-3	Aniline	ND	9.5	ug/l	UJ
101-55-3	4-Bromophenyl phenyl ether	ND	4.8	ug/l	
85-68-7	Butyl benzyl phthalate	ND	4.8	ug/l	
100-51-6	Benzyl Alcohol	ND	9.5	ug/l	
91-58-7	2-Chloronaphthalene	ND	4.8	ug/l	
106-47-8	4-Chloroaniline	ND	9.5	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	4.8	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	4.8	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	4.8	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	4.8	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	4.8	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	9.5	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	9.5	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	4.8	ug/l	
132-64-9	Dibenzofuran	ND	4.8	ug/l	
84-74-2	Di-n-butyl phthalate	ND	4.8	ug/l	
117-84-0	Di-n-octyl phthalate	ND	4.8	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

3.4  
3

Client Sample ID:	MW-8-ROX-110211	Date Sampled:	11/02/11
Lab Sample ID:	MC5220-4	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
84-66-2	Diethyl phthalate	ND	4.8	ug/l	
131-11-3	Dimethyl phthalate	ND	4.8	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	1.9	ug/l	
118-74-1	Hexachlorobenzene	ND	4.8	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	9.5	ug/l	
67-72-1	Hexachloroethane	ND	4.8	ug/l	
78-59-1	Isophorone	ND	4.8	ug/l	
88-74-4	2-Nitroaniline	ND	9.5	ug/l	
99-09-2	3-Nitroaniline	ND	9.5	ug/l	
100-01-6	4-Nitroaniline	ND	9.5	ug/l	
98-95-3	Nitrobenzene	ND	4.8	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	4.8	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	4.8	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	4.8	ug/l	
110-86-1	Pyridine	ND	9.5	ug/l	UJ

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	62%	65%	15-110%
4165-62-2	Phenol-d5	40%	39%	15-110%
118-79-6	2,4,6-Tribromophenol	84%	83%	15-110%
4165-60-0	Nitrobenzene-d5	79%	99%	30-130%
321-60-8	2-Fluorobiphenyl	78%	89%	30-130%
1718-51-0	Terphenyl-d14	102%	87%	30-130%

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

(a) Result is from Run# 2

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

### Report of Analysis

3.4  
3

Client Sample ID:	MW-8-ROX-110211	Date Sampled:	11/02/11
Lab Sample ID:	MC5220-4	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C BY SIM SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I76374.D	1	11/15/11	KR	11/09/11	OP26874	MS12805
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

**BN PAH List**

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	<del>0.23</del> u	0.23	0.095 ug/l	u
208-96-8	Acenaphthylene	ND	0.095	ug/l	
120-12-7	Anthracene	ND	0.095	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.048	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.095	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.048	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.095	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.095	ug/l	
218-01-9	Chrysene	ND	0.095	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.095	ug/l	
206-44-0	Fluoranthene	ND	0.095	ug/l	
86-73-7	Fluorene	<del>0.32</del> u	0.32	0.095 ug/l	u
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.095	ug/l	
90-12-0	1-Methylnaphthalene	<del>9.4</del> u	9.4	0.19 ug/l	u
91-57-6	2-Methylnaphthalene	<del>11.9</del> u	11.9	0.19 ug/l	u
91-20-3	Naphthalene	28.2	0.095	ug/l	
85-01-8	Phenanthrene	ND	0.048	ug/l	
129-00-0	Pyrene	ND	0.095	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	86%		30-130%
321-60-8	2-Fluorobiphenyl	84%		30-130%
1718-51-0	Terphenyl-d14	110%		30-130%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

### Report of Analysis

3.4  
3

Client Sample ID:	MW-8-ROX-110211	Date Sampled:	11/02/11
Lab Sample ID:	MC5220-4	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8011 SW846 8011	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39466.D	1	11/15/11	AP	11/14/11	OP26934	GBB2454
Run #2							

Run #	Initial Volume	Final Volume
Run #1	34.3 ml	2.0 ml
Run #2		

**VOA Special List**

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

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	82%		36-173%
460-00-4	Bromofluorobenzene (S)	153%		36-173%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

### Report of Analysis



<b>Client Sample ID:</b> MW-7-ROX-110211	<b>Date Sampled:</b> 11/02/11
<b>Lab Sample ID:</b> MC5220-5	<b>Date Received:</b> 11/04/11
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8260B	
<b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N57240.D	1000	11/12/11	JP	n/a	n/a	MSN2144
Run #2	N57255.D	5000	11/14/11	JP	n/a	n/a	MSN2145

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

VOA Special List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5000	ug/l	
107-02-8	Acrolein	ND	25000	ug/l	
107-13-1	Acrylonitrile	ND	5000	ug/l	
71-43-2	Benzene	774000 <sup>a</sup>	2500	ug/l	
108-86-1	Bromobenzene	ND	5000	ug/l	
74-97-5	Bromochloromethane	ND	5000	ug/l	
75-27-4	Bromodichloromethane	ND	1000	ug/l	
75-25-2	Bromoform	ND	1000	ug/l	
74-83-9	Bromomethane	ND	2000	ug/l	
78-93-3	2-Butanone (MEK)	ND	5000	ug/l	
104-51-8	n-Butylbenzene	ND	5000	ug/l	
135-98-8	sec-Butylbenzene	ND	5000	ug/l	
98-06-6	tert-Butylbenzene	ND	5000	ug/l	
75-15-0	Carbon disulfide	ND	5000	ug/l	
56-23-5	Carbon tetrachloride	ND	1000	ug/l	
108-90-7	Chlorobenzene	ND	1000	ug/l	
75-00-3	Chloroethane	ND	2000	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5000	ug/l	
67-66-3	Chloroform	ND	1000	ug/l	
74-87-3	Chloromethane	ND	2000	ug/l	u5
95-49-8	o-Chlorotoluene	ND	5000	ug/l	
106-43-4	p-Chlorotoluene	ND	5000	ug/l	
124-48-1	Dibromochloromethane	ND	1000	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1000	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1000	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1000	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2000	ug/l	
75-34-3	1,1-Dichloroethane	ND	1000	ug/l	
107-06-2	1,2-Dichloroethane	ND	1000	ug/l	
75-35-4	1,1-Dichloroethene	ND	1000	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1000	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1000	ug/l	

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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



## Report of Analysis

Client Sample ID:	MW-7-ROX-110211	Date Sampled:	11/02/11
Lab Sample ID:	MC5220-5	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2000	ug/l	
142-28-9	1,3-Dichloropropane	ND	5000	ug/l	
594-20-7	2,2-Dichloropropane	ND	5000	ug/l	
563-58-6	1,1-Dichloropropene	ND	5000	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	500	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	500	ug/l	
123-91-1	1,4-Dioxane	ND	25000	ug/l	
97-63-2	Ethyl methacrylate	ND	5000	ug/l	
100-41-4	Ethylbenzene	ND	1000	ug/l	
87-68-3	Hexachlorobutadiene	ND	5000	ug/l	
591-78-6	2-Hexanone	ND	5000	ug/l	
98-82-8	Isopropylbenzene	ND	5000	ug/l	
99-87-6	p-Isopropyltoluene	ND	5000	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1000	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5000	ug/l	
74-95-3	Methylene bromide	ND	5000	ug/l	
75-09-2	Methylene chloride	ND	2000	ug/l	
91-20-3	Naphthalene	ND	5000	ug/l	
103-65-1	n-Propylbenzene	ND	5000	ug/l	
100-42-5	Styrene	ND	5000	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5000	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1000	ug/l	
127-18-4	Tetrachloroethene	ND	1000	ug/l	
108-88-3	Toluene	ND	1000	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5000	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5000	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1000	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1000	ug/l	
79-01-6	Trichloroethene	ND	1000	ug/l	
75-69-4	Trichlorofluoromethane	ND	1000	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5000	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5000	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5000	ug/l	
108-05-4	Vinyl Acetate	ND	5000	ug/l	
75-01-4	Vinyl chloride	ND	1000	ug/l	u5
	m,p-Xylene	ND	1000	ug/l	
95-47-6	o-Xylene	ND	1000	ug/l	
1330-20-7	Xylene (total)	ND	1000	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis



Client Sample ID:	MW-7-ROX-110211	Date Sampled:	11/02/11
Lab Sample ID:	MC5220-5	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%	97%	70-130%
2037-26-5	Toluene-D8	90%	91%	70-130%
460-00-4	4-Bromofluorobenzene	84%	86%	70-130%

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

(a) Result is from Run# 2

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

### Report of Analysis

3.5  
3

<b>Client Sample ID:</b> MW-7-ROX-110211	<b>Date Sampled:</b> 11/02/11
<b>Lab Sample ID:</b> MC5220-5	<b>Date Received:</b> 11/04/11
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8270C SW846 3510C	
<b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I76316.D	1	11/14/11	KR	11/08/11	OP26866	MSI2802
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

**ABN Special List**

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	10	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	ug/l	UJ
51-28-5	2,4-Dinitrophenol	ND	20	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	ug/l	
95-48-7	2-Methylphenol	ND	10	ug/l	
	3&4-Methylphenol	ND	10	ug/l	
88-75-5	2-Nitrophenol	ND	10	ug/l	
100-02-7	4-Nitrophenol	ND	20	ug/l	
87-86-5	Pentachlorophenol	ND	10	ug/l	
108-95-2	Phenol	70.2	5.0	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	10	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	ug/l	
62-53-3	Aniline	ND	10	ug/l	UJ
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	ug/l	
100-51-6	Benzyl Alcohol	ND	10	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	ug/l	
106-47-8	4-Chloroaniline	ND	10	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	10	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.0	ug/l	
132-64-9	Dibenzofuran	ND	5.0	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	ug/l	

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

Report of Analysis



Client Sample ID:	MW-7-ROX-110211	Date Sampled:	11/02/11
Lab Sample ID:	MC5220-5	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
84-66-2	Diethyl phthalate	ND	5.0	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	ug/l	
67-72-1	Hexachloroethane	ND	5.0	ug/l	
78-59-1	Isophorone	ND	5.0	ug/l	
88-74-4	2-Nitroaniline	ND	10	ug/l	
99-09-2	3-Nitroaniline	ND	10	ug/l	
100-01-6	4-Nitroaniline	ND	10	ug/l	
98-95-3	Nitrobenzene	ND	5.0	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	ug/l	
110-86-1	Pyridine	ND	10	ug/l	uJ

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	52%		15-110%
4165-62-2	Phenol-d5	34%		15-110%
118-79-6	2,4,6-Tribromophenol	85%		15-110%
4165-60-0	Nitrobenzene-d5	72%		30-130%
321-60-8	2-Fluorobiphenyl	72%		30-130%
1718-51-0	Terphenyl-d14	109%		30-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

### Report of Analysis

3.5  
3

Client Sample ID:	MW-7-ROX-110211	Date Sampled:	11/02/11
Lab Sample ID:	MC5220-5	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C BY SIM SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I76375.D	1	11/15/11	KR	11/09/11	OP26874	MSI2805
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

**BN PAH List**

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	<del>0.26</del> u	0.10	ug/l	u
208-96-8	Acenaphthylene	ND	0.10	ug/l	
120-12-7	Anthracene	ND	0.10	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.050	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.050	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	ug/l	
218-01-9	Chrysene	ND	0.10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	ug/l	
206-44-0	Fluoranthene	ND	0.10	ug/l	
86-73-7	Fluorene	<del>0.28</del> u	0.10	ug/l	u
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	ug/l	
90-12-0	1-Methylnaphthalene	<del>4.3</del> u	0.20	ug/l	u
91-57-6	2-Methylnaphthalene	<del>5.9</del> u	0.20	ug/l	u
91-20-3	Naphthalene	11.3	0.10	ug/l	
85-01-8	Phenanthrene	<del>0.33</del> u	0.050	ug/l	u
129-00-0	Pyrene	ND	0.10	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	80%		30-130%
321-60-8	2-Fluorobiphenyl	75%		30-130%
1718-51-0	Terphenyl-d14	114%		30-130%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

### Report of Analysis

<b>Client Sample ID:</b> MW-7-ROX-110211	<b>Date Sampled:</b> 11/02/11
<b>Lab Sample ID:</b> MC5220-5	<b>Date Received:</b> 11/04/11
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8011 SW846 8011	
<b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39505.D	1	11/16/11	AP	11/14/11	OP26934	GBB2455
Run #2							

Run #	Initial Volume	Final Volume
Run #1	34.6 ml	2.0 ml
Run #2		

**VOA Special List**

CAS No.	Compound	Result	RL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.015	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.015	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits	
460-00-4	Bromofluorobenzene (S)	96%		36-173%	
460-00-4	Bromofluorobenzene (S)	90%		36-173%	

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID:	TB-110211	Date Sampled:	11/02/11
Lab Sample ID:	MC5220-6	Date Received:	11/04/11
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N57227.D	1	11/12/11	JP	n/a	n/a	MSN2144
Run #2							

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

## VOA Special List

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

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	TB-110211	Date Sampled:	11/02/11
Lab Sample ID:	MC5220-6	Date Received:	11/04/11
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

## VOA Special List

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

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



## Report of Analysis



Client Sample ID:	TB-110211	Date Sampled:	11/02/11
Lab Sample ID:	MC5220-6	Date Received:	11/04/11
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

**VOA Special List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		70-130%
2037-26-5	Toluene-D8	91%		70-130%
460-00-4	4-Bromofluorobenzene	85%		70-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

3.7  
3

Client Sample ID: TB-110211		Date Sampled: 11/02/11
Lab Sample ID: MC5220-7		Date Received: 11/04/11
Matrix: AQ - Trip Blank Water		Percent Solids: n/a
Method: SW846 8011 SW846 8011		
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39506.D	1	11/16/11	AP	11/14/11	OP26934	GBB2455
Run #2							

Run #	Initial Volume	Final Volume
Run #1	35.7 ml	2.0 ml
Run #2		

### VOA Special List

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

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	98%		36-173%
460-00-4	Bromofluorobenzene (S)	114%		36-173%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID:	MW6B-ROX-110311	Date Sampled:	11/03/11
Lab Sample ID:	MC5220-8	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N57259.D	10	11/14/11	JP	n/a	n/a	MSN2145
Run #2							

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

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
107-02-8	Acrolein	ND	250	ug/l	
107-13-1	Acrylonitrile	ND	50	ug/l	
71-43-2	Benzene	961	5.0	ug/l	
108-86-1	Bromobenzene	ND	50	ug/l	
74-97-5	Bromochloromethane	ND	50	ug/l	
75-27-4	Bromodichloromethane	ND	10	ug/l	
75-25-2	Bromoform	ND	10	ug/l	
74-83-9	Bromomethane	ND	20	ug/l	
78-93-3	2-Butanone (MEK)	ND	50	ug/l	
104-51-8	n-Butylbenzene	ND	50	ug/l	
135-98-8	sec-Butylbenzene	ND	50	ug/l	
98-06-6	tert-Butylbenzene	ND	50	ug/l	
75-15-0	Carbon disulfide	ND	50	ug/l	
56-23-5	Carbon tetrachloride	ND	10	ug/l	
108-90-7	Chlorobenzene	ND	10	ug/l	
75-00-3	Chloroethane	ND	20	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	50	ug/l	
67-66-3	Chloroform	ND	10	ug/l	
74-87-3	Chloromethane	ND	20	ug/l	UJ
95-49-8	o-Chlorotoluene	ND	50	ug/l	
106-43-4	p-Chlorotoluene	ND	50	ug/l	
124-48-1	Dibromochloromethane	ND	10	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	10	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	10	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	10	ug/l	
75-71-8	Dichlorodifluoromethane	ND	20	ug/l	
75-34-3	1,1-Dichloroethane	ND	10	ug/l	
107-06-2	1,2-Dichloroethane	ND	10	ug/l	
75-35-4	1,1-Dichloroethene	ND	10	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	10	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	10	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	MW6B-ROX-110311	Date Sampled:	11/03/11
Lab Sample ID:	MC5220-8	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
78-87-5	1,2-Dichloropropane	ND	20	ug/l	
142-28-9	1,3-Dichloropropane	ND	50	ug/l	
594-20-7	2,2-Dichloropropane	ND	50	ug/l	
563-58-6	1,1-Dichloropropene	ND	50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	5.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	5.0	ug/l	
123-91-1	1,4-Dioxane	ND	250	ug/l	
97-63-2	Ethyl methacrylate	ND	50	ug/l	
100-41-4	Ethylbenzene	ND	10	ug/l	
87-68-3	Hexachlorobutadiene	ND	50	ug/l	
591-78-6	2-Hexanone	ND	50	ug/l	
98-82-8	Isopropylbenzene	ND	50	ug/l	
99-87-6	p-Isopropyltoluene	ND	50	ug/l	
1634-04-4	Methyl Tert Butyl Ether	36.0	10	ug/l	J
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	50	ug/l	
74-95-3	Methylene bromide	ND	50	ug/l	
75-09-2	Methylene chloride	ND	20	ug/l	
91-20-3	Naphthalene	ND	50	ug/l	
103-65-1	n-Propylbenzene	ND	50	ug/l	
100-42-5	Styrene	ND	50	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	50	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	10	ug/l	
127-18-4	Tetrachloroethene	ND	10	ug/l	
108-88-3	Toluene	ND	10	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	10	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	10	ug/l	
79-01-6	Trichloroethene	ND	10	ug/l	
75-69-4	Trichlorofluoromethane	ND	10	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	50	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	50	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	50	ug/l	
108-05-4	Vinyl Acetate	ND	50	ug/l	
75-01-4	Vinyl chloride	ND	10	ug/l	UJ
	m,p-Xylene	ND	10	ug/l	
95-47-6	o-Xylene	ND	10	ug/l	
1330-20-7	Xylene (total)	ND	10	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> MW6B-ROX-110311		<b>Date Sampled:</b> 11/03/11
<b>Lab Sample ID:</b> MC5220-8		<b>Date Received:</b> 11/04/11
<b>Matrix:</b> AQ - Ground Water		<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8260B		
<b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

**VOA Special List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		70-130%
2037-26-5	Toluene-D8	90%		70-130%
460-00-4	4-Bromofluorobenzene	85%		70-130%

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

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

## Report of Analysis

Client Sample ID:	MW6B-ROX-110311	Date Sampled:	11/03/11
Lab Sample ID:	MC5220-8	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I76317.D	1	11/14/11	KR	11/08/11	OP26866	MSI2802
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

## ABN Special List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	10	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	ug/l	UJ
51-28-5	2,4-Dinitrophenol	ND	20	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	ug/l	
95-48-7	2-Methylphenol	ND	10	ug/l	
	3&4-Methylphenol	ND	10	ug/l	
88-75-5	2-Nitrophenol	ND	10	ug/l	
100-02-7	4-Nitrophenol	ND	20	ug/l	
87-86-5	Pentachlorophenol	ND	10	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	10	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	ug/l	UJ
62-53-3	Aniline	ND	10	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	ug/l	
100-51-6	Benzyl Alcohol	ND	10	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	ug/l	
106-47-8	4-Chloroaniline	ND	10	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	10	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.0	ug/l	
132-64-9	Dibenzofuran	ND	5.0	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	ug/l	

ND = Not detected

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N = Indicates presumptive evidence of a compound

Report of Analysis



Client Sample ID:	MW6B-ROX-110311	Date Sampled:	11/03/11
Lab Sample ID:	MC5220-8	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
84-66-2	Diethyl phthalate	ND	5.0	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	ug/l	
67-72-1	Hexachloroethane	ND	5.0	ug/l	
78-59-1	Isophorone	ND	5.0	ug/l	
88-74-4	2-Nitroaniline	ND	10	ug/l	
99-09-2	3-Nitroaniline	ND	10	ug/l	
100-01-6	4-Nitroaniline	ND	10	ug/l	
98-95-3	Nitrobenzene	ND	5.0	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	ug/l	
110-86-1	Pyridine	ND	10	ug/l	UJ

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	62%		15-110%
4165-62-2	Phenol-d5	38%		15-110%
118-79-6	2,4,6-Tribromophenol	88%		15-110%
4165-60-0	Nitrobenzene-d5	84%		30-130%
321-60-8	2-Fluorobiphenyl	84%		30-130%
1718-51-0	Terphenyl-d14	107%		30-130%

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

ND = Not detected  
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 B = Indicates analyte found in associated method blank  
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### Report of Analysis



<b>Client Sample ID:</b> MW6B-ROX-110311	<b>Date Sampled:</b> 11/03/11
<b>Lab Sample ID:</b> MC5220-8	<b>Date Received:</b> 11/04/11
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8270C BY SIM SW846 3510C	
<b>Project:</b> URSMOSTL:Roxana 4Q1I GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I76376.D	1	11/15/11	KR	11/09/11	OP26874	MSI2805
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

**BN PAH List**

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	0.10	ug/l	
208-96-8	Acenaphthylene	ND	0.10	ug/l	
120-12-7	Anthracene	ND	0.10	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.050	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.050	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	ug/l	
218-01-9	Chrysene	ND	0.10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	ug/l	
206-44-0	Fluoranthene	ND	0.10	ug/l	
86-73-7	Fluorene	ND	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.20	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	0.10	ug/l	
85-01-8	Phenanthrene	ND	0.050	ug/l	
129-00-0	Pyrene	ND	0.10	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	92%		30-130%
321-60-8	2-Fluorobiphenyl	86%		30-130%
1718-51-0	Terphenyl-d14	117%		30-130%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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



## Report of Analysis



<b>Client Sample ID:</b> MW6B-ROX-110311	
<b>Lab Sample ID:</b> MC5220-8	<b>Date Sampled:</b> 11/03/11
<b>Matrix:</b> AQ - Ground Water	<b>Date Received:</b> 11/04/11
<b>Method:</b> SW846 8011 SW846 8011	<b>Percent Solids:</b> n/a
<b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39516.D	1	11/16/11	AP	11/14/11	OP26934	GBB2455
Run #2							

Run #	Initial Volume	Final Volume
Run #1	34.2 ml	2.0 ml
Run #2		

**VOA Special List**

CAS No.	Compound	Result	RL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.015	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.015	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits	
460-00-4	Bromofluorobenzene (S)	102%		36-173%	
460-00-4	Bromofluorobenzene (S)	107%		36-173%	

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID:	MW6C-ROX-110311	Date Sampled:	11/03/11
Lab Sample ID:	MC5220-9	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N57268.D	1	11/14/11	JP	n/a	n/a	MSN2145
Run #2							

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

## VOA Special List

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

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	MW6C-ROX-110311	Date Sampled:	11/03/11
Lab Sample ID:	MC5220-9	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	3.9	1.0	ug/l	J
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	UJ
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

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J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis



Client Sample ID:	MW6C-ROX-110311	Date Sampled:	11/03/11
Lab Sample ID:	MC5220-9	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		70-130%
2037-26-5	Toluene-D8	92%		70-130%
460-00-4	4-Bromofluorobenzene	83%		70-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

### Report of Analysis



<b>Client Sample ID:</b> MW6C-ROX-110311	<b>Date Sampled:</b> 11/03/11
<b>Lab Sample ID:</b> MC5220-9	<b>Date Received:</b> 11/04/11
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8270C SW846 3510C	
<b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U3364.D	1	11/14/11	KR	11/08/11	OP26866	MSU204
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

**ABN Special List**

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	10	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	ug/l	uJ
105-67-9	2,4-Dimethylphenol	ND	10	ug/l	
51-28-5	2,4-Dinitrophenol	ND	20	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	ug/l	
95-48-7	2-Methylphenol	ND	10	ug/l	
	3&4-Methylphenol	ND	10	ug/l	
88-75-5	2-Nitrophenol	ND	10	ug/l	
100-02-7	4-Nitrophenol	ND	20	ug/l	
87-86-5	Pentachlorophenol	ND	10	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	10	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	ug/l	uJ
62-53-3	Aniline	ND	10	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	ug/l	
100-51-6	Benzyl Alcohol	ND	10	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	ug/l	
106-47-8	4-Chloroaniline	ND	10	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	10	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.0	ug/l	
132-64-9	Dibenzofuran	ND	5.0	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	ug/l	

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

### Report of Analysis

3.9  
3

Client Sample ID:	MW6C-ROX-110311	Date Sampled:	11/03/11
Lab Sample ID:	MC5220-9	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
84-66-2	Diethyl phthalate	ND	5.0	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	ug/l	
67-72-1	Hexachloroethane	ND	5.0	ug/l	
78-59-1	Isophorone	ND	5.0	ug/l	
88-74-4	2-Nitroaniline	ND	10	ug/l	
99-09-2	3-Nitroaniline	ND	10	ug/l	
100-01-6	4-Nitroaniline	ND	10	ug/l	
98-95-3	Nitrobenzene	ND	5.0	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	ug/l	
110-86-1	Pyridine	ND	10	ug/l	UJ

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	47%		15-110%
4165-62-2	Phenol-d5	30%		15-110%
118-79-6	2,4,6-Tribromophenol	85%		15-110%
4165-60-0	Nitrobenzene-d5	79%		30-130%
321-60-8	2-Fluorobiphenyl	73%		30-130%
1718-51-0	Terphenyl-d14	102%		30-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Page 1 of 1

3.9

Client Sample ID:	MW6C-ROX-110311	Date Sampled:	11/03/11
Lab Sample ID:	MC5220-9	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C BY SIM SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	176377.D	1	11/16/11	KR	11/09/11	OP26874	MSI2805
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

## BN PAH List

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	0.10	ug/l	
208-96-8	Acenaphthylene	ND	0.10	ug/l	
120-12-7	Anthracene	ND	0.10	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.050	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.050	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	ug/l	
218-01-9	Chrysene	ND	0.10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	ug/l	
206-44-0	Fluoranthene	ND	0.10	ug/l	
86-73-7	Fluorene	ND	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.20	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	0.10	ug/l	
85-01-8	Phenanthrene	<del>0.11</del> u	<del>0.050</del>	ug/l	
129-00-0	Pyrene	ND	0.10	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	74%		30-130%
321-60-8	2-Fluorobiphenyl	70%		30-130%
1718-51-0	Terphenyl-d14	109%		30-130%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis



<b>Client Sample ID:</b> MW6C-ROX-110311	<b>Date Sampled:</b> 11/03/11
<b>Lab Sample ID:</b> MC5220-9	<b>Date Received:</b> 11/04/11
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8011 SW846 8011	
<b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39517.D	1	11/16/11	AP	11/14/11	OP26934	GBB2455
Run #2							

Run #	Initial Volume	Final Volume
Run #1	35.8 ml	2.0 ml
Run #2		

**VOA Special List**

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

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	100%		36-173%
460-00-4	Bromofluorobenzene (S)	100%		36-173%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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



## Report of Analysis

Client Sample ID:	MW6D-ROX-110311	Date Sampled:	11/03/11
Lab Sample ID:	MC5220-10	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N57269.D	1	11/14/11	JP	n/a	n/a	MSN2145
Run #2							

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

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	13.0	0.50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	UJ
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	MW6D-ROX-110311	Date Sampled:	11/03/11
Lab Sample ID:	MC5220-10	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

## VOA Special List

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

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis



<b>Client Sample ID:</b> MW6D-ROX-110311 <b>Lab Sample ID:</b> MC5220-10 <b>Matrix:</b> AQ - Ground Water <b>Method:</b> SW846 8260B <b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	<b>Date Sampled:</b> 11/03/11 <b>Date Received:</b> 11/04/11 <b>Percent Solids:</b> n/a
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**VOA Special List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		70-130%
2037-26-5	Toluene-D8	91%		70-130%
460-00-4	4-Bromofluorobenzene	85%		70-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID:	MW6D-ROX-110311	Date Sampled:	11/03/11
Lab Sample ID:	MC5220-10	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U3365.D	1	11/14/11	KR	11/08/11	OP26866	MSU204
Run #2							

Run #	Initial Volume	Final Volume
Run #1	970 ml	1.0 ml
Run #2		

## ABN Special List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	10	ug/l	
95-57-8	2-Chlorophenol	ND	5.2	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	ug/l	UJ
51-28-5	2,4-Dinitrophenol	ND	21	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	ug/l	
95-48-7	2-Methylphenol	ND	10	ug/l	
	3&4-Methylphenol	ND	10	ug/l	
88-75-5	2-Nitrophenol	ND	10	ug/l	
100-02-7	4-Nitrophenol	ND	21	ug/l	
87-86-5	Pentachlorophenol	ND	10	ug/l	
108-95-2	Phenol	ND	5.2	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	10	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	ug/l	UJ
62-53-3	Aniline	ND	10	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.2	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.2	ug/l	
100-51-6	Benzyl Alcohol	ND	10	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.2	ug/l	
106-47-8	4-Chloroaniline	ND	10	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.2	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.2	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.2	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.2	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.2	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	10	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.2	ug/l	
132-64-9	Dibenzofuran	ND	5.2	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.2	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.2	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	MW6D-ROX-110311	Date Sampled:	11/03/11
Lab Sample ID:	MC5220-10	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

## ABN Special List

CAS No.	Compound	Result	RL	Units	Q
84-66-2	Diethyl phthalate	ND	5.2	ug/l	
131-11-3	Dimethyl phthalate	ND	5.2	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.1	ug/l	
118-74-1	Hexachlorobenzene	ND	5.2	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	ug/l	
67-72-1	Hexachloroethane	ND	5.2	ug/l	
78-59-1	Isophorone	ND	5.2	ug/l	
88-74-4	2-Nitroaniline	ND	10	ug/l	
99-09-2	3-Nitroaniline	ND	10	ug/l	
100-01-6	4-Nitroaniline	ND	10	ug/l	
98-95-3	Nitrobenzene	ND	5.2	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.2	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.2	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.2	ug/l	
110-86-1	Pyridine	ND	10	ug/l	UJ

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	62%		15-110%
4165-62-2	Phenol-d5	40%		15-110%
118-79-6	2,4,6-Tribromophenol	93%		15-110%
4165-60-0	Nitrobenzene-d5	100%		30-130%
321-60-8	2-Fluorobiphenyl	91%		30-130%
1718-51-0	Terphenyl-d14	119%		30-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Page 1 of 1

3.10

Client Sample ID:	MW6D-ROX-110311	Date Sampled:	11/03/11
Lab Sample ID:	MC5220-10	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C BY SIM SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I76378.D	1	11/16/11	KR	11/09/11	OP26874	MSI2805
Run #2							

Run #	Initial Volume	Final Volume
Run #1	970 ml	1.0 ml
Run #2		

## BN PAH List

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	0.10	ug/l	
208-96-8	Acenaphthylene	ND	0.10	ug/l	
120-12-7	Anthracene	ND	0.10	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.052	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	ug/l	
205-99-2	Benzo(h)fluoranthene	ND	0.052	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	ug/l	
218-01-9	Chrysene	ND	0.10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	ug/l	
206-44-0	Fluoranthene	ND	0.10	ug/l	
86-73-7	Fluorene	ND	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.21	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.21	ug/l	
91-20-3	Naphthalene	ND	0.10	ug/l	
85-01-8	Phenanthrene	ND	0.052	ug/l	
129-00-0	Pyrene	ND	0.10	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	92%		30-130%
321-60-8	2-Fluorobiphenyl	89%		30-130%
1718-51-0	Terphenyl-d14	119%		30-130%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

Report of Analysis

Client Sample ID:	MW6D-ROX-110311	Date Sampled:	11/03/11
Lab Sample ID:	MC5220-10	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8011 SW846 8011	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39518.D	1	11/16/11	AP	11/14/11	OP26934	GBB2455
Run #2							

Run #	Initial Volume	Final Volume
Run #1	34.7 ml	2.0 ml
Run #2		

VOA Special List

CAS No.	Compound	Result	RL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.015	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.015	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits	
460-00-4	Bromofluorobenzene (S)	97%		36-173%	
460-00-4	Bromofluorobenzene (S)	126%		36-173%	

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

### Report of Analysis

3.11  
3

<b>Client Sample ID:</b> MW13-ROX-110311	<b>Date Sampled:</b> 11/03/11
<b>Lab Sample ID:</b> MC5220-11	<b>Date Received:</b> 11/04/11
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8260B	
<b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N57270.D	I	11/14/11	JP	n/a	n/a	MSN2145
Run #2							

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

VOA Special List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	50.0	0.50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	UJ
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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



## Report of Analysis

Client Sample ID:	MW13-ROX-110311	Date Sampled:	11/03/11
Lab Sample ID:	MC5220-11	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	15.6	1.0	ug/l	J
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	UJ
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	MW13-ROX-110311	Date Sampled:	11/03/11
Lab Sample ID:	MC5220-11	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

**VOA Special List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		70-130%
2037-26-5	Toluene-D8	92%		70-130%
460-00-4	4-Bromofluorobenzene	124%		70-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID:	MW13-ROX-110311	Date Sampled:	11/03/11
Lab Sample ID:	MC5220-11	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U3366.D	1	11/14/11	KR	11/08/11	OP26866	MSU204
Run #2							

Run #	Initial Volume	Final Volume
Run #1	890 ml	1.0 ml
Run #2		

## ABN Special List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	11	ug/l	
95-57-8	2-Chlorophenol	ND	5.6	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	11	ug/l	
120-83-2	2,4-Dichlorophenol	ND	11	ug/l	
105-67-9	2,4-Dimethylphenol	ND	11	ug/l	uJ
51-28-5	2,4-Dinitrophenol	ND	22	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	11	ug/l	
95-48-7	2-Methylphenol	ND	11	ug/l	
	3&4-Methylphenol	ND	11	ug/l	
88-75-5	2-Nitrophenol	ND	11	ug/l	
100-02-7	4-Nitrophenol	ND	22	ug/l	
87-86-5	Pentachlorophenol	ND	11	ug/l	
108-95-2	Phenol	ND	5.6	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	11	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	11	ug/l	
62-53-3	Aniline	ND	11	ug/l	uJ
101-55-3	4-Bromophenyl phenyl ether	ND	5.6	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.6	ug/l	
100-51-6	Benzyl Alcohol	ND	11	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.6	ug/l	
106-47-8	4-Chloroaniline	ND	11	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.6	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.6	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.6	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.6	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.6	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	11	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	11	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.6	ug/l	
132-64-9	Dibenzofuran	ND	5.6	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.6	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.6	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	MW13-ROX-110311	Date Sampled:	11/03/11
Lab Sample ID:	MC5220-11	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

## ABN Special List

CAS No.	Compound	Result	RL	Units	Q
84-66-2	Diethyl phthalate	ND	5.6	ug/l	
131-11-3	Dimethyl phthalate	ND	5.6	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.2	ug/l	
118-74-1	Hexachlorobenzene	ND	5.6	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	11	ug/l	
67-72-1	Hexachloroethane	ND	5.6	ug/l	
78-59-1	Isophorone	ND	5.6	ug/l	
88-74-4	2-Nitroaniline	ND	11	ug/l	
99-09-2	3-Nitroaniline	ND	11	ug/l	
100-01-6	4-Nitroaniline	ND	11	ug/l	
98-95-3	Nitrobenzene	ND	5.6	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.6	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.6	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.6	ug/l	
110-86-1	Pyridine	ND	11	ug/l	UJ

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	63%		15-110%
4165-62-2	Phenol-d5	41%		15-110%
118-79-6	2,4,6-Tribromophenol	92%		15-110%
4165-60-0	Nitrobenzene-d5	103%		30-130%
321-60-8	2-Fluorobiphenyl	88%		30-130%
1718-51-0	Terphenyl-d14	98%		30-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

Report of Analysis



Client Sample ID:	MW13-ROX-110311	Date Sampled:	11/03/11
Lab Sample ID:	MC5220-11	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C BY SIM SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I76379.D	1	11/16/11	KR	11/09/11	OP26874	MSI2805
Run #2							

Run #	Initial Volume	Final Volume
Run #1	890 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	0.11	ug/l	
208-96-8	Acenaphthylene	ND	0.11	ug/l	
120-12-7	Anthracene	ND	0.11	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.056	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.11	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.056	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.11	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.11	ug/l	
218-01-9	Chrysene	ND	0.11	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.11	ug/l	
206-44-0	Fluoranthene	ND	0.11	ug/l	
86-73-7	Fluorene	<del>0.33</del> u	<del>0.11</del> <sup>0.33</sup>	ug/l	u
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.11	ug/l	
90-12-0	1-Methylnaphthalene	<del>0.81</del> u	<del>0.22</del> <sup>0.81</sup>	ug/l	u
91-57-6	2-Methylnaphthalene	<del>0.30</del> u	<del>0.22</del> <sup>0.30</sup>	ug/l	u
91-20-3	Naphthalene	0.17	0.11	ug/l	
85-01-8	Phenanthrene	ND	0.056	ug/l	
129-00-0	Pyrene	<del>0.18</del> u	<del>0.11</del> <sup>0.18</sup>	ug/l	u

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	93%		30-130%
321-60-8	2-Fluorobiphenyl	88%		30-130%
1718-51-0	Terphenyl-d14	111%		30-130%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

Report of Analysis

3.11



Client Sample ID:	MW13-ROX-110311	Date Sampled:	11/03/11
Lab Sample ID:	MC5220-11	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8011 SW846 8011	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39519.D	1	11/16/11	AP	11/14/11	OP26934	GBB2455
Run #2							

Run #	Initial Volume	Final Volume
Run #1	34.3 ml	2.0 ml
Run #2		

VOA Special List

CAS No.	Compound	Result	RL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.015	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.015	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits	
460-00-4	Bromofluorobenzene (S)	88%		36-173%	
460-00-4	Bromofluorobenzene (S)	140%		36-173%	

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

Report of Analysis

3.12



Client Sample ID: P54-ROX-110311	Date Sampled: 11/03/11
Lab Sample ID: MC5220-12	Date Received: 11/04/11
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8260B	
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N57271.D	1	11/14/11	JP	n/a	n/a	MSN2145
Run #2							

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

VOA Special List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	13.0	0.50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	uJ
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID:	P54-ROX-110311	Date Sampled:	11/03/11
Lab Sample ID:	MC5220-12	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
87-68-3	Hexachlorohutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	uJ
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



Report of Analysis



Client Sample ID:	P54-ROX-110311	Date Sampled:	11/03/11
Lab Sample ID:	MC5220-12	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		70-130%
2037-26-5	Toluene-D8	92%		70-130%
460-00-4	4-Bromofluorobenzene	85%		70-130%

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

ND = Not detected  
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J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	P54-ROX-110311	Date Sampled:	11/03/11
Lab Sample ID:	MC5220-12	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	S28817.D	1	11/15/11	PR	11/10/11	OP26888	MSS1253
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

## ABN Special List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	10	ug/l	UJ
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	ug/l	
51-28-5	2,4-Dinitrophenol	ND	20	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	ug/l	
95-48-7	2-Methylphenol	ND	10	ug/l	
	3&4-Methylphenol	ND	10	ug/l	
88-75-5	2-Nitrophenol	ND	10	ug/l	
100-02-7	4-Nitrophenol	ND	20	ug/l	
87-86-5	Pentachlorophenol	ND	10	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	10	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	ug/l	
62-53-3	Aniline	ND	10	ug/l	UJ
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	ug/l	
100-51-6	Benzyl Alcohol	ND	10	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	ug/l	
106-47-8	4-Chloroaniline	ND	10	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	10	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.0	ug/l	
132-64-9	Dibenzofuran	ND	5.0	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	P54-ROX-110311	Date Sampled:	11/03/11
Lab Sample ID:	MC5220-12	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

## ABN Special List

CAS No.	Compound	Result	RL	Units	Q
84-66-2	Diethyl phthalate	ND	5.0	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	ug/l	
67-72-1	Hexachloroethane	ND	5.0	ug/l	
78-59-1	Isophorone	ND	5.0	ug/l	
88-74-4	2-Nitroaniline	ND	10	ug/l	
99-09-2	3-Nitroaniline	ND	10	ug/l	
100-01-6	4-Nitroaniline	ND	10	ug/l	
98-95-3	Nitrobenzene	ND	5.0	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	ug/l	
110-86-1	Pyridine	ND	10	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	48%		15-110%
4165-62-2	Phenol-d5	33%		15-110%
118-79-6	2,4,6-Tribromophenol	84%		15-110%
4165-60-0	Nitrobenzene-d5	73%		30-130%
321-60-8	2-Fluorobiphenyl	75%		30-130%
1718-51-0	Terphenyl-d14	71%		30-130%

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

ND = Not detected  
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 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

Page 1 of 1

3.12

Client Sample ID:	P54-ROX-110311	Date Sampled:	11/03/11
Lab Sample ID:	MC5220-12	Date Received:	11/04/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C BY SIM SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I76495.D	1	11/21/11	KR	11/10/11	OP26889	MSI2813
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

## BN PAH List

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	0.10	ug/l	
208-96-8	Acenaphthylene	ND	0.10	ug/l	
120-12-7	Anthracene	ND	0.10	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.050	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.050	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	ug/l	
218-01-9	Chrysene	ND	0.10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	ug/l	
206-44-0	Fluoranthene	ND	0.10	ug/l	
86-73-7	Fluorene	ND	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.20	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	0.10	ug/l	
85-01-8	Phenanthrene	ND	0.050	ug/l	
129-00-0	Pyrene	ND	0.10	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	109%		30-130%
321-60-8	2-Fluorobiphenyl	84%		30-130%
1718-51-0	Terphenyl-d14	85%		30-130%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

### Report of Analysis



<b>Client Sample ID:</b> P54-ROX-110311	<b>Date Sampled:</b> 11/03/11
<b>Lab Sample ID:</b> MC5220-12	<b>Date Received:</b> 11/04/11
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8011 SW846 8011	
<b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39520.D	1	11/16/11	AP	11/14/11	OP26934	GBB2455
Run #2							

Run #	Initial Volume	Final Volume
Run #1	34.4 ml	2.0 ml
Run #2		

**VOA Special List**

CAS No.	Compound	Result	RL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.015	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.015	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits	
460-00-4	Bromofluorobenzene (S)	107%		36-173%	
460-00-4	Bromofluorobenzene (S)	124%		36-173%	

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Misc. Forms

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## Custody Documents and Other Forms

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Includes the following where applicable:

- Certification Exceptions
- Certification Exceptions (IL)
- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody



# Shell Oil Products Chain Of Custody Record

**URS**

LAB (LOCATION) \_\_\_\_\_

INCIDENT # (ENV SERVICES): **97214840** CHECK IF NO INCIDENT # APPLIES

DATE: **11/2/11** PAGE: **1** of **2**

Print Bill To Contact Name: **WENDY PENNINGTON**

PO # \_\_\_\_\_ BAR # \_\_\_\_\_

3 4 0 0 8 1

LAB VENDOR # \_\_\_\_\_

LAB VENDOR: **URS CORPORATION**

ADDRESS: **1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300, ST. LOUIS, MO 63110**

CLIENT ADDRESS: **300 South Central Ave, ROXANA**

CLIENT PROJECT ID: **Roxana Quarterly CW / 21562593.0006**

LAB USE ONLY: **MC5220**

LAB USE ONLY: **L. Rathnow, B. Crafton**

LAB USE ONLY: **mk@hve.com**

TURNAROUND TIME (CAT) FRI DAY SAT:  STANDARD (10 DAY)  DAYS  DAYS  DAYS  HOURS  RESULTS NEEDED ON WEEKEND

DELIVERABLES:  LEVEL 1  LEVEL 2  LEVEL 3  LEVEL 4  OTHER (SPECIFY) **ECO**

TEMPERATURE ON RECEIPT °C: **ECO**

SPECIAL INSTRUCTIONS OR NOTES:   
 \* Please include "J" values on Reports.   
 \* Please provide sample receipt upon login.   
 SHELL CONTRACT RATE APPLIES   
 ESTATE ADMINISTRATION RATE APPLIES   
 EROD NOT NEEDED   
 RECEIPT VERIFICATION REQUESTED   
 EMPLOYEE LETHAL DISK

Tag #	Field Sample Identification	SAMPLING		MATERIAL	PRESERVATIVE					VOL. OF CONT.	REQUESTED ANALYSIS				PID (ppm)	FIELD NOTES:
		DATE	TIME		PH	NOX	NO2	NO3	HEM		OTHER	VOC 8200B	VOC 8011	SVOC 8270C		
1	MW-11-ROX-110211	11/2/11	0935	Water	X			X	X	9	X	X	X	X		
1.5	MW-11-ROX-110211-MS		↓													
2	MW-12-ROX-110211		1155													
3	MW-12-ROX-110211-NUP		↓													
4	MW-8-ROX-110211		1620													
5	MW-7-ROX-110211		1510													
6	TB-110211	11/2/11		Water	X					2	X					
7	TB-110211									X	2	X				

Received by: **[Signature]** Date: **11/3/11** Time: \_\_\_\_\_

Received by: **FedEx** Date: **11/4/11** Time: **9:15**

Received by: **[Signature]** Date: \_\_\_\_\_ Time: \_\_\_\_\_

see 1.2, 0.5, 1.9, 1.8, 1.1, 0.9

4.1  
4



# Shell Oil Products Chain Of Custody Record

**URS**

LAB (LOCATION)  
 OPENED  
 CALCULATED  
 OTHER  
 IIR

LAB Vendor #

Please Check Appropriate Box:

<input type="checkbox"/> BENV. SERVICES	<input type="checkbox"/> MOTIVA RETAIL	<input type="checkbox"/> SHELL RETAIL
<input type="checkbox"/> MOTIVA SOLE	<input type="checkbox"/> COMBUSTANT	<input type="checkbox"/> OILERS
<input type="checkbox"/> SHELL PIPELINE	<input type="checkbox"/> OTHER	

Print Bill To Contact Name: WENDY PENNINGTON  
 INCIDENT # (ENV SERVICES): 8 7 2 1 8 6 4 0  
 DATE: 11/3/11  
 PAGE: 2 of 2

URS CORPORATION  
 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300, ST. LOUIS, MO 63110

800 South Central Ave. ROXANA  
 ILL.

WENDY PENNINGTON  
 TEL: 314-743-4188 or 311-452-8928  
 FAX: 314-428-0452

LAB WORK ONLY  
 MC5220

DELIVERABLES:  LEVEL 1  LEVEL 2  LEVEL 3  LEVEL 4  OTHER (SPECIFY) EDD

TEMPERATURE ON RECEIPT C° Cooler #1 Cooler #2 Cooler #3

SPECIAL INSTRUCTIONS OR NOTES:  
 \* Please include "J" values on Reports.  
 \* Please provide sample receipt upon login.

SHELL CONTRACT RATE APPLIES  
 COSTS REIMBURSEMENT RATE APPLIES  
 EDDO NOT RELEVANT  
 RETECLIP VERIFICATION REQUESTED  
 PROVIDE LEAD DISK

LSP JOB DATE	Field Sample Identification	SAMPLING		MATERIAL	PARAMETERS					NO. OF CONT.	PID (ppm)	FIELD NOTES:  TEMPERATURE ON RECEIPT C°  Container PID Readings or Laboratory Notes		
		DATE	TIME		HPL	HPD	HPD4	HPD6	OTHER					
8	MW10B-ROX-110311	11/3/11	0901	Water	X			X	X	9	X	X	X	
9	MW10C-ROX-110311		1025											
10	MW10D-ROX-110311		1104											
11	MW10E-ROX-110311		1506											
12	P54-ROX-110311		1617											

Subscribed by: (Signature) <i>[Signature]</i>	Received by: (Signature) <i>[Signature]</i>	Date: 11/3/11	Time: 9:15
Subscribed by: (Signature) <i>[Signature]</i>	Received by: (Signature) <i>[Signature]</i>	Date: 11/4/11	Time: 9:15

4.1  
4MC5220: Chain of Custody  
Page 2 of 3





# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC5220 Client: URS Immediate Client Services Action Required: No  
 Date / Time Received: 11/4/2011 Delivery Method: \_\_\_\_\_ Client Service Action Required at Login: No  
 Project: 900 SOUTH CENTRAL AVE ROXANA No. Coolers: 6 Airbill #'s: N/A

<u>Cooler Security</u>	<u>Y or N</u>	<u>Y or N</u>
1. Custody Seals Present:	<input checked="" type="checkbox"/> <input type="checkbox"/>	3. COC Present: <input checked="" type="checkbox"/> <input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/> <input type="checkbox"/>	4. Smpl Dates/Time OK: <input checked="" type="checkbox"/> <input type="checkbox"/>

<u>Cooler Temperature</u>	<u>Y or N</u>
1. Temp criteria achieved:	<input checked="" type="checkbox"/> <input type="checkbox"/>
2. Cooler temp verification:	<u>Infrared gun</u>
3. Cooler media:	<u>Ice (beg)</u>

<u>Quality Control/ Preservation</u>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Trip Blank present / cooler:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Trip Blank listed on COC:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Samples preserved properly:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. VOCs headspace free:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<u>Sample Integrity - Documentation</u>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<u>Sample Integrity - Condition</u>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample recvd within HT:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Condition of sample:	<u>Intact</u>		

<u>Sample Integrity - Instructions</u>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Bottles received for unspecified tests:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Compositing instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments

Accutest Laboratories  
V.508 481.6200

495 Technology Center West, Bldg One  
F. 508 481.7753

Marlborough, MA  
www.accutest.com

4.1  
4

MC5220: Chain of Custody  
Page 3 of 3

### Internal Sample Tracking Chronicle

Shell Oil

Job No: MC5220

URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

4.2  
4

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
MC5220-1 Collected: 02-NOV-11 09:35 By: LRBC Received: 04-NOV-11 By: JB MW-11-ROX-110211						
MC5220-1	SW846 8260B	14-NOV-11 17:23	JP			V8260SL+
MC5220-1	SW846 8270C	14-NOV-11 21:06	KR	08-NOV-11 PA		AB8270SL+
MC5220-1	SW846 8270C BY SIM	15-NOV-11 13:56	KR	09-NOV-11 AJ		B8270SIMP AH
MC5220-1	SW846 8011	15-NOV-11 18:30	AP	14-NOV-11 BJ		V8011SL
MC5220-2 Collected: 02-NOV-11 11:55 By: LRBC Received: 04-NOV-11 By: JB MW-12-ROX-110211						
MC5220-2	SW846 8270C	14-NOV-11 09:24	KR	08-NOV-11 PA		AB8270SL+
MC5220-2	SW846 8260B	14-NOV-11 18:48	JP			V8260SL+
MC5220-2	SW846 8270C BY SIM	15-NOV-11 14:28	KR	09-NOV-11 AJ		B8270SIMP AH
MC5220-2	SW846 8011	15-NOV-11 18:54	AP	14-NOV-11 BJ		V8011SL
MC5220-3 Collected: 02-NOV-11 11:55 By: LRBC Received: 04-NOV-11 By: JB MW-12-ROX-110211-DUP						
MC5220-3	SW846 8270C	14-NOV-11 09:56	KR	08-NOV-11 PA		AB8270SL+
MC5220-3	SW846 8260B	14-NOV-11 19:17	JP			V8260SL+
MC5220-3	SW846 8270C BY SIM	15-NOV-11 15:00	KR	09-NOV-11 AJ		B8270SIMP AH
MC5220-3	SW846 8911	15-NOV-11 19:19	AP	14-NOV-11 BJ		V8011SL
MC5220-4 Collected: 02-NOV-11 16:20 By: LRBC Received: 04-NOV-11 By: JB MW-8-ROX-110211						
MC5220-4	SW846 8260B	12-NOV-11 10:02	JP			V8260SL+
MC5220-4	SW846 8270C	14-NOV-11 10:27	KR	08-NOV-11 PA		AB8270SL+
MC5220-4	SW846 8260B	14-NOV-11 13:09	JP			V8260SL+
MC5220-4	SW846 8270C	15-NOV-11 12:56	KR	08-NOV-11 PA		AB8270SL+
MC5220-4	SW846 8011	15-NOV-11 19:45	AP	14-NOV-11 BJ		V8011SL
MC5220-4	SW846 8270C BY SIM	15-NOV-11 22:26	KR	09-NOV-11 AJ		B8270SIMP AH
MC5220-5 Collected: 02-NOV-11 15:15 By: LRBC Received: 04-NOV-11 By: JB MW-7-ROX-110211						
MC5220-5	SW846 8260B	12-NOV-11 10:30	JP			V8260SL+
MC5220-5	SW846 8270C	14-NOV-11 10:59	KR	08-NOV-11 PA		AB8270SL+
MC5220-5	SW846 8260B	14-NOV-11 13:37	JP			V8260SL+

## Internal Sample Tracking Chronicle

Shell Oil

Job No: MC5220

URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
MC5220-5	SW846 8270C BY SIM	15-NOV-11 22:59	KR	09-NOV-11 AJ		B8270SIMPAH
MC5220-5	SW846 8011	16-NOV-11 12:44	AP	14-NOV-11 BJ		V8011SL
MC5220-6	Collected: 02-NOV-11 00:00	By: LRBC		Received: 04-NOV-11	By: JB	
TB-110211						
MC5220-6	SW846 8260B	12-NOV-11 04:22	JP			V8260SL+
MC5220-7	Collected: 02-NOV-11 00:00	By: LRBC		Received: 04-NOV-11	By: JB	
TB-110211						
MC5220-7	SW846 8011	16-NOV-11 13:10	AP	14-NOV-11 BJ		V8011SL
MC5220-8	Collected: 03-NOV-11 09:01	By: LRBC		Received: 04-NOV-11	By: JB	
MW6B-ROX-110311						
MC5220-8	SW846 8270C	14-NOV-11 11:31	KR	08-NOV-11 PA		AB8270SL+
MC5220-8	SW846 8260B	14-NOV-11 15:30	JP			V8260SL+
MC5220-8	SW846 8270C BY SIM	15-NOV-11 23:31	KR	09-NOV-11 AJ		B8270SIMPAH
MC5220-8	SW846 8011	16-NOV-11 18:03	AP	14-NOV-11 BJ		V8011SL
MC5220-9	Collected: 03-NOV-11 10:25	By: LRBC		Received: 04-NOV-11	By: JB	
MW6C-ROX-110311						
MC5220-9	SW846 8260B	14-NOV-11 19:45	JP			V8260SL+
MC5220-9	SW846 8270C	14-NOV-11 21:40	KR	08-NOV-11 PA		AB8270SL+
MC5220-9	SW846 8270C BY SIM	16-NOV-11 00:02	KR	09-NOV-11 AJ		B8270SIMPAH
MC5220-9	SW846 8011	16-NOV-11 18:27	AP	14-NOV-11 BJ		V8011SL
MC5220-10	Collected: 03-NOV-11 11:04	By: LRBC		Received: 04-NOV-11	By: JB	
MW6D-ROX-110311						
MC5220-10	SW846 8260B	14-NOV-11 20:13	JP			V8260SL+
MC5220-10	SW846 8270C	14-NOV-11 22:14	KR	08-NOV-11 PA		AB8270SL+
MC5220-10	SW846 8270C BY SIM	16-NOV-11 00:34	KR	09-NOV-11 AJ		B8270SIMPAH
MC5220-10	SW846 8011	16-NOV-11 18:52	AP	14-NOV-11 BJ		V8011SL
MC5220-11	Collected: 03-NOV-11 15:06	By: LRBC		Received: 04-NOV-11	By: JB	
MW13-ROX-110311						

### Internal Sample Tracking Chronicle

Shell Oil

Job No: MC5220

URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

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Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
MC5220-11	SW846 8260B	14-NOV-11 20:41	JP			V8260SL+
MC5220-11	SW846 8270C	14-NOV-11 22:47	KR	08-NOV-11	PA	AB8270SL+
MC5220-11	SW846 8270C BY SIM	16-NOV-11 01:06	KR	09-NOV-11	AJ	B8270SIMPAAH
MC5220-11	SW846 8011	16-NOV-11 19:17	AP	14-NOV-11	BJ	V8011SL
MC5220-12 Collected: 03-NOV-11 16:17 By: LRBC Received: 04-NOV-11 By: JB						
P54-ROX-110311						
MC5220-12	SW846 8260B	14-NOV-11 21:10	JP			V8260SL+
MC5220-12	SW846 8270C	15-NOV-11 15:01	PR	10-NOV-11	AJ	AB8270SL+
MC5220-12	SW846 8011	16-NOV-11 19:42	AP	14-NOV-11	BJ	V8011SL
MC5220-12	SW846 8270C BY SIM	21-NOV-11 13:13	KR	10-NOV-11	AJ	B8270SIMPAAH

# Accutest Internal Chain of Custody

Job Number: MC5220  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL  
 Received: 11/04/11

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**4**

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
MC5220-1.3	Walk In Ref #22	Bijan Jafari	11/09/11 11:38	Retrieve from Storage
MC5220-1.3	Bijan Jafari		11/15/11 09:44	Depleted
MC5220-1.6	Walk In Ref #22	Bijan Jafari	11/09/11 11:38	Retrieve from Storage
MC5220-1.6	Bijan Jafari		11/15/11 09:44	Depleted
MC5220-1.9	Walk In Ref #22	Bijan Jafari	11/09/11 11:38	Retrieve from Storage
MC5220-1.9	Bijan Jafari		11/15/11 09:44	Depleted
MC5220-1.13	VOC Ref #1	Jugal Patel	11/14/11 13:29	Retrieve from Storage
MC5220-1.13	Jugal Patel	GCMSN	11/14/11 13:29	Load on Instrument
MC5220-1.13	GCMSN	Jugal Patel	11/15/11 13:46	Unload from Instrument
MC5220-1.13	Jugal Patel	VOC Ref #1	11/15/11 13:46	Return to Storage
MC5220-1.14	VOC Ref #1	Jugal Patel	11/14/11 13:29	Retrieve from Storage
MC5220-1.14	Jugal Patel	GCMSN	11/14/11 13:29	Load on Instrument
MC5220-1.14	GCMSN	Jugal Patel	11/15/11 13:46	Unload from Instrument
MC5220-1.14	Jugal Patel	VOC Ref #1	11/15/11 13:46	Return to Storage
MC5220-1.16	VOC Ref #1	Jugal Patel	11/14/11 13:29	Retrieve from Storage
MC5220-1.16	Jugal Patel	GCMSN	11/14/11 13:29	Load on Instrument
MC5220-1.16	GCMSN	Jugal Patel	11/15/11 13:46	Unload from Instrument
MC5220-1.16	Jugal Patel	VOC Ref #1	11/15/11 13:46	Return to Storage
MC5220-1.17	VOC Ref #1	Jugal Patel	11/14/11 13:29	Retrieve from Storage
MC5220-1.17	Jugal Patel	GCMSN	11/14/11 13:29	Load on Instrument
MC5220-1.17	GCMSN	Jugal Patel	11/15/11 13:46	Unload from Instrument
MC5220-1.17	Jugal Patel	VOC Ref #1	11/15/11 13:46	Return to Storage
MC5220-1.21	VOC Ref #1	Jugal Patel	11/11/11 16:43	Retrieve from Storage
MC5220-1.21	Jugal Patel	GCMSN	11/11/11 16:43	Load on Instrument
MC5220-1.21	GCMSN	Jugal Patel	11/14/11 10:25	Unload from Instrument
MC5220-1.21	Jugal Patel	VOC Ref #1	11/14/11 10:25	Return to Storage
MC5220-1.24	VOC Ref #1	Corey Aldoupolis	11/14/11 15:29	Retrieve from Storage
MC5220-1.24	Corey Aldoupolis		11/14/11 15:31	Depleted
MC5220-1.26	VOC Ref #1	Corey Aldoupolis	11/14/11 15:29	Retrieve from Storage
MC5220-1.26	Corey Aldoupolis		11/14/11 15:31	Depleted
MC5220-1.27	VOC Ref #1	Corey Aldoupolis	11/14/11 15:29	Retrieve from Storage
MC5220-1.27	Corey Aldoupolis		11/14/11 15:31	Depleted
MC5220-2.3	Walk In Ref #22	Bijan Jafari	11/09/11 11:38	Retrieve from Storage

# Accutest Internal Chain of Custody

Job Number: MC5220  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL  
 Received: 11/04/11

4.3  
**4**

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
MC5220-2.3	Bijan Jafari		11/15/11 09:44	Depleted
MC5220-2.5	VOC Ref #1	Jugal Patel	11/11/11 16:43	Retrieve from Storage
MC5220-2.5	Jugal Patel	GCMSN	11/11/11 16:43	Load on Instrument
MC5220-2.5	GCMSN	Jugal Patel	11/14/11 10:25	Unload from Instrument
MC5220-2.5	Jugal Patel	VOC Ref #1	11/14/11 10:25	Return to Storage
MC5220-2.6	VOC Ref #1	Corey Aldoupolis	11/14/11 15:29	Retrieve from Storage
MC5220-2.6	Corey Aldoupolis		11/14/11 15:31	Depleted
MC5220-2.7	VOC Ref #1	Jugal Patel	11/14/11 13:29	Retrieve from Storage
MC5220-2.7	Jugal Patel	GCMSN	11/14/11 13:29	Load on Instrument
MC5220-2.7	GCMSN	Jugal Patel	11/15/11 13:46	Unload from Instrument
MC5220-2.7	Jugal Patel	VOC Ref #1	11/15/11 13:46	Return to Storage
MC5220-3.1	Walk In Ref #22	Bijan Jafari	11/09/11 11:38	Retrieve from Storage
MC5220-3.1	Bijan Jafari		11/15/11 09:44	Depleted
MC5220-3.5	VOC Ref #1	Jugal Patel	11/11/11 16:43	Retrieve from Storage
MC5220-3.5	Jugal Patel	GCMSN	11/11/11 16:43	Load on Instrument
MC5220-3.5	GCMSN	Jugal Patel	11/14/11 10:25	Unload from Instrument
MC5220-3.5	Jugal Patel	VOC Ref #1	11/14/11 10:25	Return to Storage
MC5220-3.7	VOC Ref #1	Jugal Patel	11/14/11 13:29	Retrieve from Storage
MC5220-3.7	Jugal Patel	GCMSN	11/14/11 13:29	Load on Instrument
MC5220-3.7	GCMSN	Jugal Patel	11/15/11 13:46	Unload from Instrument
MC5220-3.7	Jugal Patel	VOC Ref #1	11/15/11 13:46	Return to Storage
MC5220-3.9	VOC Ref #1	Corey Aldoupolis	11/14/11 15:29	Retrieve from Storage
MC5220-3.9	Corey Aldoupolis		11/14/11 15:31	Depleted
MC5220-4.4	Walk In Ref #22	Bijan Jafari	11/09/11 11:38	Retrieve from Storage
MC5220-4.4	Bijan Jafari		11/15/11 09:44	Depleted
MC5220-4.5	VOC Ref #1	Jugal Patel	11/11/11 16:43	Retrieve from Storage
MC5220-4.5	Jugal Patel	GCMSN	11/11/11 16:43	Load on Instrument
MC5220-4.5	GCMSN	Jugal Patel	11/14/11 10:25	Unload from Instrument
MC5220-4.5	Jugal Patel	VOC Ref #1	11/14/11 10:25	Return to Storage
MC5220-4.6	VOC Ref #1	Jugal Patel	11/14/11 13:29	Retrieve from Storage
MC5220-4.6	Jugal Patel	GCMSN	11/14/11 13:29	Load on Instrument
MC5220-4.6	GCMSN	Jugal Patel	11/15/11 13:46	Unload from Instrument
MC5220-4.6	Jugal Patel	VOC Ref #1	11/15/11 13:46	Return to Storage

# Accutest Internal Chain of Custody

Job Number: MC5220  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL  
 Received: 11/04/11

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**4**

Sample, Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
MC5220-4.7	VOC Ref #1	Jugal Patel	11/14/11 13:29	Retrieve from Storage
MC5220-4.7	Jugal Patel	GCMSN	11/14/11 13:29	Load on Instrument
MC5220-4.7	GCMSN	Jugal Patel	11/15/11 13:46	Unload from Instrument
MC5220-4.7	Jugal Patel	VOC Ref #1	11/15/11 13:46	Return to Storage
MC5220-4.8	VOC Ref #1	Corey Aldoupolis	11/14/11 15:29	Retrieve from Storage
MC5220-4.8	Corey Aldoupolis		11/14/11 15:31	Depleted
MC5220-5.3	Walk In Ref #22	Bijan Jafari	11/09/11 11:38	Retrieve from Storage
MC5220-5.3	Bijan Jafari		11/15/11 09:44	Depleted
MC5220-5.5	VOC Ref #1	Jugal Patel	11/11/11 16:43	Retrieve from Storage
MC5220-5.5	Jugal Patel	GCMSN	11/11/11 16:43	Load on Instrument
MC5220-5.5	GCMSN	Jugal Patel	11/14/11 10:25	Unload from Instrument
MC5220-5.5	Jugal Patel	VOC Ref #1	11/14/11 10:25	Return to Storage
MC5220-5.6	VOC Ref #1	Jugal Patel	11/14/11 13:29	Retrieve from Storage
MC5220-5.6	Jugal Patel	GCMSN	11/14/11 13:29	Load on Instrument
MC5220-5.6	GCMSN	Jugal Patel	11/15/11 13:46	Unload from Instrument
MC5220-5.6	Jugal Patel	VOC Ref #1	11/15/11 13:46	Return to Storage
MC5220-5.7	VOC Ref #1	Jugal Patel	11/14/11 13:29	Retrieve from Storage
MC5220-5.7	Jugal Patel	GCMSN	11/14/11 13:29	Load on Instrument
MC5220-5.7	GCMSN	Jugal Patel	11/15/11 13:46	Unload from Instrument
MC5220-5.7	Jugal Patel	VOC Ref #1	11/15/11 13:46	Return to Storage
MC5220-5.9	VOC Ref #1	Corey Aldoupolis	11/14/11 15:29	Retrieve from Storage
MC5220-5.9	Corey Aldoupolis		11/14/11 15:31	Depleted
MC5220-6.1	VOC Ref #1	Jugal Patel	11/11/11 16:43	Retrieve from Storage
MC5220-6.1	Jugal Patel	GCMSN	11/11/11 16:43	Load on Instrument
MC5220-6.1	GCMSN	Jugal Patel	11/14/11 10:25	Unload from Instrument
MC5220-6.1	Jugal Patel	VOC Ref #1	11/14/11 10:25	Return to Storage
MC5220-7.1	VOC Ref #1	Corey Aldoupolis	11/14/11 15:29	Retrieve from Storage
MC5220-7.1	Corey Aldoupolis		11/14/11 15:31	Depleted
MC5220-8.1	Walk In Ref #22	Bijan Jafari	11/09/11 11:38	Retrieve from Storage
MC5220-8.1	Bijan Jafari		11/15/11 09:44	Depleted
MC5220-8.5	VOC Ref #1	Jugal Patel	11/11/11 16:43	Retrieve from Storage
MC5220-8.5	Jugal Patel	GCMSN	11/11/11 16:43	Load on Instrument
MC5220-8.5	GCMSN	Jugal Patel	11/14/11 10:25	Unload from Instrument
MC5220-8.5	Jugal Patel	VOC Ref #1	11/14/11 10:25	Return to Storage

# Accutest Internal Chain of Custody

Job Number: MC5220  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL  
 Received: 11/04/11

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**4**

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
MC5220-8.7	VOC Ref #1	Jugal Patel	11/14/11 13:29	Retrieve from Storage
MC5220-8.7	Jugal Patel	GCMSN	11/14/11 13:29	Load on Instrument
MC5220-8.7	GCMSN	Jugal Patel	11/15/11 13:46	Unload from Instrument
MC5220-8.7	Jugal Patel	VOC Ref #1	11/15/11 13:46	Return to Storage
MC5220-8.8	VOC Ref #1	Corey Aldoupolis	11/14/11 15:29	Retrieve from Storage
MC5220-8.8	Corey Aldoupolis		11/14/11 15:31	Depleted
MC5220-9.3	Walk In Ref #22	Bijan Jafari	11/09/11 11:38	Retrieve from Storage
MC5220-9.3	Bijan Jafari		11/15/11 09:44	Depleted
MC5220-9.5	VOC Ref #1	Jugal Patel	11/11/11 16:43	Retrieve from Storage
MC5220-9.5	Jugal Patel	GCMSN	11/11/11 16:43	Load on Instrument
MC5220-9.5	GCMSN	Jugal Patel	11/14/11 10:25	Unload from Instrument
MC5220-9.5	Jugal Patel	VOC Ref #1	11/14/11 10:25	Return to Storage
MC5220-9.7	VOC Ref #1	Jugal Patel	11/14/11 13:29	Retrieve from Storage
MC5220-9.7	Jugal Patel	GCMSN	11/14/11 13:29	Load on Instrument
MC5220-9.7	GCMSN	Jugal Patel	11/15/11 13:46	Unload from Instrument
MC5220-9.7	Jugal Patel	VOC Ref #1	11/15/11 13:46	Return to Storage
MC5220-9.8	VOC Ref #1	Corey Aldoupolis	11/14/11 15:29	Retrieve from Storage
MC5220-9.8	Corey Aldoupolis		11/14/11 15:31	Depleted
MC5220-10.1	Walk In Ref #22	Bijan Jafari	11/09/11 11:38	Retrieve from Storage
MC5220-10.1	Bijan Jafari		11/15/11 09:44	Depleted
MC5220-10.5	VOC Ref #1	Jugal Patel	11/11/11 16:43	Retrieve from Storage
MC5220-10.5	Jugal Patel	GCMSN	11/11/11 16:43	Load on Instrument
MC5220-10.5	GCMSN	Jugal Patel	11/14/11 10:25	Unload from Instrument
MC5220-10.5	Jugal Patel	VOC Ref #1	11/14/11 10:25	Return to Storage
MC5220-10.7	VOC Ref #1	Jugal Patel	11/14/11 13:29	Retrieve from Storage
MC5220-10.7	Jugal Patel	GCMSN	11/14/11 13:29	Load on Instrument
MC5220-10.7	GCMSN	Jugal Patel	11/15/11 13:46	Unload from Instrument
MC5220-10.7	Jugal Patel	VOC Ref #1	11/15/11 13:46	Return to Storage
MC5220-10.9	VOC Ref #1	Corey Aldoupolis	11/14/11 15:29	Retrieve from Storage
MC5220-10.9	Corey Aldoupolis		11/14/11 15:31	Depleted
MC5220-11.2	Walk In Ref #22	Bijan Jafari	11/09/11 11:38	Retrieve from Storage
MC5220-11.2	Bijan Jafari		11/15/11 09:44	Depleted



# Accutest Internal Chain of Custody

Job Number: MC5220  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL  
 Received: 11/04/11

4.3  
**4**

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
MC5220-11.5	VOC Ref #1	Jugal Patel	11/11/11 16:43	Retrieve from Storage
MC5220-11.5	Jugal Patel	GCMSN	11/11/11 16:43	Load on Instrument
MC5220-11.5	GCMSN	Jugal Patel	11/14/11 10:25	Unload from Instrument
MC5220-11.5	Jugal Patel	VOC Ref #1	11/14/11 10:25	Return to Storage
MC5220-11.7	VOC Ref #1	Jugal Patel	11/14/11 13:29	Retrieve from Storage
MC5220-11.7	Jugal Patel	GCMSN	11/14/11 13:29	Load on Instrument
MC5220-11.7	GCMSN	Jugal Patel	11/15/11 13:46	Unload from Instrument
MC5220-11.7	Jugal Patel	VOC Ref #1	11/15/11 13:46	Return to Storage
MC5220-11.9	VOC Ref #1	Corey Aldoupolis	11/14/11 15:29	Retrieve from Storage
MC5220-11.9	Corey Aldoupolis		11/14/11 15:31	Depleted
MC5220-12.3	Walk In Ref #22	Mahmoud Afzali	11/10/11 09:49	Retrieve from Storage
MC5220-12.3	Mahmoud Afzali	Walk In Ref #22	11/10/11 15:32	Return to Storage
MC5220-12.4	Walk In Ref #22	Mahmoud Afzali	11/10/11 09:49	Retrieve from Storage
MC5220-12.4	Mahmoud Afzali		11/11/11 14:54	Depleted
MC5220-12.5	VOC Ref #1	Jugal Patel	11/11/11 16:43	Retrieve from Storage
MC5220-12.5	Jugal Patel	GCMSN	11/11/11 16:43	Load on Instrument
MC5220-12.5	GCMSN	Jugal Patel	11/14/11 10:25	Unload from Instrument
MC5220-12.5	Jugal Patel	VOC Ref #1	11/14/11 10:25	Return to Storage
MC5220-12.7	VOC Ref #1	Jugal Patel	11/14/11 13:29	Retrieve from Storage
MC5220-12.7	Jugal Patel	GCMSN	11/14/11 13:29	Load on Instrument
MC5220-12.7	GCMSN	Jugal Patel	11/15/11 13:46	Unload from Instrument
MC5220-12.7	Jugal Patel	VOC Ref #1	11/15/11 13:46	Return to Storage
MC5220-12.9	VOC Ref #1	Corey Aldoupolis	11/14/11 15:29	Retrieve from Storage
MC5220-12.9	Corey Aldoupolis		11/14/11 15:31	Depleted

## GC/MS Volatiles

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## QC Data Summaries

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Includes the following where applicable:

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

# Method Blank Summary

Job Number: MC5220

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2144-MB	N57226.D	1	11/12/11	JP	n/a	n/a	MSN2144

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5220-4, MC5220-5, MC5220-6

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	ND	0.50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	

5.1.1  
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# Method Blank Summary

Job Number: MC5220

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2144-MB	N57226.D	1	11/12/11	JP	n/a	n/a	MSN2144

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5220-4, MC5220-5, MC5220-6

CAS No.	Compound	Result	RL	Units	Q
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	

5.1.1

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# Method Blank Summary

Job Number: MC5220

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2144-MB	N57226.D	1	11/12/11	JP	n/a	n/a	MSN2144

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5220-4, MC5220-5, MC5220-6

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	92%	70-130%
2037-26-5	Toluene-D8	92%	70-130%
460-00-4	4-Bromofluorobenzene	85%	70-130%

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

5.1.1



# Method Blank Summary

Job Number: MC5220

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2145-MB	N57253.D	1	11/14/11	JP	n/a	n/a	MSN2145

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5220-1, MC5220-2, MC5220-3, MC5220-4, MC5220-5, MC5220-8, MC5220-9, MC5220-10, MC5220-11, MC5220-12

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	ND	0.50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	

5.12  
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## Method Blank Summary

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Job Number: MC5220

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2145-MB	N57253.D	1	11/14/11	JP	n/a	n/a	MSN2145

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5220-1, MC5220-2, MC5220-3, MC5220-4, MC5220-5, MC5220-8, MC5220-9, MC5220-10, MC5220-11, MC5220-12

CAS No.	Compound	Result	RL	Units	Q
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	

5.12

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# Method Blank Summary

Job Number: MC5220

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2145-MB	N57253.D	1	11/14/11	JP	n/a	n/a	MSN2145

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5220-1, MC5220-2, MC5220-3, MC5220-4, MC5220-5, MC5220-8, MC5220-9, MC5220-10, MC5220-11, MC5220-12

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	96%	70-130%
2037-26-5	Toluene-D8	90%	70-130%
460-00-4	4-Bromofluorobenzene	86%	70-130%

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

5.1.2  
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# Blank Spike Summary

Job Number: MC5220

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2144-BS	N57224.D	1	11/12/11	JP	n/a	n/a	MSN2144

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5220-4, MC5220-5, MC5220-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	50	66.5	133* a	70-130
107-02-8	Acrolein	250	317	127	70-130
107-13-1	Acrylonitrile	50	230	460* b	70-130
71-43-2	Benzene	50	44.8	90	70-130
108-86-1	Bromobenzene	50	47.6	95	70-130
74-97-5	Bromochloromethane	50	46.3	93	70-130
75-27-4	Bromodichloromethane	50	58.7	117	70-130
75-25-2	Bromoform	50	56.3	113	70-130
74-83-9	Bromomethane	50	36.1	72	70-130
78-93-3	2-Butanone (MEK)	50	67.6	135* a	70-130
104-51-8	n-Butylbenzene	50	46.3	93	70-130
135-98-8	sec-Butylbenzene	50	45.8	92	70-130
98-06-6	tert-Butylbenzene	50	47.1	94	70-130
75-15-0	Carbon disulfide	50	41.5	83	70-130
56-23-5	Carbon tetrachloride	50	68.2	136* a	70-130
108-90-7	Chlorobenzene	50	47.2	94	70-130
75-00-3	Chloroethane	50	42.1	84	70-130
110-75-8	2-Chloroethyl vinyl ether	50	45.3	91	70-130
67-66-3	Chloroform	50	49.8	100	70-130
74-87-3	Chloromethane	50	40.3	81	70-130
95-49-8	o-Chlorotoluene	50	43.1	86	70-130
106-43-4	p-Chlorotoluene	50	45.5	91	70-130
124-48-1	Dibromochloromethane	50	62.9	126	70-130
95-50-1	1,2-Dichlorobenzene	50	48.4	97	70-130
541-73-1	1,3-Dichlorobenzene	50	46.7	93	70-130
106-46-7	1,4-Dichlorobenzene	50	47.7	95	70-130
75-71-8	Dichlorodifluoromethane	50	46.7	93	70-130
75-34-3	1,1-Dichloroethane	50	47.7	95	70-130
107-06-2	1,2-Dichloroethane	50	55.6	111	70-130
75-35-4	1,1-Dichloroethene	50	47.6	95	70-130
156-59-2	cis-1,2-Dichloroethene	50	42.3	85	70-130
156-60-5	trans-1,2-Dichloroethene	50	43.1	86	70-130
78-87-5	1,2-Dichloropropane	50	45.3	91	70-130
142-28-9	1,3-Dichloropropane	50	47.0	94	70-130
594-20-7	2,2-Dichloropropane	50	58.6	117	70-130
563-58-6	1,1-Dichloropropene	50	51.0	102	70-130

5.2.1  
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# Blank Spike Summary

Job Number: MC5220  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2144-BS	N57224.D	1	11/12/11	JP	n/a	n/a	MSN2144

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5220-4, MC5220-5, MC5220-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
10061-01-5	cis-1,3-Dichloropropene	50	50.2	100	70-130
10061-02-6	trans-1,3-Dichloropropene	50	66.6	133* a	70-130
123-91-1	1,4-Dioxane	250	262	105	70-130
97-63-2	Ethyl methacrylate	50	46.1	92	77-137
100-41-4	Ethylbenzene	50	46.5	93	70-130
87-68-3	Hexachlorobutadiene	50	58.0	116	70-130
591-78-6	2-Hexanone	50	63.6	127	70-130
98-82-8	Isopropylbenzene	50	52.0	104	70-130
99-87-6	p-Isopropyltoluene	50	50.1	100	70-130
1634-04-4	Methyl Tert Butyl Ether	50	65.7	131* a	70-130
108-10-1	4-Methyl-2-pentanone (MIBK)	50	49.7	99	70-130
74-95-3	Methylene bromide	50	52.2	104	70-130
75-09-2	Methylene chloride	50	45.0	90	70-130
91-20-3	Naphthalene	50	43.6	87	70-130
103-65-1	n-Propylbenzene	50	43.7	87	70-130
100-42-5	Styrene	50	48.9	98	70-130
630-20-6	1,1,1,2-Tetrachloroethane	50	57.9	116	70-130
79-34-5	1,1,2,2-Tetrachloroethane	50	43.2	86	70-130
127-18-4	Tetrachloroethene	50	50.1	100	70-130
108-88-3	Toluene	50	47.6	95	70-130
87-61-6	1,2,3-Trichlorobenzene	50	51.8	104	70-130
120-82-1	1,2,4-Trichlorobenzene	50	52.5	105	70-130
71-55-6	1,1,1-Trichloroethane	50	55.5	111	70-130
79-00-5	1,1,2-Trichloroethane	50	48.5	97	70-130
79-01-6	Trichloroethene	50	50.6	101	70-130
75-69-4	Trichlorofluoromethane	50	50.9	102	70-130
96-18-4	1,2,3-Trichloropropane	50	52.7	105	70-130
95-63-6	1,2,4-Trimethylbenzene	50	45.2	90	70-130
108-67-8	1,3,5-Trimethylbenzene	50	45.7	91	70-130
108-05-4	Vinyl Acetate	50	57.8	116	70-130
75-01-4	Vinyl chloride	50	37.9	76	70-130
	m,p-Xylene	100	92.9	93	70-130
95-47-6	o-Xylene	50	48.0	96	70-130
1330-20-7	Xylene (total)	150	141	94	70-130

5.2.1

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## Blank Spike Summary

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Job Number: MC5220

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2144-BS	N57224.D	1	11/12/11	JP	n/a	n/a	MSN2144

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5220-4, MC5220-5, MC5220-6

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	92%	70-130%
2037-26-5	Toluene-D8	92%	70-130%
460-00-4	4-Bromofluorobenzene	83%	70-130%

- (a) Outside control limits. Blank Spike meets program technical requirements.
- (b) Outside control limits. Associated samples are non-detect for this compound.

5.2.1

5

# Blank Spike Summary

Job Number: MC5220

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2145-BS	N57251.D	1	11/14/11	JP	n/a	n/a	MSN2145

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5220-1, MC5220-2, MC5220-3, MC5220-4, MC5220-5, MC5220-8, MC5220-9, MC5220-10, MC5220-11, MC5220-12

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	50	78.0	156* a	70-130
107-02-8	Acrolein	250	346	138* a	70-130
107-13-1	Acrylonitrile	50	244	488* b	70-130
71-43-2	Benzene	50	43.4	87	70-130
108-86-1	Bromobenzene	50	48.4	97	70-130
74-97-5	Bromochloromethane	50	46.5	93	70-130
75-27-4	Bromodichloromethane	50	61.2	122	70-130
75-25-2	Bromoform	50	62.4	125	70-130
74-83-9	Bromomethane	50	39.3	79	70-130
78-93-3	2-Butanone (MEK)	50	75.1	150* a	70-130
104-51-8	n-Butylbenzene	50	49.7	99	70-130
135-98-8	sec-Butylbenzene	50	47.9	96	70-130
98-06-6	tert-Butylbenzene	50	50.0	100	70-130
75-15-0	Carbon disulfide	50	37.3	75	70-130
56-23-5	Carbon tetrachloride	50	72.5	145* a	70-130
108-90-7	Chlorobenzene	50	47.9	96	70-130
75-00-3	Chloroethane	50	35.7	71	70-130
110-75-8	2-Chloroethyl vinyl ether	50	44.3	89	70-130
67-66-3	Chloroform	50	50.7	101	70-130
74-87-3	Chloromethane	50	34.3	69* a	70-130
95-49-8	o-Chlorotoluene	50	45.0	90	70-130
106-43-4	p-Chlorotoluene	50	47.9	96	70-130
124-48-1	Dibromochloromethane	50	68.6	137* a	70-130
95-50-1	1,2-Dichlorobenzene	50	49.7	99	70-130
541-73-1	1,3-Dichlorobenzene	50	48.8	98	70-130
106-46-7	1,4-Dichlorobenzene	50	49.0	98	70-130
75-71-8	Dichlorodifluoromethane	50	42.1	84	70-130
75-34-3	1,1-Dichloroethane	50	46.4	93	70-130
107-06-2	1,2-Dichloroethane	50	58.4	117	70-130
75-35-4	1,1-Dichloroethene	50	43.9	88	70-130
156-59-2	cis-1,2-Dichloroethene	50	40.3	81	70-130
156-60-5	trans-1,2-Dichloroethene	50	41.1	82	70-130
78-87-5	1,2-Dichloropropane	50	44.3	89	70-130
142-28-9	1,3-Dichloropropane	50	47.8	96	70-130
594-20-7	2,2-Dichloropropane	50	71.4	143* a	70-130
563-58-6	1,1-Dichloropropene	50	51.6	103	70-130

5.2.2  
5

# Blank Spike Summary

Job Number: MC5220

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2145-BS	N57251.D	1	11/14/11	JP	n/a	n/a	MSN2145

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5220-1, MC5220-2, MC5220-3, MC5220-4, MC5220-5, MC5220-8, MC5220-9, MC5220-10, MC5220-11, MC5220-12

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
10061-01-5	cis-1,3-Dichloropropene	50	52.4	105	70-130
10061-02-6	trans-1,3-Dichloropropene	50	72.5	145* a	70-130
123-91-1	1,4-Dioxane	250	282	113	70-130
97-63-2	Ethyl methacrylate	50	48.9	98	77-137
100-41-4	Ethylbenzene	50	47.3	95	70-130
87-68-3	Hexachlorobutadiene	50	63.7	127	70-130
591-78-6	2-Hexanone	50	73.8	148* a	70-130
98-82-8	Isopropylbenzene	50	53.7	107	70-130
99-87-6	p-Isopropyltoluene	50	51.5	103	70-130
1634-04-4	Methyl Tert Butyl Ether	50	68.7	137* a	70-130
108-10-1	4-Methyl-2-pentanone (MIBK)	50	56.6	113	70-130
74-95-3	Methylene bromide	50	54.8	110	70-130
75-09-2	Methylene chloride	50	43.0	86	70-130
91-20-3	Naphthalene	50	47.4	95	70-130
103-65-1	n-Propylbenzene	50	46.0	92	70-130
100-42-5	Styrene	50	49.7	99	70-130
630-20-6	1,1,1,2-Tetrachloroethane	50	59.7	119	70-130
79-34-5	1,1,2,2-Tetrachloroethane	50	47.5	95	70-130
127-18-4	Tetrachloroethene	50	52.3	105	70-130
108-88-3	Toluene	50	47.4	95	70-130
87-61-6	1,2,3-Trichlorobenzene	50	55.9	112	70-130
120-82-1	1,2,4-Trichlorobenzene	50	56.6	113	70-130
71-55-6	1,1,1-Trichloroethane	50	57.4	115	70-130
79-00-5	1,1,2-Trichloroethane	50	50.3	101	70-130
79-01-6	Trichloroethene	50	49.5	99	70-130
75-69-4	Trichlorofluoromethane	50	50.3	101	70-130
96-18-4	1,2,3-Trichloropropane	50	59.1	118	70-130
95-63-6	1,2,4-Trimethylbenzene	50	46.5	93	70-130
108-67-8	1,3,5-Trimethylbenzene	50	47.7	95	70-130
108-05-4	Vinyl Acetate	50	62.1	124	70-130
75-01-4	Vinyl chloride	50	31.9	64* a	70-130
	m,p-Xylene	100	93.3	93	70-130
95-47-6	o-Xylene	50	48.1	96	70-130
1330-20-7	Xylene (total)	150	141	94	70-130

5.2.2  
5

# Blank Spike Summary

Job Number: MC5220

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2145-BS	N57251.D	1	11/14/11	JP	n/a	n/a	MSN2145

5.2.2  
5

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5220-1, MC5220-2, MC5220-3, MC5220-4, MC5220-5, MC5220-8, MC5220-9, MC5220-10, MC5220-11, MC5220-12

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	94%	70-130%
2037-26-5	Toluene-D8	92%	70-130%
460-00-4	4-Bromofluorobenzene	83%	70-130%

(a) Outside control limits. Blank Spike meets program technical requirements.

(b) Outside control limits. Associated samples are non-detect for this compound.

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5220  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5203-22MS	N57229.D	1	11/12/11	JP	n/a	n/a	MSN2144
MC5203-22MSD	N57230.D	1	11/12/11	JP	n/a	n/a	MSN2144
MC5203-22	N57228.D	1	11/12/11	JP	n/a	n/a	MSN2144

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5220-4, MC5220-5, MC5220-6

CAS No.	Compound	MC5203-22 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND	50	27.8	56* a	28.5	57* a	2	70-130/30
107-02-8	Acrolein	ND	250	262	105	269	108	3	70-130/30
107-13-1	Acrylonitrile	ND	50	234	468* b	237	474* b	1	70-130/30
71-43-2	Benzene	ND	50	47.0	94	45.8	92	3	70-130/30
108-86-1	Bromobenzene	ND	50	48.2	96	48.5	97	1	70-130/30
74-97-5	Bromochloromethane	ND	50	47.8	96	47.6	95	0	70-130/30
75-27-4	Bromodichloromethane	ND	50	61.8	124	60.8	122	2	70-130/30
75-25-2	Bromoform	ND	50	57.8	116	58.6	117	1	70-130/30
74-83-9	Bromomethane	ND	50	34.7	69* a	36.7	73	6	70-130/30
78-93-3	2-Butanone (MEK)	ND	50	42.4	85	45.3	91	7	70-130/30
104-51-8	n-Butylbenzene	ND	50	48.5	97	47.9	96	1	70-130/30
135-98-8	sec-Butylbenzene	ND	50	48.6	97	47.9	96	1	70-130/30
98-06-6	tert-Butylbenzene	ND	50	50.1	100	49.0	98	2	70-130/30
75-15-0	Carbon disulfide	ND	50	43.6	87	42.3	85	3	70-130/30
56-23-5	Carbon tetrachloride	ND	50	74.3	149* a	70.7	141* a	5	70-130/30
108-90-7	Chlorobenzene	ND	50	51.1	102	49.9	100	2	70-130/30
75-00-3	Chloroethane	ND	50	43.4	87	42.1	84	3	70-130/30
110-75-8	2-Chloroethyl vinyl ether	ND	50	47.4	95	46.9	94	1	70-130/30
67-66-3	Chloroform	ND	50	53.4	107	51.5	103	4	70-130/30
74-87-3	Chloromethane	ND	50	40.5	81	40.7	81	0	70-130/30
95-49-8	o-Chlorotoluene	ND	50	45.0	90	44.6	89	1	70-130/30
106-43-4	p-Chlorotoluene	ND	50	47.6	95	47.4	95	0	70-130/30
124-48-1	Dibromochloromethane	ND	50	67.7	135* a	68.0	136* a	0	70-130/30
95-50-1	1,2-Dichlorobenzene	ND	50	49.6	99	49.8	100	0	70-130/30
541-73-1	1,3-Dichlorobenzene	ND	50	48.5	97	48.6	97	0	70-130/30
106-46-7	1,4-Dichlorobenzene	ND	50	48.9	98	49.2	98	1	70-130/30
75-71-8	Dichlorodifluoromethane	ND	50	51.1	102	48.5	97	5	70-130/30
75-34-3	1,1-Dichloroethane	ND	50	49.8	100	48.5	97	3	70-130/30
107-06-2	1,2-Dichloroethane	ND	50	58.9	118	57.1	114	3	70-130/30
75-35-4	1,1-Dichloroethene	ND	50	50.7	101	49.5	99	2	70-130/30
156-59-2	cis-1,2-Dichloroethene	ND	50	44.1	88	43.2	86	2	70-130/30
156-60-5	trans-1,2-Dichloroethene	ND	50	45.7	91	44.2	88	3	70-130/30
78-87-5	1,2-Dichloropropane	ND	50	47.4	95	46.9	94	1	70-130/30
142-28-9	1,3-Dichloropropane	ND	50	49.1	98	48.8	98	1	70-130/30
594-20-7	2,2-Dichloropropane	ND	50	61.1	122	57.6	115	6	70-130/30
563-58-6	1,1-Dichloropropene	ND	50	54.8	110	52.8	106	4	70-130/30

5.3.1

5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5220

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5203-22MS	N57229.D	1	11/12/11	JP	n/a	n/a	MSN2144
MC5203-22MSD	N57230.D	1	11/12/11	JP	n/a	n/a	MSN2144
MC5203-22	N57228.D	1	11/12/11	JP	n/a	n/a	MSN2144

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5220-4, MC5220-5, MC5220-6

CAS No.	Compound	MC5203-22 ug/l	Spike Q	ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
10061-01-5	cis-1,3-Dichloropropene	ND		50	51.8	104	51.0	102	2	70-130/30
10061-02-6	trans-1,3-Dichloropropene	ND		50	68.7	137* <sup>a</sup>	67.9	136* <sup>a</sup>	1	70-130/30
123-91-1	1,4-Dioxane	ND		250	240	96	260	104	8	70-130/30
97-63-2	Ethyl methacrylate	ND		50	45.4	91	47.2	94	4	72-139/30
100-41-4	Ethylbenzene	ND		50	50.9	102	49.3	99	3	70-130/30
87-68-3	Hexachlorobutadiene	ND		50	60.5	121	60.2	120	0	70-130/30
591-78-6	2-Hexanone	ND		50	43.9	88	45.8	92	4	70-130/30
98-82-8	Isopropylbenzene	ND		50	54.3	109	54.0	108	1	70-130/30
99-87-6	p-Isopropyltoluene	ND		50	52.5	105	52.1	104	1	70-130/30
1634-04-4	Methyl Tert Butyl Ether	ND		50	67.4	135* <sup>a</sup>	67.3	135* <sup>a</sup>	0	70-130/30
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		50	48.1	96	50.1	100	4	70-130/30
74-95-3	Methylene bromide	ND		50	54.6	109	53.8	108	1	70-130/30
75-09-2	Methylene chloride	ND		50	46.3	93	45.2	90	2	70-130/30
91-20-3	Naphthalene	ND		50	38.5	77	44.6	89	15	70-130/30
103-65-1	n-Propylbenzene	ND		50	45.7	91	45.4	91	1	70-130/30
100-42-5	Styrene	ND		50	52.0	104	51.6	103	1	70-130/30
630-20-6	1,1,1,2-Tetrachloroethane	ND		50	62.4	125	61.8	124	1	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	ND		50	43.4	87	45.3	91	4	70-130/30
127-18-4	Tetrachloroethene	ND		50	54.1	108	52.9	106	2	70-130/30
108-88-3	Toluene	ND		50	50.7	101	49.5	99	2	70-130/30
87-61-6	1,2,3-Trichlorobenzene	ND		50	48.6	97	53.3	107	9	70-130/30
120-82-1	1,2,4-Trichlorobenzene	ND		50	51.6	103	54.4	109	5	70-130/30
71-55-6	1,1,1-Trichloroethane	ND		50	60.1	120	56.9	114	5	70-130/30
79-00-5	1,1,2-Trichloroethane	ND		50	50.3	101	50.0	100	1	70-130/30
79-01-6	Trichloroethene	0.88	J	50	54.5	107	52.0	102	5	70-130/30
75-69-4	Trichlorofluoromethane	ND		50	56.7	113	53.3	107	6	70-130/30
96-18-4	1,2,3-Trichloropropane	ND		50	51.1	102	53.2	106	4	70-130/30
95-63-6	1,2,4-Trimethylbenzene	ND		50	46.8	94	46.7	93	0	70-130/30
108-67-8	1,3,5-Trimethylbenzene	ND		50	47.9	96	47.4	95	1	70-130/30
108-05-4	Vinyl Acetate	ND		50	54.6	109	56.2	112	3	70-130/30
75-01-4	Vinyl chloride	ND		50	40.2	80	39.5	79	2	70-130/30
	m,p-Xylene	ND		100	99.9	100	97.3	97	3	70-130/30
95-47-6	o-Xylene	ND		50	51.9	104	50.7	101	2	70-130/30
1330-20-7	Xylene (total)	ND		150	152	101	148	99	3	70-130/30

5.3.1

5



# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5220

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5203-22MS	N57229.D	1	11/12/11	JP	n/a	n/a	MSN2144
MC5203-22MSD	N57230.D	1	11/12/11	JP	n/a	n/a	MSN2144
MC5203-22	N57228.D	1	11/12/11	JP	n/a	n/a	MSN2144

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5220-4, MC5220-5, MC5220-6

CAS No.	Surrogate Recoveries	MS	MSD	MC5203-22	Limits
1868-53-7	Dibromofluoromethane	95%	93%	95%	70-130%
2037-26-5	Toluene-D8	94%	94%	92%	70-130%
460-00-4	4-Bromofluorobenzene	82%	83%	85%	70-130%

- (a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
- (b) Outside control limits. Associated samples are non-detect for this compound.

5.3.1  
5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5220

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5220-1MS	N57264.D	1	11/14/11	JP	n/a	n/a	MSN2145
MC5220-1MSD	N57265.D	1	11/14/11	JP	n/a	n/a	MSN2145
MC5220-1	N57263.D	1	11/14/11	JP	n/a	n/a	MSN2145

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5220-1, MC5220-2, MC5220-3, MC5220-4, MC5220-5, MC5220-8, MC5220-9, MC5220-10, MC5220-11, MC5220-12

CAS No.	Compound	MC5220-1 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND	50	28.7	57* a	29.6	59* a	3	70-130/30
107-02-8	Acrolein	ND	250	273	109	286	114	5	70-130/30
107-13-1	Acrylonitrile	ND	50	249	498* b	248	496* b	0	70-130/30
71-43-2	Benzene	1.9	50	44.3	85	45.2	87	2	70-130/30
108-86-1	Bromobenzene	ND	50	46.7	93	49.0	98	5	70-130/30
74-97-5	Bromochloromethane	ND	50	45.4	91	46.5	93	2	70-130/30
75-27-4	Bromodichloromethane	ND	50	61.3	123	61.0	122	0	70-130/30
75-25-2	Bromoform	ND	50	58.4	117	60.9	122	4	70-130/30
74-83-9	Bromomethane	ND	50	23.1	46* a	32.9	66* a	35* c	70-130/30
78-93-3	2-Butanone (MEK)	ND	50	46.3	93	44.2	88	5	70-130/30
104-51-8	n-Butylbenzene	ND	50	47.8	96	49.6	99	4	70-130/30
135-98-8	sec-Butylbenzene	ND	50	45.9	92	47.6	95	4	70-130/30
98-06-6	tert-Butylbenzene	ND	50	47.5	95	48.9	98	3	70-130/30
75-15-0	Carbon disulfide	ND	50	36.9	74	37.3	75	1	70-130/30
56-23-5	Carbon tetrachloride	ND	50	67.6	135* a	67.4	135* a	0	70-130/30
108-90-7	Chlorobenzene	ND	50	46.4	93	48.4	97	4	70-130/30
75-00-3	Chloroethane	ND	50	34.9	70	35.4	71	1	70-130/30
110-75-8	2-Chloroethyl vinyl ether	ND	50	44.5	89	45.3	91	2	70-130/30
67-66-3	Chloroform	ND	50	51.3	103	50.8	102	1	70-130/30
74-87-3	Chloromethane	ND	50	27.4	55* a	29.5	59* a	7	70-130/30
95-49-8	o-Chlorotoluene	ND	50	43.2	86	45.0	90	4	70-130/30
106-43-4	p-Chlorotoluene	ND	50	45.7	91	48.0	96	5	70-130/30
124-48-1	Dibromochloromethane	ND	50	65.5	131* a	67.1	134* a	2	70-130/30
95-50-1	1,2-Dichlorobenzene	ND	50	48.3	97	50.0	100	3	70-130/30
541-73-1	1,3-Dichlorobenzene	ND	50	46.8	94	48.9	98	4	70-130/30
106-46-7	1,4-Dichlorobenzene	ND	50	47.4	95	49.6	99	5	70-130/30
75-71-8	Dichlorodifluoromethane	ND	50	38.2	76	38.2	76	0	70-130/30
75-34-3	1,1-Dichloroethane	ND	50	46.1	92	46.8	94	2	70-130/30
107-06-2	1,2-Dichloroethane	ND	50	58.7	117	57.4	115	2	70-130/30
75-35-4	1,1-Dichloroethene	ND	50	43.0	86	43.7	87	2	70-130/30
156-59-2	cis-1,2-Dichloroethene	ND	50	41.2	82	41.0	82	0	70-130/30
156-60-5	trans-1,2-Dichloroethene	ND	50	40.4	81	42.5	85	5	70-130/30
78-87-5	1,2-Dichloropropane	ND	50	44.5	89	45.3	91	2	70-130/30
142-28-9	1,3-Dichloropropane	ND	50	46.2	92	48.2	96	4	70-130/30
594-20-7	2,2-Dichloropropane	ND	50	72.4	145* a	70.3	141* a	3	70-130/30
563-58-6	1,1-Dichloropropene	ND	50	49.3	99	50.6	101	3	70-130/30

5.3.2



# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5220

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5220-1MS	N57264.D	1	11/14/11	JP	n/a	n/a	MSN2145
MC5220-1MSD	N57265.D	1	11/14/11	JP	n/a	n/a	MSN2145
MC5220-1	N57263.D	1	11/14/11	JP	n/a	n/a	MSN2145

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5220-1, MC5220-2, MC5220-3, MC5220-4, MC5220-5, MC5220-8, MC5220-9, MC5220-10, MC5220-11, MC5220-12

CAS No.	Compound	MC5220-1 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
10061-01-5	cis-1,3-Dichloropropene	ND	50	51.6	103	53.0	106	3	70-130/30
10061-02-6	trans-1,3-Dichloropropene	ND	50	70.3	141* a	71.6	143* a	2	70-130/30
123-91-1	1,4-Dioxane	ND	250	280	112	278	111	1	70-130/30
97-63-2	Ethyl methacrylate	ND	50	52.3	105	53.5	107	2	72-139/30
100-41-4	Ethylbenzene	ND	50	46.2	92	47.9	96	4	70-130/30
87-68-3	Hexachlorobutadiene	ND	50	60.9	122	63.1	126	4	70-130/30
591-78-6	2-Hexanone	ND	50	50.1	100	50.9	102	2	70-130/30
98-82-8	Isopropylbenzene	ND	50	51.1	102	53.5	107	5	70-130/30
99-87-6	p-Isopropyltoluene	ND	50	49.7	99	51.9	104	4	70-130/30
1634-04-4	Methyl Tert Butyl Ether	3.0	50	64.5	123	64.4	123	0	70-130/30
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	50	55.3	111	56.2	112	2	70-130/30
74-95-3	Methylene bromide	ND	50	53.9	108	54.2	108	1	70-130/30
75-09-2	Methylene chloride	ND	50	42.7	85	43.2	86	1	70-130/30
91-20-3	Naphthalene	ND	50	43.8	88	47.9	96	9	70-130/30
103-65-1	n-Propylbenzene	ND	50	43.7	87	45.4	91	4	70-130/30
100-42-5	Styrene	ND	50	47.9	96	50.3	101	5	70-130/30
630-20-6	1,1,1,2-Tetrachloroethane	ND	50	57.9	116	59.6	119	3	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	ND	50	46.0	92	47.5	95	3	70-130/30
127-18-4	Tetrachloroethene	ND	50	48.8	98	51.2	102	5	70-130/30
108-88-3	Toluene	ND	50	47.6	95	48.1	96	1	70-130/30
87-61-6	1,2,3-Trichlorobenzene	ND	50	54.1	108	57.3	115	6	70-130/30
120-82-1	1,2,4-Trichlorobenzene	ND	50	53.8	108	57.7	115	7	70-130/30
71-55-6	1,1,1-Trichloroethane	ND	50	56.4	113	55.5	111	2	70-130/30
79-00-5	1,1,2-Trichloroethane	ND	50	49.8	100	51.2	102	3	70-130/30
79-01-6	Trichloroethene	ND	50	49.5	99	50.0	100	1	70-130/30
75-69-4	Trichlorofluoromethane	ND	50	48.6	97	47.6	95	2	70-130/30
96-18-4	1,2,3-Trichloropropane	ND	50	55.6	111	57.5	115	3	70-130/30
95-63-6	1,2,4-Trimethylbenzene	ND	50	45.6	91	47.0	94	3	70-130/30
108-67-8	1,3,5-Trimethylbenzene	ND	50	45.4	91	47.3	95	4	70-130/30
108-05-4	Vinyl Acetate	ND	50	55.8	112	56.0	112	0	70-130/30
75-01-4	Vinyl chloride	ND	50	28.9	58* a	31.2	62* a	8	70-130/30
	m,p-Xylene	ND	100	90.7	91	95.0	95	5	70-130/30
95-47-6	o-Xylene	ND	50	47.0	94	48.7	97	4	70-130/30
1330-20-7	Xylene (total)	ND	150	138	92	144	96	4	70-130/30

5.3.2

5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5220

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5220-1MS	N57264.D	1	11/14/11	JP	n/a	n/a	MSN2145
MC5220-1MSD	N57265.D	1	11/14/11	JP	n/a	n/a	MSN2145
MC5220-1	N57263.D	1	11/14/11	JP	n/a	n/a	MSN2145

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5220-1, MC5220-2, MC5220-3, MC5220-4, MC5220-5, MC5220-8, MC5220-9, MC5220-10, MC5220-11, MC5220-12

CAS No.	Surrogate Recoveries	MS	MSD	MC5220-1	Limits
1868-53-7	Dibromofluoromethane	96%	94%	96%	70-130%
2037-26-5	Toluene-D8	94%	93%	94%	70-130%
460-00-4	4-Bromofluorobenzene	82%	82%	86%	70-130%

- (a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
- (b) Outside control limits. Associated samples are non-detect for this compound.
- (c) High RPD due to possible matrix interference and/or sample non-homogeneity.

5.3.2

5

# Volatile Internal Standard Area Summary

Job Number: MC5220  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSN2144-CC2093	Injection Date:	11/12/11
Lab File ID:	N57223.D	Injection Time:	02:29
Instrument ID:	GCMSN	Method:	SW846 8260B

	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
	AREA		AREA		AREA		AREA		AREA	
Check Std	272565	9.03	394691	9.90	184439	13.16	218267	15.72	97831	6.58
Upper Limit <sup>a</sup>	545130	9.53	789382	10.40	368878	13.66	436534	16.22	195662	7.08
Lower Limit <sup>b</sup>	136283	8.53	197346	9.40	92220	12.66	109134	15.22	48916	6.08

Lab Sample ID	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
	AREA		AREA		AREA		AREA		AREA	
MSN2144-BS	282579	9.03	407670	9.91	196334	13.16	220524	15.72	100075	6.57
MSN2144-MB	266591	9.03	380781	9.90	171825	13.16	185490	15.72	91996	6.58
MC5220-6	262869	9.03	379640	9.90	171338	13.16	185524	15.72	93527	6.58
MC5203-22	255654	9.03	367185	9.91	165991	13.16	180420	15.72	91867	6.58
MC5203-22MS	264807	9.03	379016	9.90	179691	13.16	213391	15.72	94740	6.58
MC5203-22MSD	278831	9.03	398888	9.90	189334	13.16	218857	15.72	102459	6.58
ZZZZZZ	281202	9.03	400752	9.91	178203	13.16	195304	15.72	99232	6.58
MC5220-4	259536	9.03	379583	9.91	168636	13.16	177287	15.72	95313	6.58
MC5220-5	256951	9.03	377390	9.90	165919	13.16	179788	15.72	92812	6.58

- IS 1 = Pentafluorobenzene
- IS 2 = 1,4-Difluorobenzene
- IS 3 = Chlorobenzene-D5
- IS 4 = 1,4-Dichlorobenzene-d4
- IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

5.4.1  
5

# Volatile Internal Standard Area Summary

Job Number: MC5220  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSN2145-CC2093	Injection Date:	11/14/11
Lab File ID:	N57249.D	Injection Time:	10:38
Instrument ID:	GCMASN	Method:	SW846 8260B

	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
	AREA		AREA		AREA		AREA		AREA	
Check Std	294754	9.03	410689	9.90	199996	13.16	236619	15.72	110117	6.58
Upper Limit <sup>a</sup>	589508	9.53	821378	10.40	399992	13.66	473238	16.22	220234	7.08
Lower Limit <sup>b</sup>	147377	8.53	205345	9.40	99998	12.66	118310	15.22	55059	6.08

Lab	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
Sample ID	AREA		AREA		AREA		AREA		AREA	
MSN2145-BS	334894	9.03	480044	9.91	231595	13.16	260757	15.72	144366	6.58
MSN2145-MB	329203	9.03	475101	9.90	211298	13.16	225563	15.72	139395	6.58
MC5220-4	318556	9.03	455329	9.90	205780	13.16	219680	15.72	127101	6.58
MC5220-5	315338	9.03	458735	9.91	209089	13.16	224303	15.72	148358	6.58
ZZZZZZ	311225	9.03	449418	9.91	205383	13.16	217704	15.72	133031	6.58
ZZZZZZ	323974	9.03	461651	9.90	216987	13.16	241469	15.72	144897	6.58
MC5220-8	322805	9.03	470452	9.90	212793	13.16	228612	15.72	127071	6.58
ZZZZZZ	319766	9.03	458618	9.91	210139	13.16	222559	15.72	139752	6.58
ZZZZZZ	311316	9.03	449249	9.91	205270	13.16	221902	15.72	121347	6.58
ZZZZZZ	309654	9.03	453105	9.91	205944	13.16	226121	15.72	138305	6.58
MC5220-1	315192	9.03	447315	9.91	209716	13.16	222378	15.72	129757	6.58
MC5220-1MS	327712	9.03	474390	9.91	236311	13.16	268822	15.72	139507	6.58
MC5220-1MSD	351984	9.03	503937	9.90	244621	13.16	275331	15.72	143720	6.58
MC5220-2	349154	9.03	501052	9.91	222680	13.16	245718	15.72	148562	6.58
MC5220-3	337515	9.03	479996	9.91	217999	13.16	238796	15.72	131081	6.58
MC5220-9	327564	9.03	465046	9.91	214549	13.16	233377	15.72	129444	6.58
MC5220-10	320749	9.03	463038	9.91	207467	13.16	227042	15.72	121234	6.58
MC5220-11	327916	9.03	469919	9.90	218963	13.16	243413	15.72	149220	6.58
MC5220-12	323122	9.03	464468	9.91	211418	13.16	232030	15.72	125878	6.58
ZZZZZZ	337316	9.03	484559	9.90	233766	13.16	273449	15.72	149158	6.58
ZZZZZZ	392890	9.03	556788	9.90	245585	13.16	283536	15.72	147706	6.58
ZZZZZZ	391157	9.03	555394	9.91	242275	13.16	265359	15.72	139324	6.59

- IS 1 = Pentafluorobenzene
- IS 2 = 1,4-Difluorobenzene
- IS 3 = Chlorobenzene-D5
- IS 4 = 1,4-Dichlorobenzene-d4
- IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

5.4.2  
5

# Volatile Surrogate Recovery Summary

Job Number: MC5220

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Method: SW846 8260B

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
MC5220-1	N57263.D	96.0	94.0	86.0
MC5220-2	N57266.D	95.0	91.0	83.0
MC5220-3	N57267.D	94.0	91.0	84.0
MC5220-4	N57254.D	96.0	91.0	85.0
MC5220-4	N57239.D	95.0	90.0	86.0
MC5220-5	N57255.D	97.0	91.0	86.0
MC5220-5	N57240.D	94.0	90.0	84.0
MC5220-6	N57227.D	95.0	91.0	85.0
MC5220-8	N57259.D	95.0	90.0	85.0
MC5220-9	N57268.D	95.0	92.0	83.0
MC5220-10	N57269.D	95.0	91.0	85.0
MC5220-11	N57270.D	95.0	92.0	124.0
MC5220-12	N57271.D	95.0	92.0	85.0
MC5203-22MS	N57229.D	95.0	94.0	82.0
MC5203-22MSD	N57230.D	93.0	94.0	83.0
MC5220-1MS	N57264.D	96.0	94.0	82.0
MC5220-1MSD	N57265.D	94.0	93.0	82.0
MSN2144-BS	N57224.D	92.0	92.0	83.0
MSN2144-MB	N57226.D	92.0	92.0	85.0
MSN2145-BS	N57251.D	94.0	92.0	83.0
MSN2145-MB	N57253.D	96.0	90.0	86.0

**Surrogate Compounds**                      **Recovery Limits**

S1 = Dibromofluoromethane              70-130%  
 S2 = Toluene-D8                              70-130%  
 S3 = 4-Bromofluorobenzene              70-130%

5.5.1

## GC/MS Semi-volatiles

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## QC Data Summaries

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Includes the following where applicable.

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



# Method Blank Summary

Job Number: MC5220

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26866-MB	S28632.D	1	11/09/11	PR	11/08/11	OP26866	MSS1242

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5220-1, MC5220-2, MC5220-3, MC5220-4, MC5220-5, MC5220-8, MC5220-9, MC5220-10, MC5220-11

6.1.1

6

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	10	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	ug/l	
51-28-5	2,4-Dinitrophenol	ND	20	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	ug/l	
95-48-7	2-Methylphenol	ND	10	ug/l	
	3&4-Methylphenol	ND	10	ug/l	
88-75-5	2-Nitrophenol	ND	10	ug/l	
100-02-7	4-Nitrophenol	ND	20	ug/l	
87-86-5	Pentachlorophenol	ND	10	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	10	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	ug/l	
62-53-3	Aniline	ND	10	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	ug/l	
85-68-7	Butyl benzyl phthalate	0.88	5.0	ug/l	J
100-51-6	Benzyl Alcohol	ND	10	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	ug/l	
106-47-8	4-Chloroaniline	ND	10	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	10	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.0	ug/l	
132-64-9	Dibenzofuran	ND	5.0	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	ug/l	
84-66-2	Diethyl phthalate	ND	5.0	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	3.5	2.0	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	ug/l	

# Method Blank Summary

Job Number: MC5220

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26866-MB	S28632.D	1	11/09/11	PR	11/08/11	OP26866	MSS1242

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5220-1, MC5220-2, MC5220-3, MC5220-4, MC5220-5, MC5220-8, MC5220-9, MC5220-10, MC5220-11

6.1.1



CAS No.	Compound	Result	RL	Units	Q
77-47-4	Hexachlorocyclopentadiene	ND	10	ug/l	
67-72-1	Hexachloroethane	ND	5.0	ug/l	
78-59-1	Isophorone	ND	5.0	ug/l	
88-74-4	2-Nitroaniline	ND	10	ug/l	
99-09-2	3-Nitroaniline	ND	10	ug/l	
100-01-6	4-Nitroaniline	ND	10	ug/l	
98-95-3	Nitrobenzene	ND	5.0	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	ug/l	
110-86-1	Pyridine	ND	10	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	35%	15-110%
4165-62-2	Phenol-d5	23%	15-110%
118-79-6	2,4,6-Tribromophenol	83%	15-110%
4165-60-0	Nitrobenzene-d5	67%	30-130%
321-60-8	2-Fluorobiphenyl	71%	30-130%
1718-51-0	Terphenyl-d14	95%	30-130%

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

# Method Blank Summary

Job Number: MC5220  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26888-MB	S28735.D	1	11/11/11	PR	11/10/11	OP26888	MSS1249

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5220-12

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	10	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	ug/l	
51-28-5	2,4-Dinitrophenol	ND	20	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	ug/l	
95-48-7	2-Methylphenol	ND	10	ug/l	
	3&4-Methylphenol	ND	10	ug/l	
88-75-5	2-Nitrophenol	ND	10	ug/l	
100-02-7	4-Nitrophenol	ND	20	ug/l	
87-86-5	Pentachlorophenol	ND	10	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	10	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	ug/l	
62-53-3	Aniline	ND	10	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	ug/l	
85-68-7	Butyl benzyl phthalate	0.30	5.0	ug/l	J
100-51-6	Benzyl Alcohol	ND	10	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	ug/l	
106-47-8	4-Chloroaniline	ND	10	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	10	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.0	ug/l	
132-64-9	Dibenzofuran	ND	5.0	ug/l	
84-74-2	Di-n-butyl phthalate	0.67	5.0	ug/l	J
117-84-0	Di-n-octyl phthalate	ND	5.0	ug/l	
84-66-2	Diethyl phthalate	0.43	5.0	ug/l	J
131-11-3	Dimethyl phthalate	ND	5.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	ug/l	

6.1.2



# Method Blank Summary

Job Number: MC5220  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26888-MB	S28735.D	1	11/11/11	PR	11/10/11	OP26888	MSS1249

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5220-12

6.1.2  
6

CAS No.	Compound	Result	RL	Units	Q
77-47-4	Hexachlorocyclopentadiene	ND	10	ug/l	
67-72-1	Hexachloroethane	ND	5.0	ug/l	
78-59-1	Isophorone	ND	5.0	ug/l	
88-74-4	2-Nitroaniline	ND	10	ug/l	
99-09-2	3-Nitroaniline	ND	10	ug/l	
100-01-6	4-Nitroaniline	ND	10	ug/l	
98-95-3	Nitrobenzene	ND	5.0	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	ug/l	
110-86-1	Pyridine	ND	10	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	44%	15-110%
4165-62-2	Phenol-d5	29%	15-110%
118-79-6	2,4,6-Tribromophenol	87%	15-110%
4165-60-0	Nitrobenzene-d5	70%	30-130%
321-60-8	2-Fluorobiphenyl	76%	30-130%
1718-51-0	Terphenyl-d14	94%	30-130%

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

# Method Blank Summary

Job Number: MC5220  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26874-MB	I76353.D	1	11/15/11	KR	11/09/11	OP26874	MSI2804

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC5220-1, MC5220-2, MC5220-3, MC5220-4, MC5220-5, MC5220-8, MC5220-9, MC5220-10, MC5220-11

6.1.3



CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	0.81	0.10	ug/l	
208-96-8	Acenaphthylene	ND	0.10	ug/l	
120-12-7	Anthracene	ND	0.10	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.050	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.050	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	ug/l	
218-01-9	Chrysene	ND	0.10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	ug/l	
206-44-0	Fluoranthene	ND	0.10	ug/l	
86-73-7	Fluorene	1.6	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	ug/l	
90-12-0	1-Methylnaphthalene	3.1	0.20	ug/l	
91-57-6	2-Methylnaphthalene	4.4	0.20	ug/l	
91-20-3	Naphthalene	ND	0.10	ug/l	
85-01-8	Phenanthrene	1.2	0.050	ug/l	
129-00-0	Pyrene	0.52	0.10	ug/l	

CAS No.	Surrogate Recoveries		Limits
4165-60-0	Nitrobenzene-d5	76%	30-130%
321-60-8	2-Fluorobiphenyl	73%	30-130%
1718-51-0	Terphenyl-d14	114%	30-130%

# Method Blank Summary

Job Number: MC5220  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26889-MB	I76386.D	1	11/16/11	KR	11/10/11	OP26889	MSI2806

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC5220-12

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	0.10	ug/l	
208-96-8	Acenaphthylene	ND	0.10	ug/l	
120-12-7	Anthracene	ND	0.10	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.050	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.050	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	ug/l	
218-01-9	Chrysene	ND	0.10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	ug/l	
206-44-0	Fluoranthene	ND	0.10	ug/l	
86-73-7	Fluorene	ND	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.20	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	0.10	ug/l	
85-01-8	Phenanthrene	ND	0.050	ug/l	
129-00-0	Pyrene	ND	0.10	ug/l	

CAS No.	Surrogate Recoveries		Limits
4165-60-0	Nitrobenzene-d5	84%	30-130%
321-60-8	2-Fluorobiphenyl	79%	30-130%
1718-51-0	Terphenyl-d14	108%	30-130%

6.1.4  
6

# Blank Spike Summary

Job Number: MC5220  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26888-BS	S28736.D	1	11/11/11	PR	11/10/11	OP26888	MSS1249

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5220-12

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
65-85-0	Benzoic Acid	100	28.9	29* a	30-130
95-57-8	2-Chlorophenol	100	73.0	73	30-130
59-50-7	4-Chloro-3-methyl phenol	100	80.2	80	30-130
120-83-2	2,4-Dichlorophenol	100	86.3	86	30-130
105-67-9	2,4-Dimethylphenol	100	75.7	76	30-130
51-28-5	2,4-Dinitrophenol	100	86.7	87	30-130
534-52-1	4,6-Dinitro-o-cresol	100	100	100	30-130
95-48-7	2-Methylphenol	100	67.9	68	30-130
	3&4-Methylphenol	200	123	62	30-130
88-75-5	2-Nitrophenol	100	86.6	87	30-130
100-02-7	4-Nitrophenol	100	35.5	36	30-130
87-86-5	Pentachlorophenol	100	84.1	84	30-130
108-95-2	Phenol	100	33.5	34	30-130
95-95-4	2,4,5-Trichlorophenol	100	87.8	88	30-130
88-06-2	2,4,6-Trichlorophenol	100	86.8	87	30-130
62-53-3	Aniline	50	19.3	39* a	40-140
101-55-3	4-Bromophenyl phenyl ether	50	45.4	91	40-140
85-68-7	Butyl benzyl phthalate	50	45.4	91	40-140
100-51-6	Benzyl Alcohol	50	34.3	69	40-140
91-58-7	2-Chloronaphthalene	50	38.8	78	40-140
106-47-8	4-Chloroaniline	50	36.3	73	40-140
111-91-1	bis(2-Chloroethoxy)methane	50	40.2	80	40-140
111-44-4	bis(2-Chloroethyl)ether	50	40.9	82	40-140
108-60-1	bis(2-Chloroisopropyl)ether	50	40.6	81	40-140
7005-72-3	4-Chlorophenyl phenyl ether	50	42.4	85	40-140
122-66-7	1,2-Diphenylhydrazine	50	29.8	60	40-140
121-14-2	2,4-Dinitrotoluene	50	44.7	89	40-140
606-20-2	2,6-Dinitrotoluene	50	42.3	85	40-140
91-94-1	3,3'-Dichlorobenzidine	50	41.6	83	40-140
132-64-9	Dibenzofuran	50	41.1	82	40-140
84-74-2	Di-n-butyl phthalate	50	45.1	90	40-140
117-84-0	Di-n-octyl phthalate	50	48.4	97	40-140
84-66-2	Diethyl phthalate	50	43.9	88	40-140
131-11-3	Dimethyl phthalate	50	44.9	90	40-140
117-81-7	bis(2-Ethylhexyl)phthalate	50	47.8	96	40-140
118-74-1	Hexachlorobenzene	50	43.6	87	40-140

6.2.1

6

# Blank Spike Summary

Job Number: MC5220

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26888-BS	S28736.D	1	11/11/11	PR	11/10/11	OP26888	MSS1249

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5220-12

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
77-47-4	Hexachlorocyclopentadiene	50	22.4	45	40-140
67-72-1	Hexachloroethane	50	26.8	54	40-140
78-59-1	Isophorone	50	30.0	60	40-140
88-74-4	2-Nitroaniline	50	48.0	96	40-140
99-09-2	3-Nitroaniline	50	42.0	84	40-140
100-01-6	4-Nitroaniline	50	44.6	89	40-140
98-95-3	Nitrobenzene	50	34.4	69	40-140
62-75-9	n-Nitrosodimethylamine	50	21.2	42	40-140
621-64-7	N-Nitroso-di-n-propylamine	50	40.8	82	40-140
86-30-6	N-Nitrosodiphenylamine	50	44.5	89	40-140
110-86-1	Pyridine	50	20.5	41	40-140

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	47%	15-110%
4165-62-2	Phenol-d5	32%	15-110%
118-79-6	2,4,6-Tribromophenol	88%	15-110%
4165-60-0	Nitrobenzene-d5	70%	30-130%
321-60-8	2-Fluorobiphenyl	74%	30-130%
1718-51-0	Terphenyl-d14	93%	30-130%

(a) Outside control limits. Blank Spike meets program technical requirements.

6.2.1  
6



# Blank Spike Summary

Job Number: MC5220

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26889-BS	I76387.D	1	11/16/11	KR	11/10/11	OP26889	MSI2806

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC5220-12

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
83-32-9	Acenaphthene	50	41.3	83	40-140
208-96-8	Acenaphthylene	50	32.7	65	40-140
120-12-7	Anthracene	50	45.0	90	40-140
56-55-3	Benzo(a)anthracene	50	53.7	107	40-140
50-32-8	Benzo(a)pyrene	50	46.0	92	40-140
205-99-2	Benzo(b)fluoranthene	50	47.5	95	40-140
191-24-2	Benzo(g,h,i)perylene	50	56.1	112	40-140
207-08-9	Benzo(k)fluoranthene	50	49.3	99	40-140
218-01-9	Chrysene	50	45.4	91	40-140
53-70-3	Dibenzo(a,h)anthracene	50	53.9	108	40-140
206-44-0	Fluoranthene	50	48.4	97	40-140
86-73-7	Fluorene	50	45.3	91	40-140
193-39-5	Indeno(1,2,3-cd)pyrene	50	55.2	110	40-140
90-12-0	1-Methylnaphthalene	50	44.0	88	40-140
91-57-6	2-Methylnaphthalene	50	38.2	76	40-140
91-20-3	Naphthalene	50	37.0	74	40-140
85-01-8	Phenanthrene	50	39.9	80	40-140
129-00-0	Pyrene	50	49.6	99	40-140

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	85%	30-130%
321-60-8	2-Fluorobiphenyl	79%	30-130%
1718-51-0	Terphenyl-d14	104%	30-130%

6.2.2

6

# Blank Spike/Blank Spike Duplicate Summary

Job Number: MC5220  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26866-BS	S28633.D	1	11/09/11	PR	11/08/11	OP26866	MSS1242
OP26866-BSD	U3360.D	1	11/14/11	KR	11/08/11	OP26866	MSU204

The QC reported here applies to the following samples: Method: SW846 8270C

MC5220-1, MC5220-2, MC5220-3, MC5220-4, MC5220-5, MC5220-8, MC5220-9, MC5220-10, MC5220-11

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic Acid	100	50.9	51	51.9	52	2	30-130/20
95-57-8	2-Chlorophenol	100	86.3	86	88.8	89	3	30-130/20
59-50-7	4-Chloro-3-methyl phenol	100	88.7	89	95.0	95	7	30-130/20
120-83-2	2,4-Dichlorophenol	100	90.9	91	91.3	91	0	30-130/20
105-67-9	2,4-Dimethylphenol	100	80.5	81	27.9	28* a	97* b	30-130/20
51-28-5	2,4-Dinitrophenol	100	80.0	80	86.8	87	8	30-130/20
534-52-1	4,6-Dinitro-o-cresol	100	93.5	94	104	104	11	30-130/20
95-48-7	2-Methylphenol	100	85.1	85	78.2	78	8	30-130/20
	3&4-Methylphenol	200	159	80	154	77	3	30-130/20
88-75-5	2-Nitrophenol	100	91.4	91	94.3	94	3	30-130/20
109-02-7	4-Nitrophenol	100	59.7	60	63.0	63	5	30-130/20
87-86-5	Pentachlorophenol	100	96.0	96	91.3	91	5	30-130/20
108-95-2	Phenol	100	50.5	51	47.2	47	7	30-130/20
95-95-4	2,4,5-Trichlorophenol	100	95.5	96	94.1	94	1	30-130/20
88-06-2	2,4,6-Trichlorophenol	100	96.0	96	90.2	90	6	30-130/20
62-53-3	Aniline	50	3.0	6* c	23.4	47	155* b	40-140/20
101-55-3	4-Bromophenyl phenyl ether	50	46.7	93	51.5	103	10	40-140/20
85-68-7	Butyl benzyl phthalate	50	49.8	100	54.5	109	9	40-140/20
100-51-6	Benzyl Alcohol	50	35.1	70	45.1	90	25* b	40-140/20
91-58-7	2-Chloronaphthalene	50	43.0	86	47.6	95	10	40-140/20
106-47-8	4-Chloroaniline	50	24.6	49	21.3	43	14	40-140/20
111-91-1	bis(2-Chloroethoxy)methane	50	42.4	85	50.3	101	17	40-140/20
111-44-4	bis(2-Chloroethyl)ether	50	44.2	88	52.5	105	17	40-140/20
108-60-1	bis(2-Chloroisopropyl)ether	50	45.1	90	59.8	120	28* b	40-140/20
7005-72-3	4-Chlorophenyl phenyl ether	50	45.0	90	48.0	96	6	40-140/20
122-66-7	1,2-Diphenylhydrazine	50	36.2	72	50.9	102	34* b	40-140/20
121-14-2	2,4-Dinitrotoluene	50	45.6	91	44.8	90	2	40-140/20
606-20-2	2,6-Dinitrotoluene	50	43.5	87	44.8	90	3	40-140/20
91-94-1	3,3'-Dichlorobenzidine	50	41.2	82	22.0	44	61* b	40-140/20
132-64-9	Dibenzofuran	50	43.6	87	46.9	94	7	40-140/20
84-74-2	Di-n-butyl phthalate	50	47.9	96	50.0	100	4	40-140/20
117-84-0	Di-n-octyl phthalate	50	49.7	99	60.1	120	19	40-140/20
84-66-2	Diethyl phthalate	50	46.4	93	51.1	102	10	40-140/20
131-11-3	Dimethyl phthalate	50	47.0	94	49.5	99	5	40-140/20
117-81-7	bis(2-Ethylhexyl)phthalate	50	53.6	107	56.9	114	6	40-140/20
118-74-1	Hexachlorobenzene	50	44.6	89	46.8	94	5	40-140/20

6.3.1



# Blank Spike/Blank Spike Duplicate Summary

Job Number: MC5220  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26866-BS	S28633.D	1	11/09/11	PR	11/08/11	OP26866	MSS1242
OP26866-BSD	U3360.D	1	11/14/11	KR	11/08/11	OP26866	MSU204

The QC reported here applies to the following samples: Method: SW846 8270C

MC5220-1, MC5220-2, MC5220-3, MC5220-4, MC5220-5, MC5220-8, MC5220-9, MC5220-10, MC5220-11

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
77-47-4	Hexachlorocyclopentadiene	50	24.2	48	23.8	48	2	40-140/20
67-72-1	Hexachloroethane	50	31.0	62	43.7	87	34* b	40-140/20
78-59-1	Isophorone	50	32.5	65	39.2	78	19	40-140/20
88-74-4	2-Nitroaniline	50	48.0	96	49.0	98	2	40-140/20
99-09-2	3-Nitroaniline	50	39.4	79	27.2	54	37* b	40-140/20
100-01-6	4-Nitroaniline	50	41.1	82	35.3	71	15	40-140/20
98-95-3	Nitrobenzene	50	38.3	77	49.3	99	25* b	40-140/20
62-75-9	n-Nitrosodimethylamine	50	20.8	42	29.9	60	36* b	40-140/20
621-64-7	N-Nitroso-di-n-propylamine	50	45.3	91	44.1	88	3	40-140/20
86-30-6	N-Nitrosodiphenylamine	50	45.8	92	46.2	92	1	40-140/20
110-86-1	Pyridine	50	ND	0* c	35.8	72	200* b	40-140/20

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
367-12-4	2-Fluorophenol	70%	67%	15-110%
4165-62-2	Phenol-d5	53%	47%	15-110%
118-79-6	2,4,6-Tribromophenol	96%	91%	15-110%
4165-60-0	Nitrobenzene-d5	80%	101%	30-130%
321-60-8	2-Fluorobiphenyl	86%	92%	30-130%
1718-51-0	Terphenyl-d14	100%	103%	30-130%

- (a) Outside control limits. Blank Spike meets program technical requirements.
- (b) Outside control limits. Associated samples are non-detect for this compound.
- (c) Outside control limits. Refer to Blank Spike Duplicate.

6.3.1  
6

# Blank Spike/Blank Spike Duplicate Summary

Job Number: MC5220

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26874-BS	I76354.D	1	11/15/11	KR	11/09/11	OP26874	MSI2804
OP26874-BSD	I76355.D	1	11/15/11	KR	11/09/11	OP26874	MSI2804

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC5220-1, MC5220-2, MC5220-3, MC5220-4, MC5220-5, MC5220-8, MC5220-9, MC5220-10, MC5220-11

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	50	43.4	87	46.6	93	7	40-140/30
208-96-8	Acenaphthylene	50	33.8	68	35.4	71	5	40-140/30
120-12-7	Anthracene	50	44.9	90	42.8	86	5	40-140/30
56-55-3	Benzo(a)anthracene	50	54.6	109	57.4	115	5	40-140/30
50-32-8	Benzo(a)pyrene	50	47.1	94	45.7	91	3	40-140/30
205-99-2	Benzo(b)fluoranthene	50	48.7	97	54.5	109	11	40-140/30
191-24-2	Benzo(g,h,i)perylene	50	53.8	108	63.9	128	17	40-140/30
207-08-9	Benzo(k)fluoranthene	50	49.5	99	56.5	113	13	40-140/30
218-01-9	Chrysene	50	45.8	92	49.1	98	7	40-140/30
53-70-3	Dibenzo(a,h)anthracene	50	57.4	115	61.7	123	7	40-140/30
206-44-0	Fluoranthene	50	47.6	95	49.2	98	3	40-140/30
86-73-7	Fluorene	50	45.7	91	48.3	97	6	40-140/30
193-39-5	Indeno(1,2,3-cd)pyrene	50	58.2	116	62.8	126	8	40-140/30
90-12-0	1-Methylnaphthalene	50	39.2	78	46.1	92	16	40-140/30
91-57-6	2-Methylnaphthalene	50	42.2	84	44.8	90	6	40-140/30
91-20-3	Naphthalene	50	41.4	83	44.1	88	6	40-140/30
85-01-8	Phenanthrene	50	41.7	83	43.6	87	4	40-140/30
129-00-0	Pyrene	50	50.9	102	55.7	111	9	40-140/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
4165-60-0	Nitrobenzene-d5	94%	96%	30-130%
321-60-8	2-Fluorobiphenyl	86%	92%	30-130%
1718-51-0	Terphenyl-d14	113%	121%	30-130%

6.3.2

6

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5220

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26866-MS	U3361.D	1	11/14/11	KR	11/08/11	OP26866	MSU204
OP26866-MSD	U3362.D	1	11/14/11	KR	11/08/11	OP26866	MSU204
MC5220-1	U3363.D	1	11/14/11	KR	11/08/11	OP26866	MSU204

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5220-1, MC5220-2, MC5220-3, MC5220-4, MC5220-5, MC5220-8, MC5220-9, MC5220-10, MC5220-11

CAS No.	Compound	MC5220-1 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic Acid	ND	95.2	41.9	44	44.0	46	5	30-130/20
95-57-8	2-Chlorophenol	ND	95.2	81.9	86	88.1	93	7	30-130/20
59-50-7	4-Chloro-3-methyl phenol	ND	95.2	86.7	91	88.4	93	2	30-130/20
120-83-2	2,4-Dichlorophenol	ND	95.2	84.7	89	89.1	94	5	30-130/20
105-67-9	2,4-Dimethylphenol	ND	95.2	32.0	34	78.3	82	84* a	30-130/20
51-28-5	2,4-Dinitrophenol	ND	95.2	80.9	85	76.3	80	6	30-130/20
534-52-1	4,6-Dinitro-o-cresol	ND	95.2	100	105	103	108	3	30-130/20
95-48-7	2-Methylphenol	ND	95.2	71.2	75	83.7	88	16	30-130/20
	3&4-Methylphenol	ND	190	135	71	152	80	12	30-130/20
88-75-5	2-Nitrophenol	ND	95.2	89.4	94	93.3	98	4	30-130/20
100-02-7	4-Nitrophenol	ND	95.2	54.3	57	49.8	52	9	30-130/20
87-86-5	Pentachlorophenol	ND	95.2	93.2	98	95.6	100	3	30-130/20
108-95-2	Phenol	ND	95.2	38.7	41	42.7	45	10	30-130/20
95-95-4	2,4,5-Trichlorophenol	ND	95.2	86.3	91	90.6	95	5	30-130/20
88-06-2	2,4,6-Trichlorophenol	ND	95.2	85.7	90	91.7	96	7	30-130/20
62-53-3	Aniline	ND	47.6	21.0	44	26.2	55	22* a	40-140/20
101-55-3	4-Bromophenyl phenyl ether	ND	47.6	49.7	104	54.9	115	10	40-140/20
85-68-7	Butyl benzyl phthalate	ND	47.6	52.3	110	52.0	109	1	40-140/20
100-51-6	Benzyl Alcohol	ND	47.6	39.0	82	40.9	86	5	40-140/20
91-58-7	2-Chloronaphthalene	ND	47.6	46.2	97	48.7	102	5	40-140/20
106-47-8	4-Chloroaniline	ND	47.6	16.4	34* b	23.2	49	34* a	40-140/20
111-91-1	bis(2-Chloroethoxy)methane	ND	47.6	47.5	100	49.3	104	4	40-140/20
111-44-4	bis(2-Chloroethyl)ether	ND	47.6	49.7	104	53.0	111	6	40-140/20
108-60-1	bis(2-Chloroisopropyl)ether	ND	47.6	55.9	117	60.1	126	7	40-140/20
7005-72-3	4-Chlorophenyl phenyl ether	ND	47.6	45.5	96	44.8	94	2	40-140/20
122-66-7	1,2-Diphenylhydrazine	ND	47.6	50.5	106	54.6	115	8	40-140/20
121-14-2	2,4-Dinitrotoluene	ND	47.6	40.5	85	37.6	79	7	40-140/20
606-20-2	2,6-Dinitrotoluene	ND	47.6	42.5	89	41.7	88	2	40-140/20
91-94-1	3,3'-Dichlorobenzidine	ND	47.6	23.3	49	32.6	68	33* a	40-140/20
132-64-9	Dibenzofuran	ND	47.6	43.2	91	44.2	93	2	40-140/20
84-74-2	Di-n-butyl phthalate	ND	47.6	49.6	104	45.7	96	8	40-140/20
117-84-0	Di-n-octyl phthalate	ND	47.6	55.8	117	50.0	105	11	40-140/20
84-66-2	Diethyl phthalate	0.80	47.6	47.8	99	44.2	91	8	40-140/20
131-11-3	Dimethyl phthalate	ND	47.6	45.9	96	44.7	94	3	40-140/20
117-81-7	bis(2-Ethylhexyl)phthalate	ND	47.6	55.2	116	51.7	109	7	40-140/20
118-74-1	Hexachlorobenzene	ND	47.6	46.2	97	49.0	103	6	40-140/20

6.4.1

6

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5220  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26866-MS	U3361.D	1	11/14/11	KR	11/08/11	OP26866	MSU204
OP26866-MSD	U3362.D	1	11/14/11	KR	11/08/11	OP26866	MSU204
MC5220-1	U3363.D	1	11/14/11	KR	11/08/11	OP26866	MSU204

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5220-1, MC5220-2, MC5220-3, MC5220-4, MC5220-5, MC5220-8, MC5220-9, MC5220-10, MC5220-11

CAS No.	Compound	MC5220-1 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
77-47-4	Hexachlorocyclopentadiene	ND	47.6	27.1	57	30.6	64	12	40-140/20
67-72-1	Hexachloroethane	ND	47.6	38.9	82	40.6	85	4	40-140/20
78-59-1	Isophorone	ND	47.6	37.2	78	38.2	80	3	40-140/20
88-74-4	2-Nitroaniline	ND	47.6	44.6	94	44.3	93	1	40-140/20
99-09-2	3-Nitroaniline	ND	47.6	23.0	48	23.5	49	2	40-140/20
100-01-6	4-Nitroaniline	ND	47.6	33.6	71	31.5	66	6	40-140/20
98-95-3	Nitrobenzene	ND	47.6	46.8	98	48.8	102	4	40-140/20
62-75-9	n-Nitrosodimethylamine	ND	47.6	29.7	62	30.5	64	3	40-140/20
621-64-7	N-Nitroso-di-n-propylamine	ND	47.6	48.4	102	53.3	112	10	40-140/20
86-30-6	N-Nitrosodiphenylamine	ND	47.6	47.1	99	53.0	111	12	40-140/20
110-86-1	Pyridine	ND	47.6	31.8	67	31.4	66	1	40-140/20

CAS No.	Surrogate Recoveries	MS	MSD	MC5220-1	Limits
367-12-4	2-Fluorophenol	61%	66%	66%	15-110%
4165-62-2	Phenol-d5	40%	44%	43%	15-110%
118-79-6	2,4,6-Tribromophenol	95%	105%	95%	15-110%
4165-60-0	Nitrobenzene-d5	101%	104%	105%	30-130%
321-60-8	2-Fluorobiphenyl	92%	101%	94%	30-130%
1718-51-0	Terphenyl-d14	102%	113%	113%	30-130%

- (a) High RPD due to possible matrix interference and/or sample non-homogeneity.
- (b) Outside control limits due to possible matrix interference. Refer to Blank Spike.

6.4.1  
6

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5220  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26888-MS	S28812.D	1	11/15/11	PR	11/10/11	OP26888	MSS1253
OP26888-MSD	S28813.D	1	11/15/11	PR	11/10/11	OP26888	MSS1253
MC5235-4	S28814.D	1	11/15/11	PR	11/10/11	OP26888	MSS1253

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5220-12

CAS No.	Compound	MC5235-4 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic Acid	ND	100	33.1	33	28.9	29* a	14	30-130/20
95-57-8	2-Chlorophenol	ND	100	75.4	75	73.4	73	3	30-130/20
59-50-7	4-Chloro-3-methyl phenol	ND	100	78.1	78	74.4	74	5	30-130/20
120-83-2	2,4-Dichlorophenol	ND	100	84.7	85	81.9	82	3	30-130/20
105-67-9	2,4-Dimethylphenol	ND	100	72.6	73	67.0	67	8	30-130/20
51-28-5	2,4-Dinitrophenol	ND	100	64.0	64	64.1	64	0	30-130/20
534-52-1	4,6-Dinitro-o-cresol	ND	100	76.8	77	76.8	77	0	30-130/20
95-48-7	2-Methylphenol	ND	100	73.0	73	67.3	67	8	30-130/20
	3&4-Methylphenol	ND	200	129	65	120	60	7	30-130/20
88-75-5	2-Nitrophenol	ND	100	88.7	89	84.3	84	5	30-130/20
100-02-7	4-Nitrophenol	ND	100	37.3	37	36.4	36	2	30-130/20
87-86-5	Pentachlorophenol	ND	100	85.4	85	82.4	82	4	30-130/20
108-95-2	Phenol	ND	100	34.3	34	32.7	33	5	30-130/20
95-95-4	2,4,5-Trichlorophenol	ND	100	87.3	87	83.8	84	4	30-130/20
88-06-2	2,4,6-Trichlorophenol	ND	100	85.6	86	83.1	83	3	30-130/20
62-53-3	Aniline	ND	50	18.1	36* a	17.1	34* a	6	40-140/20
101-55-3	4-Bromophenyl phenyl ether	ND	50	44.0	88	41.9	84	5	40-140/20
85-68-7	Butyl benzyl phthalate	ND	50	43.4	87	42.5	85	2	40-140/20
100-51-6	Benzyl Alcohol	ND	50	35.2	70	33.2	66	6	40-140/20
91-58-7	2-Chloronaphthalene	ND	50	38.8	78	37.0	74	5	40-140/20
106-47-8	4-Chloroaniline	ND	50	25.5	51	23.4	47	9	40-140/20
111-91-1	bis(2-Chloroethoxy)methane	ND	50	41.2	82	38.9	78	6	40-140/20
111-44-4	bis(2-Chloroethyl)ether	ND	50	43.3	87	41.7	83	4	40-140/20
108-60-1	bis(2-Chloroisopropyl)ether	ND	50	41.1	82	40.0	80	3	40-140/20
7005-72-3	4-Chlorophenyl phenyl ether	ND	50	42.7	85	41.3	83	3	40-140/20
122-66-7	1,2-Diphenylhydrazine	ND	50	34.6	69	28.8	58	18	40-140/20
121-14-2	2,4-Dinitrotoluene	ND	50	43.7	87	42.5	85	3	40-140/20
606-20-2	2,6-Dinitrotoluene	ND	50	40.1	80	40.0	80	0	40-140/20
91-94-1	3,3'-Dichlorobenzidine	ND	50	39.6	79	37.8	76	5	40-140/20
132-64-9	Dibenzofuran	ND	50	40.7	81	39.9	80	2	40-140/20
84-74-2	Di-n-butyl phthalate	ND	50	42.9	86	42.4	85	1	40-140/20
117-84-0	Di-n-octyl phthalate	ND	50	43.4	87	43.2	86	0	40-140/20
84-66-2	Diethyl phthalate	ND	50	42.4	85	41.8	84	1	40-140/20
131-11-3	Dimethyl phthalate	ND	50	43.2	86	42.5	85	2	40-140/20
117-81-7	bis(2-Ethylhexyl)phthalate	ND	50	43.9	88	42.6	85	3	40-140/20
118-74-1	Hexachlorobenzene	ND	50	40.6	81	39.1	78	4	40-140/20

6.4.2

6

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5220  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26888-MS	S28812.D	1	11/15/11	PR	11/10/11	OP26888	MSS1253
OP26888-MSD	S28813.D	1	11/15/11	PR	11/10/11	OP26888	MSS1253
MC5235-4	S28814.D	1	11/15/11	PR	11/10/11	OP26888	MSS1253

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5220-12

CAS No.	Compound	MC5235-4 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
77-47-4	Hexachlorocyclopentadiene	ND	50	19.3	39* b	17.6	35* b	9	40-140/20
67-72-1	Hexachloroethane	ND	50	28.5	57	26.0	52	9	40-140/20
78-59-1	Isophorone	ND	50	29.9	60	28.8	58	4	40-140/20
88-74-4	2-Nitroaniline	ND	50	44.7	89	43.6	87	2	40-140/20
99-09-2	3-Nitroaniline	ND	50	24.6	49	24.0	48	2	40-140/20
100-01-6	4-Nitroaniline	ND	50	36.0	72	34.8	70	3	40-140/20
98-95-3	Nitrobenzene	ND	50	35.3	71	34.1	68	3	40-140/20
62-75-9	n-Nitrosodimethylamine	ND	50	22.6	45	21.4	45	5	40-140/20
621-64-7	N-Nitroso-di-n-propylamine	ND	50	40.0	80	38.4	77	4	40-140/20
86-30-6	N-Nitrosodiphenylamine	ND	50	43.1	86	41.5	83	4	40-140/20
110-86-1	Pyridine	ND	50	22.3	45	20.0	40	11	40-140/20

CAS No.	Surrogate Recoveries	MS	MSD	MC5235-4	Limits
367-12-4	2-Fluorophenol	51%	49%		15-110%
4165-62-2	Phenol-d5	35%	33%		15-110%
118-79-6	2,4,6-Tribromophenol	85%	80%		15-110%
4165-60-0	Nitrobenzene-d5	73%	69%	63%	30-130%
321-60-8	2-Fluorobiphenyl	76%	73%	65%	30-130%
1718-51-0	Terphenyl-d14	65%	62%	45%	30-130%

- (a) Outside control limits. Blank Spike meets program technical requirements.
- (b) Outside control limits due to possible matrix interference. Refer to Blank Spike.

6.4.2





# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5220

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26874-MS	I76356.D	1	11/15/11	KR	11/09/11	OP26874	MSI2804
OP26874-MSD	I76357.D	1	11/15/11	KR	11/09/11	OP26874	MSI2804
MC5220-1	I76358.D	1	11/15/11	KR	11/09/11	OP26874	MSI2804

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC5220-1, MC5220-2, MC5220-3, MC5220-4, MC5220-5, MC5220-8, MC5220-9, MC5220-10, MC5220-11

CAS No.	Compound	MC5220-1 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD	
83-32-9	Acenaphthene	ND		47.6	44.5	93	46.5	98	4	40-140/20
208-96-8	Acenaphthylene	ND		47.6	34.1	72	35.7	75	5	40-140/20
120-12-7	Anthracene	ND		47.6	42.4	89	45.5	96	7	40-140/20
56-55-3	Benzo(a)anthracene	ND		47.6	55.6	117	57.0	120	2	40-140/20
50-32-8	Benzo(a)pyrene	ND		47.6	45.6	96	48.0	101	5	40-140/20
205-99-2	Benzo(b)fluoranthene	ND		47.6	52.3	110	52.1	109	0	40-140/20
191-24-2	Benzo(g,h,i)perylene	ND		47.6	63.3	133	61.7	130	3	40-140/20
207-08-9	Benzo(k)fluoranthene	ND		47.6	53.6	113	52.5	110	2	40-140/20
218-01-9	Chrysene	0.021		47.6	47.3	99	48.1	101	2	40-140/20
53-70-3	Dibenzo(a,h)anthracene	ND		47.6	59.8	126	60.3	127	1	40-140/20
206-44-0	Fluoranthene	0.023		47.6	47.4	99	48.7	102	3	40-140/20
86-73-7	Fluorene	ND		47.6	46.4	97	48.3	101	4	40-140/20
193-39-5	Indeno(1,2,3-cd)pyrene	ND		47.6	61.2	129	61.4	129	0	40-140/20
90-12-0	1-Methylnaphthalene	0.038		47.6	45.0	94	46.6	98	3	40-140/20
91-57-6	2-Methylnaphthalene	0.051		47.6	42.4	89	44.2	93	4	40-140/20
91-20-3	Naphthalene	0.034		47.6	41.5	87	43.2	91	4	40-140/20
85-01-8	Phenanthrene	ND		47.6	41.6	87	43.3	91	4	40-140/20
129-00-0	Pyrene	0.026		47.6	53.3	112	54.3	114	2	40-140/20

CAS No.	Surrogate Recoveries	MS	MSD	MC5220-1	Limits
4165-60-0	Nitrobenzene-d5	97%	101%	97%	30-130%
321-60-8	2-Fluorobiphenyl	92%	95%	90%	30-130%
1718-51-0	Terphenyl-d14	120%	122%	129%	30-130%

6.4.3

6

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5220

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26889-MS	I76388.D	1	11/16/11	KR	11/10/11	OP26889	MSI2806
OP26889-MSD	I76389.D	1	11/16/11	KR	11/10/11	OP26889	MSI2806
MC5219-1	I76390.D	1	11/16/11	KR	11/10/11	OP26889	MSI2806

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC5220-12

CAS No.	Compound	MC5219-1 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD	
83-32-9	Acenaphthene	ND		54.3	40.1	74	39.0	73	3	40-140/20
208-96-8	Acenaphthylene	ND		54.3	31.5	58	30.8	58	2	40-140/20
120-12-7	Anthracene	ND		54.3	43.5	80	41.8	79	4	40-140/20
56-55-3	Benzo(a)anthracene	ND		54.3	51.4	95	49.0	92	5	40-140/20
50-32-8	Benzo(a)pyrene	ND		54.3	42.2	78	40.4	76	4	40-140/20
205-99-2	Benzo(b)fluoranthene	ND		54.3	43.0	79	40.9	77	5	40-140/20
191-24-2	Benzo(g,h,i)perylene	ND		54.3	49.6	91	47.1	89	5	40-140/20
207-08-9	Benzo(k)fluoranthene	ND		54.3	46.3	85	44.5	84	4	40-140/20
218-01-9	Chrysene	ND		54.3	43.5	80	41.6	78	4	40-140/20
53-70-3	Dibenzo(a,h)anthracene	ND		54.3	46.2	85	44.3	83	4	40-140/20
206-44-0	Fluoranthene	ND		54.3	46.5	86	44.0	83	6	40-140/20
86-75-7	Fluorene	ND		54.3	43.8	81	42.7	80	3	40-140/20
193-39-5	Indeno(1,2,3-cd)pyrene	ND		54.3	47.8	88	45.6	86	5	40-140/20
96-12-0	1-Methylnaphthalene	0.032	J	54.3	40.4	74	41.3	78	2	40-140/20
91-57-6	2-Methylnaphthalene	0.040	J	54.3	36.1	66	34.7	65	4	40-140/20
91-20-3	Naphthalene	ND		54.3	35.1	65	33.5	63	5	40-140/20
85-01-8	Phenanthrene	ND		54.3	39.9	73	38.0	71	5	40-140/20
129-00-0	Pyrene	ND		54.3	48.8	90	46.1	87	6	40-140/20

CAS No.	Surrogate Recoveries	MS	MSD	MC5219-1	Limits
4165-60-0	Nitrobenzene-d5	74%	77%	47%	30-130%
321-60-8	2-Fluorobiphenyl	70%	72%	71%	30-130%
1718-51-0	Terphenyl-d14	83%	81%	59%	30-130%

6.4.4

6

# Semivolatle Internal Standard Area Summary

Job Number: MC5220  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSI2802-CC2797	Injection Date:	11/14/11
Lab File ID:	I76310.D	Injection Time:	07:50
Instrument ID:	GCMSI	Method:	SW846 8270C

	IS 1	IS 2	IS 3	IS 4	IS 5	IS 6
	AREA	RT	AREA	RT	AREA	RT
Check Std	101852	5.40	352296	6.70	199445	9.14
Upper Limit <sup>a</sup>	203704	5.90	704592	7.20	398890	9.64
Lower Limit <sup>b</sup>	50926	4.90	176148	5.20	99723	8.64

Lab	IS 1	IS 2	IS 3	IS 4	IS 5	IS 6
Sample ID	AREA	RT	AREA	RT	AREA	RT
ZZZZZZ	123700	5.41	429706	6.70	237489	9.14
ZZZZZZ	116659	5.41	412691	6.70	228660	9.14
MC5220-2	105809	5.40	371352	6.70	203175	9.14
MC5220-3	113618	5.40	405117	6.70	226384	9.14
MC5220-4	117758	5.41	436173	6.70	245128	9.14
MC5220-5	124634	5.41	447377	6.70	257326	9.14
MC5220-8	125410	5.40	447546	6.70	256871	9.14
ZZZZZZ	133771	5.40	463504	6.70	271725	9.14
ZZZZZZ	101848	5.40	356426	6.70	199402	9.14
ZZZZZZ	108656	5.40	383584	6.70	220914	9.14
ZZZZZZ	115662	5.40	414822	6.70	235463	9.14
ZZZZZZ	111290	5.40	383494	6.70	216760	9.14

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.5.1  
6

# Semivolatiles Internal Standard Area Summary

Job Number: MC5220  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSI2804-CC2803	Injection Date:	11/15/11
Lab File ID:	I76348.D	Injection Time:	08:39
Instrument ID:	GCMSI	Method:	SW846 8270C BY SIM

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	172967	5.42	571677	6.70	390618	9.13	710682	11.66	857041	16.61	808259	19.14
Upper Limit <sup>a</sup>	345934	5.92	1143354	7.20	781236	9.63	1421364	12.16	1714082	17.11	1616518	19.64
Lower Limit <sup>b</sup>	86484	4.92	285839	6.20	195309	8.63	355341	11.16	428521	16.11	404130	18.64

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP26877-MB	213679	5.42	713305	6.70	489632	9.13	858213	11.64	935815	16.60	835772	19.13
OP26877-BS	179627	5.43	597495	6.70	401796	9.13	723119	11.64	837004	16.60	706620	19.13
ZZZZZZ	174300	5.42	586858	6.70	390408	9.13	694473	11.64	756224	16.60	709305	19.13
ZZZZZZ	171246	5.42	570914	6.70	386319	9.13	684436	11.64	731019	16.60	670502	19.13
OP26874-MB	204038	5.42	685806	6.70	481923	9.14	896209	11.64	965189	16.60	886086	19.13
OP26874-BS	275159	5.43	886516	6.70	614119	9.14	1070329	11.66	1251292	16.61	1165312	19.14
OP26874-BSD	202326	5.43	654762	6.70	438118	9.14	790565	11.66	866300	16.61	726144	19.14
OP26874-MS	192787	5.43	621667	6.70	416457	9.14	763346	11.66	845674	16.61	716412	19.14
OP26874-MSD	176811	5.43	581157	6.70	393572	9.14	717110	11.66	802318	16.60	712078	19.14
MC5220-1	164270	5.42	547646	6.70	370589	9.13	652107	11.64	693985	16.60	649007	19.13
MC5220-2	151498	5.42	508910	6.70	335825	9.13	622728	11.64	707919	16.60	700342	19.13
MC5220-3	163842	5.42	553105	6.70	376509	9.13	671520	11.64	764065	16.60	749820	19.13

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.5.2  
6

# Semivolatile Internal Standard Area Summary

Job Number: MC5220  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSI2805-CC2803	Injection Date:	11/15/11
Lab File ID:	I76362.D	Injection Time:	16:07
Instrument ID:	GCMSI	Method:	SW846 8270C BY SIM

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	139608	5.42	467233	6.70	317401	9.13	580786	11.64	691044	16.60	631560	19.13
Upper Limit <sup>a</sup>	279216	5.92	934466	7.20	634802	9.63	1161572	12.14	1382088	17.10	1263120	19.63
Lower Limit <sup>b</sup>	69804	4.92	233617	6.20	158701	8.63	290393	11.14	345522	16.10	315780	18.63

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP26917-MB	134529	5.42	452575	6.70	305584	9.13	554282	11.64	580257	16.60	533265	19.13
OP26917-BS	143323	5.43	479956	6.70	322675	9.13	590262	11.64	673105	16.60	594071	19.13
OP26917-MS	138732	5.42	459330	6.70	305873	9.13	544760	11.64	629400	16.60	587956	19.13
OP26917-MSD	134540	5.43	447465	6.70	299094	9.13	541158	11.64	625665	16.60	540435	19.13
MC5282-11	132337	5.42	443496	6.70	297069	9.13	538865	11.64	560006	16.60	510899	19.13
ZZZZZZ	121551	5.42	408209	6.70	271187	9.13	503060	11.64	537650	16.60	494586	19.13
ZZZZZZ	120686	5.42	401120	6.70	274328	9.13	520194	11.64	602209	16.60	588314	19.13
ZZZZZZ	114877	5.42	382615	6.70	256610	9.13	486076	11.64	526982	16.60	506053	19.13
ZZZZZZ	136537	5.42	456026	6.70	303280	9.13	565546	11.64	618298	16.60	601832	19.13
ZZZZZZ	120999	5.42	410654	6.70	278233	9.13	519153	11.64	545331	16.60	540747	19.13
MC5220-4	159032	5.43	546267	6.70	351376	9.13	663142	11.64	750944	16.60	818257	19.14
MC5220-5	159998	5.43	527493	6.70	358283	9.13	663360	11.64	739564	16.60	702678	19.13
MC5220-8	162342	5.42	540956	6.70	366605	9.13	693573	11.64	797027	16.60	769904	19.13
MC5220-9	156223	5.42	517708	6.70	353191	9.13	648484	11.64	744438	16.60	733667	19.13
MC5220-10	136028	5.42	455948	6.70	303223	9.13	564213	11.64	634194	16.60	603048	19.13
MC5220-11	163337	5.42	547541	6.70	374466	9.13	720988	11.64	887776	16.61	979628	19.14
ZZZZZZ	139433	5.42	464282	6.70	320111	9.13	595316	11.64	677261	16.60	659963	19.13
ZZZZZZ	145442	5.42	482876	6.70	331348	9.13	605536	11.64	657191	16.60	650546	19.13
ZZZZZZ	129216	5.42	434843	6.70	300320	9.13	558797	11.64	625825	16.60	629368	19.13
ZZZZZZ	138826	5.42	474915	6.70	318001	9.13	595604	11.64	662414	16.60	650858	19.13

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.5.3  
6

# Semivolatile Internal Standard Area Summary

Job Number: MC5220  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSI2806-CC2803	Injection Date:	11/16/11
Lab File ID:	I76385.D	Injection Time:	08:11
Instrument ID:	GCMSI	Method:	SW846 8270C BY SIM

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	139193	5.42	463685	6.70	314501	9.13	577193	11.64	759314	16.60	743098	19.13
Upper Limit <sup>a</sup>	278386	5.92	927370	7.20	629002	9.63	1154386	12.14	1518628	17.10	1486196	19.63
Lower Limit <sup>b</sup>	69597	4.92	231843	6.20	157251	8.63	288597	11.14	379657	16.10	371549	18.63

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP26889-MB	149738	5.42	494733	6.70	334333	9.13	619362	11.64	693300	16.60	640646	19.13
OP26889-BS	144554	5.42	481657	6.70	327721	9.13	616620	11.64	758414	16.60	689098	19.13
OP26889-MS	128748	5.42	430447	6.70	291297	9.13	555756	11.64	663580	16.60	613993	19.13
OP26889-MSD	128608	5.42	432274	6.70	293975	9.13	561183	11.64	672005	16.60	624905	19.13
MC5219-L	122709	5.42	409674	6.70	281626	9.13	547372	11.64	599533	16.60	546770	19.13
ZZZZZZ	126099	5.42	416200	6.70	282189	9.13	540922	11.64	603497	16.60	551314	19.13
ZZZZZZ	127764	5.42	428691	6.70	290583	9.13	558926	11.64	651061	16.60	588859	19.13
ZZZZZZ	120826	5.42	404169	6.70	266609	9.13	528250	11.64	570332	16.60	521987	19.13
ZZZZZZ	116683	5.42	387111	6.70	261243	9.13	501955	11.64	589804	16.60	559786	19.13
ZZZZZZ	119121	5.42	392357	6.70	264610	9.13	512715	11.64	572870	16.60	575693	19.13
ZZZZZZ	122938	5.42	402581	6.70	267862	9.13	512011	11.64	566577	16.60	529311	19.13
ZZZZZZ	123846	5.42	410728	6.70	281706	9.13	537824	11.64	587150	16.60	569123	19.13
ZZZZZZ	124374	5.42	411642	6.70	276201	9.13	519111	11.64	546448	16.60	514441	19.13
ZZZZZZ	121471	5.42	402361	6.70	266351	9.13	503612	11.64	542890	16.60	511211	19.13
ZZZZZZ	122545	5.42	404177	6.70	267918	9.13	515690	11.64	570889	16.60	576535	19.13
ZZZZZZ	124060	5.42	416415	6.70	273754	9.13	515098	11.64	604076	16.60	689719	19.13
ZZZZZZ	126302	5.42	419125	6.70	277091	9.13	523721	11.64	570280	16.60	584118	19.13
ZZZZZZ	123406	5.42	411215	6.70	272825	9.13	516600	11.64	544015	16.60	622663	19.13
ZZZZZZ	122817	5.42	409288	6.70	272896	9.13	515549	11.64	528074	16.60	516508	19.13
ZZZZZZ	115964	5.42	385366	6.70	253518	9.13	479478	11.64	510811	16.60	535291	19.13
ZZZZZZ	115774	5.42	385614	6.70	257869	9.13	490151	11.64	535447	16.60	562851	19.13
ZZZZZZ	134484	5.42	445674	6.70	297385	9.13	558873	11.64	598953	16.60	585108	19.13
ZZZZZZ	120211	5.42	394793	6.70	259121	9.13	494363	11.64	536120	16.60	510196	19.13
ZZZZZZ	131779	5.42	439012	6.70	289448	9.13	546985	11.64	565059	16.60	543717	19.13
ZZZZZZ	112928	5.42	375284	6.70	245340	9.13	464861	11.64	486789	16.60	450447	19.13

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.5.4  
6

# Semivolatile Internal Standard Area Summary

Job Number: MC5220  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSI2813-CC2803	Injection Date:	11/21/11
Lab File ID:	176494.D	Injection Time:	12:42
Instrument ID:	GCMSI	Method:	SW846 8270C BY SIM

	IS 1	IS 2	IS 3	IS 4	IS 5	IS 6
	AREA	RT	AREA	RT	AREA	RT
Check Std	196453	5.41	642514	6.68	443654	9.12
Upper Limit <sup>a</sup>	392906	5.91	1285028	7.18	887308	9.62
Lower Limit <sup>b</sup>	98227	4.91	321257	6.18	221827	8.62

Lab Sample ID	IS 1	IS 2	IS 3	IS 4	IS 5	IS 6
	AREA	RT	AREA	RT	AREA	RT
MC5220-12	233588	5.41	734318	6.67	511908	9.11
OP26998-MB	201307	5.41	637468	6.67	434225	9.11
OP26998-BS	187825	5.41	604630	6.68	412900	9.11
OP26998-MS	201311	5.41	650294	6.68	444488	9.11
OP26998-MSD	185094	5.41	599404	6.68	409932	9.11
MC5526-10	194963	5.41	622985	6.67	434969	9.11
ZZZZZZ	187606	5.41	603807	6.67	418119	9.11
ZZZZZZ	210973	5.41	668043	6.67	464401	9.11
ZZZZZZ	186155	5.41	591349	6.67	406133	9.11
ZZZZZZ	211923	5.41	673444	6.67	467938	9.11
ZZZZZZ	162758	5.41	518277	6.67	351643	9.11
ZZZZZZ	190831	5.41	605882	6.67	415346	9.11
ZZZZZZ	182337	5.41	582144	6.67	401529	9.11
ZZZZZZ	198738	5.41	625797	6.67	432453	9.11
ZZZZZZ	197509	5.41	623746	6.67	432200	9.11
ZZZZZZ	185059	5.41	591883	6.67	410339	9.11
ZZZZZZ	199075	5.41	632270	6.67	436856	9.11
ZZZZZZ	206946	5.41	660534	6.67	462664	9.11
ZZZZZZ	197342	5.41	625747	6.67	427980	9.11
ZZZZZZ	198898	5.41	632552	6.67	435402	9.11
ZZZZZZ	186140	5.41	594754	6.67	403497	9.11
ZZZZZZ	158042	5.41	513342	6.67	348969	9.11

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.5.5  
6

# Semivolatile Internal Standard Area Summary

Job Number: MC5220  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSS1242-CC1238	Injection Date:	11/09/11
Lab File ID:	S28622.D	Injection Time:	10:39
Instrument ID:	GCMSS	Method:	SW846 8270C

	IS 1	IS 2	IS 3	IS 4	IS 5	IS 6						
	AREA	RT	AREA	RT	AREA	RT						
Check Std	314438	6.31	1136726	7.69	650501	9.90	1163662	12.09	1312286	16.44	1189859	18.67
Upper Limit <sup>a</sup>	628876	6.81	2273452	8.19	1301002	10.40	2327324	12.59	2624572	16.94	2379718	19.17
Lower Limit <sup>b</sup>	157219	5.81	568363	7.19	325251	9.40	581831	11.59	656143	15.94	594930	18.17

Lab	IS 1	IS 2	IS 3	IS 4	IS 5	IS 6						
Sample ID	AREA	RT	AREA	RT	AREA	RT						
ZZZZZZ	288651	6.31	999471	7.69	570978	9.90	1023090	12.10	1094383	16.44	1049095	18.67
OP26861-BS	356136	6.31	1349112	7.69	755493	9.90	1431398	12.09	1516398	16.44	1333768	18.67
OP26861-MB	345368	6.31	1241193	7.69	708937	9.90	1258711	12.09	1287619	16.44	1218162	18.67
OP26861-MS	372550	6.31	1324420	7.69	746721	9.90	1384193	12.09	1496813	16.44	1291868	18.67
OP26861-MSD	369933	6.31	1316384	7.69	729949	9.90	1327049	12.10	1403332	16.44	1263063	18.67
MC5247-1	362683	6.31	1284534	7.69	724465	9.90	1354419	12.09	1426137	16.44	1260085	18.67
ZZZZZZ	365145	6.31	1301736	7.69	758375	9.90	1390575	12.09	1410215	16.44	1176214	18.67
ZZZZZZ	390530	6.31	1402910	7.69	777598	9.90	1292345	12.10	1296813	16.49	1855839	18.75
ZZZZZZ	391592	6.31	1397091	7.69	782245	9.90	1424291	12.09	1186489	16.44	1235152	18.68
OP26866-MB	309415	6.31	1091593	7.69	614756	9.90	1080053	12.09	1197558	16.44	1309417	18.68
OP26866-BS	345214	6.31	1253456	7.70	650668	9.90	1173189	12.10	1230491	16.45	1270917	18.68

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.5.6  
6



# Semivolatile Internal Standard Area Summary

Job Number: MC5220  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSS1248-CC1245	Injection Date:	11/11/11
Lab File ID:	S28724.D	Injection Time:	17:25
Instrument ID:	GCMSS	Method:	SW846 8270C

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	358567	6.32	1274171	7.70	725445	9.91	1356891	12.11	1520905	16.46	1475593	18.69
Upper Limit <sup>a</sup>	717134	6.82	2548342	8.20	1450890	10.41	2713782	12.61	3041810	16.96	2951186	19.19
Lower Limit <sup>b</sup>	179284	5.82	637086	7.20	362723	9.41	678446	11.61	760453	15.96	737797	18.19

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP26794-MB	315922	6.32	1128000	7.70	633943	9.91	1194384	12.10	1239042	16.45	1170513	18.68
OP26794-BS	322932	6.32	1143246	7.70	649708	9.91	1203280	12.11	1293319	16.45	1157075	18.68
OP26794-BSD	330392	6.32	1168231	7.70	656357	9.91	1205374	12.11	1261085	16.45	1140176	18.68
ZZZZZZ	365674	6.32	1317806	7.70	741275	9.91	1380752	12.10	1516696	16.45	1455272	18.68
ZZZZZZ	294718	6.32	1037810	7.70	597683	9.91	1109448	12.10	1199189	16.45	1168747	18.68
ZZZZZZ	361694	6.32	1311238	7.70	743576	9.91	1382520	12.10	1515716	16.45	1448414	18.68
ZZZZZZ	318291	6.31	1146088	7.70	651185	9.91	1226800	12.10	1363611	16.45	1323556	18.68
ZZZZZZ	341796	6.31	1205478	7.70	701565	9.91	1284099	12.10	1409978	16.45	1372175	18.68
ZZZZZZ	309865	6.31	1094969	7.70	630328	9.91	1160270	12.10	1249103	16.45	1241262	18.68
ZZZZZZ	279413	6.31	1016177	7.70	583722	9.91	1092776	12.10	1168555	16.45	1137813	18.68
OP26888-MB	332826	6.31	1202199	7.70	685717	9.91	1274384	12.10	1355908	16.45	1339910	18.68
OP26888-BS	293446	6.31	1048384	7.70	609294	9.91	1113036	12.10	1244553	16.45	1194265	18.68
ZZZZZZ	276147	6.31	979151	7.70	560134	9.90	1055770	12.09	1124340	16.44	1111973	18.68
OP26835-MS	339877	6.31	1200516	7.70	655324	9.90	1190095	12.09	1188419	16.45	1083498	18.68
OP26835-MSD	361635	6.31	1279700	7.70	717137	9.90	1300589	12.10	1309998	16.45	1160347	18.68
MC5221-1	317251	6.31	1126558	7.69	630105	9.90	1168244	12.10	1186593	16.44	1075030	18.68
ZZZZZZ	312924	6.31	1099603	7.69	632351	9.90	1138080	12.10	1180904	16.44	1090692	18.68
ZZZZZZ	329152	6.31	1162828	7.69	642578	9.90	1149574	12.09	1116586	16.44	1027727	18.68
ZZZZZZ	365059	6.31	1296863	7.69	741701	9.90	1356291	12.09	1352955	16.44	1187431	18.68
ZZZZZZ	375766	6.31	1353002	7.69	758888	9.90	1349400	12.10	1214451	16.45	1145022	18.68
ZZZZZZ	336449	6.31	1213813	7.69	681882	9.90	1236250	12.10	1229516	16.45	1154790	18.68
OP26875-MS	437546	6.31	1555925	7.70	868239	9.90	1558288	12.10	1399059	16.45	1173702	18.68
OP26875-MSD	429384	6.31	1515212	7.69	856274	9.90	1533885	12.10	1393871	16.45	1196405	18.68
MC5190-1	367031	6.31	1277678	7.69	722113	9.90	1314923	12.10	1234733	16.45	1163818	18.68

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.5.7  
6

# Semivolatiles Internal Standard Area Summary

Job Number: MC5220  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSS1249-CC1238	Injection Date:	11/11/11
Lab File ID:	S28724A.D	Injection Time:	17:25
Instrument ID:	GCMSS	Method:	SW846 8270C

	IS 1	IS 2	IS 3	IS 4	IS 5	IS 6
	AREA	RT	AREA	RT	AREA	RT
Check Std	358571	6.32	1274171	7.70	725445	9.91
Upper Limit <sup>a</sup>	717142	6.82	2548342	8.20	1450890	10.41
Lower Limit <sup>b</sup>	179286	5.82	637086	7.20	362723	9.41

Lab Sample ID	IS 1	IS 2	IS 3	IS 4	IS 5	IS 6
	AREA	RT	AREA	RT	AREA	RT
OP26794-MB	315922	6.32	1128000	7.70	633943	9.91
OP26794-BS	322932	6.32	1143246	7.70	649708	9.91
OP26794-BSD	330392	6.32	1168231	7.70	656357	9.91
ZZZZZZ	365674	6.32	1317806	7.70	741275	9.91
ZZZZZZ	294718	6.32	1037810	7.70	597683	9.91
ZZZZZZ	361694	6.32	1311238	7.70	743576	9.91
ZZZZZZ	318291	6.31	1146088	7.70	651185	9.91
ZZZZZZ	341796	6.31	1205478	7.70	701565	9.91
ZZZZZZ	309865	6.31	1094969	7.70	630328	9.91
ZZZZZZ	279413	6.31	1016177	7.70	583722	9.91
OP26888-ME	332826	6.31	1202199	7.70	685717	9.91
OP26888-ES	293446	6.31	1048384	7.70	609294	9.91
ZZZZZZ	276147	6.31	979151	7.70	560134	9.90
OP26835-MS	339877	6.31	1200516	7.70	655324	9.90
OP26835-MSD	361635	6.31	1279700	7.70	717137	9.90
MC5221-1	317251	6.31	1126558	7.69	630105	9.90
ZZZZZZ	312924	6.31	1099603	7.69	632351	9.90
ZZZZZZ	329152	6.31	1162828	7.69	642578	9.90
ZZZZZZ	365059	6.31	1296863	7.69	741701	9.90
ZZZZZZ	375766	6.31	1353002	7.69	758888	9.90
ZZZZZZ	336449	6.31	1213813	7.69	681882	9.90
OP26875-MS	437546	6.31	1555925	7.70	868239	9.90
OP26875-MSD	429384	6.31	1515212	7.69	856274	9.90
MC5190-1	367031	6.31	1277678	7.69	722113	9.90

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.5.8  
6

# Semivolatiles Internal Standard Area Summary

Job Number: MC5220  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSS1253-CC1238	Injection Date:	11/15/11
Lab File ID:	S28807.D	Injection Time:	10:15
Instrument ID:	GCMSS	Method:	SW846 8270C

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	289498	6.32	1057291	7.70	594320	9.91	1125573	12.11	1250479	16.47	1194451	18.70
Upper Limit <sup>a</sup>	578996	6.82	2114582	8.20	1188640	10.41	2251146	12.61	2500958	16.97	2388902	19.20
Lower Limit <sup>b</sup>	144749	5.82	528646	7.20	297160	9.41	562787	11.61	625240	15.97	597226	18.20

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
ZZZZZZ	233656	6.32	835085	7.70	475374	9.91	892030	12.10	931455	16.45	916836	18.69
OP26915-MS	293353	6.32	1018361	7.70	558080	9.91	976716	12.11	978450	16.46	923509	18.69
OP26915-MSD	301697	6.32	1076754	7.70	580731	9.91	1024576	12.12	1036384	16.47	997099	18.69
MC5400-1	287278	6.32	1045114	7.70	581129	9.91	1033902	12.12	1129437	16.46	1167836	18.69
OP26888-MS	245960	6.32	875769	7.70	502547	9.91	919072	12.11	1027252	16.46	1051313	18.69
OP26388-MSD	251707	6.32	907254	7.70	515029	9.91	952291	12.11	1065785	16.46	1070018	18.69
MC5235-4	252674	6.31	900061	7.70	522905	9.91	990060	12.10	1090127	16.45	1141343	18.69
ZZZZZZ	282469	6.31	1037486	7.70	573984	9.91	1052472	12.10	1122234	16.45	1175115	18.69
ZZZZZZ	261820	6.31	942138	7.70	568132	9.91	1029879	12.10	1123294	16.45	1153394	18.69
MC5220-12	297299	6.31	1040322	7.70	595568	9.91	1106050	12.10	1204299	16.45	1238102	18.69
OP26906-MB	280236	6.31	989663	7.70	571398	9.91	1067180	12.10	1167629	16.45	1222229	18.69
OP26906-BS	309234	6.31	1121306	7.70	631498	9.91	1135975	12.10	1238276	16.45	1200923	18.69
OP26906-MS	292962	6.31	1063306	7.70	606532	9.91	1115205	12.10	1226696	16.45	1222528	18.69
OP26906-MSD	298319	6.31	1063067	7.70	606864	9.91	1099291	12.10	1210223	16.45	1201191	18.69
MC5282-4	322726	6.31	1139212	7.70	647674	9.91	1202072	12.10	1311773	16.45	1343961	18.69
ZZZZZZ	322822	6.31	1147131	7.69	665935	9.90	1226317	12.09	1314906	16.45	1314924	18.69
ZZZZZZ	280422	6.31	1007587	7.69	589852	9.90	1119022	12.09	1244253	16.45	1281689	18.69
ZZZZZZ	282652	6.31	1015433	7.69	583740	9.90	1095157	12.09	1219772	16.45	1263322	18.68
ZZZZZZ	350837	6.31	1237170	7.69	702454	9.90	1301468	12.09	1453381	16.45	1521346	18.68
ZZZZZZ	365691	6.31	1298324	7.69	720342	9.90	1283566	12.09	1281370	16.45	1330797	18.68
ZZZZZZ	420420	6.31	1480909	7.69	845513	9.90	1532909	12.09	1608376	16.45	1652428	18.69
ZZZZZZ	359171	6.31	1311878	7.69	766101	9.90	1429844	12.09	1564972	16.45	1599294	18.68
ZZZZZZ	294863	6.31	1057564	7.69	623222	9.90	1171475	12.10	1310062	16.45	1337764	18.68
ZZZZZZ	353369	6.31	1287702	7.69	728634	9.90	1385702	12.09	1542751	16.45	1555308	18.69
ZZZZZZ	322246	6.31	1127640	7.69	670350	9.90	1244147	12.10	1376152	16.45	1393786	18.68

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.5.9  
6

# Semivolatile Internal Standard Area Summary

Job Number: MC5220  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSS1254-CC1245	Injection Date:	11/15/11
Lab File ID:	S28807A.D	Injection Time:	10:15
Instrument ID:	GCMSS	Method:	SW846 8270C

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	289498	6.32	1057291	7.70	594320	9.91	1125573	12.11	1250479	16.47	1194451	18.73
Upper Limit <sup>a</sup>	578996	6.82	2114582	8.20	1188640	10.41	2251146	12.61	2500958	16.97	2388902	19.20
Lower Limit <sup>b</sup>	144749	5.82	528646	7.20	297160	9.41	562787	11.61	625240	15.97	597226	18.20

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
ZZZZZZ	233656	6.32	835085	7.70	475374	9.91	892030	12.10	931455	16.45	916836	18.69
OP26915-MS	293353	6.32	1018361	7.70	558080	9.91	976716	12.11	978450	16.46	923509	18.69
OP26915-MSD	301697	6.32	1076754	7.70	580731	9.91	1024576	12.12	1036384	16.47	997099	18.69
MC5400-1	287278	6.32	1045114	7.70	581129	9.91	1033902	12.12	1129437	16.46	1167836	18.69
OP26888-MS	245960	6.32	875769	7.70	502547	9.91	919072	12.11	1027252	16.46	1051313	18.69
OP26888-MSD	251707	6.32	907254	7.70	515029	9.91	952291	12.11	1065785	16.46	1070018	18.69
MC5235-4	252674	6.31	900061	7.70	522905	9.91	990060	12.10	1090127	16.45	1141343	18.69
ZZZZZZ	282469	6.31	1037486	7.70	573984	9.91	1052472	12.10	1122234	16.45	1175115	18.69
ZZZZZZ	261820	6.31	942138	7.70	568132	9.91	1029879	12.10	1123294	16.45	1153394	18.69
MC5220-12	297299	6.31	1040322	7.70	595568	9.91	1106050	12.10	1204299	16.45	1238102	18.69
OP26906-MB	280236	6.31	989663	7.70	571398	9.91	1067180	12.10	1167629	16.45	1222229	18.69
OP26906-BS	309234	6.31	1121306	7.70	631498	9.91	1135975	12.10	1238276	16.45	1200923	18.69
OP26906-MS	292962	6.31	1063306	7.70	606532	9.91	1115205	12.10	1226696	16.45	1222528	18.69
OP26906-MSD	298319	6.31	1063067	7.70	606864	9.91	1099291	12.10	1210223	16.45	1201191	18.69
MC5282-4	322726	6.31	1139212	7.70	647674	9.91	1202072	12.10	1311773	16.45	1343961	18.69
ZZZZZZ	322822	6.31	1147131	7.69	665935	9.90	1226317	12.09	1314906	16.45	1314924	18.69
ZZZZZZ	280422	6.31	1007587	7.69	589852	9.90	1119022	12.09	1244253	16.45	1281689	18.69
ZZZZZZ	282652	6.31	1015433	7.69	583740	9.90	1095157	12.09	1219772	16.45	1263322	18.68
ZZZZZZ	350837	6.31	1237170	7.69	702454	9.90	1301468	12.09	1453381	16.45	1521346	18.68
ZZZZZZ	365691	6.31	1298324	7.69	720342	9.90	1283566	12.09	1281370	16.45	1330797	18.68
ZZZZZZ	420420	6.31	1480909	7.69	845513	9.90	1532909	12.09	1608376	16.45	1652428	18.69
ZZZZZZ	359171	6.31	1311878	7.69	766101	9.90	1429844	12.09	1564972	16.45	1599294	18.68
ZZZZZZ	294863	6.31	1057564	7.69	623222	9.90	1171475	12.10	1310062	16.45	1337764	18.68
ZZZZZZ	353369	6.31	1287702	7.69	728634	9.90	1385702	12.09	1542751	16.45	1555308	18.69
ZZZZZZ	322246	6.31	1127640	7.69	670350	9.90	1244147	12.10	1376152	16.45	1393786	18.68

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.5.10  
6

# Semivolatile Internal Standard Area Summary

Job Number: MC5220  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSU204-CC202	Injection Date:	11/14/11
Lab File ID:	U3359.D	Injection Time:	18:55
Instrument ID:	GCMSU	Method:	SW846 8270C

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	146179	5.49	529868	6.80	250190	9.25	376523	11.78	394751	16.73	419082	19.26
Upper Limit <sup>a</sup>	292358	5.99	1059736	7.30	500380	9.75	753046	12.28	789502	17.23	838164	19.76
Lower Limit <sup>b</sup>	73090	4.99	264934	6.30	125095	8.75	188262	11.28	197376	16.23	209541	18.76

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP26866-BSD	146101	5.49	518718	6.80	243992	9.25	379592	11.77	364135	16.73	363914	19.26
OP26866-MS	170543	5.49	586094	6.80	267231	9.25	391081	11.78	376010	16.73	423605	19.26
OP26866-MSD	192396	5.49	683419	6.80	301885	9.25	387480	11.78	298742	16.73	347708	19.26
MC5220-1	162993	5.49	596454	6.80	277566	9.25	417966	11.77	362350	16.73	367275	19.26
MC5220-9	190440	5.49	686585	6.80	304708	9.25	402120	11.77	296566	16.72	351125	19.26
MC5220-10	173856	5.49	621241	6.80	275383	9.25	357413	11.77	224543	16.72	249801	19.25
MC5220-11	162931	5.49	572023	6.80	270381	9.25	443572	11.77	484521	16.74	558431	19.27
ZZZZZZ	160184	5.49	579444	6.80	268403	9.25	373970	11.77	297215	16.73	319859	19.26
ZZZZZZ	156134	5.49	554799	6.80	247680	9.25	328578	11.77	265816	16.72	310911	19.26
ZZZZZZ	137152	5.49	504836	6.80	242384	9.25	379338	11.77	349217	16.72	358190	19.26
ZZZZZZ	143760	5.49	519424	6.80	241608	9.25	352348	11.77	318152	16.72	334051	19.26
ZZZZZZ	137875	5.49	495729	6.80	237858	9.25	364981	11.77	320515	16.72	332200	19.26
ZZZZZZ	132926	5.49	489621	6.80	231250	9.25	347122	11.77	312977	16.72	333507	19.26
OP26915-MB	208237	5.50	767591	6.80	342127	9.25	468143	11.77	290194	16.72	293922	19.25
OP26915-BS	151969	5.49	545030	6.80	247073	9.25	346483	11.77	266743	16.73	282673	19.26
OP26915-BSD	130897	5.49	473112	6.80	222634	9.25	315107	11.77	262616	16.73	294231	19.26
ZZZZZZ	171731	5.49	626699	6.80	272872	9.25	369459	11.77	261828	16.72	302721	19.26
ZZZZZZ	137782	5.49	507127	6.80	237044	9.25	345975	11.77	274996	16.72	311789	19.25
ZZZZZZ	139606	5.49	508824	6.80	243045	9.25	373740	11.77	368430	16.72	411335	19.26
ZZZZZZ	143009	5.49	513544	6.80	235991	9.25	330595	11.77	254121	16.72	314650	19.25
ZZZZZZ	127707	5.49	511807	6.80	234529	9.25	305697	11.77	122265 <sup>c</sup>	16.71	122175 <sup>c</sup>	19.25

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.  
 (c) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

6.5.11



# Semivolatile Internal Standard Area Summary

Job Number: MC5220  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSU205-CC202	Injection Date:	11/15/11
Lab File ID:	U3383.D	Injection Time:	08:01
Instrument ID:	GCMSU	Method:	SW846 8270C

	IS 1	IS 2	IS 3	IS 4	IS 5	IS 6
	AREA	RT	AREA	RT	AREA	RT
Check Std	156907	5.49	577947	6.80	270289	9.25
Upper Limit <sup>a</sup>	313814	5.99	1155894	7.30	540578	9.75
Lower Limit <sup>b</sup>	78454	4.99	288974	6.30	135145	8.75

Lab	IS 1	IS 2	IS 3	IS 4	IS 5	IS 6
Sample ID	AREA	RT	AREA	RT	AREA	RT
ZZZZZZ	130923	5.49	465877	6.80	207167	9.25
ZZZZZZ	191721	5.49	663656	6.80	253714	9.25
ZZZZZZ	174071	5.49	599689	6.80	226842	9.25
ZZZZZZ	225785	5.49	726952	6.80	240896	9.25
ZZZZZZ	120722	5.49	424783	6.80	192195	9.25
ZZZZZZ	145687	5.49	508002	6.80	221479	9.25
ZZZZZZ	135144	5.49	478927	6.80	212382	9.25
ZZZZZZ	178787	5.49	649400	6.80	290448	9.25
MC5220-4	133893	5.49	488141	6.80	223327	9.25
ZZZZZZ	159085	5.49	559865	6.80	245662	9.25
ZZZZZZ	163115	5.49	573531	6.80	237735	9.25
ZZZZZZ	182466	5.49	637251	6.80	283944	9.25

IS 1 = 1,4-Dichlorobenzene-d4  
 IS 2 = Naphthalene-d8  
 IS 3 = Acenaphthene-D10  
 IS 4 = Phenanthrene-d10  
 IS 5 = Chrysene-d12  
 IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.5.12



# Semivolatile Surrogate Recovery Summary

Job Number: MC5220

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Method: SW846 8270C

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4	S5	S6
MC5220-1	U3363.D	66.0	43.0	95.0	105.0	94.0	113.0
MC5220-2	I76313.D	62.0	37.0	87.0	85.0	85.0	103.0
MC5220-3	I76314.D	57.0	35.0	85.0	81.0	77.0	102.0
MC5220-4	U3392.D	65.0	39.0	83.0	99.0	89.0	87.0
MC5220-4	I76315.D	62.0	40.0	84.0	79.0	78.0	102.0
MC5220-5	I76316.D	52.0	34.0	85.0	72.0	72.0	109.0
MC5220-8	I76317.D	62.0	38.0	88.0	84.0	84.0	107.0
MC5220-9	U3364.D	47.0	30.0	85.0	79.0	73.0	102.0
MC5220-10	U3365.D	52.0	40.0	93.0	100.0	91.0	119.0
MC5220-11	U3366.D	63.0	41.0	92.0	103.0	88.0	98.0
MC5220-12	S28817.D	48.0	33.0	84.0	73.0	75.0	71.0
OP26866-BS	S28633.D	70.0	53.0	96.0	80.0	86.0	100.0
OP26866-BSD	U3360.D	67.0	47.0	91.0	101.0	92.0	103.0
OP26866-MB	S28632.D	35.0	23.0	83.0	67.0	71.0	95.0
OP26866-MS	U3361.D	61.0	40.0	95.0	101.0	92.0	102.0
OP26866-MSD	U3362.D	66.0	44.0	105.0	104.0	101.0	113.0
OP26888-BS	S28736.D	47.0	32.0	88.0	70.0	74.0	93.0
OP26888-MB	S28735.D	44.0	29.0	87.0	70.0	76.0	94.0
OP26888-MS	S28812.D	51.0	35.0	85.0	73.0	76.0	65.0
OP26888-MSD	S28813.D	49.0	33.0	80.0	69.0	73.0	62.0

**Surrogate Compounds**                      **Recovery Limits**

S1 = 2-Fluorophenol	15-110%
S2 = Phenol-d5	15-110%
S3 = 2,4,6-Tribromophenol	15-110%
S4 = Nitrobenzene-d5	30-130%
S5 = 2-Fluorobiphenyl	30-130%
S6 = Terphenyl-d14	30-130%

6.6.1



# Semivolatile Surrogate Recovery Summary

Job Number: MC5220

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Method: SW846 8270C BY SIM

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
MC5220-1	I76358.D	97.0	90.0	129.0
MC5220-2	I76359.D	91.0	86.0	110.0
MC5220-3	I76360.D	36.0	79.0	109.0
MC5220-4	I76374.D	86.0	84.0	110.0
MC5220-5	I76375.D	80.0	75.0	114.0
MC5220-8	I76376.D	92.0	86.0	117.0
MC5220-9	I76377.D	74.0	70.0	109.0
MC5220-10	I76378.D	92.0	89.0	119.0
MC5220-11	I76379.D	93.0	88.0	111.0
MC5220-12	I76495.D	109.0	84.0	85.0
OP26874-BS	I76354.D	94.0	86.0	113.0
OP26874-BSD	I76355.D	96.0	92.0	121.0
OP26874-MB	I76353.D	76.0	73.0	114.0
OP26874-MS	I76356.D	97.0	92.0	120.0
OP26874-MSD	I76357.D	101.0	95.0	122.0
OP26889-BS	I76387.D	85.0	79.0	104.0
OP26889-MB	I76386.D	84.0	79.0	108.0
OP26889-MS	I76388.D	74.0	70.0	83.0
OP26889-MSD	I76389.D	77.0	72.0	81.0

Surrogate Compounds	Recovery Limits
S1 = Nitrobenzene-d5	30-130%
S2 = 2-Fluorobiphenyl	30-130%
S3 = Terphenyl-d14	30-130%

6.6.2

6





**GC Volatiles**

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**QC Data Summaries**

7

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**Includes the following where applicable:**

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary

Job Number: MC5220

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26934-MB	BB39458.D	1	11/15/11	AP	11/14/11	OP26934	GBB2454

The QC reported here applies to the following samples:

Method: SW846 8011

MC5220-1, MC5220-2, MC5220-3, MC5220-4, MC5220-5, MC5220-7, MC5220-8, MC5220-9, MC5220-10, MC5220-11, MC5220-12

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

CAS No.	Surrogate Recoveries	Results	Limits
460-00-4	Bromofluorobenzene (S)	104%	36-173%
460-00-4	Bromofluorobenzene (S)	106%	36-173%

7.1.1  
7

# Blank Spike Summary

Job Number: MC5220

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Centrai Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26934-BS	BB39459.D	1	11/15/11	AP	11/14/11	OP26934	GBB2454

The QC reported here applies to the following samples:

Method: SW846 8011

MC5220-1, MC5220-2, MC5220-3, MC5220-4, MC5220-5, MC5220-7, MC5220-8, MC5220-9, MC5220-10, MC5220-11, MC5220-12

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
96-12-8	1,2-Dibromo-3-chloropropane	0.071	0.081	114	60-140
106-93-4	1,2-Dibromoethane	0.071	0.069	97	60-140

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	Bromofluorobenzene (S)	96%	36-173%
460-00-4	Bromofluorobenzene (S)	116%	36-173%

7.2.1

7

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5220

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26934-MS	BB39461.D	1	11/15/11	AP	11/14/11	OP26934	GBB2454
OP26934-MSD	BB39462.D	1	11/15/11	AP	11/14/11	OP26934	GBB2454
MC5220-1	BB39463.D	1	11/15/11	AP	11/14/11	OP26934	GBB2454

The QC reported here applies to the following samples:

Method: SW846 8011

MC5220-1, MC5220-2, MC5220-3, MC5220-4, MC5220-5, MC5220-7, MC5220-8, MC5220-9, MC5220-10, MC5220-11, MC5220-12

CAS No.	Compound	MC5220-1 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.071	0.078	110	0.064	90	20	64-141/29
106-93-4	1,2-Dibromoethane	ND	0.071	0.065	92	0.055	77	17	63-163/27

CAS No.	Surrogate Recoveries	MS	MSD	MC5220-1	Limits
460-00-4	Bromofluorobenzene (S)	101%	76%	64%	36-175%
460-00-4	Bromofluorobenzene (S)	123%	94%	87%	36-173%

7.3.1

7

# Volatile Surrogate Recovery Summary

Job Number: MC5220

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Method: SW846 8011

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 <sup>a</sup>	S1 <sup>b</sup>
MC5220-1	BB39463.D	64.0	87.0
MC5220-2	BB39464.D	74.0	86.0
MC5220-3	BB39465.D	95.0	97.0
MC5220-4	BB39466.D	82.0	153.0
MC5220-5	BB39505.D	96.0	90.0
MC5220-7	BB39506.D	98.0	114.0
MC5220-8	BB39516.D	102.0	107.0
MC5220-9	BB39517.D	100.0	100.0
MC5220-10	BB39518.D	97.0	126.0
MC5220-11	BB39519.D	88.0	140.0
MC5220-12	BB39520.D	107.0	124.0
OP26934-BS	BB39459.D	96.0	116.0
OP26934-MB	BB39458.D	104.0	106.0
OP26934-MS	BB39461.D	101.0	133.0
OP26934-MSD	BB39462.D	76.0	94.0

Surrogate  
Compounds                      Recovery  
Limits

S1 = Bromofluorobenzene (S)                      36-173%

(a) Recovery from GC signal #1

(b) Recovery from GC signal #2

7.4.1



# GC Surrogate Retention Time Summary

Job Number: MC5220  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	GBB2454-ICC2454	Injection Date:	11/15/11
Lab File ID:	BB39452.D	Injection Time:	13:49
Instrument ID:	GCBB	Method:	SW846 8011

	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
Check Std	3.94	3.88

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
ZZZZZZ	BB39457.D	11/15/11	15:58	3.93	3.87
ZZZZZZ	BB39457A.D	11/15/11	15:58	3.93	3.87
OP26934-MB	BB39458.D	11/15/11	16:23	3.93	3.87
OP26934-BS	BB39459.D	11/15/11	16:49	3.93	3.87
ZZZZZZ	BB39460.D	11/15/11	17:14	3.93	3.87
OP26934-MS	BB39461.D	11/15/11	17:39	3.93	3.87
OP26934-MSD	BB39462.D	11/15/11	18:04	3.93	3.87
MC5220-1	BB39463.D	11/15/11	18:30	3.93	3.87
MC5220-2	BB39464.D	11/15/11	18:54	3.93	3.87
MC5220-3	BB39465.D	11/15/11	19:19	3.93	3.87
MC5220-4	BB39466.D	11/15/11	19:45	3.92	3.86

**Surrogate  
Compounds**

S1 = Bromofluorobenzene (S)

- (a) Retention time from GC signal #1
- (b) Retention time from GC signal #2

7.5.1  
7

# GC Surrogate Retention Time Summary

Job Number: MC5220  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	GBB2455-ICC2455	Injection Date:	11/16/11
Lab File ID:	BB39498.D	Injection Time:	09:39
Instrument ID:	GCBB	Method:	SW846 8011

	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
Check Std	3.95	3.90

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
MC5220-5	BB39505.D	11/16/11	12:44	3.96	3.90
MC5229-7	BB39506.D	11/16/11	13:10	3.96	3.90
OP26932-MB	BB39507.D	11/16/11	13:35	3.96	3.90
OP26933-MB	BB39507A.D	11/16/11	13:35	3.96	3.90
OP26932-BS	BB39508.D	11/16/11	14:00	3.95	3.90
OP26933-BS	BB39508A.D	11/16/11	14:00	3.95	3.90
OP26932-BSD	BB39509.D	11/16/11	14:25	3.95	3.90
OP26932-MS	BB39510.D	11/16/11	14:50	3.96	3.90
OP26933-MS	BB39510A.D	11/16/11	14:50	3.96	3.90
OP26932-MSD	BB39511.D	11/16/11	15:15	3.96	3.90
OP26933-MSD	BB39511A.D	11/16/11	15:15	3.96	3.90
ZZZZZZ	BB39512.D	11/16/11	15:40	3.96	3.90
ZZZZZZ	BB39513.D	11/16/11	16:05	3.96	3.90
ZZZZZZ	BB39514.D	11/16/11	16:30	3.96	3.90

Surrogate  
Compounds

S1 = Bromofluorobenzene (S)

- (a) Retention time from GC signal #1
- (b) Retention time from GC signal #2

7.5.2  
7

# GC Surrogate Retention Time Summary

Job Number: MC5220  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	GBB2455-CC2455	Injection Date:	11/16/11
Lab File ID:	BB39515.D	Injection Time:	17:37
Instrument ID:	GCBB	Method:	SW846 8011

	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
Check Std	3.96	3.90

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
MC5220-8	BB39516.D	11/16/11	18:03	3.96	3.90
MC5220-9	BB39517.D	11/16/11	18:27	3.96	3.90
MC5220-10	BB39518.D	11/16/11	18:52	3.96	3.90
MC5220-11	BB39519.D	11/16/11	19:17	3.96	3.90
MC5220-12	BB39520.D	11/16/11	19:42	3.96	3.90
ZZZZZ	BB39521.D	11/16/11	20:07	3.95	3.90
ZZZZZ	BB39522.D	11/16/11	20:33	3.96	3.90
ZZZZZ	BB39523.D	11/16/11	20:58	3.96	3.90
ZZZZZ	BB39524.D	11/16/11	21:23	3.96	3.90
ZZZZZ	BB39525.D	11/16/11	21:48	3.96	3.90

**Surrogate  
Compounds**

S1 = Bromofluorobenzene (S)

- (a) Retention time from GC signal #1
- (b) Retention time from GC signal #2

7.5.3  
7



# Roxana Groundwater Quarterly – 4<sup>th</sup> Quarter 2011 Data Review

Laboratory SDG: MC5350

Data Reviewer: Melissa Mansker

Peer Reviewer: Elizabeth Kunkel

Date Reviewed: 12/16/2011

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

Sample Identification	Sample Identification
P57-ROX-110811	TB-110811

## 1.0 Data Package Completeness

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

Yes

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

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

Yes, the laboratory case narrative indicated VOC and SVOC LCS recoveries were outside evaluation criteria. Although not indicated in the laboratory case narrative, acetone was detected in the trip blank and diethyl phthalate was detected in the method blank. These issues are addressed further in the appropriate sections below.

The cooler receipt form indicated samples in one of one coolers were received by the laboratory at a temperature of 1.7°C, which is outside the 4°C ± 2°C criteria. Samples were received in good condition; therefore, no qualification of data was required.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

Yes

## 4.0 Blank Contamination

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

Yes

Blank ID	Parameter	Analyte	Concentration/Amount
TB-110811	VOCs	Acetone	5.1 ug/L
OP26916-MB	SVOCs	Diethyl phthalate	0.79 ug/L

Analytical data that were reported non-detect or at concentrations greater than five times (5X) the associated blank concentration (10X for common laboratory contaminants) did not require qualification.

## 5.0 Laboratory Control Sample

*Were LCS recoveries within evaluation criteria?*

No

LCS/LCSD ID	Parameter	Analyte	LCS/LCSD Recovery	RPD	LCS/LCSD/ RPD Criteria
MSN2152-BS	VOCs	Acrolein	218	NA	70-130
MSN2152-BS	VOCs	Acrylonitrile	478	NA	70-130
MSN2152-BS	VOCs	Isopropylbenzene	131	NA	70-130
OP26916-BS	SVOCs	Aniline	37	NA	40-140
OP26916-BS	SVOCs	Hexachlorocyclopentadiene	34	NA	40-140

Analytical data that required qualification based on LCS data are included in the table below. Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification.

Field ID	Parameter	Analyte	Qualification
P57-ROX-110811	SVOCs	Aniline	UJ
P57-ROX-110811	SVOCs	Hexachlorocyclopentadiene	UJ

## 6.0 Surrogate Recoveries

*Were surrogate recoveries within evaluation criteria?*

Yes

## 7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

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

No

## 8.0 Internal Standard (IS) Recoveries

*Were internal standard area recoveries within evaluation criteria?*

Yes

## 9.0 Laboratory Duplicate Results

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

No

## 10.0 Field Duplicate Results

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

No

**11.0 Sample Dilutions**

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

Not applicable; analytes were detected in samples that were diluted.

**12.0 Additional Qualifications**

*Were additional qualifications applied?*

No



12/16/11

## Technical Report for

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### Shell Oil

URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana,

Accutest Job Number: MC5350

Sampling Date: 11/08/11

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### Report to:

URS Corporation

Elizabeth\_Kunkel@URSCorp.com

ATTN: Elizabeth Kunkel

Total number of pages in report: 71



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

*Reviewed on 12/16/2011*  
*Reza Fand*  
Reza Fand  
Lab Director

Client Service contact: Jeremy Vienneau 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) ISO 17025.2005 (L2235)

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Test results relate only to samples analyzed.

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### Sample Summary

Shell Oil

Job No: MC5350

URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
MC5350-1	11/08/11	11:41 JJLM	11/09/11	AQ	Ground Water	P57-ROX-110811 ✓
MC5350-2	11/08/11	00:00 JJLM	11/09/11	AQ	Trip Blank Water	TB-110811 ✓
MC5350-3	11/08/11	00:00 JJLM	11/09/11	AQ	Trip Blank Water	TB110811

## SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Shell Oil Job No MC5350  
Site: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Centra Report Date 11/28/2011 1:22:05 PM

1 Sample(s), 2 Trip Blank(s) and 0 Field Blank(s) were collected on 11/08/2011 and were received at Accutest on 11/09/2011 properly preserved, at 1.7 Deg. C and intact. These Samples received an Accutest job number of MC5350. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report. 1-Chlorohexane, Benzenethiol, Dibenz(a,h)acridine, Indene, and Quinoline were searched in the library search and reported only if detections were found.

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

### Volatiles by GCMS By Method SW846 8260B

Matrix: AQ	Batch ID: MSN2152
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- All samples were analyzed within the recommended method holding time.
- Sample(s) MC5396-1MS, MC5396-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for Isopropylbenzene are outside control limits. Blank Spike meets program technical requirements.
- MS/MSD Recovery(s) for Acetone are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- MSN2152-BS/MS/MSD for Aerolein, Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.

Matrix: AQ	Batch ID: MSN2155
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- All samples were analyzed within the recommended method holding time.
- Sample(s) MC5444-2MS, MC5444-2MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

### Extractables by GCMS By Method SW846 8270C

Matrix: AQ	Batch ID: OP26916
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- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC5282-10MS, MC5282-10MSD were used as the QC samples indicated.
- BS/MS Recovery(s) for Aniline, Hexachlorocyclopentadiene are outside control limits. Blank Spike meets program technical requirements
- Matrix Spike Duplicate Recovery(s) for Hexachlorocyclopentadiene are outside control limits. Blank Spike meets program technical requirements

### Extractables by GCMS By Method SW846 8270C BY SIM

Matrix: AQ	Batch ID: OP26917
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- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC5282-11MS, MC5282-11MSD were used as the QC samples indicated.

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## Volatiles by GC By Method SW846 8011

Matrix: AQ	Batch ID: OP26933
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- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC5472-5MS, MC5472-5MSD were used as the QC samples indicated.

Matrix: AQ	Batch ID: OP26934
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- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC5220-1MS, MC5220-1MSD were used as the QC samples indicated.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety. The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC5350).





**Sample Results**

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**Report of Analysis**

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## Report of Analysis

Client Sample ID:	P57-ROX-110811	Date Sampled:	11/08/11
Lab Sample ID:	MC5350-1	Date Received:	11/09/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N57456.D	100	11/19/11	JP	n/a	n/a	MSN2152
Run #2	N57529.D	1000	11/22/11	JP	n/a	n/a	MSN2155

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

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	500	ug/l	
107-02-8	Acrolein	ND	2500	ug/l	
107-13-1	Acrylonitrile	ND	500	ug/l	
71-43-2	Benzene	123000 <sup>a</sup>	500	ug/l	
108-86-1	Bromobenzene	ND	500	ug/l	
74-97-5	Bromochloromethane	ND	500	ug/l	
75-27-4	Bromodichloromethane	ND	100	ug/l	
75-25-2	Bromoform	ND	100	ug/l	
74-83-9	Bromomethane	ND	200	ug/l	
78-93-3	2-Butanone (MEK)	ND	500	ug/l	
104-51-8	n-Butylbenzene	ND	500	ug/l	
135-98-8	sec-Butylbenzene	ND	500	ug/l	
98-06-6	tert-Butylbenzene	ND	500	ug/l	
75-15-0	Carbon disulfide	ND	500	ug/l	
56-23-5	Carbon tetrachloride	ND	100	ug/l	
108-90-7	Chlorobenzene	ND	100	ug/l	
75-00-3	Chloroethane	ND	200	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	500	ug/l	
67-66-3	Chloroform	ND	100	ug/l	
74-87-3	Chloromethane	ND	200	ug/l	
95-49-8	o-Chlorotoluene	ND	500	ug/l	
106-43-4	p-Chlorotoluene	ND	500	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	500	ug/l	
124-48-1	Dibromochloromethane	ND	100	ug/l	
106-93-4	1,2-Dibromoethane	ND	200	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	100	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	100	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	100	ug/l	
75-71-8	Dichlorodifluoromethane	ND	200	ug/l	
75-34-3	1,1-Dichloroethane	ND	100	ug/l	
107-06-2	1,2-Dichloroethane	ND	100	ug/l	
75-35-4	1,1-Dichloroethene	ND	100	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	P57-ROX-110811	Date Sampled:	11/08/11
Lab Sample ID:	MC5350-1	Date Received:	11/09/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, 1L	

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
156-59-2	cis-1,2-Dichloroethene	ND	100	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	100	ug/l	
78-87-5	1,2-Dichloropropane	ND	200	ug/l	
142-28-9	1,3-Dichloropropane	ND	500	ug/l	
594-20-7	2,2-Dichloropropane	ND	500	ug/l	
563-58-6	1,1-Dichloropropene	ND	500	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	50	ug/l	
123-91-1	1,4-Dioxane	ND	2500	ug/l	
97-63-2	Ethyl methacrylate	ND	500	ug/l	
100-41-4	Ethylbenzene	1100	100	ug/l	
87-68-3	Hexachlorobutadiene	ND	500	ug/l	
591-78-6	2-Hexanone	ND	500	ug/l	
98-82-8	Isopropylbenzene	ND	500	ug/l	
99-87-6	p-Isopropyltoluene	ND	500	ug/l	
1634-04-4	Methyl Tert Butyl Ether	221	100	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	500	ug/l	
74-95-3	Methylene bromide	ND	500	ug/l	
75-09-2	Methylene chloride	ND	200	ug/l	
91-20-3	Naphthalene	ND	500	ug/l	
103-65-1	n-Propylbenzene	ND	500	ug/l	
100-42-5	Styrene	ND	500	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	500	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	100	ug/l	
127-18-4	Tetrachloroethene	ND	100	ug/l	
108-88-3	Toluene	ND	100	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	500	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	500	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	100	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	100	ug/l	
79-01-6	Trichloroethene	ND	100	ug/l	
75-69-4	Trichlorofluoromethane	ND	100	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	500	ug/l	
95-63-6	1,2,4-Trimethylbenzene	615	500	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	500	ug/l	
108-05-4	Vinyl Acetate	ND	500	ug/l	
75-01-4	Vinyl chloride	ND	100	ug/l	
	m,p-Xylene	1020	100	ug/l	
95-47-6	o-Xylene	ND	100	ug/l	
1330-20-7	Xylene (total)	1020	100	ug/l	

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N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	P57-ROX-110811	Date Sampled:	11/08/11
Lab Sample ID:	MC5350-1	Date Received:	11/09/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%	95%	70-130%
2037-26-5	Toluene-D8	88%	88%	70-130%
460-00-4	4-Bromofluorobenzene	92%	91%	70-130%

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

(a) Result is from Run# 2

ND = Not detected  
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J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	P57-ROX-110811	Date Sampled:	11/08/11
Lab Sample ID:	MC5350-1	Date Received:	11/09/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	S28799.D	1	11/14/11	PR	11/12/11	OP26916	MSS1251
Run #2	S28808.D	5	11/15/11	PR	11/12/11	OP26916	MSS1253

Run #	Initial Volume	Final Volume
Run #1	920 ml	1.0 ml
Run #2	920 ml	1.0 ml

## ABN Special List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	11	ug/l	
95-57-8	2-Chlorophenol	ND	5.4	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	11	ug/l	
120-83-2	2,4-Dichlorophenol	ND	11	ug/l	
105-67-9	2,4-Dimethylphenol	ND	11	ug/l	
51-28-5	2,4-Dinitrophenol	ND	22	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	11	ug/l	
95-48-7	2-Methylphenol	ND	11	ug/l	
	3&4-Methylphenol	ND	11	ug/l	
88-75-5	2-Nitrophenol	ND	11	ug/l	
100-02-7	4-Nitrophenol	ND	22	ug/l	
87-86-5	Pentachlorophenol	ND	11	ug/l	
108-95-2	Phenol	286 <sup>a</sup>	27	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	11	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	11	ug/l	
62-53-3	Aniline	ND	11	ug/l	WJ
101-55-3	4-Bromophenyl phenyl ether	ND	5.4	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.4	ug/l	
100-51-6	Benzyl Alcohol	ND	11	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.4	ug/l	
106-47-8	4-Chloroaniline	ND	11	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.4	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.4	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.4	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.4	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.4	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	11	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	11	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.4	ug/l	
132-64-9	Dibenzofuran	ND	5.4	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.4	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.4	ug/l	

ND = Not detected

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E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

### Report of Analysis

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Client Sample ID:	P57-ROX-110811	Date Sampled:	11/08/11
Lab Sample ID:	MC5350-1	Date Received:	11/09/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

**ABN Special List**

CAS No.	Compound	Result	RL	Units	Q
84-66-2	Diethyl phthalate	ND	5.4	ug/l	
131-11-3	Dimethyl phthalate	ND	5.4	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.2	ug/l	
118-74-1	Hexachlorobenzene	ND	5.4	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	11	ug/l	UJ
67-72-1	Hexachloroethane	ND	5.4	ug/l	
78-59-1	Isophorone	ND	5.4	ug/l	
88-74-4	2-Nitroaniline	ND	11	ug/l	
99-09-2	3-Nitroaniline	ND	11	ug/l	
100-01-6	4-Nitroaniline	ND	11	ug/l	
98-95-3	Nitrobenzene	ND	5.4	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.4	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.4	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.4	ug/l	
110-86-1	Pyridine	ND	11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	60%	59%	15-110%
4165-62-2	Phenol-d5	38%	37%	15-110%
118-79-6	2,4,6-Tribromophenol	86%	84%	15-110%
4165-60-0	Nitrobenzene-d5	87%	78%	30-130%
321-60-8	2-Fluorobiphenyl	82%	82%	30-130%
1718-51-0	Terphenyl-d14	75%	74%	30-130%

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

(a) Result is from Run# 2

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID:	P57-ROX-110811	Date Sampled:	11/08/11
Lab Sample ID:	MC5350-1	Date Received:	11/09/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C BY SIM SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I76368.D	5	11/15/11	KR	11/12/11	OP26917	MSI2805
Run #2							

Run #	Initial Volume	Final Volume
Run #1	920 ml	1.0 ml
Run #2		

## BN PAH List

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	0.55	0.54	ug/l	
208-96-8	Acenaphthylene	ND	0.54	ug/l	
120-12-7	Anthracene	ND	0.54	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.27	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.54	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.27	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.54	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.54	ug/l	
218-01-9	Chrysene	ND	0.54	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.54	ug/l	
206-44-0	Fluoranthene	ND	0.54	ug/l	
86-73-7	Fluorene	0.76	0.54	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.54	ug/l	
90-12-0	1-Methylnaphthalene	28.8	1.1	ug/l	
91-57-6	2-Methylnaphthalene	38.8	1.1	ug/l	
91-20-3	Naphthalene	152	0.54	ug/l	
85-01-8	Phenanthrene	0.60	0.27	ug/l	
129-00-0	Pyrene	ND	0.54	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	98%		30-130%
321-60-8	2-Fluorobiphenyl	94%		30-130%
1718-51-0	Terphenyl-d14	88%		30-130%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

### Report of Analysis

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<b>Client Sample ID:</b> P57-ROX-110811	<b>Date Sampled:</b> 11/08/11
<b>Lab Sample ID:</b> MC5350-1	<b>Date Received:</b> 11/09/11
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8011 SW846 8011	
<b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39521.D	1	11/16/11	AP	11/14/11	OP26934	GBB2455
Run #2							

Run #	Initial Volume	Final Volume
Run #1	34.3 ml	2.0 ml
Run #2		

**VOA Special List**

CAS No.	Compound	Result	RL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.015	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.015	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits	
460-00-4	Bromofluorobenzene (S)	88%		36-173%	
460-00-4	Bromofluorobenzene (S)	124%		36-173%	

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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



Report of Analysis

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Client Sample ID: TB-110811	Date Sampled: 11/08/11
Lab Sample ID: MC5350-2	Date Received: 11/09/11
Matrix: AQ - Trip Blank Water	Percent Solids: n/a
Method: SW846 8011 SW846 8011	
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39544.D	1	11/17/11	AP	11/14/11	OP26933	GBB2455
Run #2							

Run #	Initial Volume	Final Volume
Run #1	35.8 ml	2.0 ml
Run #2		

VOA Special List

CAS No.	Compound	Result	RL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.015	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.015	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits	
460-00-4	Bromofluorobenzene (S)	106%		36-173%	
460-00-4	Bromofluorobenzene (S)	104%		36-173%	

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID:	TB110811	Date Sampled:	11/08/11
Lab Sample ID:	MC5350-3	Date Received:	11/09/11
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N57440.D	1	11/19/11	JP	n/a	n/a	MSN2152
Run #2							

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

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	5.1	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	ND	0.50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	TB110811	Date Sampled:	11/08/11
Lab Sample ID:	MC5350-3	Date Received:	11/09/11
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

3.3  
3

Client Sample ID:	TB110811	Date Sampled:	11/08/11
Lab Sample ID:	MC5350-3	Date Received:	11/09/11
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	93%		70-130%
2037-26-5	Toluene-D8	88%		70-130%
460-00-4	4-Bromofluorobenzene	93%		70-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Misc. Forms

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## Custody Documents and Other Forms

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Includes the following where applicable:

- Certification Exceptions
- Certification Exceptions (IL)
- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody



# Shell Oil Products Chain Of Custody Record

UR

LAB (LOCATION)  
 CINCINNATI  
 COLUMBUS (Columbus, Ohio) (614) 291-1100  
 DAYTON (Dayton, Ohio) (937) 233-1100  
 INDIANAPOLIS (Indianapolis, IN) (317) 252-1100  
 KANSAS CITY (Kansas City, MO) (816) 252-1100  
 LEXINGTON (Lexington, KY) (606) 252-1100  
 LITTLE ROCK (Little Rock, AR) (501) 252-1100  
 MEMPHIS (Memphis, TN) (901) 252-1100  
 MILWAUKEE (Milwaukee, WI) (414) 252-1100  
 MINNEAPOLIS (Minneapolis, MN) (612) 252-1100  
 MOBILE (Mobile, AL) (251) 252-1100  
 NEW ORLEANS (New Orleans, LA) (504) 252-1100  
 NEW YORK (New York, NY) (212) 252-1100  
 OKLAHOMA CITY (Oklahoma City, OK) (405) 252-1100  
 OMAHA (Omaha, NE) (402) 252-1100  
 PHOENIX (Phoenix, AZ) (602) 252-1100  
 RICHMOND (Richmond, VA) (804) 252-1100  
 ST. LOUIS (St. Louis, MO) (314) 252-1100  
 TAMPA (Tampa, FL) (813) 252-1100  
 WASHINGTON (Washington, DC) (202) 252-1100  
 WICHITA (Wichita, KS) (316) 252-1100

Please Check Appropriate Box:

<input type="checkbox"/> ENV. SERVICES	<input type="checkbox"/> MOTIVA RETAIL	<input type="checkbox"/> SHELL RETAIL
<input type="checkbox"/> MOTIVA BOOTH	<input type="checkbox"/> COORSATANT	<input type="checkbox"/> OILBARS
<input type="checkbox"/> SHELL PIPELINE	<input type="checkbox"/> OTHER	

Print Bill To Contact Name: WENDY PENNINGTON  
 Incident # (ENV SERVICES): 0 7 2 7 8 8 4 0  
 PG # \_\_\_\_\_ SAP # \_\_\_\_\_  
 3 4 0 0 8 1

CHECK IF NO INCIDENT # APPL  
 DATE: 11/8/11  
 PAGE: 31 of 31

Lab Vendor # \_\_\_\_\_  
 URS CORPORATION  
 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300, ST. LOUIS, MO 63110

1718 ADDRESS (Street and City)  
 900 South Central Ave, ROXANA, IL  
 1719 PHONE (Area Code) (City) (State) (Zip)  
 314-743-4100 or 314-452-8622 314-429-0482

CONSULTANT PROJECT:  
 Roxana Client  
 21582582.0000  
 MC5350

PROJECT CONTACT (Name) (Title) (Phone)  
 Erik Arthur  
 314-743-4100 or 314-452-8622 314-429-0482  
 E-mail: [erik.arthur@urscorp.com](mailto:erik.arthur@urscorp.com)

ANALYST (Name) (Title) (Phone)  
 J. Jackson, L. Marquez

TURNAROUND TIME (CALENDAR DAYS):  
 STANDARD (10 DAY)  3 DAYS  5 DAYS  7 DAYS  24 HOURS  RESULTS NEEDED ON WEEKEND

LA - EMQCA REPORT FORMAT  UST AGENCY

DELIVERABLES:  LEVEL 1  LEVEL 2  LEVEL 3  LEVEL 4  OTHER (SPECIFY) EDD

TEMPERATURE ON RECEIPT °C: Cooler #1 \_\_\_\_\_ Cooler #2 \_\_\_\_\_ Cooler #3 \_\_\_\_\_

REQUESTED ANALYSIS

VOC SEMI SL + TICS	VOC B011 SL + TICS	SVOC B270C	PAH RETAIL
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FIELD NOTE:  
 TEMPERATURE ON RSL  
 Container PID Read or Laboratory No

SPECIAL INSTRUCTIONS OR NOTES:  
 \* Please include "J" values on Reports.  
 \* Please provide sample receipt upon login.

SPECIAL CONTRACT RATE APPLIES  
 STATE ASSESSMENT RATE APPLIES  
 SEND NOT RECEIVED  
 RECEIPT VERIFICATION REQUESTED  
 PROVIDE LTRD DECK

Field Sample Identification	SAMPLING		MTRX	FIBROSTATIC						REL. OF CONT.	PID (ppm)			
	DATE	TIME		HOL	IND	PER	OD	HOME	OTHER					
P57-ROX-110811	11/8/11	1141	Water	X				X	X	9	X	X	X	0
TB-110811	-2								X	2	X			
TB-110811	-3	11/8/11	Water	X						2	X			

Relinquished by (Signature): *[Signature]*  
 Accepted by (Signature): *[Signature]*  
 Relinquished by (Signature): *[Signature]*  
 Accepted by (Signature): *[Signature]*  
 Relinquished by (Signature): *[Signature]*  
 Accepted by (Signature): *[Signature]*

FED EX

Date: 11/8/11  
 Time: \_\_\_\_\_  
 Date: 11/9/11  
 Time: 9:30  
 Date: \_\_\_\_\_  
 Time: 1:7

4.1  
4



# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC5350 Client: URS Immediate Client Services Action Required: No  
 Date / Time Received: 11/9/2011 Delivery Method: \_\_\_\_\_ Client Service Action Required at Login: No  
 Project: 900 SOUTH CENTRAL AVE No. Coolers: 1 Airbill #'s: \_\_\_\_\_

**Cooler Security**      Y or N      Y or N  
 1. Custody Seals Present:        3. COC Present:    
 2. Custody Seals Intact:        4. Smp'l Dates/Time OK:

**Cooler Temperature**      Y or N  
 1. Temp criteria achieved:    
 2. Cooler temp verification: Infrared gun  
 3. Cooler media: Ice (bag)

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

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

**Sample Integrity - Condition**      Y      N  
 1. Sample recvd within HT:    
 2. All containers accounted for:    
 3. Condition of sample: Intact

**Sample Integrity - Instructions**      Y      N      N/A  
 1. Analysis requested is clear:    
 2. Bottles received for unspecified tests:    
 3. Sufficient volume recvd for analysis:    
 4. Compositing instructions clear:     
 5. Filtering instructions clear:

Comments

Accutest Laboratories  
V.508.481.6200

495 Technology Center West, Bldg One  
F. 508.481.7753

Marlborough, MA  
www.accutest.com

4.1  
4

### Internal Sample Tracking Chronicle

Shell Oil

Job No: MC5350

URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

4.2  
4

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
MC5350-1 Collected: 08-NOV-11 11:41 By: JJLM Received: 09-NOV-11 By: JB P57-ROX-110811						
MC5350-1	SW846 8270C	14-NOV-11 19:48	PR	12-NOV-11	AJ	AB8270SL+
MC5350-1	SW846 8270C	15-NOV-11 10:44	PR	12-NOV-11	AJ	AB8270SL+
MC5350-1	SW846 8270C BY SIM	15-NOV-11 19:16	KR	12-NOV-11	SC	B8270SIMP
MC5350-1	SW846 8011	16-NOV-11 20:07	AP	14-NOV-11	BJ	V8011SL
MC5350-1	SW846 8260B	19-NOV-11 20:16	JP			V8260SL+
MC5350-1	SW846 8260B	22-NOV-11 06:53	JP			V8260SL+
MC5350-2 Collected: 08-NOV-11 00:00 By: JJLM Received: 09-NOV-11 By: JB TB-110811						
MC5350-2	SW846 8011	17-NOV-11 05:46	AP	14-NOV-11	BJ	V8011SL
MC5350-3 Collected: 08-NOV-11 00:00 By: JJLM Received: 09-NOV-11 By: JB TB110811						
MC5350-3	SW846 8260B	19-NOV-11 12:42	JP			V8260SL+



# Accutest Internal Chain of Custody

Job Number: MC5350  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL  
 Received: 11/09/11

4.3  
**4**

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
MC5350-1.3	Walk In Ref #22	Corey Aldoupolis	11/12/11 10:42	Retrieve from Storage
MC5350-1.3	Corey Aldoupolis		11/12/11 14:01	Depleted
MC5350-1.4	Walk In Ref #22	Michael Rolo	11/14/11 15:10	Retrieve from Storage
MC5350-1.4	Michael Rolo	Walk In Ref #22	11/14/11 18:07	Return to Storage
MC5350-1.5	VOC Ref #1	Jugal Patel	11/19/11 10:38	Retrieve from Storage
MC5350-1.5	Jugal Patel	GCMSN	11/19/11 10:38	Load on Instrument
MC5350-1.5	GCMSN	Jugal Patel	11/23/11 10:26	Unload from Instrument
MC5350-1.5	Jugal Patel	VOC Ref #1	11/23/11 10:26	Return to Storage
MC5350-1.6	VOC Ref #1	Jugal Patel	11/21/11 14:08	Retrieve from Storage
MC5350-1.6	Jugal Patel	GCMSN	11/21/11 14:08	Load on Instrument
MC5350-1.6	GCMSN	Jugal Patel	11/23/11 10:26	Unload from Instrument
MC5350-1.6	Jugal Patel	VOC Ref #1	11/23/11 10:26	Return to Storage
MC5350-1.8	VOC Ref #1	Corey Aldoupolis	11/14/11 15:29	Retrieve from Storage
MC5350-1.8	Corey Aldoupolis		11/14/11 15:31	Depleted
MC5350-2.2	VOC Ref #1	Bijan Jafari	11/14/11 16:32	Retrieve from Storage
MC5350-2.2	Bijan Jafari		11/15/11 09:44	Depleted
MC5350-3.1	VOC Ref #1	Jugal Patel	11/19/11 10:38	Retrieve from Storage
MC5350-3.1	Jugal Patel	GCMSN	11/19/11 10:38	Load on Instrument
MC5350-3.1	GCMSN	Jugal Patel	11/23/11 10:26	Unload from Instrument
MC5350-3.1	Jugal Patel	VOC Ref #1	11/23/11 10:26	Return to Storage

## GC/MS Volatiles

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## QC Data Summaries

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Includes the following where applicable:

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

# Method Blank Summary

Job Number: MC5350

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2152-MB	N57438.D	1	11/19/11	JP	n/a	n/a	MSN2152

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5350-1, MC5350-3

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	ND	0.50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	

# Method Blank Summary

Job Number: MC5350

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2152-MB	N57438.D	1	11/19/11	JP	n/a	n/a	MSN2152

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5350-1, MC5350-3

CAS No.	Compound	Result	RL	Units	Q
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	

5.1.1

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# Method Blank Summary

Job Number: MC5350

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2152-MB	N57438.D	1	11/19/11	JP	n/a	n/a	MSN2152

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5350-1, MC5350-3

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	92%	70-130%
2037-26-5	Toluene-D8	88%	70-130%
460-00-4	4-Bromofluorobenzene	91%	70-130%

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

5.1.1

5

## Method Blank Summary

Page 1 of 1

Job Number: MC5350

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2155-MB	N57522.D	1	11/22/11	JP	n/a	n/a	MSN2155

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5350-1

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	91%	70-130%
2037-26-5	Toluene-D8	88%	70-130%
460-00-4	4-Bromofluorobenzene	89%	70-130%

5.1.2  
5

# Method Blank Summary

Job Number: MC5350

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2152-MB3	N57494.D	1	11/21/11	JP	n/a	n/a	MSN2152

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5396-1MS, MC5396-1MSD

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	ND	0.50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	

5.1.3  
5

# Method Blank Summary

Job Number: MC5350

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2152-MB3	N57494.D	1	11/21/11	JP	n/a	n/a	MSN2152

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5396-1MS, MC5396-1MSD

CAS No.	Compound	Result	RL	Units	Q
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	

5.1.3  
5



# Method Blank Summary

Job Number: MC5350

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2152-MB3	N57494.D	1	11/21/11	JP	n/a	n/a	MSN2152

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5396-1MS, MC5396-1MSD

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	93%	70-130%
2037-26-5	Toluene-D8	88%	70-130%
460-00-4	4-Bromofluorobenzene	98%	70-130%

5.1.3

5

# Blank Spike Summary

Job Number: MC5350

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2152-BS	N57435.D	1	11/19/11	JP	n/a	n/a	MSN2152

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5350-1, MC5350-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	50	60.1	120	70-130
107-02-8	Acrolein	250	546	218* a	70-130
107-13-1	Acrylonitrile	50	239	478* a	70-130
71-43-2	Benzene	50	49.1	98	70-130
108-86-1	Bromobenzene	50	54.6	109	70-130
74-97-5	Bromochloromethane	50	53.5	107	70-130
75-27-4	Bromodichloromethane	50	57.1	114	70-130
75-25-2	Bromoform	50	47.9	96	70-130
74-83-9	Bromomethane	50	51.8	104	70-130
78-93-3	2-Butanone (MEK)	50	62.1	124	70-130
104-51-8	n-Butylbenzene	50	61.5	123	70-130
135-98-8	sec-Butylbenzene	50	57.5	115	70-130
98-06-6	tert-Butylbenzene	50	56.6	113	70-130
75-15-0	Carbon disulfide	50	59.5	119	70-130
56-23-5	Carbon tetrachloride	50	56.5	113	70-130
108-90-7	Chlorobenzene	50	51.6	103	70-130
75-00-3	Chloroethane	50	53.3	107	70-130
110-75-8	2-Chloroethyl vinyl ether	50	52.8	106	70-130
67-66-3	Chloroform	50	53.1	106	70-130
74-87-3	Chloromethane	50	52.9	106	70-130
95-49-8	o-Chlorotoluene	50	54.5	109	70-130
106-43-4	p-Chlorotoluene	50	57.5	115	70-130
96-12-8	1,2-Dibromo-3-chloropropane	50	51.7	103	70-130
124-48-1	Dibromochloromethane	50	55.8	112	70-130
106-93-4	1,2-Dibromoethane	50	52.1	104	70-130
95-50-1	1,2-Dichlorobenzene	50	53.9	108	70-130
541-73-1	1,3-Dichlorobenzene	50	54.8	110	70-130
106-46-7	1,4-Dichlorobenzene	50	53.8	108	70-130
75-71-8	Dichlorodifluoromethane	50	56.0	112	70-130
75-34-3	1,1-Dichloroethane	50	53.9	108	70-130
107-06-2	1,2-Dichloroethane	50	53.4	107	70-130
75-35-4	1,1-Dichloroethene	50	55.3	111	70-130
156-59-2	cis-1,2-Dichloroethene	50	51.6	103	70-130
156-60-5	trans-1,2-Dichloroethene	50	54.1	108	70-130
78-87-5	1,2-Dichloropropane	50	52.8	106	70-130
142-28-9	1,3-Dichloropropane	50	51.3	103	70-130

5.2.1  
5

# Blank Spike Summary

Job Number: MC5350

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2152-BS	N57435.D	1	11/19/11	JP	n/a	n/a	MSN2152

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5350-1, MC5350-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
594-20-7	2,2-Dichloropropane	50	53.3	107	70-130
563-58-6	1,1-Dichloropropene	50	57.7	115	70-130
10061-01-5	cis-1,3-Dichloropropene	50	57.8	116	70-130
10061-02-6	trans-1,3-Dichloropropene	50	56.0	112	70-130
123-91-1	1,4-Dioxane	250	227	91	70-130
97-63-2	Ethyl methacrylate	50	47.3	95	77-137
100-41-4	Ethylbenzene	50	55.0	110	70-130
87-68-3	Hexachlorobutadiene	50	59.4	119	70-130
591-78-6	2-Hexanone	50	59.5	119	70-130
98-82-8	Isopropylbenzene	50	65.5	131* b	70-130
99-87-6	p-Isopropyltoluene	50	59.1	118	70-130
1634-04-4	Methyl Tert Butyl Ether	50	46.3	93	70-130
108-10-1	4-Methyl-2-pentanone (MIBK)	50	49.8	100	70-130
74-95-3	Methylene bromide	50	54.8	110	70-130
75-09-2	Methylene chloride	50	50.4	101	70-130
91-20-3	Naphthalene	50	49.4	99	70-130
103-65-1	n-Propylbenzene	50	57.9	116	70-130
100-42-5	Styrene	50	53.4	107	70-130
630-20-6	1,1,1,2-Tetrachloroethane	50	55.0	110	70-130
79-34-5	1,1,2,2-Tetrachloroethane	50	48.8	98	70-130
127-18-4	Tetrachloroethene	50	54.9	110	70-130
108-88-3	Toluene	50	55.1	110	70-130
87-61-6	1,2,3-Trichlorobenzene	50	52.4	105	70-130
120-82-1	1,2,4-Trichlorobenzene	50	59.0	118	70-130
71-55-6	1,1,1-Trichloroethane	50	56.8	114	70-130
79-00-5	1,1,2-Trichloroethane	50	53.4	107	70-130
79-01-6	Trichloroethene	50	55.4	111	70-130
75-69-4	Trichlorofluoromethane	50	57.0	114	70-130
96-18-4	1,2,3-Trichloropropane	50	49.8	100	70-130
95-63-6	1,2,4-Trimethylbenzene	50	56.7	113	70-130
108-67-8	1,3,5-Trimethylbenzene	50	56.4	113	70-130
108-05-4	Vinyl Acetate	50	60.6	121	70-130
75-01-4	Vinyl chloride	50	54.6	109	70-130
	m,p-Xylene	100	111	111	70-130
95-47-6	o-Xylene	50	54.8	110	70-130
1330-20-7	Xylene (total)	150	165	110	70-130

5.2.1

5

## Blank Spike Summary

Page 3 of 3

Job Number: MC5350

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2152-BS	N57435.D	1	11/19/11	JP	n/a	n/a	MSN2152

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5350-1, MC5350-3

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	91%	70-130%
2037-26-5	Toluene-D8	91%	70-130%
460-00-4	4-Bromofluorobenzene	91%	70-130%

- (a) Outside control limits. Associated samples are non-detect for this compound.
- (b) Outside control limits. Blank Spike meets program technical requirements.

5.2.1

5

# Blank Spike Summary

Job Number: MC5350

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2155-BS	N57519.D	1	11/22/11	JP	n/a	n/a	MSN2155

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5350-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	50	48.3	97	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	88%	70-130%
2037-26-5	Toluene-D8	87%	70-130%
460-00-4	4-Bromofluorobenzene	89%	70-130%

5.2.2

5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5350

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5396-1MS	N57499.D	5	11/21/11	JP	n/a	n/a	MSN2152
MC5396-1MSD	N57500.D	5	11/21/11	JP	n/a	n/a	MSN2152
MC5396-1	N57497.D	1	11/21/11	JP	n/a	n/a	MSN2152

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5350-1, MC5350-3

CAS No.	Compound	MC5396-1 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND	250	114	46* a	113	45* a	1	70-130/30
107-02-8	Acrolein	ND	1250	2350	188* b	2320	186* b	1	70-130/30
107-13-1	Acrylonitrile	ND	250	1190	476* b	1180	472* b	1	70-130/30
71-43-2	Benzene	4.9	250	252	99	238	93	6	70-130/30
108-86-1	Bromobenzene	ND	250	273	109	274	110	0	70-130/30
74-97-5	Bromochloromethane	ND	250	266	106	254	102	5	70-130/30
75-27-4	Bromodichloromethane	ND	250	273	109	257	103	6	70-130/30
75-25-2	Bromoform	ND	250	242	97	239	96	1	70-130/30
74-83-9	Bromomethane	ND	250	254	102	255	102	0	70-130/30
78-93-3	2-Butanone (MEK)	ND	250	199	80	192	77	4	70-130/30
104-51-8	n-Butylbenzene	10.1	250	309	120	299	116	3	70-130/30
135-98-8	sec-Butylbenzene	10.3	250	290	112	282	109	3	70-130/30
98-06-6	tert-Butylbenzene	ND	250	278	111	269	108	3	70-130/30
75-15-0	Carbon disulfide	ND	250	293	117	276	110	6	70-130/30
56-23-5	Carbon tetrachloride	ND	250	262	105	246	98	6	70-130/30
108-90-7	Chlorobenzene	ND	250	272	109	261	104	4	70-130/30
75-00-3	Chloroethane	ND	250	260	104	254	102	2	70-130/30
110-75-8	2-Chloroethyl vinyl ether	ND	250	261	104	245	98	6	70-130/30
67-66-3	Chloroform	ND	250	250	100	244	98	2	70-130/30
74-87-3	Chloromethane	ND	250	241	96	237	95	2	70-130/30
95-49-8	o-Chlorotoluene	ND	250	265	106	258	103	3	70-130/30
106-43-4	p-Chlorotoluene	ND	250	277	111	271	108	2	70-130/30
96-12-8	1,2-Dibromo-3-chloropropane	ND	250	244	98	254	102	4	70-130/30
124-48-1	Dibromochloromethane	ND	250	278	111	271	108	3	70-130/30
106-93-4	1,2-Dibromoethane	ND	250	265	106	256	102	3	70-130/30
95-50-1	1,2-Dichlorobenzene	ND	250	267	107	262	105	2	70-130/30
541-73-1	1,3-Dichlorobenzene	ND	250	269	108	263	105	2	70-130/30
106-46-7	1,4-Dichlorobenzene	ND	250	267	107	262	105	2	70-130/30
75-71-8	Dichlorodifluoromethane	ND	250	252	101	233	93	8	70-130/30
75-34-3	1,1-Dichloroethane	ND	250	264	106	250	100	5	70-130/30
107-06-2	1,2-Dichloroethane	ND	250	251	100	240	96	4	70-130/30
75-35-4	1,1-Dichloroethene	ND	250	278	111	264	106	5	70-130/30
156-59-2	cis-1,2-Dichloroethene	ND	250	263	105	252	101	4	70-130/30
156-60-5	trans-1,2-Dichloroethene	ND	250	271	108	263	105	3	70-130/30
78-87-5	1,2-Dichloropropane	ND	250	261	104	246	98	6	70-130/30
142-28-9	1,3-Dichloropropane	ND	250	261	104	254	102	3	70-130/30

5.3.1  
5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5350

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5396-1MS	N57499.D	5	11/21/11	JP	n/a	n/a	MSN2152
MC5396-1MSD	N57500.D	5	11/21/11	JP	n/a	n/a	MSN2152
MC5396-1	N57497.D	1	11/21/11	JP	n/a	n/a	MSN2152

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5350-1, MC5350-3

CAS No.	Compound	MC5396-1 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
594-20-7	2,2-Dichloropropane	ND	250	268	107	254	102	5	70-130/30
563-58-6	1,1-Dichloropropene	ND	250	278	111	263	105	6	70-130/30
10061-01-5	cis-1,3-Dichloropropene	ND	250	283	113	274	110	3	70-130/30
10061-02-6	trans-1,3-Dichloropropene	ND	250	273	109	262	105	4	70-130/30
123-91-1	1,4-Dioxane	ND	1250	1240	99	1150	92	8	70-130/30
97-63-2	Ethyl methacrylate	ND	250	248	99	239	96	4	72-139/30
100-41-4	Ethylbenzene	ND	250	284	114	272	109	4	70-130/30
87-68-3	Hexachlorobutadiene	ND	250	300	120	294	118	2	70-130/30
591-78-6	2-Hexanone	ND	250	202	81	197	79	3	70-130/30
98-82-8	Isopropylbenzene	26.9	250	345	127	337	124	2	70-130/30
99-87-6	p-Isopropyltoluene	ND	250	290	116	281	112	3	70-130/30
1634-04-4	Methyl Tert Butyl Ether	ND	250	240	96	233	93	3	70-130/30
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	250	245	98	234	94	5	70-130/30
74-95-3	Methylene bromide	ND	250	272	109	254	102	7	70-130/30
75-09-2	Methylene chloride	ND	250	251	100	243	97	3	70-130/30
91-20-3	Naphthalene	10.8	250	278	107	278	107	0	70-130/30
103-65-1	n-Propylbenzene	34.6	250	314	112	306	109	3	70-130/30
100-42-5	Styrene	ND	250	284	114	271	108	5	70-130/30
630-20-6	1,1,1,2-Tetrachloroethane	ND	250	276	110	266	106	4	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	ND	250	243	97	243	97	0	70-130/30
127-18-4	Tetrachloroethene	ND	250	287	115	276	110	4	70-130/30
108-88-3	Toluene	ND	250	279	112	263	105	6	70-130/30
87-61-6	1,2,3-Trichlorobenzene	ND	250	279	112	280	112	0	70-130/30
120-82-1	1,2,4-Trichlorobenzene	ND	250	298	119	300	120	1	70-130/30
71-55-6	1,1,1-Trichloroethane	ND	250	267	107	253	101	5	70-130/30
79-00-5	1,1,2-Trichloroethane	ND	250	263	105	254	102	3	70-130/30
79-01-6	Trichloroethene	ND	250	276	110	261	104	6	70-130/30
75-69-4	Trichlorofluoromethane	ND	250	262	105	247	99	6	70-130/30
96-18-4	1,2,3-Trichloropropane	ND	250	251	100	252	101	0	70-130/30
95-63-6	1,2,4-Trimethylbenzene	ND	250	279	112	270	108	3	70-130/30
108-67-8	1,3,5-Trimethylbenzene	ND	250	277	111	270	108	3	70-130/30
108-05-4	Vinyl Acetate	ND	250	298	119	298	119	0	70-130/30
75-01-4	Vinyl chloride	ND	250	259	104	246	98	5	70-130/30
	m,p-Xylene	ND	500	580	116	551	110	5	70-130/30
95-47-6	o-Xylene	ND	250	288	115	270	108	6	70-130/30
1330-20-7	Xylene (total)	ND	750	868	116	820	109	6	70-130/30

5.3.1

5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5350

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5396-1MS	N57499.D	5	11/21/11	JP	n/a	n/a	MSN2152
MC5396-1MSD	N57500.D	5	11/21/11	JP	n/a	n/a	MSN2152
MC5396-1	N57497.D	1	11/21/11	JP	n/a	n/a	MSN2152

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5350-1, MC5350-3

CAS No.	Surrogate Recoveries	MS	MSD	MC5396-1	Limits
1868-53-7	Dibromofluoromethane	88%	87%	92%	70-130%
2037-26-5	Toluene-D8	90%	89%	89%	70-130%
460-00-4	4-Bromofluorobenzene	89%	89%	91%	70-130%

- (a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
- (b) Outside control limits. Associated samples are non-detect for this compound.

5.3.1

5



# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5350

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5444-2MS	N57540.D	5	11/22/11	JP	n/a	n/a	MSN2155
MC5444-2MSD	N57541.D	5	11/22/11	JP	n/a	n/a	MSN2155
MC5444-2	N57539.D	1	11/22/11	JP	n/a	n/a	MSN2155

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5350-1

CAS No.	Compound	MC5444-2 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND	250	242	97	241	96	0	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	MC5444-2	Limits
1868-53-7	Dibromofluoromethane	91%	91%	93%	70-130%
2037-26-5	Toluene-D8	91%	91%	88%	70-130%
460-00-4	4-Bromofluorobenzene	91%	92%	92%	70-130%

5.3.2

5

# Volatile Internal Standard Area Summary

Job Number: MC5350  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSN2152-CC2146	Injection Date:	11/19/11
Lab File ID:	N57434.D	Injection Time:	09:52
Instrument ID:	GCMSN	Method:	SW846 8260B

	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
	AREA		AREA		AREA		AREA		AREA	
Check Std	315122	9.03	447649	9.90	220619	13.16	244586	15.72	101439	6.58
Upper Limit <sup>a</sup>	630244	9.53	895298	10.40	441238	13.66	489172	16.22	202878	7.08
Lower Limit <sup>b</sup>	157561	8.53	223825	9.40	110310	12.66	122293	15.22	50720	6.08

Lab Sample ID	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
	AREA		AREA		AREA		AREA		AREA	
MSN2152-BS	332669	9.03	470510	9.90	227360	13.16	253257	15.72	116906	6.57
MSN2151-BS2	332669	9.03	470510	9.90	227360	13.16	253257	15.72	116906	6.57
MSN2152-MB	325366	9.03	464548	9.90	206468	13.16	225869	15.72	119770	6.58
MSN2151-MB2	325366	9.03	464548	9.90	206468	13.16	225869	15.72	119770	6.58
ZZZZZZ	308033	9.03	446265	9.90	203756	13.16	220652	15.72	101642	6.58
MC5350-3	303801	9.03	441297	9.90	201195	13.16	217759	15.72	102944	6.57
MC5347-3	306261	9.03	434567	9.90	199974	13.16	213658	15.72	92330	6.58
ZZZZZZ	305176	9.03	437780	9.90	205400	13.16	229147	15.72	99065	6.58
ZZZZZZ	327361	9.03	459129	9.90	214868	13.16	246776	15.72	104422	6.58
ZZZZZZ	323317	9.03	484716	9.90	213358	13.16	228900	15.72	120274	6.58
ZZZZZZ	323474	9.03	481701	9.90	215266	13.16	229269	15.72	116432	6.58
ZZZZZZ	315167	9.03	461698	9.90	210800	13.16	221067	15.72	105445	6.58
ZZZZZZ	305749	9.03	447472	9.90	201797	13.16	216351	15.72	111806	6.58
ZZZZZZ	306005	9.03	442068	9.90	202667	13.16	216621	15.72	94985	6.58
ZZZZZZ	303208	9.03	440052	9.90	200858	13.16	216531	15.72	101587	6.58
MC5350-1	287296	9.03	418273	9.90	191541	13.16	208822	15.72	92020	6.58

- IS 1 = Pentafluorobenzene
- IS 2 = 1,4-Difluorobenzene
- IS 3 = Chlorobenzene-D5
- IS 4 = 1,4-Dichlorobenzene-d4
- IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

5.4.1  
5

# Volatile Internal Standard Area Summary

Job Number: MC5350  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSN2154-CC2146	Injection Date:	11/21/11
Lab File ID:	N57490.D	Injection Time:	12:29
Instrument ID:	GCMSN	Method:	SW846 8260B

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	276936	9.03	395257	9.90	200494	13.16	221485	15.72	96966	6.57
Upper Limit <sup>a</sup>	553872	9.53	790514	10.40	400988	13.66	442970	16.22	193932	7.07
Lower Limit <sup>b</sup>	138468	8.53	197629	9.40	100247	12.66	110743	15.22	48483	6.07

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
MSN2154-BS	289393	9.03	418944	9.90	207266	13.16	229414	15.72	109030	6.58
MSN2152-BS3	289393	9.03	418944	9.90	207266	13.16	229414	15.72	109030	6.58
MSN2154-BSD	313247	9.03	441148	9.90	217046	13.16	237269	15.72	109792	6.57
MSN2154-MB	293269	9.03	418726	9.90	188737	13.16	181200	15.72	99143	6.59
MSN2152-MB3	293269	9.03	418726	9.90	188737	13.16	181200	15.72	99143	6.59
ZZZZZ	295773	9.03	424866	9.90	203793	13.16	232443	15.72	98291	6.58
MC5329-1	325182	9.03	460738	9.91	211634	13.16	238466	15.72	104664	6.58
MC5396-1	324168	9.03	468601	9.90	218163	13.16	247666	15.72	103252	6.58
ZZZZZ	356027	9.03	506150	9.90	231724	13.16	265363	15.72	119058	6.58
MC5396-1MS	370973	9.03	522564	9.90	243275	13.16	283005	15.72	119311	6.58
MC5396-1MSD	382098	9.03	544704	9.90	251984	13.16	286951	15.72	124260	6.57
MC5329-1MS	388402	9.03	540209	9.90	245179	13.16	288262	15.72	125652	6.58
MC5329-1MSD	394163	9.03	546850	9.90	252766	13.16	291719	15.72	127336	6.57
ZZZZZ	389539	9.03	546743	9.90	240004	13.16	267598	15.72	130139	6.57
ZZZZZ	377044	9.03	534736	9.90	235218	13.16	260759	15.72	122648	6.58
ZZZZZ	371878	9.03	520130	9.90	233538	13.16	261224	15.72	118859	6.58
ZZZZZ	367407	9.03	518866	9.90	233513	13.16	273209	15.72	122348	6.58
ZZZZZ	376712	9.03	523949	9.90	239466	13.16	281532	15.72	124800	6.58
ZZZZZ	388313	9.03	546033	9.90	244990	13.16	283781	15.72	132984	6.58
ZZZZZ	390467	9.03	541977	9.90	244850	13.16	282866	15.72	137329	6.58
ZZZZZ	387524	9.03	547348	9.90	237752	13.16	280170	15.72	141166	6.58
ZZZZZ	381105	9.03	542862	9.90	241140	13.16	269414	15.72	139367	6.58
ZZZZZ	373213	9.03	524575	9.90	234934	13.16	261400	15.72	126620	6.58
MC5329-9MS	368378	9.03	517701	9.90	246908	13.16	282565	15.72	128272	6.58
MC5329-9MSD	383898	9.03	537339	9.90	251920	13.16	284860	15.72	128567	6.58

- IS 1 = Pentafluorobenzene
- IS 2 = 1,4-Difluorobenzene
- IS 3 = Chlorobenzene-D5
- IS 4 = 1,4-Dichlorobenzene-d4
- IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

5.4.2  
5

# Volatile Internal Standard Area Summary

Job Number: MC5350  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSN2155-CC2146	Injection Date:	11/22/11
Lab File ID:	N57518.D	Injection Time:	01:42
Instrument ID:	GCMSN	Method:	SW846 8260B

	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
	AREA		AREA		AREA		AREA		AREA	
Check Std	363741	9.03	516809	9.90	235328	13.16	274699	15.72	125814	6.57
Upper Limit <sup>a</sup>	727482	9.53	1033618	10.40	470656	13.66	549398	16.22	251628	7.07
Lower Limit <sup>b</sup>	181871	8.53	258405	9.40	117664	12.66	137350	15.22	62907	6.07

Lab	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
Sample ID	AREA		AREA		AREA		AREA		AREA	
MSN2155-BS	366555	9.03	522369	9.90	243394	13.16	274050	15.72	131211	6.58
MSN2155-MB	348024	9.03	498505	9.90	222266	13.16	249931	15.72	132406	6.58
ZZZZZZ	345106	9.03	482404	9.90	219055	13.16	241526	15.72	118115	6.58
ZZZZZZ	341697	9.03	485500	9.90	224257	13.16	251019	15.72	118076	6.57
ZZZZZZ	336338	9.03	489072	9.90	220722	13.16	234802	15.72	125080	6.58
ZZZZZZ	329247	9.03	477703	9.90	214662	13.16	232141	15.72	113138	6.58
ZZZZZZ	324316	9.03	468714	9.90	211812	13.16	228439	15.72	114071	6.58
MC5350-1	313961	9.03	454527	9.90	203802	13.16	225983	15.72	121583	6.58
ZZZZZZ	305215	9.03	447697	9.90	204678	13.16	219189	15.72	114914	6.58
ZZZZZZ	306225	9.03	442842	9.91	203058	13.16	215691	15.72	118789	6.58
ZZZZZZ	297621	9.03	442567	9.90	201992	13.16	214526	15.72	113263	6.58
ZZZZZZ	302930	9.03	433983	9.90	198348	13.16	222013	15.72	116996	6.58
ZZZZZZ	300795	9.03	436373	9.90	213897	13.16	254510	15.72	98520	6.57
ZZZZZZ	332046	9.03	472380	9.91	217727	13.16	238740	15.72	111270	6.58
MC5444-2	323086	9.03	465572	9.90	211607	13.16	229986	15.72	103588	6.58
MC5444-2MS	327164	9.03	469710	9.90	228560	13.16	254950	15.72	111719	6.57
MC5444-2MSD	339543	9.03	482894	9.90	232295	13.16	256382	15.72	122129	6.57
ZZZZZZ	327653	9.03	467810	9.90	212787	13.16	245829	15.72	110586	6.58

- IS 1 = Pentafluorobenzene
- IS 2 = 1,4-Difluorobenzene
- IS 3 = Chlorobenzene-D5
- IS 4 = 1,4-Dichlorobenzene-d4
- IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

5.4.3  
5

# Volatile Surrogate Recovery Summary

Job Number: MC5350

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Method: SW846 8260B

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
MC5350-1	N57456.D	95.0	88.0	92.0
MC5350-1	N57529.D	95.0	88.0	91.0
MC5350-3	N57440.D	93.0	88.0	93.0
MC5396-1MS	N57499.D	88.0	90.0	89.0
MC5396-1MSD	N57500.D	87.0	89.0	89.0
MC5444-2MS	N57540.D	91.0	91.0	91.0
MC5444-2MSD	N57541.D	91.0	91.0	92.0
MSN2152-BS	N57435.D	91.0	91.0	91.0
MSN2152-MB	N57438.D	92.0	88.0	91.0
MSN2155-BS	N57519.D	88.0	87.0	89.0
MSN2155-MB	N57522.D	91.0	88.0	89.0
MSN2152-MB3	N57494.D	93.0	88.0	98.0

Surrogate Compounds	Recovery Limits
S1 = Dibromofluoromethane	70-130%
S2 = Toluene-D8	70-130%
S3 = 4-Bromofluorobenzene	70-130%

5.5.1

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## GC/MS Semi-volatiles

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6

## QC Data Summaries

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Includes the following where applicable:

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

# Method Blank Summary

Job Number: MC5350  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26916-MB	S28793.D	1	11/14/11	PR	11/12/11	OP26916	MSS1251

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5350-1

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	10	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	ug/l	
51-28-5	2,4-Dinitrophenol	ND	20	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	ug/l	
95-48-7	2-Methylphenol	ND	10	ug/l	
	3&4-Methylphenol	ND	10	ug/l	
88-75-5	2-Nitrophenol	ND	10	ug/l	
100-02-7	4-Nitrophenol	ND	20	ug/l	
87-86-5	Pentachlorophenol	ND	10	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	10	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	ug/l	
62-53-3	Aniline	ND	10	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	ug/l	
100-51-6	Benzyl Alcohol	ND	10	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	ug/l	
106-47-8	4-Chloroaniline	ND	10	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	10	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.0	ug/l	
132-64-9	Dibenzofuran	ND	5.0	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	ug/l	
84-66-2	Diethyl phthalate	0.79	5.0	ug/l	J
131-11-3	Dimethyl phthalate	ND	5.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	5.0	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	ug/l	

6.1.1

6

# Method Blank Summary

Job Number: MC5350

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26916-MB	S28793.D	1	11/14/11	PR	11/12/11	OP26916	MSS1251

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5350-1

CAS No.	Compound	Result	RL	Units	Q
77-47-4	Hexachlorocyclopentadiene	ND	10	ug/l	
67-72-1	Hexachloroethane	ND	5.0	ug/l	
78-59-1	Isophorone	ND	5.0	ug/l	
88-74-4	2-Nitroaniline	ND	10	ug/l	
99-09-2	3-Nitroaniline	ND	10	ug/l	
100-01-6	4-Nitroaniline	ND	10	ug/l	
98-95-3	Nitrobenzene	ND	5.0	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	ug/l	
110-86-1	Pyridine	ND	10	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	56%	15-110%
4165-62-2	Phenol-d5	37%	15-110%
118-79-6	2,4,6-Tribromophenol	86%	15-110%
4165-60-0	Nitrobenzene-d5	86%	30-130%
321-60-8	2-Fluorobiphenyl	67%	30-130%
1718-51-0	Terphenyl-d14	105%	30-130%

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

6.1.1

6



# Method Blank Summary

Job Number: MC5350  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26917-MB	I76363.D	1	11/15/11	KR	11/12/11	OP26917	MSI2805

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC5350-1

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	0.10	ug/l	
208-96-8	Acenaphthylene	ND	0.10	ug/l	
120-12-7	Anthracene	ND	0.10	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.050	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.050	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	ug/l	
218-01-9	Chrysene	ND	0.10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	ug/l	
206-44-0	Fluoranthene	ND	0.10	ug/l	
86-73-7	Fluorene	ND	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.20	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	0.10	ug/l	
85-01-8	Phenanthrene	ND	0.050	ug/l	
129-00-0	Pyrene	ND	0.10	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	57%	15-110%
4165-62-2	Phenol-d5	38%	15-110%
118-79-6	2,4,6-Tribromophenol	96%	15-110%
4165-60-0	Nitrobenzene-d5	94%	30-130%
321-60-8	2-Fluorobiphenyl	70%	30-130%
1718-51-0	Terphenyl-d14	121%	30-130%

6.1.2

6

# Blank Spike Summary

Job Number: MC5350

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26916-BS	S28794.D	1	11/14/11	PR	11/12/11	OP26916	MSS1251

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5350-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
65-85-0	Benzoic Acid	100	34.4	34	30-130
95-57-8	2-Chlorophenol	100	78.4	78	30-130
59-50-7	4-Chloro-3-methyl phenol	100	79.8	80	30-130
120-83-2	2,4-Dichlorophenol	100	83.7	84	30-130
105-67-9	2,4-Dimethylphenol	100	73.6	74	30-130
51-28-5	2,4-Dinitrophenol	100	85.1	85	30-130
534-52-1	4,6-Dinitro-o-cresol	100	97.6	98	30-130
95-48-7	2-Methylphenol	100	74.0	74	30-130
	3&4-Methylphenol	200	129	65	30-130
88-75-5	2-Nitrophenol	100	86.0	86	30-130
100-02-7	4-Nitrophenol	100	41.9	42	30-130
87-86-5	Pentachlorophenol	100	78.9	79	30-130
108-95-2	Phenol	100	37.9	38	30-130
95-95-4	2,4,5-Trichlorophenol	100	85.0	85	30-130
88-06-2	2,4,6-Trichlorophenol	100	84.5	85	30-130
62-53-3	Aniline	50	18.3	37* a	40-140
101-55-3	4-Bromophenyl phenyl ether	50	39.5	79	40-140
85-68-7	Butyl benzyl phthalate	50	48.3	97	40-140
100-51-6	Benzyl Alcohol	50	35.3	71	40-140
91-58-7	2-Chloronaphthalene	50	35.2	70	40-140
106-47-8	4-Chloroaniline	50	23.8	48	40-140
111-91-1	bis(2-Chloroethoxy)methane	50	45.3	91	40-140
111-44-4	bis(2-Chloroethyl)ether	50	47.7	95	40-140
108-60-1	bis(2-Chloroisopropyl)ether	50	45.5	91	40-140
7005-72-3	4-Chlorophenyl phenyl ether	50	36.7	73	40-140
122-66-7	1,2-Diphenylhydrazine	50	34.9	70	40-140
121-14-2	2,4-Dinitrotoluene	50	44.0	88	40-140
606-20-2	2,6-Dinitrotoluene	50	41.9	84	40-140
91-94-1	3,3'-Dichlorobenzidine	50	21.1	42	40-140
132-64-9	Dibenzofuran	50	38.0	76	40-140
84-74-2	Di-n-butyl phthalate	50	46.0	92	40-140
117-84-0	Di-n-octyl phthalate	50	51.8	104	40-140
84-66-2	Diethyl phthalate	50	44.5	89	40-140
131-11-3	Dimethyl phthalate	50	45.6	91	40-140
117-81-7	bis(2-Ethylhexyl)phthalate	50	50.6	101	40-140
118-74-1	Hexachlorobenzene	50	39.5	79	40-140

6.2.1  
6

# Blank Spike Summary

Job Number: MC5350

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26916-BS	S28794.D	1	11/14/11	PR	11/12/11	OP26916	MSS1251

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5350-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
77-47-4	Hexachlorocyclopentadiene	50	16.9	34* a	40-140
67-72-1	Hexachloroethane	50	28.4	57	40-140
78-59-1	Isophorone	50	34.0	68	40-140
88-74-4	2-Nitroaniline	50	43.2	86	40-140
99-09-2	3-Nitroaniline	50	27.4	55	40-140
100-01-6	4-Nitroaniline	50	37.3	75	40-140
98-95-3	Nitrobenzene	50	40.9	82	40-140
62-75-9	n-Nitrosodimethylamine	50	26.5	53	40-140
621-64-7	N-Nitroso-di-n-propylamine	50	45.9	92	40-140
86-30-6	N-Nitrosodiphenylamine	50	43.6	87	40-140
110-86-1	Pyridine	50	24.7	49	40-140

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	56%	15-110%
4165-62-2	Phenol-d5	39%	15-110%
118-79-6	2,4,6-Tribromophenol	84%	15-110%
4165-60-0	Nitrobenzene-d5	84%	30-130%
321-60-8	2-Fluorobiphenyl	77%	30-130%
1718-51-0	Terphenyl-d14	97%	30-130%

(a) Outside control limits. Blank Spike meets program technical requirements.

6.2.1

6

# Blank Spike Summary

Job Number: MC5350

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26917-BS	I76364.D	1	11/15/11	KR	11/12/11	OP26917	MSI2805

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC5350-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
83-32-9	Acenaphthene	50	37.9	76	40-140
208-96-8	Acenaphthylene	50	31.0	62	40-140
120-12-7	Anthracene	50	45.0	90	40-140
56-55-3	Benzo(a)anthracene	50	54.8	110	40-140
50-32-8	Benzo(a)pyrene	50	45.5	91	40-140
205-99-2	Benzo(b)fluoranthene	50	48.3	97	40-140
191-24-2	Benzo(g,h,i)perylene	50	54.1	108	40-140
207-08-9	Benzo(k)fluoranthene	50	52.1	104	40-140
218-01-9	Chrysene	50	46.5	93	40-140
53-70-3	Dibenzo(a,h)anthracene	50	53.7	107	40-140
206-44-0	Fluoranthene	50	47.9	96	40-140
86-73-7	Fluorene	50	41.2	82	40-140
193-39-5	Indeno(1,2,3-cd)pyrene	50	54.2	108	40-140
90-12-0	1-Methylnaphthalene	50	29.3	59	40-140
91-57-6	2-Methylnaphthalene	50	35.3	71	40-140
91-20-3	Naphthalene	50	36.6	73	40-140
85-01-8	Phenanthrene	50	39.2	78	40-140
129-00-0	Pyrene	50	52.4	105	40-140

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	56%	15-110%
4165-62-2	Phenol-d5	38%	15-110%
118-79-6	2,4,6-Tribromophenol	96%	15-110%
4165-60-0	Nitrobenzene-d5	91%	30-130%
321-60-8	2-Fluorobiphenyl	80%	30-130%
1718-51-0	Terphenyl-d14	112%	30-130%

6.2.2

6

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5350

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26916-MS	S28795.D	1	11/14/11	PR	11/12/11	OP26916	MSS1251
OP26916-MSD	S28796.D	1	11/14/11	PR	11/12/11	OP26916	MSS1251
MC5282-10	S28797.D	1	11/14/11	PR	11/12/11	OP26916	MSS1251

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5350-1

CAS No.	Compound	MC5282-10 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic Acid	ND	100	33.4	33	37.1	37	10	30-130/20
95-57-8	2-Chlorophenol	ND	100	80.9	81	84.8	85	5	30-130/20
59-50-7	4-Chloro-3-methyl phenol	ND	100	84.5	85	88.9	89	5	30-130/20
120-83-2	2,4-Dichlorophenol	ND	100	88.6	89	92.2	92	4	30-130/20
105-67-9	2,4-Dimethylphenol	ND	100	82.8	83	87.2	87	5	30-130/20
51-28-5	2,4-Dinitrophenol	ND	100	92.0	92	95.3	95	4	30-130/20
534-52-1	4,6-Dinitro-o-cresol	ND	100	103	103	105	105	2	30-130/20
95-48-7	2-Methylphenol	ND	100	77.4	77	84.6	85	9	30-130/20
	3&4-Methylphenol	ND	200	140	70	155	78	10	30-130/20
88-75-5	2-Nitrophenol	ND	100	90.6	91	91.9	92	1	30-130/20
100-02-7	4-Nitrophenol	ND	100	44.5	45	46.3	46	4	30-130/20
87-86-5	Pentachlorophenol	ND	100	82.6	83	84.1	84	2	30-130/20
108-95-2	Phenol	ND	100	40.5	41	44.5	45	9	30-130/20
95-95-4	2,4,5-Trichlorophenol	ND	100	89.7	90	92.9	93	4	30-130/20
88-06-2	2,4,6-Trichlorophenol	ND	100	89.0	89	90.9	91	2	30-130/20
62-53-3	Aniline	ND	50	19.2	38* a	20.4	41	6	40-140/20
101-55-3	4-Bromophenyl phenyl ether	ND	50	41.2	82	41.8	84	1	40-140/20
85-68-7	Butyl benzyl phthalate	ND	50	50.5	101	52.2	104	3	40-140/20
100-51-6	Benzyl Alcohol	ND	50	36.8	74	38.9	78	6	40-140/20
91-58-7	2-Chloronaphthalene	ND	50	35.2	70	37.6	75	7	40-140/20
106-47-8	4-Chloroaniline	ND	50	28.2	56	30.7	61	8	40-140/20
111-91-1	bis(2-Chloroethoxy)methane	ND	50	46.6	93	48.5	97	4	40-140/20
111-44-4	bis(2-Chloroethyl)ether	ND	50	49.6	99	52.8	106	6	40-140/20
108-60-1	bis(2-Chloroisopropyl)ether	ND	50	47.6	95	50.0	100	5	40-140/20
7005-72-3	4-Chlorophenyl phenyl ether	ND	50	37.4	75	39.3	79	5	40-140/20
122-66-7	1,2-Diphenylhydrazine	ND	50	36.1	72	37.2	74	3	40-140/20
121-14-2	2,4-Dinitrotoluene	ND	50	46.1	92	48.8	98	6	40-140/20
606-20-2	2,6-Dinitrotoluene	ND	50	44.0	88	45.5	91	3	40-140/20
91-94-1	3,3'-Dichlorobenzidine	ND	50	26.8	54	27.9	56	4	40-140/20
132-64-9	Dibenzofuran	ND	50	39.0	78	40.9	82	5	40-140/20
84-74-2	Di-n-butyl phthalate	ND	50	47.8	96	48.8	98	2	40-140/20
117-84-0	Di-n-octyl phthalate	ND	50	53.5	107	54.2	108	1	40-140/20
84-66-2	Diethyl phthalate	0.54	50	47.1	93	49.1	97	4	40-140/20
131-11-3	Dimethyl phthalate	ND	50	47.4	95	49.6	99	5	40-140/20
117-81-7	bis(2-Ethylhexyl)phthalate	ND	50	52.7	105	54.2	108	3	40-140/20
118-74-1	Hexachlorobenzene	ND	50	40.9	82	42.4	85	4	40-140/20

6.3.1  
6

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5350  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26916-MS	S28795.D	1	11/14/11	PR	11/12/11	OP26916	MSS1251
OP26916-MSD	S28796.D	1	11/14/11	PR	11/12/11	OP26916	MSS1251
MC5282-10	S28797.D	1	11/14/11	PR	11/12/11	OP26916	MSS1251

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5350-1

CAS No.	Compound	MC5282-10 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
77-47-4	Hexachlorocyclopentadiene	ND	50	17.9	36* a	18.3	37* a	2	40-140/20
67-72-1	Hexachloroethane	ND	50	28.0	56	30.8	62	10	40-140/20
78-59-1	Isophorone	ND	50	35.6	71	36.8	74	3	40-140/20
88-74-4	2-Nitroaniline	ND	50	47.3	95	48.3	97	2	40-140/20
99-09-2	3-Nitroaniline	ND	50	31.4	63	34.0	68	8	40-140/20
100-01-6	4-Nitroaniline	ND	50	41.2	82	40.8	82	1	40-140/20
98-95-3	Nitrobenzene	ND	50	41.9	84	44.2	88	5	40-140/20
62-75-9	n-Nitrosodimethylamine	ND	50	27.1	54	27.9	56	3	40-140/20
621-64-7	N-Nitroso-di-n-propylamine	ND	50	48.8	98	51.0	102	4	40-140/20
86-30-6	N-Nitrosodiphenylamine	ND	50	46.8	94	46.9	94	0	40-140/20
110-86-1	Pyridine	ND	50	26.6	53	25.6	51	4	40-140/20

CAS No.	Surrogate Recoveries	MS	MSD	MC5282-10	Limits
367-12-4	2-Fluorophenol	59%	62%	53%	15-110%
4165-62-2	Phenol-d5	42%	45%	37%	15-110%
118-79-6	2,4,6-Tribromophenol	88%	90%	82%	15-110%
4165-60-0	Nitrobenzene-d5	86%	89%	82%	30-130%
321-60-8	2-Fluorobiphenyl	78%	80%	65%	30-130%
1718-51-0	Terphenyl-d14	100%	103%	103%	30-130%

(a) Outside control limits. Blank Spike meets program technical requirements.

6.3.1  
6

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5350

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26917-MS	I76365.D	1	11/15/11	KR	11/12/11	OP26917	MSI2805
OP26917-MSD	I76366.D	1	11/15/11	KR	11/12/11	OP26917	MSI2805
MC5282-11	I76367.D	1	11/15/11	KR	11/12/11	OP26917	MSI2805

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC5350-1

CAS No.	Compound	MC5282-11 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND	50	38.7	77	40.2	80	4	40-140/20
208-96-8	Acenaphthylene	ND	50	31.9	64	32.9	66	3	40-140/20
120-12-7	Anthracene	ND	50	47.5	95	48.3	97	2	40-140/20
56-55-3	Benzo(a)anthracene	ND	50	57.5	115	58.7	117	2	40-140/20
50-32-8	Benzo(a)pyrene	ND	50	47.8	96	49.1	98	3	40-140/20
205-99-2	Benzo(b)fluoranthene	ND	50	49.8	100	52.4	105	5	40-140/20
191-24-2	Benzo(g,h,i)perylene	ND	50	55.9	112	57.2	114	2	40-140/20
207-08-9	Benzo(k)fluoranthene	ND	50	53.4	107	56.0	112	5	40-140/20
218-01-9	Chrysene	0.017	50	48.7	97	49.8	100	2	40-140/20
53-70-3	Dibenzo(a,h)anthracene	ND	50	56.5	113	57.2	114	1	40-140/20
206-44-0	Fluoranthene	ND	50	49.6	99	51.5	103	4	40-140/20
86-73-7	Fluorene	ND	50	42.7	85	44.2	88	3	40-140/20
193-39-5	Indeno(1,2,3-cd)pyrene	ND	50	57.4	115	58.2	116	1	40-140/20
90-12-0	1-Methylnaphthalene	0.025	50	30.9	62	30.1	60	3	40-140/20
91-57-6	2-Methylnaphthalene	0.036	50	35.6	71	37.5	75	5	40-140/20
91-20-3	Naphthalene	0.048	50	36.5	73	38.6	77	6	40-140/20
85-01-8	Phenanthrene	ND	50	41.9	84	42.3	85	1	40-140/20
129-00-0	Pyrene	ND	50	54.1	108	55.8	112	3	40-140/20

CAS No.	Surrogate Recoveries	MS	MSD	MC5282-11	Limits
367-12-4	2-Fluorophenol	58%	60%		15-110%
4165-62-2	Phenol-d5	40%	43%		15-110%
118-79-6	2,4,6-Tribromophenol	102%	102%		15-110%
4165-60-0	Nitrobenzene-d5	93%	96%	89%	30-130%
321-60-8	2-Fluorobiphenyl	82%	84%	69%	30-130%
1718-51-0	Terphenyl-d14	113%	117%	118%	30-130%

6.3.2

6

# Semivolatiles Internal Standard Area Summary

Job Number: MC5350  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSI2805-CC2803	Injection Date:	11/15/11
Lab File ID:	I76362.D	Injection Time:	16:07
Instrument ID:	GCMSI	Method:	SW846 8270C BY SIM

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	139608	5.42	467233	6.70	317401	9.13	580786	11.64	691044	16.60	631560	19.13
Upper Limit <sup>a</sup>	279216	5.92	934466	7.20	634802	9.63	1161572	12.14	1382088	17.10	1263120	19.63
Lower Limit <sup>b</sup>	69804	4.92	233617	6.20	158701	8.63	290393	11.14	345522	16.10	315780	18.63

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP26917-MB	134529	5.42	452575	6.70	305584	9.13	554282	11.64	580257	16.60	533265	19.13
OP26917-BS	143323	5.43	479956	6.70	322675	9.13	590262	11.64	673105	16.60	594071	19.13
OP26917-MS	138732	5.42	459330	6.70	305873	9.13	544760	11.64	629400	16.60	587956	19.13
OP26917-MSD	134540	5.43	447465	6.70	299094	9.13	541158	11.64	625665	16.60	540435	19.13
MC5282-11	132337	5.42	443496	6.70	297069	9.13	538865	11.64	560006	16.60	510899	19.13
MC5350-1	121551	5.42	408209	6.70	271187	9.13	503060	11.64	537650	16.60	494586	19.13
ZZZZZZ	120686	5.42	401120	6.70	274328	9.13	520194	11.64	602209	16.60	588314	19.13
ZZZZZZ	114877	5.42	382615	6.70	256610	9.13	486076	11.64	526982	16.60	506053	19.13
ZZZZZZ	136537	5.42	456026	6.70	303280	9.13	565546	11.64	618298	16.60	601832	19.13
ZZZZZZ	120999	5.42	410654	6.70	278233	9.13	519153	11.64	545331	16.60	540747	19.13
ZZZZZZ	159032	5.43	546267	6.70	351376	9.13	663142	11.64	750944	16.60	818257	19.14
ZZZZZZ	159998	5.43	527493	6.70	358283	9.13	663360	11.64	739564	16.60	702678	19.13
ZZZZZZ	162342	5.42	540956	6.70	366605	9.13	693573	11.64	797027	16.60	769904	19.13
ZZZZZZ	156223	5.42	517708	6.70	353191	9.13	648484	11.64	744438	16.60	733667	19.13
ZZZZZZ	136028	5.42	455948	6.70	303223	9.13	564213	11.64	634194	16.60	603048	19.13
ZZZZZZ	163337	5.42	547541	6.70	374466	9.13	720988	11.64	887776	16.61	979628	19.14
ZZZZZZ	139433	5.42	464282	6.70	320111	9.13	595316	11.64	677261	16.60	659963	19.13
ZZZZZZ	145442	5.42	482876	6.70	331348	9.13	605536	11.64	657191	16.60	650546	19.13
ZZZZZZ	129216	5.42	434843	6.70	300320	9.13	558797	11.64	625825	16.60	629368	19.13
ZZZZZZ	138826	5.42	474915	6.70	318001	9.13	595604	11.64	662414	16.60	650858	19.13

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.4.1

6



# Semivolatile Internal Standard Area Summary

Job Number: MC5350  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSS1252-CC1245	Injection Date:	11/14/11
Lab File ID:	S28779A.D	Injection Time:	10:18
Instrument ID:	GCMSS	Method:	SW846 8270C

	IS 1	IS 2	IS 3	IS 4	IS 5	IS 6
	AREA	RT	AREA	RT	AREA	RT
Check Std	295563	6.31	1067359	7.70	583410	9.91
Upper Limit <sup>a</sup>	591126	6.81	2134718	8.20	1166820	10.41
Lower Limit <sup>b</sup>	147782	5.81	533680	7.20	291705	9.41

Lab Sample ID	IS 1	IS 2	IS 3	IS 4	IS 5	IS 6
	AREA	RT	AREA	RT	AREA	RT
MC5317-1	260685	6.31	947998	7.70	520648	9.91
OP26851-MB	257194	6.31	912517	7.70	504272	9.91
OP26851-BS	280480	6.31	1019894	7.70	558705	9.91
OP26851-MS	280517	6.32	1014402	7.70	557510	9.91
OP26851-MSD	271175	6.32	954942	7.70	531827	9.91
MC5256-1	251792	6.31	896773	7.70	497262	9.91
ZZZZZZ	281697	6.32	1012013	7.70	552850	9.91
ZZZZZZ	286017	6.32	1009638	7.70	554203	9.91
ZZZZZZ	312198	6.32	1112111	7.70	616434	9.91
OP26918-MB	273385	6.32	973363	7.70	546727	9.91
OP26918-BS	239133	6.32	834974	7.70	461334	9.91
ZZZZZZ	262063	6.32	943557	7.70	524986	9.91
OP26916-MB	262401	6.31	934165	7.70	512734	9.91
OP26916-BS	250200	6.32	894710	7.70	485335	9.91
OP26916-MS	246505	6.32	881484	7.70	481414	9.91
OP26916-MSD	234648	6.32	851819	7.70	463625	9.91
MC5282-10	242359	6.32	845286	7.70	471857	9.91
ZZZZZZ	244252	6.32	850997	7.70	473670	9.91
MC5350-1	226760	6.32	828618	7.70	452030	9.91
ZZZZZZ	267020	6.32	973289	7.70	533870	9.91
ZZZZZZ	295434	6.32	1054728	7.70	575087	9.91
ZZZZZZ	329319	6.32	1184311	7.70	656811	9.91
ZZZZZZ	319333	6.32	1136659	7.70	622406	9.91
ZZZZZZ	327783	6.32	1174903	7.70	648401	9.91

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.4.2  
6

# Semivolatiles Internal Standard Area Summary

Job Number: MC5350  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSS1251-CC1238	Injection Date:	11/14/11
Lab File ID:	S28779.D	Injection Time:	10:18
Instrument ID:	GCMSS	Method:	SW846 8270C

	IS 1	IS 2	IS 3	IS 4	IS 5	IS 6
	AREA	RT	AREA	RT	AREA	RT
Check Std	295554	6.31	1067359	7.70	583410	9.91
Upper Limit <sup>a</sup>	591108	6.81	2134718	8.20	1166820	10.41
Lower Limit <sup>b</sup>	147777	5.81	533680	7.20	291705	9.41

Lab Sample ID	IS 1	IS 2	IS 3	IS 4	IS 5	IS 6
	AREA	RT	AREA	RT	AREA	RT
MC5317-1	260685	6.31	947998	7.70	520648	9.91
OP26851-MB	257194	6.31	912517	7.70	504272	9.91
OP26851-BS	280480	6.31	1019894	7.70	558705	9.91
OP26851-MS	280517	6.32	1014402	7.70	557510	9.91
OP26851-MSD	271175	6.32	954942	7.70	531827	9.91
MC5256-1	251792	6.31	896773	7.70	497262	9.91
ZZZZZZ	281697	6.32	1012013	7.70	552850	9.91
ZZZZZZ	286017	6.32	1009638	7.70	554203	9.91
ZZZZZZ	312198	6.32	1112111	7.70	616434	9.91
OP26918-MB	273385	6.32	973363	7.70	546727	9.91
OP26918-BS	239133	6.32	834974	7.70	461334	9.91
ZZZZZZ	262063	6.32	943557	7.70	524986	9.91
OP26916-MB	262401	6.31	934165	7.70	512734	9.91
OP26916-BS	250200	6.32	894710	7.70	485335	9.91
OP26916-MS	246505	6.32	881484	7.70	481414	9.91
OP26916-MSD	234648	6.32	851819	7.70	463625	9.91
MC5282-10	242359	6.32	845286	7.70	471857	9.91
ZZZZZZ	244252	6.32	850997	7.70	473670	9.91
MC5350-1	226760	6.32	828618	7.70	452030	9.91
ZZZZZZ	267020	6.32	973289	7.70	533870	9.91
ZZZZZZ	295434	6.32	1054728	7.70	575087	9.91
ZZZZZZ	329319	6.32	1184311	7.70	656811	9.91
ZZZZZZ	319333	6.32	1156659	7.70	622406	9.91
ZZZZZZ	327783	6.32	1174903	7.70	648401	9.91

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.4.3  
6

# Semivolatiles Internal Standard Area Summary

Job Number: MC5350  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSS1253-CC1238	Injection Date:	11/15/11
Lab File ID:	S28807.D	Injection Time:	10:15
Instrument ID:	GCMSS	Method:	SW846 8270C

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	289498	6.32	1057291	7.70	594320	9.91	1125573	12.11	1250479	16.47	1194451	18.70
Upper Limit <sup>a</sup>	578996	6.82	2114582	8.20	1188640	10.41	2251146	12.61	2500958	16.97	2388902	19.20
Lower Limit <sup>b</sup>	144749	5.82	528646	7.20	297160	9.41	562787	11.61	625240	15.97	597226	18.20

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
MC5350-1	233656	6.32	835085	7.70	475374	9.91	892030	12.10	931455	16.45	916836	18.69
OP26915-MS	293353	6.32	1018361	7.70	558080	9.91	976716	12.11	978450	16.46	923509	18.69
OP26915-MSD	301697	6.32	1076754	7.70	580731	9.91	1024576	12.12	1036384	16.47	997099	18.69
MC5400-1	287278	6.32	1045114	7.70	581129	9.91	1033902	12.12	1129437	16.46	1167836	18.69
OP26888-MS	245960	6.32	875769	7.70	502547	9.91	919072	12.11	1027252	16.46	1051313	18.69
OP26888-MSD	251707	6.32	907254	7.70	515029	9.91	952291	12.11	1065785	16.46	1070018	18.69
MC5235-4	252674	6.31	900061	7.70	522905	9.91	990060	12.10	1090127	16.45	1141343	18.69
ZZZZZZ	282469	6.31	1037486	7.70	573984	9.91	1052472	12.10	1122234	16.45	1175115	18.69
ZZZZZZ	261820	6.31	942138	7.70	568132	9.91	1029879	12.10	1123294	16.45	1153394	18.69
ZZZZZZ	297299	6.31	1040322	7.70	595568	9.91	1106050	12.10	1204299	16.45	1238102	18.69
OP26906-MB	280236	6.31	989663	7.70	571398	9.91	1067180	12.10	1167629	16.45	1222229	18.69
OP26906-BS	309234	6.31	1121306	7.70	631498	9.91	1135975	12.10	1238276	16.45	1200923	18.69
OP26906-MS	292962	6.31	1063306	7.70	606532	9.91	1115205	12.10	1226696	16.45	1222528	18.69
OP26906-MSD	298319	6.31	1063067	7.70	606864	9.91	1099291	12.10	1210223	16.45	1201191	18.69
MC5282-4	322726	6.31	1139212	7.70	647674	9.91	1202072	12.10	1311773	16.45	1343961	18.69
ZZZZZZ	322822	6.31	1147131	7.69	665935	9.90	1226317	12.09	1314906	16.45	1314924	18.69
ZZZZZZ	280422	6.31	1007587	7.69	589852	9.90	1119022	12.09	1244253	16.45	1281689	18.69
ZZZZZZ	282652	6.31	1015433	7.69	583740	9.90	1095157	12.09	1219772	16.45	1263322	18.68
ZZZZZZ	350837	6.31	1237170	7.69	702454	9.90	1301468	12.09	1453381	16.45	1521346	18.68
ZZZZZZ	365691	6.31	1298324	7.69	720342	9.90	1283566	12.09	1281370	16.45	1330797	18.68
ZZZZZZ	420420	6.31	1480909	7.69	845513	9.90	1532909	12.09	1608376	16.45	1652428	18.69
ZZZZZZ	359171	6.31	1311878	7.69	766101	9.90	1429844	12.09	1564972	16.45	1599294	18.68
ZZZZZZ	294863	6.31	1057564	7.69	623222	9.90	1171475	12.10	1310062	16.45	1337764	18.68
ZZZZZZ	353369	6.31	1287702	7.69	728634	9.90	1385702	12.09	1542751	16.45	1555308	18.69
ZZZZZZ	322246	6.31	1127640	7.69	670350	9.90	1244147	12.10	1376152	16.45	1393786	18.68

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.4.4  
6

# Semivolatle Internal Standard Area Summary

Job Number: MC5350  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSS1254-CC1245	Injection Date:	11/15/11
Lab File ID:	S28807A.D	Injection Time:	10:15
Instrument ID:	GCMSS	Method:	SW846 8270C

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	289498	6.32	1057291	7.70	594320	9.91	1125573	12.11	1250479	16.47	1194451	18.70
Upper Limit <sup>a</sup>	578996	6.82	2114582	8.20	1188640	10.41	2251146	12.61	2500958	16.97	2388902	19.20
Lower Limit <sup>b</sup>	144749	5.82	528646	7.20	297160	9.41	562787	11.61	625240	15.97	597226	18.20

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
MC5350-1	233656	6.32	835085	7.70	475374	9.91	892030	12.10	931455	16.45	916836	18.69
OP26915-MS	293353	6.32	1018361	7.70	558080	9.91	976716	12.11	978450	16.46	923509	18.69
OP26915-MSD	301697	6.32	1076754	7.70	580731	9.91	1024576	12.12	1036384	16.47	997099	18.69
MC5400-1	287278	6.32	1045114	7.70	581129	9.91	1033902	12.12	1129437	16.46	1167836	18.69
OP26888-MS	245960	6.32	875769	7.70	502547	9.91	919072	12.11	1027252	16.46	1051313	18.69
OP26888-MSD	251707	6.32	907254	7.70	515029	9.91	952291	12.11	1065785	16.46	1070018	18.69
MC5235-4	252674	6.31	900061	7.70	522905	9.91	990060	12.10	1090127	16.45	1141343	18.69
ZZZZZZ	282469	6.31	1037486	7.70	573984	9.91	1052472	12.10	1122234	16.45	1175115	18.69
ZZZZZZ	261820	6.31	942138	7.70	568132	9.91	1029879	12.10	1123294	16.45	1153394	18.69
ZZZZZZ	297299	6.31	1040322	7.70	595568	9.91	1106050	12.10	1204299	16.45	1238102	18.69
OP26906-MB	280236	6.31	989663	7.70	571398	9.91	1067180	12.10	1167629	16.45	1222229	18.69
OP26906-BS	309234	6.31	1121306	7.70	631498	9.91	1135975	12.10	1238276	16.45	1200923	18.69
OP26906-MS	292962	6.31	1063306	7.70	606532	9.91	1115205	12.10	1226696	16.45	1222528	18.69
OP26906-MSD	298319	6.31	1063067	7.70	606864	9.91	1099291	12.10	1210223	16.45	1201191	18.69
MC5282-4	322726	6.31	1139212	7.70	647674	9.91	1202072	12.10	1311773	16.45	1343961	18.69
ZZZZZZ	322822	6.31	1147131	7.69	665935	9.90	1226317	12.09	1314906	16.45	1314924	18.69
ZZZZZZ	280422	6.31	1007587	7.69	589852	9.90	1119022	12.09	1244253	16.45	1281689	18.69
ZZZZZZ	282652	6.31	1015433	7.69	583740	9.90	1095157	12.09	1219772	16.45	1263322	18.68
ZZZZZZ	350837	6.31	1237170	7.69	702454	9.90	1301468	12.09	1453381	16.45	1521346	18.68
ZZZZZZ	365691	6.31	1298324	7.69	720342	9.90	1283566	12.09	1281370	16.45	1330797	18.68
ZZZZZZ	420420	6.31	1480909	7.69	845513	9.90	1532909	12.09	1608376	16.45	1652428	18.69
ZZZZZZ	359171	6.31	1311878	7.69	766101	9.90	1429844	12.09	1564972	16.45	1599294	18.68
ZZZZZZ	294863	6.31	1057564	7.69	623222	9.90	1171475	12.10	1310062	16.45	1337764	18.68
ZZZZZZ	353369	6.31	1287702	7.69	728634	9.90	1385702	12.09	1542751	16.45	1555308	18.69
ZZZZZZ	322246	6.31	1127640	7.69	670350	9.90	1244147	12.10	1376152	16.45	1393786	18.68

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.4.5  
6

# Semivolatile Surrogate Recovery Summary

Job Number: MC5350

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Method: SW846 8270C

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4	S5	S6
MC5350-1	S28808.D	59.0	37.0	84.0	78.0	82.0	74.0
MC5350-1	S28799.D	60.0	38.0	86.0	87.0	82.0	75.0
OP26916-BS	S28794.D	56.0	39.0	84.0	84.0	77.0	97.0
OP26916-MB	S28793.D	56.0	37.0	86.0	86.0	67.0	105.0
OP26916-MS	S28795.D	59.0	42.0	88.0	86.0	78.0	100.0
OP26916-MSD	S28796.D	62.0	45.0	90.0	89.0	80.0	103.0

<b>Surrogate Compounds</b>	<b>Recovery Limits</b>
----------------------------	------------------------

S1 = 2-Fluorophenol 15-110%

S2 = Phenol-d5 15-110%

S3 = 2,4,6-Tribromophenol 15-110%

S4 = Nitrobenzene-d5 30-130%

S5 = 2-Fluorobiphenyl 30-130%

S6 = Terphenyl-d14 30-130%

6.5.1

6

# Semivolatile Surrogate Recovery Summary

Job Number: MC5350

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Method: SW846 8270C BY SIM

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
MC5350-1	I76368.D	98.0	94.0	88.0
OP26917-BS	I76364.D	91.0	80.0	112.0
OP26917-MB	I76363.D	94.0	70.0	121.0
OP26917-MS	I76365.D	93.0	82.0	113.0
OP26917-MSD	I76366.D	96.0	84.0	117.0

Surrogate Compounds	Recovery Limits
------------------------	--------------------

S1 = Nitrobenzene-d5	30-130%
S2 = 2-Fluorobiphenyl	30-130%
S3 = Terphenyl-d14	30-130%

6.5.2

6

## GC Volatiles

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## QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary

Job Number: MC5350

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26934-MB	BB39458.D	1	11/15/11	AP	11/14/11	OP26934	GBB2454

The QC reported here applies to the following samples:

Method: SW846 8011

MC5350-1

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

CAS No.	Surrogate Recoveries		Limits
460-00-4	Bromofluorobenzene (S)	104%	36-173%
460-00-4	Bromofluorobenzene (S)	106%	36-173%

7.1.1  
7



# Method Blank Summary

Job Number: MC5350

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26933-MB	BB39507A.D1		11/16/11	AP	11/14/11	OP26933	GBB2455

The QC reported here applies to the following samples:

Method: SW846 8011

MC5350-2

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

CAS No.	Surrogate Recoveries		Limits
460-00-4	Bromofluorobenzene (S)	106%	36-173%
460-00-4	Bromofluorobenzene (S)	110%	36-173%

7.1.2  
7

# Blank Spike Summary

Job Number: MC5350

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26934-BS	BB39459.D	1	11/15/11	AP	11/14/11	OP26934	GBB2454

The QC reported here applies to the following samples:

Method: SW846 8011

MC5350-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
96-12-8	1,2-Dibromo-3-chloropropane	0.071	0.081	114	60-140
106-93-4	1,2-Dibromoethane	0.071	0.069	97	60-140

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	Bromofluorobenzene (S)	96%	36-173%
460-00-4	Bromofluorobenzene (S)	116%	36-173%

7.2.1  
7

# Blank Spike Summary

Job Number: MC5350

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26933-BS	BB39508A.D1		11/16/11	AP	11/14/11	OP26933	GBB2455

The QC reported here applies to the following samples:

Method: SW846 8011

MC5350-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
96-12-8	1,2-Dibromo-3-chloropropane	0.071	0.071	100	60-140
106-93-4	1,2-Dibromoethane	0.071	0.076	107	60-140

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	Bromofluorobenzene (S)	103%	36-173%
460-00-4	Bromofluorobenzene (S)	111%	36-173%

7.2.2  
7

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5350

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26934-MS	BB39461.D	1	11/15/11	AP	11/14/11	OP26934	GBB2454
OP26934-MSD	BB39462.D	1	11/15/11	AP	11/14/11	OP26934	GBB2454
MC5220-1	BB39463.D	1	11/15/11	AP	11/14/11	OP26934	GBB2454

The QC reported here applies to the following samples:

Method: SW846 8011

MC5350-1

CAS No.	Compound	MC5220-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
96-12-8	1,2-Dibromo-3-chloropropane	ND		0.071	0.078	110	0.064	90	20	64-141/29
106-93-4	1,2-Dibromoethane	ND		0.071	0.065	92	0.055	77	17	63-163/27

CAS No.	Surrogate Recoveries	MS	MSD	MC5220-1	Limits
460-00-4	Bromofluorobenzene (S)	101%	76%	64%	36-173%
460-00-4	Bromofluorobenzene (S)	133%	94%	87%	36-173%

7.3.1

7

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5350

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26933-MS	BB39510A.D1		11/16/11	AP	11/14/11	OP26933	GBB2455
OP26933-MSD	BB39511A.D1		11/16/11	AP	11/14/11	OP26933	GBB2455
MC5472-5	BB39536A.D1		11/17/11	AP	11/14/11	OP26933	GBB2455

The QC reported here applies to the following samples:

Method: SW846 8011

MC5350-2

CAS No.	Compound	MC5472-5 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.0755	0.077	102	0.071	101	8	64-141/29
106-93-4	1,2-Dibromoethane	ND	0.0755	0.080	106	0.071	101	12	63-163/27

CAS No.	Surrogate Recoveries	MS	MSD	MC5472-5	Limits
460-00-4	Bromofluorobenzene (S)	104%	103%	85%	36-173%
460-00-4	Bromofluorobenzene (S)	95%	93%	97%	36-173%

7.3.2

7

# Volatile Surrogate Recovery Summary

Job Number: MC5350

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Method: SW846 8011

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 <sup>a</sup>	S1 <sup>b</sup>
MC5350-1	BB39521.D	88.0	124.0
MC5350-2	BB39544.D	106.0	104.0
OP26933-BS	BB39508A.D	103.0	111.0
OP26933-MB	BB39507A.D	106.0	110.0
OP26933-MS	BB39510A.D	104.0	95.0
OP26933-MSD	BB39511A.D	103.0	93.0
OP26934-BS	BB39459.D	96.0	116.0
OP26934-MB	BB39458.D	104.0	106.0
OP26934-MS	BB39461.D	101.0	133.0
OP26934-MSD	BB39462.D	76.0	94.0

Surrogate Compounds                      Recovery Limits

S1 = Bromofluorobenzene (S)              36-173%

(a) Recovery from GC signal #1

(b) Recovery from GC signal #2

7.4.1

7

# GC Surrogate Retention Time Summary

Job Number: MC5350  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	GBB2454-ICC2454	Injection Date:	11/15/11
Lab File ID:	BB39452.D	Injection Time:	13:49
Instrument ID:	GCB	Method:	SW846 8011

	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
Check Std	3.94	3.88

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
ZZZZZZ	BB39457.D	11/15/11	15:58	3.93	3.87
ZZZZZZ	BB39457A.D	11/15/11	15:58	3.93	3.87
OP26934-MB	BB39458.D	11/15/11	16:23	3.93	3.87
OP26934-BS	BB39459.D	11/15/11	16:49	3.93	3.87
ZZZZZZ	BB39460.D	11/15/11	17:14	3.93	3.87
OP26934-MS	BB39461.D	11/15/11	17:39	3.93	3.87
OP26934-MSD	BB39462.D	11/15/11	18:04	3.93	3.87
MC5220-1	BB39463.D	11/15/11	18:30	3.93	3.87
ZZZZZZ	BB39464.D	11/15/11	18:54	3.93	3.87
ZZZZZZ	BB39465.D	11/15/11	19:19	3.93	3.87
ZZZZZZ	BB39466.D	11/15/11	19:45	3.92	3.86

**Surrogate  
Compounds**

S1 = Bromofluorobenzene (S)

- (a) Retention time from GC signal #1
- (b) Retention time from GC signal #2

7.5.1  
7

# GC Surrogate Retention Time Summary

Job Number: MC5350  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	GBB2455-CC2455	Injection Date:	11/17/11
Lab File ID:	BB39537.D	Injection Time:	02:51
Instrument ID:	GCBB	Method:	SW846 8011

	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
Check Std	3.96	3.90

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
ZZZZZZ	BB39538.D	11/17/11	03:16	3.96	3.90
ZZZZZZ	BB39539.D	11/17/11	03:41	3.96	3.90
ZZZZZZ	BB39540.D	11/17/11	04:06	3.96	3.90
ZZZZZZ	BB39541.D	11/17/11	04:31	3.96	3.90
ZZZZZZ	BB39542.D	11/17/11	04:57	3.95	3.90
ZZZZZZ	BB39543.D	11/17/11	05:22	3.95	3.90
MC5350-2	BB39544.D	11/17/11	05:46	3.95	3.90

**Surrogate  
Compounds**

S1 = Bromofluorobenzene (S)

- (a) Retention time from GC signal #1
- (b) Retention time from GC signal #2

7.5.2  
7



# GC Surrogate Retention Time Summary

Job Number: MC5350

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	GBB2455-ICC2455	Injection Date:	11/16/11
Lab File ID:	BB39498.D	Injection Time:	09:39
Instrument ID:	GCB8	Method:	SW846 8011

	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
Check Std	3.95	3.90

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
ZZZZZZ	BB39505.D	11/16/11	12:44	3.96	3.90
ZZZZZZ	BB39506.D	11/16/11	13:10	3.96	3.90
OP26932-MB	BB39507.D	11/16/11	13:35	3.96	3.90
OP26933-MB	BB39507A.D	11/16/11	13:35	3.96	3.90
OP26932-BS	BB39508.D	11/16/11	14:00	3.95	3.90
OP26933-BS	BB39508A.D	11/16/11	14:00	3.95	3.90
OP26932-BSD	BB39509.D	11/16/11	14:25	3.95	3.90
OP26932-MS	BB39510.D	11/16/11	14:50	3.96	3.90
OP26933-MS	BB39510A.D	11/16/11	14:50	3.96	3.90
OP26932-MSD	BB39511.D	11/16/11	15:15	3.96	3.90
OP26933-MSD	BB39511A.D	11/16/11	15:15	3.96	3.90
ZZZZZZ	BB39512.D	11/16/11	15:40	3.96	3.90
ZZZZZZ	BB39513.D	11/16/11	16:05	3.96	3.90
ZZZZZZ	BB39514.D	11/16/11	16:30	3.96	3.90

**Surrogate  
Compounds**

S1 = Bromofluorobenzene (S)

- (a) Retention time from GC signal #1
- (b) Retention time from GC signal #2

7.5.3  
7

# GC Surrogate Retention Time Summary

Job Number: MC5350

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	GBB2455-CC2455	Injection Date:	11/16/11
Lab File ID:	BB39515.D	Injection Time:	17:37
Instrument ID:	GCB	Method:	SW846 8011

	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
Check Std	3.96	3.90

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
ZZZZZZ	BB39516.D	11/16/11	18:03	3.96	3.90
ZZZZZZ	BB39517.D	11/16/11	18:27	3.96	3.90
ZZZZZZ	BB39518.D	11/16/11	18:52	3.96	3.90
ZZZZZZ	BB39519.D	11/16/11	19:17	3.96	3.90
ZZZZZZ	BB39520.D	11/16/11	19:42	3.96	3.90
MC5350-1	BB39521.D	11/16/11	20:07	3.95	3.90
ZZZZZZ	BB39522.D	11/16/11	20:33	3.96	3.90
ZZZZZZ	BB39523.D	11/16/11	20:58	3.96	3.90
ZZZZZZ	BB39524.D	11/16/11	21:23	3.96	3.90
ZZZZZZ	BB39525.D	11/16/11	21:48	3.96	3.90

**Surrogate  
Compounds**

S1 = Bromofluorobenzene (S)

- (a) Retention time from GC signal #1
- (b) Retention time from GC signal #2

7.5.4  
7

# Roxana Groundwater Quarterly – 4<sup>th</sup> Quarter 2011 Data Review

Laboratory SDG: MC5398

Data Reviewer: Elizabeth Kunkel

Peer Reviewer: Tony Sedlacek

Date Reviewed: 12/16/2011

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

Sample Identification	Sample Identification
MW14-ROX-110911	TB-110911
TB-110911	

## 1.0 Data Package Completeness

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

Yes

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

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

Yes, the laboratory case narrative indicated that VOC LCS/LCSD recoveries were outside evaluation criteria. One PAH LCS recovery was outside evaluation criteria. Although not indicated in the laboratory case narrative, diethyl phthalate was detected in the method blank. These issues are addressed further in the appropriate sections below.

The cooler receipt form did not indicate any problems.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

Yes

## 4.0 Blank Contamination

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

Yes

Blank ID	Parameter	Analyte	Concentration/ Amount
OP26928-MB	SVOCs	Diethyl phthalate	0.87 µg/L

Analytical data that were reported non-detect or at concentrations greater than five times (5X) the associated blank concentration did not require qualification. No qualification of data was required.

## 5.0 Laboratory Control Sample

*Were LCS recoveries within evaluation criteria?*

No

LCS/LCSD ID	Parameter	Analyte	LCS/LCSD Recovery	RPD	LCS/LCSD /RPD Criteria
MSN2152-BS	VOCs	Acrolein	218/NA	NA	70-130
MSN2152-BS	VOCs	Acrylonitrile	478/NA	NA	70-130
MSN2152-BS	VOCs	Isopropylbenzene	131/NA	NA	70-130
MSN2154-BS/BSD	VOCs	Acetone	138/129	7	70-130/25
MSN2154-BS/BSD	VOCs	Acrolein	225/216	4	70-130/25
MSN2154-BS/BSD	VOCs	2-Butanone	131/121	8	70-130/25
MSN2154-BS/BSD	VOCs	Isopropylbenzene	133/129	3	70-130/25
OP26929-BS	PAHs	Acenaphthylene	35/NA	NA	40-140

Analytical data that required qualification based on LCS data are included in the table below. Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification.

Sample ID	Parameter	Analyte	Qualification
MW14-ROX-110911	SVOCS	Acenaphthylene	UJ

## 6.0 Surrogate Recoveries

*Were surrogate recoveries within evaluation criteria?*

Yes

## 7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

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

No

## 8.0 Internal Standard (IS) Recoveries

*Were internal standard area recoveries within evaluation criteria?*

Yes

## 9.0 Laboratory Duplicate Results

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

No

**10.0 Field Duplicate Results**

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

No

**11.0 Sample Dilutions**

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

Not applicable; samples analyzed did not require dilution.

**12.0 Additional Qualifications**

*Were additional qualifications applied?*

No



12/16/11

**Technical Report for**

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**Shell Oil**

URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana,

Accutest Job Number: MC5398

Sampling Date: 11/09/11

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**Report to:**

URS Corporation

Elizabeth\_Kunkel@URSCorp.com

ATTN: Elizabeth Kunkel

Total number of pages in report: 70



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

*Reviewed on 12/16/11*  
*Reza Fard*  
Reza Fard  
Lab Director

Client Service contact: Jeremy Vienneau 508-481-6200

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

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### Sample Summary

Shell Oil

Job No: MC5398

URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
MC5398-1	11/09/11	10:35 JJLM	11/11/11	AQ	Ground Water	MW14-ROX-110911 ✓
MC5398-2	11/09/11	00:00 JJLM	11/11/11	AQ	Trip Blank Water	TB-110911 ✓
MC5398-3	11/09/11	00:00 JJLM	11/11/11	AQ	Trip Blank Water	TB-110911 ✓





### Extractables by GCMS By Method SW846 8270C BY SIM

Matrix AQ	Batch ID: OP26929
-----------	-------------------

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC5472-2MS, MC5472-2MSD were used as the QC samples indicated.
- Blank Spike Recovery(s) for Acenaphthylene are outside control limits. Blank Spike meets program technical requirements.
- OP26929-MS/MSD for Acenaphthylene: Outside control limits. Blank Spike meets program technical requirements.
- OP26929-MS has internal standard outside control limits. Outside control limits due to possible matrix interference. Confirmed by reanalysis.

### Volatiles by GC By Method SW846 8011

Matrix AQ	Batch ID: OP26934
-----------	-------------------

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC5220-1MS, MC5220-1MSD were used as the QC samples indicated.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety. The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report (MC5398).



Sample Results

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Report of Analysis

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## Report of Analysis

Client Sample ID:	MW14-ROX-110911	Date Sampled:	11/09/11
Lab Sample ID:	MC5398-1	Date Received:	11/11/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N57505.D	1	11/21/11	JP	n/a	n/a	MSN2154
Run #2							

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

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	ND	0.50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	MW14-ROX-110911	Date Sampled:	11/09/11
Lab Sample ID:	MC5398-1	Date Received:	11/11/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis



Client Sample ID: MW14-ROX-110911	Date Sampled: 11/09/11
Lab Sample ID: MC5398-1	Date Received: 11/11/11
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8260B	
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

**VOA Special List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	88%		70-130%
2037-26-5	Toluene-D8	88%		70-130%
460-00-4	4-Bromofluorobenzene	90%		70-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID:	MW14-ROX-110911	Date Sampled:	11/09/11
Lab Sample ID:	MC5398-1	Date Received:	11/11/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U3436.D	1	11/16/11	KR	11/14/11	OP26928	MSU207
Run #2							

Run #	Initial Volume	Final Volume
Run #1	950 ml	1.0 ml
Run #2		

## ABN Special List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	11	ug/l	
95-57-8	2-Chlorophenol	ND	5.3	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	11	ug/l	
120-83-2	2,4-Dichlorophenol	ND	11	ug/l	
105-67-9	2,4-Dimethylphenol	ND	11	ug/l	
51-28-5	2,4-Dinitrophenol	ND	21	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	11	ug/l	
95-48-7	2-Methylphenol	ND	11	ug/l	
	3&4-Methylphenol	ND	11	ug/l	
88-75-5	2-Nitrophenol	ND	11	ug/l	
100-02-7	4-Nitrophenol	ND	21	ug/l	
87-86-5	Pentachlorophenol	ND	11	ug/l	
108-95-2	Phenol	ND	5.3	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	11	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	11	ug/l	
62-53-3	Aniline	ND	11	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.3	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.3	ug/l	
100-51-6	Benzyl Alcohol	ND	11	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.3	ug/l	
106-47-8	4-Chloroaniline	ND	11	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.3	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.3	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.3	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.3	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.3	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	11	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	11	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.3	ug/l	
132-64-9	Dibenzofuran	ND	5.3	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.3	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.3	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

### Report of Analysis

3.1  
3

<b>Client Sample ID:</b> MW14-ROX-110911	<b>Date Sampled:</b> 11/09/11
<b>Lab Sample ID:</b> MC5398-1	<b>Date Received:</b> 11/11/11
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8270C SW846 3510C	
<b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

**ABN Special List**

CAS No.	Compound	Result	RL	Units	Q
84-66-2	Diethyl phthalate	ND	5.3	ug/l	
131-11-3	Dimethyl phthalate	ND	5.3	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.1	ug/l	
118-74-1	Hexachlorobenzene	ND	5.3	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	11	ug/l	
67-72-1	Hexachloroethane	ND	5.3	ug/l	
78-59-1	Isophorone	ND	5.3	ug/l	
88-74-4	2-Nitroaniline	ND	11	ug/l	
99-09-2	3-Nitroaniline	ND	11	ug/l	
100-01-6	4-Nitroaniline	ND	11	ug/l	
98-95-3	Nitrobenzene	ND	5.3	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.3	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.3	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.3	ug/l	
110-86-1	Pyridine	ND	11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	59%		15-110%
4165-62-2	Phenol-d5	52%		15-110%
118-79-6	2,4,6-Tribromophenol	77%		15-110%
4165-60-0	Nitrobenzene-d5	87%		30-130%
321-60-8	2-Fluorobiphenyl	75%		30-130%
1718-51-0	Terphenyl-d14	88%		30-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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



## Report of Analysis

Page 1 of 1

3.1

3

Client Sample ID:	MW14-ROX-110911	Date Sampled:	11/09/11
Lab Sample ID:	MC5398-1	Date Received:	11/11/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C BY SIM SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I76429.D	1	11/17/11	KR	11/14/11	OP26929	MSI2807
Run #2							

Run #	Initial Volume	Final Volume
Run #1	950 ml	1.0 ml
Run #2		

## BN PAH List

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	0.11	ug/l	UJ
208-96-8	Acenaphthylene	ND	0.11	ug/l	
120-12-7	Anthracene	ND	0.11	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.053	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.11	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.053	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.11	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.11	ug/l	
218-01-9	Chrysene	ND	0.11	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.11	ug/l	
206-44-0	Fluoranthene	ND	0.11	ug/l	
86-73-7	Fluorene	ND	0.11	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.11	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.21	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.21	ug/l	
91-20-3	Naphthalene	ND	0.11	ug/l	
85-01-8	Phenanthrene	ND	0.053	ug/l	
129-00-0	Pyrene	ND	0.11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	42%		30-130%
321-60-8	2-Fluorobiphenyl	40%		30-130%
1718-51-0	Terphenyl-d14	48%		30-130%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

3.1  
3

<b>Client Sample ID:</b> MW14-ROX-110911 <b>Lab Sample ID:</b> MC5398-1 <b>Matrix:</b> AQ - Ground Water <b>Method:</b> SW846 8011 SW846 8011 <b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	<b>Date Sampled:</b> 11/09/11 <b>Date Received:</b> 11/11/11 <b>Percent Solids:</b> n/a
--	---

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39522.D	1	11/16/11	AP	11/14/11	OP26934	GBB2455
Run #2							

Run #	Initial Volume	Final Volume
Run #1	33.6 ml	2.0 ml
Run #2		

**VOA Special List**

CAS No.	Compound	Result	RL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.016	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	98%		36-173%
460-00-4	Bromofluorobenzene (S)	105%		36-173%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID:	TB-110911	Date Sampled:	11/09/11
Lab Sample ID:	MC5398-2	Date Received:	11/11/11
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N57439.D	1	11/19/11	JP	n/a	n/a	MSN2152
Run #2							

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

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	ND	0.50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	TB-110911	Date Sampled:	11/09/11
Lab Sample ID:	MC5398-2	Date Received:	11/11/11
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

3.2  
3

<b>Client Sample ID:</b> TB-110911 <b>Lab Sample ID:</b> MC5398-2 <b>Matrix:</b> AQ - Trip Blank Water <b>Method:</b> SW846 8260B <b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	<b>Date Sampled:</b> 11/09/11 <b>Date Received:</b> 11/11/11 <b>Percent Solids:</b> n/a
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**VOA Special List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		70-130%
2037-26-5	Toluene-D8	88%		70-130%
460-00-4	4-Bromofluorobenzene	92%		70-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis



<b>Client Sample ID:</b> TB-110911 <b>Lab Sample ID:</b> MC5398-3 <b>Matrix:</b> AQ - Trip Blank Water <b>Method:</b> SW846 8011 SW846 8011 <b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	<b>Date Sampled:</b> 11/09/11 <b>Date Received:</b> 11/11/11 <b>Percent Solids:</b> n/a
--	---

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39523.D	1	11/16/11	AP	11/14/11	OP26934	GBB2455
Run #2							

Run #	Initial Volume	Final Volume
Run #1	35.3 ml	2.0 ml
Run #2		

**VOA Special List**

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

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	115%		36-173%
460-00-4	Bromofluorobenzene (S)	111%		36-173%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Misc. Forms

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## Custody Documents and Other Forms

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Includes the following where applicable:

- Certification Exceptions
- Certification Exceptions (IL)
- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody



# Shell Oil Products Chain Of Custody Record

**URS**

LAB (LOCATION) \_\_\_\_\_  
 CAS/CLERK  
 OTHER  
 QA  
 Lab Vendor # \_\_\_\_\_

Please Check Appropriate Box:

<input type="checkbox"/> DRUM SERVICES	<input type="checkbox"/> MOTIVA RETAIL	<input type="checkbox"/> SHELL RETAIL
<input type="checkbox"/> MOTIVA SOLE	<input type="checkbox"/> CONSULTANT	<input type="checkbox"/> OTHER
<input type="checkbox"/> SHELL PIPELINE	<input type="checkbox"/> OTHER	

Print Bill To Contact Name: \_\_\_\_\_  
 INCIDENT # (ENV SERVICES): 9 7 2 1 3 4 0  
 WENDY PENNINGTON  
 PG # \_\_\_\_\_ SAP # \_\_\_\_\_  
 3 4 0 0 8 1

DATE: 11/9/11  
 PAGE: 3 of 3

URS CORPORATION  
 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300, ST. LOUIS, MO 63110  
 Erik Arthur  
 314-743-4166 or 314-432-8626  
 FORWARDING TIME (CALENDAR DAYS):  
 STANDARD (30 DAY)  15 DAYS  10 DAYS  5 DAYS  24 HOURS  RESULTS RETURNED ON WEEKEND

300 South Central Ave, ROXANA  
 J. Jackson, L. Marquez  
 MC5398

DELIVERABLE:  LEVEL 1  LEVEL 2  LEVEL 3  LEVEL 4  BOTH (MPCV)  EDD  
 SPECIAL INSTRUCTIONS OR NOTES:  
 \* Please include "J" values on Reports.  
 \* Please provide sample receipt upon login.

REQUIRED ANALYSIS:  
 FIELD NOTES:  
 TEMPERATURE ON RECEIPT:  
 Container PID Reading or Laboratory Note

Lab Sample ID	Field Sample Identification		SAMPLING		MATRIX	PRESERVATIVE					NO. OF BOTT.	VOC SEMI-VOLATILES	VOC 8011	SVOC SEMI-VOLATILES	PAN RETAIL	PID (ppm)
	DATE	TIME	DATE	TIME		POL	HEX	HEX	HEX	OTHER						
1	MW14-ROX-110911		11/9/11	1035	Water	X			X	X	9	X	X	X	X	0
2	TP-110911					X					2	X				
3	TP-110911								X		2	X				

Received by (Signature): *[Signature]* Date: 11/10/11  
 Received by (Signature): *[Signature]* Date: 11/10/11  
 Received by (Signature): *[Signature]* Date: 11/10/11  
 Time: 9:15  
 2.8

4.1  
4

MC5398: Chain of Custody  
 Page 1 of 2





# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC5398 Client: URS Immediate Client Services Action Required: No  
 Date / Time Received: 11/11/2011 Delivery Method: \_\_\_\_\_ Client Service Action Required at Login: No  
 Project: 900 SOUTH CENTRAL AVE No. Coolers: 1 Airbill #'s: \_\_\_\_\_

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

**Cooler Temperature**      Y or N  
 1. Temp criteria achieved:    
 2. Cooler temp verification: Infrared gun  
 3. Cooler media: Ice (bag)

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

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

**Sample Integrity - Condition**      Y or N  
 1. Sample recvd within HT:    
 2. All containers accounted for:    
 3. Condition of sample: Intact

**Sample Integrity - Instructions**      Y or N      N/A  
 1. Analysis requested is clear:    
 2. Bottles received for unspecified tests:    
 3. Sufficient volume recvd for analysis:    
 4. Compositing instructions clear:     
 5. Filtering instructions clear:

Comments

4.1  
4

### Internal Sample Tracking Chronicle

Shell Oil

Job No: MC5398

URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

4.2

4

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
MC5398-1 MW14-ROX-110911	Collected: 09-NOV-11 10:35	By: JJLM	Received: 11-NOV-11	By: JB		
MC5398-1	SW846 8270C	16-NOV-11 17:03	KR	14-NOV-11 MT		AB8270SL+
MC5398-1	SW846 8011	16-NOV-11 20:33	AP	14-NOV-11 BJ		V8011SL
MC5398-1	SW846 8270C BY SIM	17-NOV-11 17:31	KR	14-NOV-11 MT		B8270SIMPAH
MC5398-1	SW846 8260B	21-NOV-11 19:35	JP			V8260SL+
MC5398-2 TB-110911	Collected: 09-NOV-11 00:00	By: JJLM	Received: 11-NOV-11	By: JB		
MC5398-2	SW846 8260B	19-NOV-11 12:14	JP			V8260SL+
MC5398-3 TB-110911	Collected: 09-NOV-11 00:00	By: JJLM	Received: 11-NOV-11	By: JB		
MC5398-3	SW846 8011	16-NOV-11 20:58	AP	14-NOV-11 BJ		V8011SL

# Accutest Internal Chain of Custody

Job Number: MC5398  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL  
 Received: 11/11/11

4.3  
**4**

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
MC5398-1.1	Walk In Ref #22	Michael Rolo	11/14/11 15:10	Retrieve from Storage
MC5398-1.1	Michael Rolo		11/14/11 23:10	Depleted
MC5398-1.5	VOC Ref #2	Jugal Patel	11/19/11 10:39	Retrieve from Storage
MC5398-1.5	Jugal Patel	GCMSN	11/19/11 10:39	Load on Instrument
MC5398-1.5	GCMSN	Jugal Patel	11/23/11 10:28	Unload from Instrument
MC5398-1.5	Jugal Patel	VOC Ref #2	11/23/11 10:28	Return to Storage
MC5398-1.6	VOC Ref #2	Jugal Patel	11/21/11 14:07	Retrieve from Storage
MC5398-1.6	Jugal Patel	GCMSN	11/21/11 14:07	Load on Instrument
MC5398-1.6	GCMSN	Jugal Patel	11/23/11 10:28	Unload from Instrument
MC5398-1.6	Jugal Patel	VOC Ref #2	11/23/11 10:28	Return to Storage
MC5398-1.8	VOC Ref #2	Corey Aldoupolis	11/14/11 15:29	Retrieve from Storage
MC5398-1.8	Corey Aldoupolis		11/14/11 15:31	Depleted
MC5398-2.1	VOC Ref #2	Jugal Patel	11/19/11 10:39	Retrieve from Storage
MC5398-2.1	Jugal Patel	GCMSN	11/19/11 10:39	Load on Instrument
MC5398-2.1	GCMSN	Jugal Patel	11/23/11 10:28	Unload from Instrument
MC5398-2.1	Jugal Patel	VOC Ref #2	11/23/11 10:28	Return to Storage
MC5398-3.2	VOC Ref #2	Corey Aldoupolis	11/14/11 15:29	Retrieve from Storage
MC5398-3.2	Corey Aldoupolis		11/14/11 15:31	Depleted

## GC/MS Volatiles

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## QC Data Summaries

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Includes the following where applicable:

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

# Method Blank Summary

Job Number: MC5398

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2152-MB	N57438.D	1	11/19/11	JP	n/a	n/a	MSN2152

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5398-2

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	ND	0.50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	

5.1.1  
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# Method Blank Summary

Job Number: MC5398

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2152-MB	N57438.D	1	11/19/11	JP	n/a	n/a	MSN2152

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5398-2

CAS No.	Compound	Result	RL	Units	Q
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	

5.1.1  
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# Method Blank Summary

Job Number: MC5398

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2152-MB	N57438.D	1	11/19/11	JP	n/a	n/a	MSN2152

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5398-2

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	92%	70-130%
2037-26-5	Toluene-D8	88%	70-130%
460-00-4	4-Bromofluorobenzene	91%	70-130%

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

5.1.1  
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# Method Blank Summary

Job Number: MC5398

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2154-MB	N57494.D	1	11/21/11	JP	n/a	n/a	MSN2154

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5398-1

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	ND	0.50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	

5.1.2  
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## Method Blank Summary

Job Number: MC5398

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2154-MB	N57494.D	1	11/21/11	JP	n/a	n/a	MSN2154

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5398-1

CAS No.	Compound	Result	RL	Units	Q
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	

# Method Blank Summary

Job Number: MC5398

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2154-MB	N57494.D	1	11/21/11	JP	n/a	n/a	MSN2154

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5398-1

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	93%	70-130%
2037-26-5	Toluene-D8	88%	70-130%
460-00-4	4-Bromofluorobenzene	98%	70-130%

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

5.1.2  
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# Method Blank Summary

Job Number: MC5398

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2152-MB3	N57494.D	1	11/21/11	JP	n/a	n/a	MSN2152

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5396-1MS, MC5396-1MSD

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	ND	0.50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	

5.1.3  
5

# Method Blank Summary

Job Number: MC5398  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2152-MB3	N57494.D	1	11/21/11	JP	n/a	n/a	MSN2152

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5396-IMS, MC5396-IMSD

CAS No.	Compound	Result	RL	Units	Q
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	

# Method Blank Summary

Job Number: MC5398

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2152-MB3	N57494.D	1	11/21/11	JP	n/a	n/a	MSN2152

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5396-1MS, MC5396-1MSD

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	93%	70-130%
2037-26-5	Toluene-D8	88%	70-130%
460-00-4	4-Bromofluorobenzene	98%	70-130%

5.1.3

5

# Blank Spike Summary

Job Number: MC5398

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2152-BS	N57435.D	1	11/19/11	JP	n/a	n/a	MSN2152

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5398-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	50	60.1	120	70-130
107-02-8	Acrolein	250	546	218* a	70-130
107-13-1	Acrylonitrile	50	239	478* a	70-130
71-43-2	Benzene	50	49.1	98	70-130
108-86-1	Bromobenzene	50	54.6	109	70-130
74-97-5	Bromochloromethane	50	53.5	107	70-130
75-27-4	Bromodichloromethane	50	57.1	114	70-130
75-25-2	Bromoform	50	47.9	96	70-130
74-83-9	Bromomethane	50	51.8	104	70-130
78-93-3	2-Butanone (MEK)	50	62.1	124	70-130
104-51-8	n-Butylbenzene	50	61.5	123	70-130
135-98-8	sec-Butylbenzene	50	57.5	115	70-130
98-06-6	tert-Butylbenzene	50	56.6	113	70-130
75-15-0	Carbon disulfide	50	59.5	119	70-130
56-23-5	Carbon tetrachloride	50	56.5	113	70-130
108-90-7	Chlorobenzene	50	51.6	103	70-130
75-00-3	Chloroethane	50	53.3	107	70-130
110-75-8	2-Chloroethyl vinyl ether	50	52.8	106	70-130
67-66-3	Chloroform	50	53.1	106	70-130
74-87-3	Chloromethane	50	52.9	106	70-130
95-49-8	o-Chlorotoluene	50	54.5	109	70-130
106-43-4	p-Chlorotoluene	50	57.5	115	70-130
96-12-8	1,2-Dibromo-3-chloropropane	50	51.7	103	70-130
124-48-1	Dibromochloromethane	50	55.8	112	70-130
106-93-4	1,2-Dibromoethane	50	52.1	104	70-130
95-50-1	1,2-Dichlorobenzene	50	53.9	108	70-130
541-73-1	1,3-Dichlorobenzene	50	54.8	110	70-130
106-46-7	1,4-Dichlorobenzene	50	53.8	108	70-130
75-71-8	Dichlorodifluoromethane	50	56.0	112	70-130
75-34-3	1,1-Dichloroethane	50	53.9	108	70-130
107-06-2	1,2-Dichloroethane	50	53.4	107	70-130
75-35-4	1,1-Dichloroethene	50	55.3	111	70-130
156-59-2	cis-1,2-Dichloroethene	50	51.6	103	70-130
156-60-5	trans-1,2-Dichloroethene	50	54.1	108	70-130
78-87-5	1,2-Dichloropropane	50	52.8	106	70-130
142-28-9	1,3-Dichloropropane	50	51.3	103	70-130

5.2.1  
5

# Blank Spike Summary

Job Number: MC5398

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2152-BS	N57435.D	1	11/19/11	JP	n/a	n/a	MSN2152

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5398-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
594-20-7	2,2-Dichloropropane	50	53.3	107	70-130
563-58-6	1,1-Dichloropropene	50	57.7	115	70-130
10061-01-5	cis-1,3-Dichloropropene	50	57.8	116	70-130
10061-02-6	trans-1,3-Dichloropropene	50	56.0	112	70-130
123-91-1	1,4-Dioxane	250	227	91	70-130
97-63-2	Ethyl methacrylate	50	47.3	95	77-137
100-41-4	Ethylbenzene	50	55.0	110	70-130
87-68-3	Hexachlorobutadiene	50	59.4	119	70-130
591-78-6	2-Hexanone	50	59.5	119	70-130
98-82-8	Isopropylbenzene	50	65.5	131* b	70-130
99-87-6	p-Isopropyltoluene	50	59.1	118	70-130
1634-04-4	Methyl Tert Butyl Ether	50	46.3	93	70-130
108-10-1	4-Methyl-2-pentanone (MIBK)	50	49.8	100	70-130
74-95-3	Methylene bromide	50	54.8	110	70-130
75-09-2	Methylene chloride	50	50.4	101	70-130
91-20-3	Naphthalene	50	49.4	99	70-130
103-65-1	n-Propylbenzene	50	57.9	116	70-130
100-42-5	Styrene	50	53.4	107	70-130
630-20-6	1,1,1,2-Tetrachloroethane	50	55.0	110	70-130
79-34-5	1,1,2,2-Tetrachloroethane	50	48.8	98	70-130
127-18-4	Tetrachloroethene	50	54.9	110	70-130
108-88-3	Toluene	50	55.1	110	70-130
87-61-6	1,2,3-Trichlorobenzene	50	52.4	105	70-130
120-82-1	1,2,4-Trichlorobenzene	50	59.0	118	70-130
71-55-6	1,1,1-Trichloroethane	50	56.8	114	70-130
79-00-5	1,1,2-Trichloroethane	50	53.4	107	70-130
79-01-6	Trichloroethene	50	55.4	111	70-130
75-69-4	Trichlorofluoromethane	50	57.0	114	70-130
96-18-4	1,2,3-Trichloropropane	50	49.8	100	70-130
95-63-6	1,2,4-Trimethylbenzene	50	56.7	113	70-130
108-67-8	1,3,5-Trimethylbenzene	50	56.4	113	70-130
108-05-4	Vinyl Acetate	50	60.6	121	70-130
75-01-4	Vinyl chloride	50	54.6	109	70-130
	m,p-Xylene	100	111	111	70-130
95-47-6	o-Xylene	50	54.8	110	70-130
1330-20-7	Xylene (total)	150	165	110	70-130

5.2.1



# Blank Spike Summary

Job Number: MC5398

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2152-BS	N57435.D	1	11/19/11	JP	n/a	n/a	MSN2152

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5398-2

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	91%	70-130%
2037-26-5	Toluene-D8	91%	70-130%
460-00-4	4-Bromofluorobenzene	91%	70-130%

- (a) Outside control limits. Associated samples are non-detect for this compound.
- (b) Outside control limits. Blank Spike meets program technical requirements.

5.2.1

5



# Blank Spike/Blank Spike Duplicate Summary

Job Number: MC5398  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2154-BS	N57491.D	1	11/21/11	JP	n/a	n/a	MSN2154
MSN2154-BSD	N57492.D	1	11/21/11	JP	n/a	n/a	MSN2154

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5398-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	50	68.9	138* a	64.4	129	7	70-130/25
107-02-8	Acrolein	250	562	225* b	540	216* b	4	70-130/25
107-13-1	Acrylonitrile	50	247	494* b	250	500* b	1	70-130/25
71-43-2	Benzene	50	48.9	98	47.8	96	2	70-130/25
108-86-1	Bromobenzene	50	55.2	110	53.2	106	4	70-130/25
74-97-5	Bromochloromethane	50	54.0	108	51.1	102	6	70-130/25
75-27-4	Bromodichloromethane	50	58.7	117	57.3	115	2	70-130/25
75-25-2	Bromoform	50	48.8	98	47.9	96	2	70-130/25
74-83-9	Bromomethane	50	54.9	110	51.8	104	6	70-130/25
78-93-3	2-Butanone (MEK)	50	65.5	131* a	60.5	121	8	70-130/25
104-51-8	n-Butylbenzene	50	63.6	127	59.9	120	6	70-130/25
135-98-8	sec-Butylbenzene	50	58.7	117	56.2	112	4	70-130/25
98-06-6	tert-Butylbenzene	50	59.8	120	57.0	114	5	70-130/25
75-15-0	Carbon disulfide	50	60.6	121	57.0	114	6	70-130/25
56-23-5	Carbon tetrachloride	50	61.1	122	57.2	114	7	70-130/25
108-90-7	Chlorobenzene	50	52.0	104	50.3	101	3	70-130/25
75-00-3	Chloroethane	50	54.3	109	51.3	103	6	70-130/25
110-75-8	2-Chloroethyl vinyl ether	50	52.0	104	51.1	102	2	70-130/25
67-66-3	Chloroform	50	56.0	112	52.5	105	6	70-130/25
74-87-3	Chloromethane	50	55.7	111	49.6	99	12	70-130/25
95-49-8	o-Chlorotoluene	50	55.8	112	54.0	108	3	70-130/25
106-43-4	p-Chlorotoluene	50	59.0	118	57.2	114	3	70-130/25
96-12-8	1,2-Dibromo-3-chloropropane	50	52.3	105	51.6	103	1	70-130/25
124-48-1	Dibromochloromethane	50	57.1	114	55.6	111	3	70-130/25
106-93-4	1,2-Dibromoethane	50	51.8	104	50.4	101	3	70-130/25
95-50-1	1,2-Dichlorobenzene	50	55.4	111	53.7	107	3	70-130/25
541-73-1	1,3-Dichlorobenzene	50	55.2	110	53.6	107	3	70-130/25
106-46-7	1,4-Dichlorobenzene	50	55.4	111	52.7	105	5	70-130/25
75-71-8	Dichlorodifluoromethane	50	58.3	117	53.8	108	8	70-130/25
75-34-3	1,1-Dichloroethane	50	56.4	113	53.0	106	6	70-130/25
107-06-2	1,2-Dichloroethane	50	57.5	115	55.3	111	4	70-130/25
75-35-4	1,1-Dichloroethene	50	57.3	115	53.8	108	6	70-130/25
156-59-2	cis-1,2-Dichloroethene	50	54.2	108	50.6	101	7	70-130/25
156-60-5	trans-1,2-Dichloroethene	50	56.3	113	52.1	104	8	70-130/25
78-87-5	1,2-Dichloropropane	50	52.0	104	51.1	102	2	70-130/25
142-28-9	1,3-Dichloropropane	50	51.5	103	49.8	100	3	70-130/25

5.3.1  
5

# Blank Spike/Blank Spike Duplicate Summary

Job Number: MC5398  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2154-BS	N57491.D	1	11/21/11	JP	n/a	n/a	MSN2154
MSN2154-BSD	N57492.D	1	11/21/11	JP	n/a	n/a	MSN2154

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5398-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
594-20-7	2,2-Dichloropropane	50	56.1	112	51.5	103	9	70-130/25
563-58-6	1,1-Dichloropropene	50	57.1	114	56.3	113	1	70-130/25
10061-01-5	cis-1,3-Dichloropropene	50	59.9	120	57.4	115	4	70-130/25
10061-02-6	trans-1,3-Dichloropropene	50	57.6	115	55.1	110	4	70-130/25
123-91-1	1,4-Dioxane	250	251	100	222	89	12	70-130/25
97-63-2	Ethyl methacrylate	50	47.5	95	46.7	93	2	77-137/25
100-41-4	Ethylbenzene	50	55.4	111	53.7	107	3	70-130/25
87-68-3	Hexachlorobutadiene	50	62.4	125	59.4	119	5	70-130/25
591-78-6	2-Hexanone	50	62.6	125	59.0	118	6	70-130/25
98-82-8	Isopropylbenzene	50	66.3	133* a	64.4	129	3	70-130/25
99-87-6	p-Isopropyltoluene	50	60.1	120	57.8	116	4	70-130/25
1634-04-4	Methyl Tert Butyl Ether	50	50.0	100	46.0	92	8	70-130/25
108-10-1	4-Methyl-2-pentanone (MIBK)	50	54.3	109	52.9	106	3	70-130/25
74-95-3	Methylene bromide	50	55.6	111	55.3	111	1	70-130/25
75-09-2	Methylene chloride	50	52.4	105	49.4	99	6	70-130/25
91-20-3	Naphthalene	50	47.9	96	47.5	95	1	70-130/25
103-65-1	n-Propylbenzene	50	58.9	118	56.8	114	4	70-130/25
100-42-5	Styrene	50	52.4	105	51.3	103	2	70-130/25
630-20-6	1,1,1,2-Tetrachloroethane	50	54.8	110	53.8	108	2	70-130/25
79-34-5	1,1,2,2-Tetrachloroethane	50	50.3	101	49.1	98	2	70-130/25
127-18-4	Tetrachloroethene	50	54.4	109	52.8	106	3	70-130/25
108-88-3	Toluene	50	55.6	111	54.3	109	2	70-130/25
87-61-6	1,2,3-Trichlorobenzene	50	51.4	103	50.8	102	1	70-130/25
120-82-1	1,2,4-Trichlorobenzene	50	58.7	117	56.7	113	3	70-130/25
71-55-6	1,1,1-Trichloroethane	50	61.1	122	56.4	113	8	70-130/25
79-00-5	1,1,2-Trichloroethane	50	53.7	107	52.8	106	2	70-130/25
79-01-6	Trichloroethene	50	58.4	117	55.8	112	5	70-130/25
75-69-4	Trichlorofluoromethane	50	61.1	122	55.9	112	9	70-130/25
96-18-4	1,2,3-Trichloropropane	50	51.6	103	51.0	102	1	70-130/25
95-63-6	1,2,4-Trimethylbenzene	50	58.6	117	56.2	112	4	70-130/25
108-67-8	1,3,5-Trimethylbenzene	50	58.8	118	56.3	113	4	70-130/25
108-05-4	Vinyl Acetate	50	64.5	129	59.4	119	8	70-130/25
75-01-4	Vinyl chloride	50	55.9	112	51.6	103	8	70-130/25
	m,p-Xylene	100	110	110	107	107	3	70-130/25
95-47-6	o-Xylene	50	54.5	109	52.3	105	4	70-130/25
1330-20-7	Xylene (total)	150	164	109	159	106	3	70-130/25

5.3.1



# Blank Spike/Blank Spike Duplicate Summary

Job Number: MC5398

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2154-BS	N57491.D	1	11/21/11	JP	n/a	n/a	MSN2154
MSN2154-BSD	N57492.D	1	11/21/11	JP	n/a	n/a	MSN2154

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5398-1

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	94%	92%	70-130%
2037-26-5	Toluene-D8	90%	91%	70-130%
460-00-4	4-Bromofluorobenzene	90%	92%	70-130%

- (a) Outside control limits. Blank Spike meets program technical requirements.
- (b) Outside control limits. Associated samples are non-detect for this compound.

5.3.1  
5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5398

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5396-1MS	N57499.D	5	11/21/11	JP	n/a	n/a	MSN2152
MC5396-1MSD	N57500.D	5	11/21/11	JP	n/a	n/a	MSN2152
MC5396-1	N57497.D	1	11/21/11	JP	n/a	n/a	MSN2152

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5398-2

CAS No.	Compound	MC5396-1 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND	250	114	46* a	113	45* a	1	70-130/30
107-02-8	Acrolein	ND	1250	2350	188* b	2320	186* b	1	70-130/30
107-13-1	Acrylonitrile	ND	250	1190	476* b	1180	472* b	1	70-130/30
71-43-2	Benzene	4.9	250	252	99	238	93	6	70-130/30
108-86-1	Bromobenzene	ND	250	273	109	274	110	0	70-130/30
74-97-5	Bromochloromethane	ND	250	266	106	254	102	5	70-130/30
75-27-4	Bromodichloromethane	ND	250	273	109	257	103	6	70-130/30
75-25-2	Bromoform	ND	250	242	97	239	96	1	70-130/30
74-83-9	Bromomethane	ND	250	254	102	255	102	0	70-130/30
78-93-3	2-Butanone (MEK)	ND	250	199	80	192	77	4	70-130/30
104-51-8	n-Butylbenzene	10.1	250	309	120	299	116	3	70-130/30
135-98-8	sec-Butylbenzene	10.3	250	290	112	282	109	3	70-130/30
98-06-6	tert-Butylbenzene	ND	250	278	111	269	108	3	70-130/30
75-15-0	Carbon disulfide	ND	250	293	117	276	110	6	70-130/30
56-23-5	Carbon tetrachloride	ND	250	262	105	246	98	6	70-130/30
108-90-7	Chlorobenzene	ND	250	272	109	261	104	4	70-130/30
75-00-3	Chloroethane	ND	250	260	104	254	102	2	70-130/30
110-75-8	2-Chloroethyl vinyl ether	ND	250	261	104	245	98	6	70-130/30
67-66-3	Chloroform	ND	250	250	100	244	98	2	70-130/30
74-87-3	Chloromethane	ND	250	241	96	237	95	2	70-130/30
95-49-8	o-Chlorotoluene	ND	250	265	106	258	103	3	70-130/30
106-43-4	p-Chlorotoluene	ND	250	277	111	271	108	2	70-130/30
96-12-8	1,2-Dibromo-3-chloropropane	ND	250	244	98	254	102	4	70-130/30
124-48-1	Dibromochloromethane	ND	250	278	111	271	108	3	70-130/30
106-93-4	1,2-Dibromoethane	ND	250	265	106	256	102	3	70-130/30
95-50-1	1,2-Dichlorobenzene	ND	250	267	107	262	105	2	70-130/30
541-73-1	1,3-Dichlorobenzene	ND	250	269	108	263	105	2	70-130/30
106-46-7	1,4-Dichlorobenzene	ND	250	267	107	262	105	2	70-130/30
75-71-8	Dichlorodifluoromethane	ND	250	252	101	233	93	8	70-130/30
75-34-3	1,1-Dichloroethane	ND	250	264	106	250	100	5	70-130/30
107-06-2	1,2-Dichloroethane	ND	250	251	100	240	96	4	70-130/30
75-35-4	1,1-Dichloroethene	ND	250	278	111	264	106	5	70-130/30
156-59-2	cis-1,2-Dichloroethene	ND	250	263	105	252	101	4	70-130/30
156-60-5	trans-1,2-Dichloroethene	ND	250	271	108	263	105	3	70-130/30
78-87-5	1,2-Dichloropropane	ND	250	261	104	246	98	6	70-130/30
142-28-9	1,3-Dichloropropane	ND	250	261	104	254	102	3	70-130/30

5.4.1  
5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5398

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5396-1MS	N57499.D	5	11/21/11	JP	n/a	n/a	MSN2152
MC5396-1MSD	N57500.D	5	11/21/11	JP	n/a	n/a	MSN2152
MC5396-1	N57497.D	1	11/21/11	JP	n/a	n/a	MSN2152

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5398-2

CAS No.	Compound	MC5396-1 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
594-20-7	2,2-Dichloropropane	ND	250	268	107	254	102	5	70-130/30
563-58-6	1,1-Dichloropropene	ND	250	278	111	263	105	6	70-130/30
10061-01-5	cis-1,3-Dichloropropene	ND	250	283	113	274	110	3	70-130/30
10061-02-6	trans-1,3-Dicbloropropene	ND	250	273	109	262	105	4	70-130/30
123-91-1	1,4-Dioxane	ND	1250	1240	99	1150	92	8	70-130/30
97-63-2	Ethyl methacrylate	ND	250	248	99	239	96	4	72-139/30
100-41-4	Ethylbenzene	ND	250	284	114	272	109	4	70-130/30
87-68-3	Hexachlorobutadiene	ND	250	300	120	294	118	2	70-130/30
591-78-6	2-Hexanone	ND	250	202	81	197	79	3	70-130/30
98-82-8	Isopropylbenzene	26.9	250	345	127	337	124	2	70-130/30
99-87-6	p-Isopropyltoluene	ND	250	290	116	281	112	3	70-130/30
1634-04-4	Methyl Tert Butyl Ether	ND	250	240	96	233	93	3	70-130/30
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	250	245	98	234	94	5	70-130/30
74-95-3	Methylene bromide	ND	250	272	109	254	102	7	70-130/30
75-09-2	Methylene chloride	ND	250	251	100	243	97	3	70-130/30
91-20-3	Naphthalene	10.8	250	278	107	278	107	0	70-130/30
103-65-1	n-Propylbenzene	34.6	250	314	112	306	109	3	70-130/30
100-42-5	Styrene	ND	250	284	114	271	108	5	70-130/30
630-20-6	1,1,1,2-Tetrachloroethane	ND	250	276	110	266	106	4	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	ND	250	243	97	243	97	0	70-130/30
127-18-4	Tetrachloroethene	ND	250	287	115	276	110	4	70-130/30
108-88-3	Toluene	ND	250	279	112	263	105	6	70-130/30
87-61-6	1,2,3-Trichlorobenzene	ND	250	279	112	280	112	0	70-130/30
120-82-1	1,2,4-Trichlorobenzene	ND	250	298	119	300	120	1	70-130/30
71-55-6	1,1,1-Trichloroethane	ND	250	267	107	253	101	5	70-130/30
79-00-5	1,1,2-Trichloroethane	ND	250	263	105	254	102	3	70-130/30
79-01-6	Trichloroethene	ND	250	276	110	261	104	6	70-130/30
75-69-4	Trichlorofluoromethane	ND	250	262	105	247	99	6	70-130/30
96-18-4	1,2,3-Trichloropropane	ND	250	251	100	252	101	0	70-130/30
95-63-6	1,2,4-Trimethylbenzene	ND	250	279	112	270	108	3	70-130/30
108-67-8	1,3,5-Trimethylbenzene	ND	250	277	111	270	108	3	70-130/30
108-05-4	Vinyl Acetate	ND	250	298	119	298	119	0	70-130/30
75-01-4	Vinyl chloride	ND	250	259	104	246	98	5	70-130/30
	m,p-Xylene	ND	500	580	116	551	110	5	70-130/30
95-47-6	o-Xylene	ND	250	288	115	270	108	6	70-130/30
1330-20-7	Xylene (total)	ND	750	868	116	820	109	6	70-130/30

5.4.1  
5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5398

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5396-1MS	N57499.D	5	11/21/11	JP	n/a	n/a	MSN2152
MC5396-1MSD	N57500.D	5	11/21/11	JP	n/a	n/a	MSN2152
MC5396-1	N57497.D	1	11/21/11	JP	n/a	n/a	MSN2152

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5398-2

CAS No.	Surrogate Recoveries	MS	MSD	MC5396-1	Limits
1868-53-7	Dibromofluoromethane	88%	87%	92%	70-130%
2037-26-5	Toluene-D8	90%	89%	89%	70-130%
460-00-4	4-Bromofluorobenzene	89%	89%	91%	70-130%

- (a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
- (b) Outside control limits. Associated samples are non-detect for this compound.

5.4.1  
5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5398  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5329-1MS	N57501.D	1	11/21/11	JP	n/a	n/a	MSN2154
MC5329-1MSD	N57502.D	1	11/21/11	JP	n/a	n/a	MSN2154
MC5329-1	N57496.D	1	11/21/11	JP	n/a	n/a	MSN2154

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5398-1

CAS No.	Compound	MC5329-1 ug/l	Spike Q	ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND	50	28.6	57* <sup>a</sup>	28.9	58* <sup>a</sup>	1	70-130/30	
107-02-8	Acrolein	ND	250	443	177* <sup>b</sup>	453	181* <sup>b</sup>	2	70-130/30	
107-13-1	Acrylonitrile	ND	50	236	472* <sup>b</sup>	236	472* <sup>b</sup>	0	70-130/30	
71-43-2	Benzene	12.6	50	59.0	93	58.1	91	2	70-130/30	
108-86-1	Bromobenzene	ND	50	57.6	115	54.3	109	6	70-130/30	
74-97-5	Bromochloromethane	ND	50	51.5	103	50.9	102	1	70-130/30	
75-27-4	Bromodichloromethane	ND	50	53.4	107	51.9	104	3	70-130/30	
75-25-2	Bromoform	ND	50	50.2	100	48.6	97	3	70-130/30	
74-83-9	Bromomethane	ND	50	53.6	107	53.8	108	0	70-130/30	
78-93-3	2-Butanone (MEK)	ND	50	36.4	73	38.1	76	5	70-130/30	
104-51-8	n-Butylbenzene	ND	50	60.0	120	58.2	116	3	70-130/30	
135-98-8	sec-Butylbenzene	ND	50	56.6	113	55.4	111	2	70-130/30	
98-06-6	tert-Butylbenzene	ND	50	54.2	108	53.2	106	2	70-130/30	
75-15-0	Carbon disulfide	ND	50	57.2	114	54.8	110	4	70-130/30	
56-23-5	Carbon tetrachloride	ND	50	50.9	102	49.1	98	4	70-130/30	
108-90-7	Chlorobenzene	ND	50	55.2	110	53.3	107	4	70-130/30	
75-00-3	Chloroethane	ND	50	50.6	101	48.7	97	4	70-130/30	
110-75-8	2-Chloroethyl vinyl ether	ND	50	51.5	103	49.8	100	3	70-130/30	
67-66-3	Chloroform	ND	50	48.8	98	47.3	95	3	70-130/30	
74-87-3	Chloromethane	ND	50	50.7	101	48.7	97	4	70-130/30	
95-49-8	o-Chlorotoluene	ND	50	52.9	106	51.7	103	2	70-130/30	
106-43-4	p-Chlorotoluene	ND	50	55.5	111	54.0	108	3	70-130/30	
96-12-8	1,2-Dibromo-3-chloropropane	ND	50	48.9	98	47.5	95	3	70-130/30	
124-48-1	Dibromochloromethane	ND	50	57.1	114	55.1	110	4	70-130/30	
106-93-4	1,2-Dibromoethane	ND	50	54.1	108	52.3	105	3	70-130/30	
95-50-1	1,2-Dichlorobenzene	ND	50	54.9	110	53.8	108	2	70-130/30	
541-73-1	1,3-Dichlorobenzene	ND	50	54.7	109	53.8	108	2	70-130/30	
106-46-7	1,4-Dichlorobenzene	ND	50	53.9	108	53.7	107	0	70-130/30	
75-71-8	Dichlorodifluoromethane	ND	50	45.6	91	45.2	90	1	70-130/30	
75-34-3	1,1-Dichloroethane	ND	50	50.6	101	49.6	99	2	70-130/30	
107-06-2	1,2-Dichloroethane	ND	50	48.3	97	46.8	94	3	70-130/30	
75-35-4	1,1-Dichloroethene	ND	50	54.4	109	52.7	105	3	70-130/30	
156-59-2	cis-1,2-Dichloroethene	ND	50	50.6	101	49.6	99	2	70-130/30	
156-60-5	trans-1,2-Dichloroethene	ND	50	53.8	108	51.6	103	4	70-130/30	
78-87-5	1,2-Dichloropropane	ND	50	51.5	103	49.9	100	3	70-130/30	
142-28-9	1,3-Dichloropropane	ND	50	52.7	105	51.4	103	2	70-130/30	

5.4.2  
5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5398  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5329-1MS	N57501.D	1	11/21/11	JP	n/a	n/a	MSN2154
MC5329-1MSD	N57502.D	1	11/21/11	JP	n/a	n/a	MSN2154
MC5329-1	N57496.D	1	11/21/11	JP	n/a	n/a	MSN2154

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5398-1

CAS No.	Compound	MC5329-1 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
594-20-7	2,2-Dichloropropane	ND	50	51.3	103	48.3	97	6	70-130/30
563-58-6	1,1-Dichloropropane	ND	50	54.8	110	53.0	106	3	70-130/30
10061-01-5	cis-1,3-Dichloropropene	ND	50	56.0	112	54.0	108	4	70-130/30
10061-02-6	trans-1,3-Dichloropropene	ND	50	53.5	107	52.6	105	2	70-130/30
123-91-1	1,4-Dioxane	ND	250	241	96	222	89	8	70-130/30
97-63-2	Ethyl methacrylate	ND	50	49.8	100	49.5	99	1	72-139/30
100-41-4	Ethylbenzene	ND	50	57.6	115	55.3	111	4	70-130/30
87-68-3	Hexachlorobutadiene	ND	50	59.7	119	58.2	116	3	70-130/30
591-78-6	2-Hexanone	ND	50	43.7	87	42.5	85	3	70-130/30
98-82-8	Isopropylbenzene	ND	50	65.2	130	64.1	128	2	70-130/30
99-87-6	p-Isopropyltoluene	ND	50	57.7	115	56.1	112	3	70-130/30
1634-04-4	Methyl Tert Butyl Ether	25.9	50	77.1	102	75.4	99	2	70-130/30
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	50	48.8	98	47.7	95	2	70-130/30
74-95-3	Methylene bromide	ND	50	52.4	105	52.1	104	1	70-130/30
75-09-2	Methylene chloride	ND	50	48.8	98	48.3	97	1	70-130/30
91-20-3	Naphthalene	ND	50	53.2	106	52.9	106	1	70-130/30
103-65-1	n-Propylbenzene	ND	50	56.7	113	55.6	111	2	70-130/30
100-42-5	Styrene	ND	50	56.7	113	54.4	109	4	70-130/30
630-20-6	1,1,1,2-Tetrachloroethane	ND	50	55.3	111	53.7	107	3	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	ND	50	49.3	99	49.0	98	1	70-130/30
127-18-4	Tetrachloroethene	ND	50	58.1	116	55.5	111	5	70-130/30
108-88-3	Toluene	ND	50	54.8	110	53.6	107	2	70-130/30
87-61-6	1,2,3-Trichlorobenzene	ND	50	55.4	111	54.5	109	2	70-130/30
120-82-1	1,2,4-Trichlorobenzene	ND	50	60.6	121	59.8	120	1	70-130/30
71-55-6	1,1,1-Trichloroethane	ND	50	51.4	103	49.2	98	4	70-130/30
79-00-5	1,1,2-Trichloroethane	ND	50	52.6	105	51.2	102	3	70-130/30
79-01-6	Trichloroethene	ND	50	54.1	108	53.4	107	1	70-130/30
75-69-4	Trichlorofluoromethane	ND	50	49.8	100	47.8	96	4	70-130/30
96-18-4	1,2,3-Trichloropropane	ND	50	51.4	103	50.9	102	1	70-130/30
95-63-6	1,2,4-Trimethylbenzene	ND	50	56.0	112	54.8	110	2	70-130/30
108-67-8	1,3,5-Trimethylbenzene	ND	50	55.5	111	54.6	109	2	70-130/30
108-05-4	Vinyl Acetate	ND	50	57.8	116	58.3	117	1	70-130/30
75-01-4	Vinyl chloride	ND	50	50.3	101	48.8	98	3	70-130/30
	m,p-Xylene	2.1	100	119	117	113	111	5	70-130/30
95-47-6	o-Xylene	1.3	50	58.5	114	56.3	110	4	70-130/30
1330-20-7	Xylene (total)	3.4	150	177	116	169	110	5	70-130/30

5.4.2  
5



# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5398

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5329-1MS	N57501.D	1	11/21/11	JP	n/a	n/a	MSN2154
MC5329-1MSD	N57502.D	1	11/21/11	JP	n/a	n/a	MSN2154
MC5329-1	N57496.D	1	11/21/11	JP	n/a	n/a	MSN2154

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5398-1

CAS No.	Surrogate Recoveries	MS	MSD	MC5329-1	Limits
1868-53-7	Dibromofluoromethane	86%	85%	91%	70-130%
2037-26-5	Toluene-D8	90%	90%	89%	70-130%
460-00-4	4-Bromofluorobenzene	88%	88%	91%	70-130%

- (a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
- (b) Outside control limits. Associated samples are non-detect for this compound.

5.4.2

5

# Volatile Internal Standard Area Summary

Job Number: MC5398  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSN2152-CC2146	Injection Date:	11/19/11
Lab File ID:	N57434.D	Injection Time:	09:52
Instrument ID:	GCMSEN	Method:	SW846 8260B

	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
	AREA		AREA		AREA		AREA		AREA	
Check Std	315122	9.03	447649	9.90	220619	13.16	244586	15.72	101439	6.58
Upper Limit <sup>a</sup>	630244	9.53	895298	10.40	441238	13.66	489172	16.22	202878	7.08
Lower Limit <sup>b</sup>	157561	8.53	223825	9.40	110310	12.66	122293	15.22	50720	6.08

Lab	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
Sample ID	AREA		AREA		AREA		AREA		AREA	
MSN2152-BS	332669	9.03	470510	9.90	227360	13.16	253257	15.72	116906	6.57
MSN2151-BS2	332669	9.03	470510	9.90	227360	13.16	253257	15.72	116906	6.57
MSN2152-MB	325366	9.03	464548	9.90	206468	13.16	225869	15.72	119770	6.58
MSN2151-MB2	325366	9.03	464548	9.90	206468	13.16	225869	15.72	119770	6.58
MC5398-2	308033	9.03	446265	9.90	203756	13.16	220652	15.72	101642	6.58
ZZZZZZ	303801	9.03	441297	9.90	201195	13.16	217759	15.72	102944	6.57
MC5347-3	306261	9.03	434567	9.90	199974	13.16	213658	15.72	92330	6.58
ZZZZZZ	305176	9.03	437780	9.90	205400	13.16	229147	15.72	99065	6.58
ZZZZZZ	327361	9.03	459129	9.90	214868	13.16	246776	15.72	104422	6.58
ZZZZZZ	323317	9.03	484716	9.90	213358	13.16	228900	15.72	120274	6.58
ZZZZZZ	323474	9.03	481701	9.90	215266	13.16	229269	15.72	116432	6.58
ZZZZZZ	315167	9.03	461698	9.90	210800	13.16	221067	15.72	105445	6.58
ZZZZZZ	305749	9.03	447472	9.90	201797	13.16	216351	15.72	111806	6.58
ZZZZZZ	306005	9.03	442068	9.90	202667	13.16	216621	15.72	94985	6.58
ZZZZZZ	303208	9.03	440052	9.90	200858	13.16	216531	15.72	101587	6.58
ZZZZZZ	287296	9.03	418273	9.90	191541	13.16	208822	15.72	92020	6.58

- IS 1 = Pentafluorobenzene
- IS 2 = 1,4-Difluorobenzene
- IS 3 = Chlorobenzene-D5
- IS 4 = 1,4-Dichlorobenzene-d4
- IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

5.5.1

# Volatile Internal Standard Area Summary

Job Number: MC5398  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL-Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSN2154-CC2146	Injection Date:	11/21/11
Lab File ID:	N57490.D	Injection Time:	12:29
Instrument ID:	GCMSN	Method:	SW846 8260B

	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
	AREA		AREA		AREA		AREA		AREA	
Check Std	276936	9.03	395257	9.90	200494	13.16	221485	15.72	96966	6.57
Upper Limit <sup>a</sup>	553872	9.53	790514	10.40	400988	13.66	442970	16.22	193932	7.07
Lower Limit <sup>b</sup>	138468	8.53	197629	9.40	100247	12.66	110743	15.22	48483	6.07

Lab Sample ID	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
	AREA		AREA		AREA		AREA		AREA	
MSN2154-BS	289393	9.03	418944	9.90	207266	13.16	229414	15.72	109030	6.58
MSN2152-BS3	289393	9.03	418944	9.90	207266	13.16	229414	15.72	109030	6.58
MSN2154-BSD	313247	9.03	441148	9.90	217046	13.16	237269	15.72	109792	6.57
MSN2154-MB	293269	9.03	418726	9.90	188737	13.16	181200	15.72	99143	6.59
MSN2152-MB3	293269	9.03	418726	9.90	188737	13.16	181200	15.72	99143	6.59
ZZZZZZ	295773	9.03	424866	9.90	203793	13.16	232443	15.72	98291	6.58
MC5329-1	325182	9.03	460738	9.91	211634	13.16	238466	15.72	104664	6.58
MC5396-1	324168	9.03	468601	9.90	218163	13.16	247666	15.72	103252	6.58
ZZZZZZ	356027	9.03	506150	9.90	231724	13.16	265363	15.72	119058	6.58
MC5396-1MS	370973	9.03	522564	9.90	243275	13.16	283005	15.72	119311	6.58
MC5396-1MSD	382098	9.03	544704	9.90	251984	13.16	286951	15.72	124260	6.57
MC5329-1MS	388402	9.03	540209	9.90	245179	13.16	288262	15.72	125652	6.58
MC5329-1MSD	394163	9.03	546850	9.90	252766	13.16	291719	15.72	127336	6.57
ZZZZZZ	389539	9.03	546743	9.90	240004	13.16	267598	15.72	130139	6.57
ZZZZZZ	377044	9.03	534736	9.90	235218	13.16	260759	15.72	122648	6.58
MC5398-1	371878	9.03	520130	9.90	233538	13.16	261224	15.72	118859	6.58
ZZZZZZ	367407	9.03	518866	9.90	233513	13.16	273209	15.72	122348	6.58
ZZZZZZ	376712	9.03	523949	9.90	239466	13.16	281532	15.72	124800	6.58
ZZZZZZ	388313	9.03	546033	9.90	244990	13.16	283781	15.72	132984	6.58
ZZZZZZ	390467	9.03	541977	9.90	244850	13.16	282866	15.72	137329	6.58
ZZZZZZ	387524	9.03	547348	9.90	237752	13.16	280170	15.72	141166	6.58
ZZZZZZ	381105	9.03	542862	9.90	241140	13.16	269414	15.72	139367	6.58
ZZZZZZ	373213	9.03	524575	9.90	234934	13.16	261400	15.72	126620	6.58
MC5329-9MS	368378	9.03	517701	9.90	246908	13.16	282565	15.72	128272	6.58
MC5329-9MSD	383898	9.03	537339	9.90	251920	13.16	284860	15.72	128567	6.58

- IS 1 = Pentafluorobenzene
- IS 2 = 1,4-Difluorobenzene
- IS 3 = Chlorobenzene-D5
- IS 4 = 1,4-Dichlorobenzene-d4
- IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

5.5.2  
5

# Volatile Surrogate Recovery Summary

Job Number: MC5398

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Method: SW846 8260B	Matrix: AQ
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Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
MC5398-1	N57505.D	88.0	88.0	90.0
MC5398-2	N57439.D	95.0	88.0	92.0
MC5329-IMS	N57501.D	86.0	90.0	88.0
MC5329-IMSD	N57502.D	85.0	90.0	88.0
MC5396-IMS	N57499.D	88.0	90.0	89.0
MC5396-IMSD	N57500.D	87.0	89.0	89.0
MSN2152-BS	N57435.D	91.0	91.0	91.0
MSN2152-MB	N57438.D	92.0	88.0	91.0
MSN2154-BS	N57491.D	94.0	90.0	90.0
MSN2154-BSD	N57492.D	92.0	91.0	92.0
MSN2154-MB	N57494.D	93.0	88.0	98.0
MSN2152-MB3	N57494.D	93.0	88.0	98.0

Surrogate Compounds	Recovery Limits
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S1 = Dibromofluoromethane	70-130%
S2 = Toluene-D8	70-130%
S3 = 4-Bromofluorobenzene	70-130%

5.6.1

5

## GC/MS Semi-volatiles

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6

## QC Data Summaries

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Includes the following where applicable:

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

# Method Blank Summary

Job Number: MC5398

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26928-MB	U3430.D	1	11/16/11	KR	11/14/11	OP26928	MSU207

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5398-1

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	10	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	ug/l	
51-28-5	2,4-Dinitrophenol	ND	20	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	ug/l	
95-48-7	2-Methylphenol	ND	10	ug/l	
	3&4-Methylphenol	ND	10	ug/l	
88-75-5	2-Nitrophenol	ND	10	ug/l	
100-02-7	4-Nitrophenol	ND	20	ug/l	
87-86-5	Pentachlorophenol	ND	10	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	10	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	ug/l	
62-53-3	Aniline	ND	10	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	ug/l	
100-51-6	Benzyl Alcohol	ND	10	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	ug/l	
106-47-8	4-Chloroaniline	ND	10	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	10	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.0	ug/l	
132-64-9	Dibenzofuran	ND	5.0	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	ug/l	
84-66-2	Diethyl phthalate	0.87	5.0	ug/l	J
131-11-3	Dimethyl phthalate	ND	5.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	ug/l	

6.1.1

6

# Method Blank Summary

Job Number: MC5398

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26928-MB	U3430.D	1	11/16/11	KR	11/14/11	OP26928	MSU207

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5398-1

CAS No.	Compound	Result	RL	Units	Q
77-47-4	Hexachlorocyclopentadiene	ND	10	ug/l	
67-72-1	Hexachloroethane	ND	5.0	ug/l	
78-59-1	Isophorone	ND	5.0	ug/l	
88-74-4	2-Nitroaniline	ND	10	ug/l	
99-09-2	3-Nitroaniline	ND	10	ug/l	
100-01-6	4-Nitroaniline	ND	10	ug/l	
98-95-3	Nitrobenzene	ND	5.0	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	ug/l	
110-86-1	Pyridine	ND	10	ug/l	

CAS No.	Surrogate Recoveries	Limits
367-12-4	2-Fluorophenol	53% 15-110%
4165-62-2	Phenol-d5	38% 15-110%
118-79-6	2,4,6-Tribromophenol	69% 15-110%
4165-60-0	Nitrobenzene-d5	93% 30-130%
321-60-8	2-Fluorobiphenyl	81% 30-130%
1718-51-0	Terphenyl-d14	103% 30-130%

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

6.1.1

6

# Method Blank Summary

Job Number: MC5398

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26929-MB	I76424.D	1	11/17/11	KR	11/14/11	OP26929	MSI2807

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC5398-1

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	0.10	ug/l	
208-96-8	Acenaphthylene	ND	0.10	ug/l	
120-12-7	Anthracene	ND	0.10	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.050	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.050	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	ug/l	
218-01-9	Chrysene	ND	0.10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	ug/l	
206-44-0	Fluoranthene	ND	0.10	ug/l	
86-73-7	Fluorene	ND	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.20	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	0.10	ug/l	
85-01-8	Phenanthrene	ND	0.050	ug/l	
129-00-0	Pyrene	ND	0.10	ug/l	

CAS No.	Surrogate Recoveries		Limits
4165-60-0	Nitrobenzene-d5	44%	30-130%
321-60-8	2-Fluorobiphenyl	41%	30-130%
1718-51-0	Terphenyl-d14	54%	30-130%

6.1.2

6



# Blank Spike Summary

Job Number: MC5398

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26928-BS	U3431.D	1	11/16/11	KR	11/14/11	OP26928	MSU207

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5398-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
65-85-0	Benzoic Acid	100	40.2	40	30-130
95-57-8	2-Chlorophenol	100	80.5	81	30-130
59-50-7	4-Chloro-3-methyl phenol	100	96.2	96	30-130
120-83-2	2,4-Dichlorophenol	100	85.5	86	30-130
105-67-9	2,4-Dimethylphenol	100	94.7	95	30-130
51-28-5	2,4-Dinitrophenol	100	66.0	66	30-130
534-52-1	4,6-Dinitro-o-cresol	100	85.3	85	30-130
95-48-7	2-Methylphenol	100	82.7	83	30-130
	3&4-Methylphenol	200	152	76	30-130
88-75-5	2-Nitrophenol	100	83.2	83	30-130
100-02-7	4-Nitrophenol	100	57.1	57	30-130
87-86-5	Pentachlorophenol	100	89.8	90	30-130
108-95-2	Phenol	100	43.5	44	30-130
95-95-4	2,4,5-Trichlorophenol	100	86.5	87	30-130
88-06-2	2,4,6-Trichlorophenol	100	85.3	85	30-130
62-53-3	Aniline	50	30.5	61	40-140
101-55-3	4-Bromophenyl phenyl ether	50	47.6	95	40-140
85-68-7	Butyl benzyl phthalate	50	50.7	101	40-140
100-51-6	Benzyl Alcohol	50	41.8	84	40-140
91-58-7	2-Chloronaphthalene	50	44.4	89	40-140
106-47-8	4-Chloroaniline	50	35.9	72	40-140
111-91-1	bis(2-Chloroethoxy)methane	50	47.6	95	40-140
111-44-4	bis(2-Chloroethyl)ether	50	51.3	103	40-140
108-60-1	bis(2-Chloroisopropyl)ether	50	60.0	120	40-140
7005-72-3	4-Chlorophenyl phenyl ether	50	45.6	91	40-140
122-66-7	1,2-Diphenylhydrazine	50	52.0	104	40-140
121-14-2	2,4-Dinitrotoluene	50	44.4	89	40-140
606-20-2	2,6-Dinitrotoluene	50	45.1	90	40-140
91-94-1	3,3'-Dichlorobenzidine	50	41.3	83	40-140
132-64-9	Dibenzofuran	50	44.4	89	40-140
84-74-2	Di-n-butyl phthalate	50	50.6	101	40-140
117-84-0	Di-n-octyl phthalate	50	50.5	101	40-140
84-66-2	Diethyl phthalate	50	48.0	96	40-140
131-11-3	Dimethyl phthalate	50	38.6	77	40-140
117-81-7	bis(2-Ethylhexyl)phthalate	50	56.3	113	40-140
118-74-1	Hexachlorobenzene	50	43.0	86	40-140

6.2.1

6

# Blank Spike Summary

Job Number: MC5398

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26928-BS	U3431.D	1	11/16/11	KR	11/14/11	OP26928	MSU207

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5398-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
77-47-4	Hexachlorocyclopentadiene	50	23.3	47	40-140
67-72-1	Hexachloroethane	50	41.0	82	40-140
78-59-1	Isophorone	50	39.4	79	40-140
88-74-4	2-Nitroaniline	50	47.4	95	40-140
99-09-2	3-Nitroaniline	50	38.5	77	40-140
100-01-6	4-Nitroaniline	50	41.9	84	40-140
98-95-3	Nitrobenzene	50	47.2	94	40-140
62-75-9	n-Nitrosodimethylamine	50	28.1	56	40-140
621-64-7	N-Nitroso-di-n-propylamine	50	56.3	113	40-140
86-30-6	N-Nitrosodiphenylamine	50	49.2	98	40-140
110-86-1	Pyridine	50	24.3	49	40-140

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	58%	15-110%
4165-62-2	Phenol-d5	43%	15-110%
118-79-6	2,4,6-Tribromophenol	83%	15-110%
4165-60-0	Nitrobenzene-d5	92%	30-130%
321-60-8	2-Fluorobiphenyl	81%	30-130%
1718-51-0	Terphenyl-d14	98%	30-130%

6.2.1

6

# Blank Spike Summary

Job Number: MC5398

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26929-BS	I76439.D	1	11/18/11	KR	11/14/11	OP26929	MSI2810

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC5398-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
83-32-9	Acenaphthene	50	22.1	44	40-140
208-96-8	Acenaphthylene	50	17.4	35* a	40-140
120-12-7	Anthracene	50	23.5	47	40-140
56-55-3	Benzo(a)anthracene	50	28.9	58	40-140
50-32-8	Benzo(a)pyrene	50	24.2	48	40-140
205-99-2	Benzo(b)fluoranthene	50	25.1	50	40-140
191-24-2	Benzo(g,h,i)perylene	50	27.2	54	40-140
207-08-9	Benzo(k)fluoranthene	50	27.0	54	40-140
218-01-9	Chrysene	50	24.2	48	40-140
53-70-3	Dibenzo(a,h)anthracene	50	26.8	54	40-140
206-44-0	Fluoranthene	50	25.2	50	40-140
86-73-7	Fluorene	50	23.7	47	40-140
193-39-5	Indeno(1,2,3-cd)pyrene	50	27.3	55	40-140
90-12-0	1-Methylnaphthalene	50	21.1	42	40-140
91-57-6	2-Methylnaphthalene	50	22.0	44	40-140
91-20-3	Naphthalene	50	20.8	42	40-140
85-01-8	Phenanthrene	50	21.6	43	40-140
129-00-0	Pyrene	50	26.5	53	40-140

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	44%	30-130%
321-60-8	2-Fluorobiphenyl	41%	30-130%
1718-51-0	Terphenyl-d14	54%	30-130%

(a) Outside control limits. Blank Spike meets program technical requirements.

6.2.2

6

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5398

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26928-MS	U3433.D	1	11/16/11	KR	11/14/11	OP26928	MSU207
OP26928-MSD	U3434.D	1	11/16/11	KR	11/14/11	OP26928	MSU207
MC5472-3	U3435.D	1	11/16/11	KR	11/14/11	OP26928	MSU207

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5398-1

CAS No.	Compound	MC5472-3		Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
		ug/l	Q							
65-85-0	Benzoic Acid	ND		100	40.3	40	37.4	37	7	30-130/20
95-57-8	2-Chlorophenol	ND		100	79.6	80	84.2	84	6	30-130/20
59-50-7	4-Chloro-3-methyl phenol	ND		100	92.7	93	98.2	98	6	30-130/20
120-83-2	2,4-Dichlorophenol	ND		100	83.7	84	88.0	88	5	30-130/20
105-67-9	2,4-Dimethylphenol	ND		100	94.0	94	98.7	99	5	30-130/20
51-28-5	2,4-Dinitrophenol	ND		100	60.7	61	63.2	63	4	30-130/20
534-52-1	4,6-Dinitro-o-cresol	ND		100	80.2	80	83.1	83	4	30-130/20
95-48-7	2-Methylphenol	ND		100	81.7	82	85.8	86	5	30-130/20
	3&4-Methylphenol	ND		200	150	75	159	80	6	30-130/20
88-75-5	2-Nitrophenol	ND		100	83.9	84	88.1	88	5	30-130/20
100-02-7	4-Nitrophenol	ND		100	55.7	56	53.6	54	4	30-130/20
87-86-5	Pentachlorophenol	ND		100	85.1	85	91.2	91	7	30-130/20
108-95-2	Phenol	ND		100	42.4	42	45.6	46	7	30-130/20
95-95-4	2,4,5-Trichlorophenol	ND		100	83.3	83	85.6	86	3	30-130/20
88-06-2	2,4,6-Trichlorophenol	ND		100	83.3	83	84.9	85	2	30-130/20
62-53-3	Aniline	ND		50	30.5	61	32.2	64	5	40-140/20
101-55-3	4-Bromophenyl phenyl ether	ND		50	46.7	93	49.2	98	5	40-140/20
85-68-7	Butyl benzyl phthalate	ND		50	49.3	99	51.3	103	4	40-140/20
100-51-6	Benzyl Alcohol	ND		50	41.5	83	43.7	87	5	40-140/20
91-58-7	2-Chloronaphthalene	ND		50	43.8	88	46.6	93	6	40-140/20
106-47-8	4-Chloroaniline	ND		50	34.9	70	37.4	75	7	40-140/20
111-91-1	bis(2-Chloroethoxy)methane	ND		50	47.6	95	49.8	100	5	40-140/20
111-44-4	bis(2-Chloroethyl)ether	ND		50	50.7	101	53.8	108	6	40-140/20
108-60-1	bis(2-Chloroisopropyl)ether	ND		50	59.8	120	63.2	126	6	40-140/20
7005-72-3	4-Chlorophenyl phenyl ether	ND		50	45.4	91	46.8	94	3	40-140/20
122-66-7	1,2-Diphenylhydrazine	ND		50	50.2	100	53.2	106	6	40-140/20
121-14-2	2,4-Dinitrotoluene	ND		50	43.3	87	44.8	90	3	40-140/20
606-20-2	2,6-Dinitrotoluene	ND		50	44.3	89	46.1	92	4	40-140/20
91-94-1	3,3'-Dichlorobenzidine	ND		50	40.5	81	43.3	87	7	40-140/20
132-64-9	Dibenzofuran	ND		50	43.7	87	45.6	91	4	40-140/20
84-74-2	Di-n-butyl phthalate	0.36		50	47.8	95	51.1	101	7	40-140/20
117-84-0	Di-n-octyl phthalate	ND		50	48.0	96	50.4	101	5	40-140/20
84-66-2	Diethyl phthalate	0.69		50	46.0	91	49.0	97	6	40-140/20
131-11-3	Dimethyl phthalate	ND		50	34.9	70	41.0	82	16	40-140/20
117-81-7	bis(2-Ethylhexyl)phthalate	0.66		50	55.2	109	56.2	111	2	40-140/20
118-74-1	Hexachlorobenzene	ND		50	42.1	84	44.2	88	5	40-140/20

6.3.1

6

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5398

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26928-MS	U3433.D	1	11/16/11	KR	11/14/11	OP26928	MSU207
OP26928-MSD	U3434.D	1	11/16/11	KR	11/14/11	OP26928	MSU207
MC5472-3	U3435.D	1	11/16/11	KR	11/14/11	OP26928	MSU207

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5398-1

CAS No.	Compound	MC5472-3 ug/l	Spike Q	ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
77-47-4	Hexachlorocyclopentadiene	ND	50	22.2	44	23.1	46	4	40-140/20	
67-72-1	Hexachloroethane	ND	50	40.9	82	43.5	87	6	40-140/20	
78-59-1	Isophorone	ND	50	39.0	78	41.2	82	5	40-140/20	
88-74-4	2-Nitroaniline	ND	50	46.2	92	48.1	96	4	40-140/20	
99-09-2	3-Nitroaniline	ND	50	37.4	75	41.9	84	11	40-140/20	
100-01-6	4-Nitroaniline	ND	50	40.7	81	42.6	85	5	40-140/20	
98-95-3	Nitrobenzene	ND	50	46.4	93	50.2	100	8	40-140/20	
62-75-9	n-Nitrosodimethylamine	ND	50	27.8	56	29.7	59	7	40-140/20	
621-64-7	N-Nitroso-di-n-propylamine	ND	50	55.4	111	59.1	118	6	40-140/20	
86-30-6	N-Nitrosodiphenylamine	ND	50	48.0	96	50.5	101	5	40-140/20	
110-86-1	Pyridine	ND	50	25.5	51	27.1	54	6	40-140/20	

CAS No.	Surrogate Recoveries	MS	MSD	MC5472-3	Limits
367-12-4	2-Fluorophenol	57%	62%	52%	15-110%
4165-62-2	Phenol-d5	41%	44%	37%	15-110%
118-79-6	2,4,6-Tri bromophenol	79%	85%	71%	15-110%
4165-60-0	Nitrobenzene-d5	90%	98%	95%	30-130%
321-60-8	2-Fluorobiphenyl	80%	85%	83%	30-130%
1718-51-0	Terphenyl-d14	99%	97%	102%	30-130%

6.3.1

6

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5398

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26929-MS	I76440.D	1	11/18/11	KR	11/14/11	OP26929	MSI2810
OP26929-MSD	I76441.D	1	11/18/11	KR	11/14/11	OP26929	MSI2810
MC5472-2	I76428.D	1	11/17/11	KR	11/14/11	OP26929	MSI2807

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC5398-1

CAS No.	Compound	MC5472-2 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND	50	21.7	43	22.6	45	4	40-140/20
208-96-8	Acenaphthylene	ND	50	17.1	34* <sup>a</sup>	17.9	36* <sup>a</sup>	5	40-140/20
120-12-7	Anthracene	ND	50	22.8	46	23.6	47	3	40-140/20
56-55-3	Benzo(a)anthracene	ND	50	28.0	56	28.8	58	3	40-140/20
50-32-8	Benzo(a)pyrene	ND	50	23.5	47	24.0	48	2	40-140/20
205-99-2	Benzo(b)fluoranthene	ND	50	22.8	46	24.1	48	6	40-140/20
191-24-2	Benzo(g,h,i)perylene	ND	50	31.6	63	31.9	64	1	40-140/20
207-08-9	Benzo(k)fluoranthene	ND	50	25.1	50	25.2	50	0	40-140/20
218-01-9	Chrysene	ND	50	23.6	47	24.3	49	3	40-140/20
53-70-3	Dibenzo(a,h)anthracene	ND	50	29.1	58	29.6	59	2	40-140/20
206-44-0	Fluoranthene	ND	50	24.0	48	24.7	49	3	40-140/20
86-73-7	Fluorene	ND	50	23.1	46	24.3	49	5	40-140/20
193-39-5	Indeno(1,2,3-cd)pyrene	ND	50	30.0	60	30.5	61	2	40-140/20
90-12-0	1-Methylnaphthalene	0.018	50	21.5	43	22.5	45	5	40-140/20
91-57-6	2-Methylnaphthalene	0.020	50	21.9	44	22.9	46	4	40-140/20
91-20-3	Naphthalene	0.028	50	20.9	42	21.7	43	4	40-140/20
85-01-8	Phenanthrene	ND	50	20.6	41	21.4	43	4	40-140/20
129-00-0	Pyrene	ND	50	26.1	52	26.7	53	2	40-140/20

CAS No.	Surrogate Recoveries	MS	MSD	MC5472-2	Limits
4165-60-0	Nitrobenzene-d5	44%	46%	44%	30-130%
321-60-8	2-Fluorobiphenyl	41%	43%	41%	30-130%
1718-51-0	Terphenyl-d14	53%	54%	55%	30-130%

(a) Outside control limits. Blank Spike meets program technical requirements.

6.3.2

6

# Semivolatiles Internal Standard Area Summary

Job Number: MC5398  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSI2807-CC2803	Injection Date:	11/17/11
Lab File ID:	I76412.D	Injection Time:	08:45
Instrument ID:	GCMSI	Method:	SW846 8270C BY SIM

	IS 1	IS 2	IS 3	IS 4	IS 5	IS 6
	AREA	RT	AREA	RT	AREA	RT
Check Std	150095	5.42	504152	6.70	334916	9.13
Upper Limit <sup>a</sup>	300190	5.92	1008304	7.20	669832	9.63
Lower Limit <sup>b</sup>	75048	4.92	252076	6.20	167458	8.63

Lab	IS 1	IS 2	IS 3	IS 4	IS 5	IS 6
Sample ID	AREA	RT	AREA	RT	AREA	RT
OP26907-MB	152704	5.42	507255	6.70	338653	9.13
OP26907-BS	156165	5.42	524462	6.70	350054	9.13
OP26907-MS	158254	5.42	526366	6.70	346245	9.13
OP26907-MSD	160395	5.42	540069	6.70	363693	9.13
MC5282-5	143539	5.42	479111	6.70	323958	9.13
ZZZZZZ	132426	5.42	440711	6.70	290778	9.13
OP26908-MB	132643	5.42	438691	6.70	291653	9.13
OP26908-BS	143387	5.42	487784	6.70	327620	9.13
OP26908-MS	137244	5.42	459379	6.70	308016	9.13
OP26908-MSD	138608	5.42	469596	6.70	314729	9.13
MC5179-6	124515	5.42	416444	6.70	276297	9.13
OP26929-MB	248714	5.42	827649	6.70	580495	9.13
MC5472-2	266001	5.42	874748	6.70	613082	9.14
MC5398-1	224508	5.42	750507	6.70	520190	9.13
ZZZZZZ	128365	5.42	429243	6.70	288985	9.13
ZZZZZZ	123581	5.42	412986	6.70	273021	9.13
ZZZZZZ	108198	5.42	368119	6.70	247158	9.13
ZZZZZZ	108787	5.42	360703	6.70	236700	9.13

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.4.1  
6

# Semivolatle Internal Standard Area Summary

Job Number: MC5398  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSI2808-CC2809	Injection Date:	11/17/11
Lab File ID:	I76412A.D	Injection Time:	08:45
Instrument ID:	GCMSI	Method:	SW846 8270C BY SIM

	IS 1	IS 2	IS 3	IS 4	IS 5	IS 6
	AREA	RT	AREA	RT	AREA	RT
Check Std	150095	5.42	504152	6.70	334916	9.13
Upper Limit <sup>a</sup>	300190	5.92	1008304	7.20	669832	9.63
Lower Limit <sup>b</sup>	75048	4.92	252076	6.20	167458	8.63

Lab	IS 1	IS 2	IS 3	IS 4	IS 5	IS 6
Sample ID	AREA	RT	AREA	RT	AREA	RT
OP26907-MB	152704	5.42	507255	6.70	338653	9.13
OP26907-BS	156165	5.42	524462	6.70	350054	9.13
OP26907-MS	158254	5.42	526366	6.70	346245	9.13
OP26907-MSD	160395	5.42	540069	6.70	363693	9.13
MC5282-5	143539	5.42	479111	6.70	323958	9.13
ZZZZZZ	132426	5.42	440711	6.70	290778	9.13
OP26908-MB	132643	5.42	438691	6.70	291653	9.13
OP26908-BS	143387	5.42	487784	6.70	327620	9.13
OP26908-MS	137244	5.42	459379	6.70	308016	9.13
OP26908-MSD	138608	5.42	469596	6.70	314729	9.13
MC5179-6	124515	5.42	416444	6.70	276297	9.13
OP26929-MB	248714	5.42	827649	6.70	580495	9.13
MC5472-2	266001	5.42	874748	6.70	613082	9.14
MC5398-1	224508	5.42	750507	6.70	520190	9.13
ZZZZZZ	128365	5.42	429243	6.70	288985	9.13
ZZZZZZ	123581	5.42	412986	6.70	273021	9.13
ZZZZZZ	108198	5.42	368119	6.70	247158	9.13
ZZZZZZ	108787	5.42	360703	6.70	236700	9.13

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.4.2  
6



# Semivolatile Internal Standard Area Summary

Job Number: MC5398  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSI2810-CC2803	Injection Date:	11/18/11
Lab File ID:	I76435.D	Injection Time:	09:06
Instrument ID:	GCMSI	Method:	SW846 8270C BY SIM

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	122950	5.42	414025	6.70	279253	9.13	515082	11.64	639143	16.60	594366	19.13
Upper Limit <sup>a</sup>	245900	5.92	828050	7.20	558506	9.63	1030164	12.14	1278286	17.10	1188732	19.63
Lower Limit <sup>b</sup>	61475	4.92	207013	6.20	139627	8.63	257541	11.14	319572	16.10	297183	18.63

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP26952-MB	133717	5.43	447144	6.70	297941	9.13	540498	11.64	596944	16.59	523641	19.13
OP26952-BS	142559	5.43	480118	6.70	305238	9.13	582693	11.64	676374	16.60	573448	19.13
ZZZZZZ	140770	5.43	475041	6.70	303498	9.13	581185	11.64	662365	16.59	612152	19.13
OP26929-BS	245231	5.42	797780	6.70	548608	9.13	983088	11.64	1168550	16.60	1041333	19.14
OP26929-MS	260962 <sup>c</sup>	5.42	855211 <sup>c</sup>	6.70	591676 <sup>c</sup>	9.13	1082588 <sup>c</sup>	11.64	1247544	16.61	1300331 <sup>c</sup>	19.14
OP26929-MSD	229957	5.42	754733	6.70	519353	9.13	957970	11.64	1115192	16.60	1183269	19.14
OP26944-MB	102398	5.42	341806	6.68	228332	9.13	426023	11.64	449395	16.59	429832	19.13
OP26944-BS	107690	5.42	369008	6.70	245817	9.13	461504	11.64	537764	16.60	604911	19.13
OP26944-MS	110086	5.42	375967	6.70	251255	9.13	471119	11.64	558177	16.60	650002	19.13
OP26944-MSD	110920	5.42	380452	6.70	254885	9.13	475806	11.64	552024	16.60	642407	19.13
MC5466-3	103238	5.42	350175	6.70	238843	9.13	451501	11.64	472533	16.59	515705	19.13

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.  
 (c) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

6.4.3  
6

# Semivolatile Internal Standard Area Summary

Job Number: MC5398  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSU207-CC202	Injection Date:	11/16/11
Lab File ID:	U3420.D	Injection Time:	07:51
Instrument ID:	GCMSU	Method:	SW846 8270C

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	167546	5.49	637303	6.80	322599	9.25	530284	11.77	461457	16.73	468201	19.26
Upper Limit <sup>a</sup>	335092	5.99	1274606	7.30	645198	9.75	1060568	12.27	922914	17.23	936402	19.76
Lower Limit <sup>b</sup>	83773	4.99	318652	6.30	161300	8.75	265142	11.27	230729	16.23	234101	18.76

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP26943-MB	151264	5.49	566635	6.79	276143	9.25	432949	11.77	373257	16.71	299389	19.25
OP26943-BS	144664	5.49	541325	6.80	271647	9.25	440037	11.77	384137	16.72	303651	19.25
ZZZZZZ	136447	5.49	511812	6.79	251651	9.25	414022	11.77	394782	16.72	373834	19.25
ZZZZZZ	136695	5.49	515468	6.79	253485	9.25	406226	11.77	341868	16.72	352314	19.25
ZZZZZZ	136077	5.49	509037	6.79	253037	9.25	408575	11.77	370315	16.72	461730	19.26
ZZZZZZ	156134	5.49	584785	6.79	286117	9.25	464712	11.77	376775	16.72	450971	19.25
ZZZZZZ	140183	5.49	535055	6.79	262027	9.25	430585	11.77	367616	16.71	436161	19.25
ZZZZZZ	151814	5.49	561254	6.79	271147	9.25	421619	11.77	310695	16.71	380404	19.25
ZZZZZZ	149732	5.49	562821	6.79	277347	9.25	434231	11.77	300105	16.71	364740	19.25
OP26928-MB	126936	5.49	484588	6.79	238915	9.25	389263	11.77	310730	16.71	364327	19.25
OP26928-BS	132035	5.49	479963	6.80	237056	9.25	375857	11.77	361126	16.72	428185	19.25
ZZZZZZ	156102	5.49	590423	6.79	291543	9.25	458892	11.77	394849	16.71	451719	19.25
OP26928-MS	140184	5.49	511307	6.80	249562	9.25	398620	11.77	356810	16.72	419929	19.25
OP26928-MSD	124952	5.49	455074	6.80	223606	9.25	350846	11.77	336927	16.72	395124	19.25
MC5472-3	164651	5.49	604054	6.79	295386	9.25	466448	11.77	406780	16.71	466321	19.25
ZZZZZZ	161834	5.49	592769	6.80	283109	9.25	428029	11.77	347791	16.71	439842	19.25
MC5398-1	134311	5.49	501455	6.79	251367	9.25	401964	11.77	376113	16.71	425197	19.25
ZZZZZZ	140446	5.49	528849	6.80	255287	9.25	404759	11.77	318417	16.71	378266	19.25
ZZZZZZ	135180	5.49	503475	6.79	246450	9.25	404396	11.77	381470	16.71	420528	19.25
ZZZZZZ	137548	5.49	526304	6.79	259080	9.25	408342	11.77	345644	16.71	399330	19.25

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.4.4  
6

# Semivolatile Surrogate Recovery Summary

Job Number: MC5398

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Method: SW846 8270C

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4	S5	S6
MC5398-1	U3436.D	59.0	52.0	77.0	87.0	75.0	88.0
OP26928-BS	U3431.D	58.0	43.0	83.0	92.0	81.0	98.0
OP26928-MB	U3430.D	53.0	38.0	69.0	93.0	81.0	103.0
OP26928-MS	U3433.D	57.0	41.0	79.0	90.0	80.0	99.0
OP26928-MSD	U3434.D	62.0	44.0	85.0	98.0	85.0	97.0

Surrogate Compounds                      Recovery Limits

S1 = 2-Fluorophenol	15-110%
S2 = Phenol-d5	15-110%
S3 = 2,4,6-Tribromophenol	15-110%
S4 = Nitrobenzene-d5	30-130%
S5 = 2-Fluorobiphenyl	30-130%
S6 = Terphenyl-d14	30-130%

6.5.1

6

# Semivolatile Surrogate Recovery Summary

Job Number: MC5398

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Method: SW846 8270C BY SIM

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
MC5398-1	I76429.D	42.0	40.0	48.0
OP26929-BS	I76439.D	44.0	41.0	54.0
OP26929-MB	I76424.D	44.0	41.0	54.0
OP26929-MS	I76440.D	44.0	41.0	53.0
OP26929-MSD	I76441.D	46.0	43.0	54.0

Surrogate Compounds	Recovery Limits
------------------------	--------------------

S1 = Nitrobenzene-d5	30-130%
S2 = 2-Fluorobiphenyl	30-130%
S3 = Terphenyl-d14	30-130%

6.5.2  
6

## GC Volatiles

---

## QC Data Summaries

---

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary

Job Number: MC5398

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26934-MB	BB39458.D	1	11/15/11	AP	11/14/11	OP26934	GBB2454

The QC reported here applies to the following samples:

Method: SW846 8011

MC5398-1, MC5398-3

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

CAS No.	Surrogate Recoveries		Limits
460-00-4	Bromofluorobenzene (S)	104%	36-173%
460-00-4	Bromofluorobenzene (S)	106%	36-173%

7.1.1

7

# Blank Spike Summary

Job Number: MC5398

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26934-BS	BB39459.D	1	11/15/11	AP	11/14/11	OP26934	GBB2454

The QC reported here applies to the following samples:

Method: SW846 8011

MC5398-1, MC5398-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
96-12-8	1,2-Dibromo-3-chloropropane	0.071	0.081	114	60-140
106-93-4	1,2-Dibromoethane	0.071	0.069	97	60-140

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	Bromofluorobenzene (S)	96%	36-173%
460-00-4	Bromofluorobenzene (S)	116%	36-173%

7.2.1  
7

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5398

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP26934-MS	BB39461.D	1	11/15/11	AP	11/14/11	OP26934	GBB2454
OP26934-MSD	BB39462.D	1	11/15/11	AP	11/14/11	OP26934	GBB2454
MC5220-1	BB39463.D	1	11/15/11	AP	11/14/11	OP26934	GBB2454

The QC reported here applies to the following samples:

Method: SW846 8011

MC5398-1, MC5398-3

CAS No.	Compound	MC5220-1 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.071	0.078	110	0.064	90	20	64-141/29
106-93-4	1,2-Dibromoethane	ND	0.071	0.065	92	0.055	77	17	63-163/27

CAS No.	Surrogate Recoveries	MS	MSD	MC5220-1	Limits
460-00-4	Bromofluorobenzene (S)	101%	76%	64%	36-173%
460-00-4	Bromofluorobenzene (S)	133%	94%	87%	36-173%

7.3.1

7



# Volatile Surrogate Recovery Summary

Job Number: MC5398

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Method: SW846 8011

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 <sup>a</sup>	S1 <sup>b</sup>
MC5398-1	BB39522.D	98.0	105.0
MC5398-3	BB39523.D	115.0	111.0
OP26934-BS	BB39459.D	96.0	116.0
OP26934-MB	BB39458.D	104.0	106.0
OP26934-MS	BB39461.D	101.0	133.0
OP26934-MSD	BB39462.D	76.0	94.0

Surrogate Compounds	Recovery Limits
------------------------	--------------------

S1 = Bromofluorobenzene (S)	36-173%
-----------------------------	---------

(a) Recovery from GC signal #1

(b) Recovery from GC signal #2

7.4.1

7

# GC Surrogate Retention Time Summary

Job Number: MC5398  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	GBB2454-ICC2454	Injection Date:	11/15/11
Lab File ID:	BB39452.D	Injection Time:	13:49
Instrument ID:	GCB8	Method:	SW846 8011

	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
Check Std	3.94	3.88

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
ZZZZZZ	BB39457.D	11/15/11	15:58	3.93	3.87
ZZZZZZ	BB39457A.D	11/15/11	15:58	3.93	3.87
OP26934-MB	BB39458.D	11/15/11	16:23	3.93	3.87
OP26934-BS	BB39459.D	11/15/11	16:49	3.93	3.87
ZZZZZZ	BB39460.D	11/15/11	17:14	3.93	3.87
OP26934-MS	BB39461.D	11/15/11	17:39	3.93	3.87
OP26934-MSD	BB39462.D	11/15/11	18:04	3.93	3.87
MC5220-1	BB39463.D	11/15/11	18:30	3.93	3.87
ZZZZZZ	BB39464.D	11/15/11	18:54	3.93	3.87
ZZZZZZ	BB39465.D	11/15/11	19:19	3.93	3.87
ZZZZZZ	BB39466.D	11/15/11	19:45	3.92	3.86

**Surrogate  
Compounds**

S1 = Bromofluorobenzene (S)

- (a) Retention time from GC signal #1
- (b) Retention time from GC signal #2

7.5.1  
7

# GC Surrogate Retention Time Summary

Job Number: MC5398  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	GBB2455-CC2455	Injection Date:	11/16/11
Lab File ID:	BB39515.D	Injection Time:	17:37
Instrument ID:	GCBB	Method:	SW846 8011

	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
Check Std	3.96	3.90

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
ZZZZZZ	BB39516.D	11/16/11	18:03	3.96	3.90
ZZZZZZ	BB39517.D	11/16/11	18:27	3.96	3.90
ZZZZZZ	BB39518.D	11/16/11	18:52	3.96	3.90
ZZZZZZ	BB39519.D	11/16/11	19:17	3.96	3.90
ZZZZZZ	BB39520.D	11/16/11	19:42	3.96	3.90
ZZZZZZ	BB39521.D	11/16/11	20:07	3.95	3.90
MC5398-1	BB39522.D	11/16/11	20:33	3.96	3.90
MC5398-3	BB39523.D	11/16/11	20:58	3.96	3.90
ZZZZZZ	BB39524.D	11/16/11	21:23	3.96	3.90
ZZZZZZ	BB39525.D	11/16/11	21:48	3.96	3.90

**Surrogate  
Compounds**

S1 = Bromofluorobenzene (S)

- (a) Retention time from GC signal #1
- (b) Retention time from GC signal #2

7.5.2

7

# Roxana Groundwater Quarterly – 4<sup>th</sup> Quarter 2011 Data Review

Laboratory SDG: MC5747

Data Reviewer: Melissa Mansker

Peer Reviewer: Elizabeth Kunkel

Date Reviewed: 12/14/2011

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

Sample Identification	Sample Identification
MW6A-ROX-112111	MW6A-ROX-112111-Dup
MW5-ROX-112111	TB-112111

## 1.0 Data Package Completeness

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

Yes

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

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

Yes, the laboratory case narrative indicated that VOC, SVOC, and PAH LCS recoveries were outside evaluation criteria. Although not indicated in the laboratory case narrative, PAHs were detected in the method blank. The compounds Benzene and Indeno(1,2,3-cd)pyrene were qualified due to field duplicate RPD outside evaluation criteria. Professional judgment was used to qualify acetone in Sample MW6A-ROX-112111. These issues are addressed further in the appropriate sections below.

The cooler receipt form indicated samples were received by the laboratory at a temperature of 1.8°C, which is outside the 4°C ± 2°C criteria. Samples were received in good condition; therefore, no qualification of data was required.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

Yes

## 4.0 Blank Contamination

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

Yes

Blank ID	Parameter	Analyte	Concentration/ Amount
OP27050-MB	PAHs	2-Methylnaphthalene	0.072 ug/L
OP27050-MB	PAHs	Naphthalene	0.083 ug/L

Qualifications due to blank contamination are included in the table below. Analytical data that were reported non-detect or at concentrations greater than five times (5X) the associated blank concentration (10X for common laboratory contaminants) did not require qualification.

Sample ID	Parameter	Analyte	New Reporting Limit (RL)	Qualification
MW5-ROX-112111	PAHs	Naphthalene	0.14 ug/L	<b>U</b>

## 5.0 Laboratory Control Sample

*Were LCS recoveries within evaluation criteria?*

No

LCS/LCSD ID	Parameter	Analyte	LCS/LCSD Recovery	RPD	LCS/LCSD /RPD Criteria
MSR912-BS	VOCs	Acetone	<b>47</b>	NA	70-130
MSR912-BS	VOCs	Acrylonitrile	<b>472</b>	NA	70-130
MSR912-BS	VOCs	2-Chloroethyl vinyl ether	<b>46</b>	NA	70-130
MSR912-BS	VOCs	Dichlorodifluoromethane	<b>65</b>	NA	70-130
MSR912-BS	VOCs	Vinyl Acetate	<b>63</b>	NA	70-130
OP27047-BS	SVOCs	Benzoic Acid	<b>26</b>	NA	30-130
OP27050-BS	PAHs	Benzo(g,h,i)perylene	<b>152</b>	NA	40-140
OP27050-BS	PAHs	Dibenzo(a,h)anthracene	<b>163</b>	NA	40-140
OP27050-BS	PAHs	Indeno(1,2,3-cd)pyrene	<b>154</b>	NA	40-140
OP27050-BS	PAHs	1-Methylnaphthalene	<b>0</b>	NA	40-140

Analytical data that required qualification based on LCS data are included in the table below. Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. LCS MSR912-BS was associated with trip blank sample TB-103111. Trip blank samples are quality control samples and are not qualified. 1-Methylnaphthalene had an LCS recovery of zero due to it not being present in the spiking solution.

Sample ID	Parameter	Analyte	Qualification
MW6A-ROX-112111	VOCs	Acetone	<b>UJ</b>
MW6A-ROX-112111	VOCs	2-Chloroethyl vinyl ether	<b>UJ</b>
MW6A-ROX-112111	VOCs	Dichlorodifluoromethane	<b>UJ</b>
MW6A-ROX-112111	VOCs	Vinyl Acetate	<b>UJ</b>
MW6A-ROX-112111-Dup	VOCs	Acetone	<b>UJ</b>
MW6A-ROX-112111-Dup	VOCs	2-Chloroethyl vinyl ether	<b>UJ</b>
MW6A-ROX-112111-Dup	VOCs	Dichlorodifluoromethane	<b>UJ</b>
MW6A-ROX-112111-Dup	VOCs	Vinyl Acetate	<b>UJ</b>
MW5-ROX-112111	VOCs	Acetone	<b>UJ</b>

Sample ID	Parameter	Analyte	Qualification
MW5-ROX-112111	VOCs	2-Chloroethyl vinyl ether	UJ
MW5-ROX-112111	VOCs	Dichlorodifluoromethane	UJ
MW5-ROX-112111	VOCs	Vinyl Acetate	UJ
MW6A-ROX-112111	SVOCs	Benzoic Acid	UJ
MW6A-ROX-112111-Dup	SVOCs	Benzoic Acid	UJ
MW5-ROX-112111	SVOCs	Benzoic Acid	UJ
MW6A-ROX-112111	PAHs	Indeno(1,2,3-cd)pyrene	J
MW6A-ROX-112111	PAHs	1-Methylnaphthalene	UJ
MW6A-ROX-112111-Dup	PAHs	1-Methylnaphthalene	UJ
MW5-ROX-112111	PAHs	1-Methylnaphthalene	J

### 6.0 Surrogate Recoveries

*Were surrogate recoveries within evaluation criteria?*

Yes

### 7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

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

No

### 8.0 Internal Standard (IS) Recoveries

*Were internal standard area recoveries within evaluation criteria?*

Yes

### 9.0 Laboratory Duplicate Results

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

No

### 10.0 Field Duplicate Results

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

Yes

Field ID	Field Duplicate ID
MW6A-ROX-112111	MW6A-ROX-112111-Dup

*Were field duplicates within evaluation criteria?*

No

Field ID	Field Duplicate ID	Parameter	Analyte	RPD	Qualification
MW6A-ROX-112111	MW6A-ROX-112111-Dup	VOCs	Benzene	26	J/J

Field ID	Field Duplicate ID	Parameter	Analyte	RPD	Qualification
MW6A-ROX-112111	MW6A-ROX-112111-Dup	PAHs	Indeno(1,2,3-cd)pyrene	200	J/UJ

### 11.0 Sample Dilutions

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

Not applicable; samples analyzed did not require dilution.

### 12.0 Additional Qualifications

*Were additional qualifications applied?*

Yes, professional judgment was used to qualify the common laboratory contaminant acetone reported at concentrations less than two (2X) the reporting limit (RL), since acetone is not representative of site conditions.

Sample ID	Analyte	New RL	Qualification	Comment
MW6A-ROX-112111	Acetone	5.9 ug/L	<b>U</b>	Professional Judgment



12/14/11

Technical Report for

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Shell Oil

URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana,

Accutest Job Number: MC5747

Sampling Date: 11/21/11

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Report to:

URS Corporation

Elizabeth\_Kunkel@URSCorp.com

ATTN: Elizabeth Kunkel

Total number of pages in report: 72



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

*Reviewed on  
12/14/2011*

*Reza Fard*  
Reza Fard  
Lab Director

Client Service contact: Jeremy Vienneau 508-481-6200

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

Shell Oil

Job No: MC5747

URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
MC5747-1	11/21/11	10:33 LRDM	11/22/11	AQ	Ground Water	MW6A-ROX-112111 ✓
MC5747-2	11/21/11	10:33 LRDM	11/22/11	AQ	Ground Water	MW6A-ROX-112111-DUP ✓
MC5747-3	11/21/11	14:50 LRDM	11/22/11	AQ	Ground Water	MW5-ROX-112111 ✓
MC5747-4	11/21/11	00:00 LRDM	11/22/11	AQ	Trip Blank Water	TB-112111 ✓
MC5747-5	11/21/11	00:00 LRDM	11/22/11	AQ	Trip Blank Water	TB-112111

## SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Shell Oil

Job No MC5747

Site: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Centra

Report Date 12/13/2011 3:06:32 PM

3 Sample(s), 1 Trip Blank(s) and 0 Field Blank(s) were collected on 11/21/2011 and were received at Accutest on 11/22/2011 properly preserved, at 1.8 Deg. C and intact. These Samples received an Accutest job number of MC5747. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report. 1-Chlorohexane, Benzenethiol, Dibenz(a,h)acridine, Indene, and Quinoline were searched in the library search and reported only if detections were found.

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

### Volatiles by GCMS By Method SW846 8260B

Matrix: AQ

Batch ID: MSR912

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC5579-2MS, MC5579-2MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for 2-Chloroethyl vinyl ether, Acetone, Dichlorodifluoromethane, Vinyl Acetate are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for 2-Chloroethyl vinyl ether, 2-Hexanone, Acetone, Acrolein, Chloromethane, Dichlorodifluoromethane are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 2-Hexanone, Acetone, Chloromethane, Dichlorodifluoromethane, 2-Chloroethyl vinyl ether are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- RPD(s) for MSD for 2-Chloroethyl vinyl ether, Acrolein are outside control limits for sample MC5579-2MSD. High RPD due to possible matrix interference and/or sample non-homogeneity.
- MSR912-BSMS/MSD for Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.

### Extractables by GCMS By Method SW846 8270C

Matrix: AQ

Batch ID: OP27047

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC5813-8MS, MC5813-8MSD were used as the QC samples indicated.
- Blank Spike Recovery(s) for Benzoic Acid are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Duplicate Recovery(s) for Pyridine are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.

## Extractables by GCMS By Method SW846 8270C BY SIM

Matrix: AQ

Batch ID: OP27050

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC5800-4MS, MC5800-4MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for Benzo(g,h,i)perylene, Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene are outside control limits. Blank Spike meets program technical requirements.
- OP27050-BS/MS/MSD for 1-Methylnaphthalene: Analyte not present in spiking solution.

## Volatiles by GC By Method SW846 8011

Matrix: AQ

Batch ID: OP27039

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC5813-3MS, MC5813-3MSD were used as the QC samples indicated.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety. The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC5747).



**Sample Results**

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**Report of Analysis**

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## Report of Analysis

Client Sample ID:	MW6A-ROX-112111	Date Sampled:	11/21/11
Lab Sample ID:	MC5747-1	Date Received:	11/22/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R24594.D	1	11/28/11	DFT	n/a	n/a	MSR912
Run #2							

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

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	<del>5.9</del> u	<del>5.0</del> 5.9	4.1	ug/l	UJ
107-02-8	Acrolein	ND	25	13	ug/l	
107-13-1	Acrylonitrile	ND	5.0	4.3	ug/l	
71-43-2	Benzene	10.5	0.50	0.46	ug/l	J
108-86-1	Bromobenzene	ND	5.0	0.99	ug/l	
74-97-5	Bromochloromethane	ND	5.0	0.92	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.49	ug/l	
75-25-2	Bromoform	ND	1.0	0.71	ug/l	
74-83-9	Bromomethane	ND	2.0	1.3	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.7	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	1.1	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	1.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	0.82	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.62	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.58	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.44	ug/l	
75-00-3	Chloroethane	ND	2.0	0.32	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	5.0	ug/l	UJ
67-66-3	Chloroform	ND	1.0	0.58	ug/l	
74-87-3	Chloromethane	ND	2.0	0.71	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	1.1	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	0.98	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	1.6	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.89	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	0.48	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.41	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.44	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.42	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.1	ug/l	UJ
75-34-3	1,1-Dichloroethane	ND	1.0	0.33	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.44	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.80	ug/l	

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

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

Report of Analysis

Client Sample ID:	MW6A-ROX-112111	Date Sampled:	11/21/11
Lab Sample ID:	MC5747-1	Date Received:	11/22/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.69	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.64	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	0.71	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	0.75	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	0.78	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.41	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.49	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	0.70	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.80	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.3	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	0.94	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	0.88	ug/l	
1634-04-4	Methyl Tert Butyl Ether	16.9	1.0	0.61	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	0.76	ug/l	
74-95-3	Methylene bromide	ND	5.0	0.52	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.99	ug/l	
91-20-3	Naphthalene	ND	5.0	0.70	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	0.89	ug/l	
100-42-5	Styrene	ND	5.0	0.97	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	0.83	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.79	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.36	ug/l	
108-88-3	Toluene	ND	1.0	0.59	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	1.1	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.55	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.74	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.75	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.40	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.70	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.98	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.90	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	1.1	ug/l	W
75-01-4	Vinyl chloride	ND	1.0	0.82	ug/l	
	m,p-Xylene	ND	1.0	0.90	ug/l	
95-47-6	o-Xylene	ND	1.0	0.32	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.32	ug/l	

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

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

## Report of Analysis



<b>Client Sample ID:</b> MW6A-ROX-112111		<b>Date Sampled:</b> 11/21/11
<b>Lab Sample ID:</b> MC5747-1		<b>Date Received:</b> 11/22/11
<b>Matrix:</b> AQ - Ground Water		<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8260B		
<b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

**VOA Special List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	78%		70-130%
2037-26-5	Toluene-D8	81%		70-130%
460-00-4	4-Bromofluorobenzene	81%		70-130%

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

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### Report of Analysis



<b>Client Sample ID:</b> MW6A-ROX-112111	
<b>Lab Sample ID:</b> MC5747-1	<b>Date Sampled:</b> 11/21/11
<b>Matrix:</b> AQ - Ground Water	<b>Date Received:</b> 11/22/11
<b>Method:</b> SW846 8270C SW846 3510C	<b>Percent Solids:</b> n/a
<b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U3623.D	1	11/29/11	KR	11/24/11	OP27047	MSU219
Run #2							

Run #	Initial Volume	Final Volume
Run #1	970 ml	1.0 ml
Run #2		

**ABN Special List**

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	10	1.2	ug/l	UJ
95-57-8	2-Chlorophenol	ND	5.2	0.42	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	0.39	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	0.39	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	2.8	ug/l	
51-28-5	2,4-Dinitrophenol	ND	21	1.4	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	5.2	ug/l	
95-48-7	2-Methylphenol	ND	10	0.62	ug/l	
	3&4-Methylphenol	ND	10	0.78	ug/l	
88-75-5	2-Nitrophenol	ND	10	0.49	ug/l	
100-02-7	4-Nitrophenol	ND	21	2.8	ug/l	
87-86-5	Pentachlorophenol	ND	10	0.66	ug/l	
108-95-2	Phenol	ND	5.2	0.96	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	10	0.51	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	0.36	ug/l	
62-53-3	Aniline	ND	10	2.1	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.2	0.34	ug/l	
85-68-7	Butyl benzyl phthalate	0.77	5.2	0.27	ug/l	J
100-51-6	Benzyl Alcohol	ND	10	0.27	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.2	0.18	ug/l	
106-47-8	4-Chloroaniline	ND	10	0.65	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.2	0.22	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.2	0.39	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.2	0.29	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.2	0.30	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.2	0.22	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	2.1	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	10	0.21	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.2	0.92	ug/l	
132-64-9	Dibenzofuran	ND	5.2	0.22	ug/l	
84-74-2	Di-n-butyl phthalate	0.53	5.2	0.37	ug/l	J
117-84-0	Di-n-octyl phthalate	0.93	5.2	0.24	ug/l	J

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 N = Indicates presumptive evidence of a compound

## Report of Analysis

3.1  
3

Client Sample ID:	MW6A-ROX-112111	Date Sampled:	11/21/11
Lab Sample ID:	MC5747-1	Date Received:	11/22/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C	Project:	
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

**ABN Special List**

CAS No.	Compound	Result	RL	MDL	Units	Q
84-66-2	Diethyl phthalate	ND	5.2	0.19	ug/l	
131-11-3	Dimethyl phthalate	ND	5.2	5.2	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	2.3	2.1	0.39	ug/l	
118-74-1	Hexachlorobenzene	ND	5.2	0.26	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	5.2	ug/l	
67-72-1	Hexachloroethane	ND	5.2	2.1	ug/l	
78-59-1	Isophorone	ND	5.2	0.33	ug/l	
88-74-4	2-Nitroaniline	ND	10	0.23	ug/l	
99-09-2	3-Nitroaniline	ND	10	0.26	ug/l	
100-01-6	4-Nitroaniline	ND	10	2.1	ug/l	
98-95-3	Nitrobenzene	ND	5.2	0.25	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.2	0.61	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.2	0.28	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.2	0.45	ug/l	
110-86-1	Pyridine	ND	10	5.2	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	44%		15-110%
4165-62-2	Phenol-d5	36%		15-110%
118-79-6	2,4,6-Tribromophenol	72%		15-110%
4165-60-0	Nitrobenzene-d5	88%		30-130%
321-60-8	2-Fluorobiphenyl	72%		30-130%
1718-51-0	Terphenyl-d14	81%		30-130%

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

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 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

### Report of Analysis

3.1  
3

Client Sample ID:	MW6A-ROX-112111	Date Sampled:	11/21/11
Lab Sample ID:	MC5747-1	Date Received:	11/22/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C BY SIM SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F53620.D	1	12/02/11	KR	11/24/11	OP27050	MSF2580
Run #2							

Run #	Initial Volume	Final Volume
Run #1	970 ml	1.0 ml
Run #2		

**BN PAH List**

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	0.10	ug/l	
208-96-8	Acenaphthylene	ND	0.10	ug/l	
120-12-7	Anthracene	ND	0.10	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.052	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.052	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	ug/l	
218-01-9	Chrysene	ND	0.10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	ug/l	
206-44-0	Fluoranthene	ND	0.10	ug/l	
86-73-7	Fluorene	ND	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	1.5	0.10	ug/l	J
90-12-0	1-Methylnaphthalene	ND	0.21	ug/l	W
91-57-6	2-Methylnaphthalene	ND	0.21	ug/l	
91-20-3	Naphthalene	ND	0.10	ug/l	
85-01-8	Phenanthrene	ND	0.052	ug/l	
129-00-0	Pyrene	ND	0.10	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	83%		30-130%
321-60-8	2-Fluorobiphenyl	73%		30-130%
1718-51-0	Terphenyl-d14	91%		30-130%

ND = Not detected  
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J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

### Report of Analysis

3.1  
3

<b>Client Sample ID:</b> MW6A-ROX-112111	
<b>Lab Sample ID:</b> MC5747-1	<b>Date Sampled:</b> 11/21/11
<b>Matrix:</b> AQ - Ground Water	<b>Date Received:</b> 11/22/11
<b>Method:</b> SW846 8011 SW846 8011	<b>Percent Solids:</b> n/a
<b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39670.D	1	11/24/11	AP	11/23/11	OP27039	GBB2460
Run #2							

Run #	Initial Volume	Final Volume
Run #1	36.9 ml	2.0 ml
Run #2		

**VOA Special List**

CAS No.	Compound	Result	RL	MDL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.014	0.0089	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.014	0.0066	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	113%		36-173%
460-00-4	Bromofluorobenzene (S)	160%		36-173%

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

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

## Report of Analysis

Client Sample ID:	MW6A-ROX-112111-DUP	Date Sampled:	11/21/11
Lab Sample ID:	MC5747-2	Date Received:	11/22/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R24595.D	1	11/28/11	DFT	n/a	n/a	MSR912
Run #2							

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

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	4.1	ug/l	UJ
107-02-8	Acrolein	ND	25	13	ug/l	
107-13-1	Acrylonitrile	ND	5.0	4.3	ug/l	
71-43-2	Benzene	13.7	0.50	0.46	ug/l	J
108-86-1	Bromobenzene	ND	5.0	0.99	ug/l	
74-97-5	Bromochloromethane	ND	5.0	0.92	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.49	ug/l	
75-25-2	Bromoform	ND	1.0	0.71	ug/l	
74-83-9	Bromomethane	ND	2.0	1.3	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.7	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	1.1	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	1.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	0.82	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.62	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.58	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.44	ug/l	
75-00-3	Chloroethane	ND	2.0	0.32	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	5.0	ug/l	UJ
67-66-3	Chloroform	ND	1.0	0.58	ug/l	
74-87-3	Chloromethane	ND	2.0	0.71	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	1.1	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	0.98	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	1.6	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.89	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	0.48	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.41	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.44	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.42	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.1	ug/l	UJ
75-34-3	1,1-Dichloroethane	ND	1.0	0.33	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.44	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.80	ug/l	

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 E = Indicates value exceeds calibration range

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 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	MW6A-ROX-112111-DUP	Date Sampled:	11/21/11
Lab Sample ID:	MC5747-2	Date Received:	11/22/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.69	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.64	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	0.71	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	0.75	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	0.78	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.41	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.49	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	0.70	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.80	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.3	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	0.94	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	0.88	ug/l	
1634-04-4	Methyl Tert Butyl Ether	18.I	1.0	0.61	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	0.76	ug/l	
74-95-3	Methylene bromide	ND	5.0	0.52	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.99	ug/l	
91-20-3	Naphthalene	ND	5.0	0.70	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	0.89	ug/l	
100-42-5	Styrene	ND	5.0	0.97	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	0.83	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.79	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.36	ug/l	
108-88-3	Toluene	ND	1.0	0.59	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	1.1	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.55	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.74	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.75	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.40	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.70	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.98	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.90	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	1.1	ug/l	WJ
75-01-4	Vinyl chloride	ND	1.0	0.82	ug/l	
	m,p-Xylene	ND	1.0	0.90	ug/l	
95-47-6	o-Xylene	ND	1.0	0.32	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.32	ug/l	

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

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

### Report of Analysis

3.2  
3

<b>Client Sample ID:</b> MW6A-ROX-112111-DUP	
<b>Lab Sample ID:</b> MC5747-2	<b>Date Sampled:</b> 11/21/11
<b>Matrix:</b> AQ - Ground Water	<b>Date Received:</b> 11/22/11
<b>Method:</b> SW846 8260B	<b>Percent Solids:</b> n/a
<b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

**VOA Special List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	84%		70-130%
2037-26-5	Toluene-D8	86%		70-130%
460-00-4	4-Bromofluorobenzene	87%		70-130%

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

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

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

### Report of Analysis

3

<b>Client Sample ID:</b> MW6A-ROX-112111-DUP	
<b>Lab Sample ID:</b> MC5747-2	<b>Date Sampled:</b> 11/21/11
<b>Matrix:</b> AQ - Ground Water	<b>Date Received:</b> 11/22/11
<b>Method:</b> SW846 8270C SW846 3510C	<b>Percent Solids:</b> n/a
<b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U3624.D	1	11/29/11	KR	11/24/11	OP27047	MSU219
Run #2							

Run #	Initial Volume	Final Volume
Run #1	980 ml	1.0 ml
Run #2		

**ABN Special List**

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	10	1.2	ug/l	UJ
95-57-8	2-Chlorophenol	ND	5.1	0.41	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	0.38	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	0.38	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	2.8	ug/l	
51-28-5	2,4-Dinitrophenol	ND	20	1.4	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	5.1	ug/l	
95-48-7	2-Methylphenol	ND	10	0.62	ug/l	
	3&4-Methylphenol	ND	10	0.77	ug/l	
88-75-5	2-Nitrophenol	ND	10	0.48	ug/l	
100-02-7	4-Nitrophenol	ND	20	2.8	ug/l	
87-86-5	Pentachlorophenol	ND	10	0.65	ug/l	
108-95-2	Phenol	ND	5.1	0.95	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	10	0.50	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	0.36	ug/l	
62-53-3	Aniline	ND	10	2.0	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.1	0.33	ug/l	
85-68-7	Butyl benzyl phthalate	0.54	5.1	0.27	ug/l	J
100-51-6	Benzyl Alcohol	ND	10	0.27	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.1	0.18	ug/l	
106-47-8	4-Chloroaniline	ND	10	0.64	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.1	0.22	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.1	0.38	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.1	0.29	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.1	0.30	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.1	0.22	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	2.0	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	10	0.21	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.1	0.91	ug/l	
132-64-9	Dibenzofuran	ND	5.1	0.22	ug/l	
84-74-2	Di-n-butyl phthalate	0.69	5.1	0.37	ug/l	J
117-84-0	Di-n-octyl phthalate	ND	5.1	0.24	ug/l	

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

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



## Report of Analysis

Client Sample ID:	MW6A-ROX-112111-DUP	Date Sampled:	11/21/11
Lab Sample ID:	MC5747-2	Date Received:	11/22/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

## ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
84-66-2	Diethyl phthalate	ND	5.1	0.19	ug/l	
131-11-3	Dimethyl phthalate	ND	5.1	5.1	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	1.1	2.0	0.38	ug/l	J
118-74-1	Hexachlorobenzene	ND	5.1	0.25	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	5.1	ug/l	
67-72-1	Hexachloroethane	ND	5.1	2.0	ug/l	
78-59-1	Isophorone	ND	5.1	0.32	ug/l	
88-74-4	2-Nitroaniline	ND	10	0.23	ug/l	
99-09-2	3-Nitroaniline	ND	10	0.26	ug/l	
100-01-6	4-Nitroaniline	ND	10	2.0	ug/l	
98-95-3	Nitrobenzene	ND	5.1	0.25	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.1	0.60	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.1	0.28	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.1	0.44	ug/l	
110-86-1	Pyridine	ND	10	5.1	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	42%		15-110%
4165-62-2	Phenol-d5	40%		15-110%
118-79-6	2,4,6-Tribromophenol	70%		15-110%
4165-60-0	Nitrobenzene-d5	88%		30-130%
321-60-8	2-Fluorobiphenyl	72%		30-130%
1718-51-0	Terphenyl-d14	78%		30-130%

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

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

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

### Report of Analysis

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3

<b>Client Sample ID:</b> MW6A-ROX-112111-DUP	
<b>Lab Sample ID:</b> MC5747-2	<b>Date Sampled:</b> 11/21/11
<b>Matrix:</b> AQ - Ground Water	<b>Date Received:</b> 11/22/11
<b>Method:</b> SW846 8270C BY SIM SW846 3510C	<b>Percent Solids:</b> n/a
<b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F53621.D	1	12/02/11	KR	11/24/11	OP27050	MSF2580
Run #2							

Run #	Initial Volume	Final Volume
Run #1	980 ml	1.0 ml
Run #2		

**BN PAH List**

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	0.10	ug/l	
208-96-8	Acenaphthylene	ND	0.10	ug/l	
120-12-7	Anthracene	ND	0.10	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.051	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.051	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	ug/l	
218-01-9	Chrysene	ND	0.10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	ug/l	
206-44-0	Fluoranthene	ND	0.10	ug/l	
86-73-7	Fluorene	ND	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.20	ug/l	WJ
91-57-6	2-Methylnaphthalene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	0.10	ug/l	
85-01-8	Phenanthrene	ND	0.051	ug/l	
129-00-0	Pyrene	ND	0.10	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	81%		30-130%
321-60-8	2-Fluorobiphenyl	73%		30-130%
1718-51-0	Terphenyl-d14	88%		30-130%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

### Report of Analysis

3.2  
3

<b>Client Sample ID:</b> MW6A-ROX-112111-DUP	<b>Date Sampled:</b> 11/21/11
<b>Lab Sample ID:</b> MC5747-2	<b>Date Received:</b> 11/22/11
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8011 SW846 8011	
<b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39672.D	1	11/24/11	AP	11/23/11	OP27039	GBB2460
Run #2							

Run #	Initial Volume	Final Volume
Run #1	36.4 ml	2.0 ml
Run #2		

**VOA Special List**

CAS No.	Compound	Result	RL	MDL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.014	0.0091	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.014	0.0067	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
460-00-4	Bromofluorobenzene (S)	99%		36-173%		
460-00-4	Bromofluorobenzene (S)	143%		36-173%		

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

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

## Report of Analysis

Client Sample ID:	MW5-ROX-112111	Date Sampled:	11/21/11
Lab Sample ID:	MC5747-3	Date Received:	11/22/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R24596.D	1	11/28/11	DFT	n/a	n/a	MSR912
Run #2							

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

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	4.1	ug/l	<i>UJ</i>
107-02-8	Acrolein	ND	25	13	ug/l	
107-13-1	Acrylonitrile	ND	5.0	4.3	ug/l	
71-43-2	Benzene	10.9	0.50	0.46	ug/l	
108-86-1	Bromobenzene	ND	5.0	0.99	ug/l	
74-97-5	Bromochloromethane	ND	5.0	0.92	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.49	ug/l	
75-25-2	Bromoform	ND	1.0	0.71	ug/l	
74-83-9	Bromomethane	ND	2.0	1.3	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.7	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	1.1	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	1.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	0.82	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.62	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.58	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.44	ug/l	
75-00-3	Chloroethane	ND	2.0	0.32	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	5.0	ug/l	<i>UJ</i>
67-66-3	Chloroform	ND	1.0	0.58	ug/l	
74-87-3	Chloromethane	ND	2.0	0.71	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	1.1	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	0.98	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	1.6	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.89	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	0.48	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.41	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.44	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.42	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.1	ug/l	<i>UJ</i>
75-34-3	1,1-Dichloroethane	ND	1.0	0.33	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.44	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.80	ug/l	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	MW5-ROX-112111	Date Sampled:	11/21/11
Lab Sample ID:	MC5747-3	Date Received:	11/22/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.69	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.64	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	0.71	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	0.75	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	0.78	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.41	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.49	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	0.70	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.80	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.3	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	0.94	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	0.88	ug/l	
1634-04-4	Methyl Tert Butyl Ether	6.9	1.0	0.61	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	0.76	ug/l	
74-95-3	Methylene bromide	ND	5.0	0.52	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.99	ug/l	
91-20-3	Naphthalene	ND	5.0	0.70	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	0.89	ug/l	
100-42-5	Styrene	ND	5.0	0.97	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	0.83	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.79	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.36	ug/l	
108-88-3	Toluene	ND	1.0	0.59	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	1.1	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.55	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.74	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.75	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.40	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.70	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.98	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.90	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	1.1	ug/l	KS
75-01-4	Vinyl chloride	ND	1.0	0.82	ug/l	
	m,p-Xylene	ND	1.0	0.90	ug/l	
95-47-6	o-Xylene	ND	1.0	0.32	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.32	ug/l	

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

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

## Report of Analysis

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3

Client Sample ID:	MW5-ROX-112111	Date Sampled:	11/21/11
Lab Sample ID:	MC5747-3	Date Received:	11/22/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

**VOA Special List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	82%		70-130%
2037-26-5	Toluene-D8	86%		70-130%
460-00-4	4-Bromofluorobenzene	86%		70-130%

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

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

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

## Report of Analysis

Client Sample ID:	MW5-ROX-112111	Date Sampled:	11/21/11
Lab Sample ID:	MC5747-3	Date Received:	11/22/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U3625.D	1	11/29/11	KR	11/24/11	OP27047	MSU219
Run #2							

Run #	Initial Volume	Final Volume
Run #1	950 ml	1.0 ml
Run #2		

## ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	11	1.2	ug/l	UJ
95-57-8	2-Chlorophenol	ND	5.3	0.42	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	11	0.39	ug/l	
120-83-2	2,4-Dichlorophenol	ND	11	0.39	ug/l	
105-67-9	2,4-Dimethylphenol	ND	11	2.9	ug/l	
51-28-5	2,4-Dinitrophenol	ND	21	1.4	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	11	5.3	ug/l	
95-48-7	2-Methylphenol	ND	11	0.64	ug/l	
	3&4-Methylphenol	ND	11	0.79	ug/l	
88-75-5	2-Nitrophenol	ND	11	0.50	ug/l	
100-02-7	4-Nitrophenol	ND	21	2.9	ug/l	
87-86-5	Pentachlorophenol	ND	11	0.67	ug/l	
108-95-2	Phenol	ND	5.3	0.98	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	11	0.52	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	11	0.37	ug/l	
62-53-3	Aniline	ND	11	2.1	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.3	0.34	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.3	0.28	ug/l	
100-51-6	Benzyl Alcohol	ND	11	0.28	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.3	0.19	ug/l	
106-47-8	4-Chloroaniline	ND	11	0.67	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.3	0.23	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.3	0.40	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.3	0.30	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.3	0.31	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.3	0.23	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	11	2.1	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	11	0.22	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.3	0.94	ug/l	
132-64-9	Dibenzofuran	ND	5.3	0.23	ug/l	
84-74-2	Di-n-butyl phthalate	0.52	5.3	0.38	ug/l	J
117-84-0	Di-n-octyl phthalate	ND	5.3	0.25	ug/l	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

### Report of Analysis

33  
3

Client Sample ID:	MW5-ROX-112111	Date Sampled:	11/21/11
Lab Sample ID:	MC5747-3	Date Received:	11/22/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

**ABN Special List**

CAS No.	Compound	Result	RL	MDL	Units	Q
84-66-2	Diethyl phthalate	ND	5.3	0.20	ug/l	
131-11-3	Dimethyl phthalate	ND	5.3	5.3	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	0.79	2.1	0.39	ug/l	J
118-74-1	Hexachlorobenzene	ND	5.3	0.26	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	11	5.3	ug/l	
67-72-1	Hexachloroethane	ND	5.3	2.1	ug/l	
78-59-1	Isophorone	ND	5.3	0.33	ug/l	
88-74-4	2-Nitroaniline	ND	11	0.24	ug/l	
99-09-2	3-Nitroaniline	ND	11	0.27	ug/l	
100-01-6	4-Nitroaniline	ND	11	2.1	ug/l	
98-95-3	Nitrobenzene	ND	5.3	0.25	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.3	0.62	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.3	0.29	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.3	0.46	ug/l	
110-86-1	Pyridine	ND	11	5.3	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	38%		15-110%
4165-62-2	Phenol-d5	27%		15-110%
118-79-6	2,4,6-Tribromophenol	66%		15-110%
4165-60-0	Nitrobenzene-d5	77%		30-130%
321-60-8	2-Fluorobiphenyl	67%		30-130%
1718-51-0	Terphenyl-d14	71%		30-130%

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

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

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



### Report of Analysis

33  
3

Client Sample ID:	MW5-ROX-112111	Date Sampled:	11/21/11
Lab Sample ID:	MC5747-3	Date Received:	11/22/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C BY SIM SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F53622.D	1	12/02/11	KR	11/24/11	OP27050	MSF2580
Run #2							

Run #	Initial Volume	Final Volume
Run #1	950 ml	1.0 ml
Run #2		

**BN PAH List**

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	0.11	ug/l	
208-96-8	Acenaphthylene	ND	0.11	ug/l	
120-12-7	Anthracene	ND	0.11	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.053	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.11	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.053	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.11	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.11	ug/l	
218-01-9	Chrysene	ND	0.11	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.11	ug/l	
206-44-0	Fluoranthene	0.41	0.11	ug/l	
86-73-7	Fluorene	ND	0.11	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.11	ug/l	
90-12-0	1-Methylnaphthalene	0.51	0.21	ug/l	J
91-57-6	2-Methylnaphthalene	ND	0.21	ug/l	
91-20-3	Naphthalene	<del>0.14 u</del>	<del>0.110 u</del>	ug/l	u
85-01-8	Phenanthrene	ND	0.053	ug/l	
129-00-0	Pyrene	ND	0.11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	74%		30-130%
321-60-8	2-Fluorobiphenyl	69%		30-130%
1718-51-0	Terphenyl-d14	84%		30-130%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID:	MW5-ROX-112111	Date Sampled:	11/21/11
Lab Sample ID:	MC5747-3	Date Received:	11/22/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8011 SW846 8011	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39673.D	1	11/24/11	AP	11/23/11	OP27039	GBB2460
Run #2							

Run #	Initial Volume	Final Volume
Run #1	36.0 ml	2.0 ml
Run #2		

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.015	0.0092	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.015	0.0068	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	118%		36-173%
460-00-4	Bromofluorobenzene (S)	157%		36-173%

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

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

Report of Analysis

3.4  
3

Client Sample ID:	TB-112111	Date Sampled:	11/21/11
Lab Sample ID:	MC5747-4	Date Received:	11/22/11
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R24597.D	1	11/28/11	DFT	n/a	n/a	MSR912
Run #2							

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

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	4.1	ug/l	
107-02-8	Acrolein	ND	25	13	ug/l	
107-13-1	Acrylonitrile	ND	5.0	4.3	ug/l	
71-43-2	Benzene	ND	0.50	0.46	ug/l	
108-86-1	Bromobenzene	ND	5.0	0.99	ug/l	
74-97-5	Bromochloromethane	ND	5.0	0.92	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.49	ug/l	
75-25-2	Bromoform	ND	1.0	0.71	ug/l	
74-83-9	Bromomethane	ND	2.0	1.3	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.7	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	1.1	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	1.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	0.82	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.62	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.58	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.44	ug/l	
75-00-3	Chloroethane	ND	2.0	0.32	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	0.58	ug/l	
74-87-3	Chloromethane	ND	2.0	0.71	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	1.1	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	0.98	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	1.6	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.89	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	0.48	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.41	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.44	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.42	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.1	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.33	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.44	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.80	ug/l	

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

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

## Report of Analysis

Client Sample ID:	TB-112111	Date Sampled:	11/21/11
Lab Sample ID:	MC5747-4	Date Received:	11/22/11
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.69	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.64	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	0.71	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	0.75	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	0.78	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.41	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.49	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	0.70	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.80	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.3	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	0.94	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	0.88	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.61	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	0.76	ug/l	
74-95-3	Methylene bromide	ND	5.0	0.52	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.99	ug/l	
91-20-3	Naphthalene	ND	5.0	0.70	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	0.89	ug/l	
100-42-5	Styrene	ND	5.0	0.97	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	0.83	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.79	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.36	ug/l	
108-88-3	Toluene	ND	1.0	0.59	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	1.1	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.55	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.74	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.75	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.40	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.70	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.98	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.90	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	1.1	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.82	ug/l	
	m,p-Xylene	ND	1.0	0.90	ug/l	
95-47-6	o-Xylene	ND	1.0	0.32	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.32	ug/l	

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

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

## Report of Analysis

Client Sample ID:	TB-112111	Date Sampled:	11/21/11
Lab Sample ID:	MC5747-4	Date Received:	11/22/11
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

**VOA Special List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	85%		70-130%
2037-26-5	Toluene-D8	86%		70-130%
460-00-4	4-Bromofluorobenzene	86%		70-130%

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

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

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

## Report of Analysis

Client Sample ID:	TB-112111	Date Sampled:	11/21/11
Lab Sample ID:	MC5747-5	Date Received:	11/22/11
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8011 SW846 8011	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39674.D	1	11/24/11	AP	11/23/11	OP27039	GBB2460
Run #2							

Run #	Initial Volume	Final Volume
Run #1	36.2 ml	2.0 ml
Run #2		

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.015	0.0091	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.015	0.0067	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	118%		36-173%
460-00-4	Bromofluorobenzene (S)	139%		36-173%

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

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

**Misc. Forms**

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**Custody Documents and Other Forms**

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**Includes the following where applicable:**

- Certification Exceptions
- Certification Exceptions (IL)
- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody

LAB (LOCATION)  
 CHENCO  
 CONTACT: ACCUSTEST LABORATORIES, CH-117  
 60THRU 1 Marlborough, MA 01753 (508-461-5200)  
 Club Vendor #  
 Lab Vendor #



Shell Oil Products Chain Of Custody Record

URS

Please Check Appropriate Box:

<input type="checkbox"/> ENV SERVICES	<input type="checkbox"/> MOTIVA RETAIL	<input type="checkbox"/> SHELL RETAIL
<input type="checkbox"/> MOTIVA SEASON	<input type="checkbox"/> CONSULTANT	<input type="checkbox"/> OTHER
<input type="checkbox"/> SHELL PIPELINE	<input type="checkbox"/> OTHER	

Print Bill To Contact Name: Erik Arthur  
 INCIDENT # (ENV SERVICES) 9 7 2 1 8 4 0  
 CHECK IF NO INCIDENT # APPLIES  
 DATE: 11/21/11  
 PO #  
 SAF #  
 PAGE 1 of 1

MAILING COMPANY: URS CORPORATION  
 ADDRESS: 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300, ST. LOUIS, MO 63110  
 PROJECT CONTACT (Name/Title/Phone/Fax): Erik Arthur  
 314-743-4166 or 314-452-8923 314-429-0452  
 TURNAROUND TIME (CALENDAR DAYS) STANDARD (10 DAYS) 30 DAYS 45 DAYS 60 DAYS 75 HOURS RESULTS NEEDED ON WEEKEND  
 DELIVERABLES:  LEVEL 1  LEVEL 2  LEVEL 3  LEVEL 4  OTHER (SPECIFY) EDO  
 TEMPERATURE ON RECEIPT °C Coder #1 Coder #2 Coder #3

SHIP ADDRESS: 800 South Central Ave; ROXANA, IL  
 STATE: IL  
 ZIP CODE: 62474  
 CONTACT NAME: L. Rothman, D. Mattingly  
 LAB USE ONLY: MC5747  
 PROJECT NO: Roxana Quarterly GW / 21582593.00005

SPECIAL INSTRUCTIONS OR NOTES:  
 • Please include "J" values on Reports.  
 • Please provide sample receipt upon login.  
 SHELL CONTRACT RATE APPLIES  
 EXISTING ASSIGNMENT RATE APPLIES  
 CPOD NOT NEEDED  
 RECEIPT VERIFICATION REQUESTED  
 PROVIDE LEDO DISK

NO. OF CONC.	PHEMPHATIC				NO. OF CONC.	VOC B260B SL+TICS	VOC 8011	SVOC 8270C SL+TICS	PAH 8270LL	PID (ppm)	FIELD NOTES:
	HEX	HEX3	HEX4	OTHER							
1	X	X	X	X	9	X	X	X	X	0	Container PID Readings of Laboratory Note  17A, JF6
2	X	X	X	X	9	X	X	X	X	0	
3	X	X	X	X	9	X	X	X	X	0	
4	X	X	X	X	2	X	X	X	X	0	
5	X	X	X	X	2	X	X	X	X	0	

Requested by: (Signature) Erik Arthur	Received by: (Signature) FED EX	Date: 11/21/11	Time:
Requested by: (Signature) FedEx	Received by: (Signature) FedEx	Date: 11/22/11	Time: 10:00

4.1  
4





# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC5747 Client: URS Immediate Client Services Action Required: No  
 Date / Time Received: 11/22/2011 Delivery Method: \_\_\_\_\_ Client Service Action Required at Login: No  
 Project: 900 SOUTH CENTRAL No. Coolers: 1 Airbill #s: \_\_\_\_\_

**Cooler Security**      Y or N      Y or N  
 1. Custody Seals Present:        3. COC Present:    
 2. Custody Seals Intact:        4. Smp Dates/Time OK:

**Cooler Temperature**      Y or N  
 1. Temp criteria achieved:    
 2. Cooler temp verification: Infrared gun  
 3. Cooler media: Ice (bag)

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

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

**Sample Integrity - Condition**      Y or N  
 1. Sample recvd within HT:    
 2. All containers accounted for:    
 3. Condition of sample: Intact

**Sample Integrity - Instructions**      Y or N      N/A  
 1. Analysis requested is clear:    
 2. Bottles received for unspecified tests:    
 3. Sufficient volume recvd for analysis:    
 4. Compositing instructions clear:     
 5. Filtering instructions clear:

Comments

4.1  
4

### Internal Sample Tracking Chronicle

Shell Oil

Job No: MC5747

URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

4.2  
4

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
MC5747-1 Collected: 21-NOV-11 10:33 By: LRDM Received: 22-NOV-11 By: JB MW6A-ROX-112111						
MC5747-1	SW846 8011	24-NOV-11 16:31	AP	23-NOV-11	AJ	V8011SL
MC5747-1	SW846 8260B	28-NOV-11 17:58	DFT			V8260SL+
MC5747-1	SW846 8270C	29-NOV-11 16:34	KR	24-NOV-11	AJ	AB8270SL+
MC5747-1	SW846 8270C BY SIM	02-DEC-11 11:17	KR	24-NOV-11	AJ	B8270SIMPAH
MC5747-2 Collected: 21-NOV-11 10:33 By: LRDM Received: 22-NOV-11 By: JB MW6A-ROX-112111-DUP						
MC5747-2	SW846 8011	24-NOV-11 17:20	AP	23-NOV-11	AJ	V8011SL
MC5747-2	SW846 8260B	28-NOV-11 18:26	DFT			V8260SL+
MC5747-2	SW846 8270C	29-NOV-11 17:07	KR	24-NOV-11	AJ	AB8270SL+
MC5747-2	SW846 8270C BY SIM	02-DEC-11 11:45	KR	24-NOV-11	AJ	B8270SIMPAH
MC5747-3 Collected: 21-NOV-11 14:50 By: LRDM Received: 22-NOV-11 By: JB MW5-ROX-112111						
MC5747-3	SW846 8011	24-NOV-11 17:44	AP	23-NOV-11	AJ	V8011SL
MC5747-3	SW846 8260B	28-NOV-11 18:55	DFT			V8260SL+
MC5747-3	SW846 8270C	29-NOV-11 17:40	KR	24-NOV-11	AJ	AB8270SL+
MC5747-3	SW846 8270C BY SIM	02-DEC-11 12:16	KR	24-NOV-11	AJ	B8270SIMPAH
MC5747-4 Collected: 21-NOV-11 00:00 By: LRDM Received: 22-NOV-11 By: JB TB-112111						
MC5747-4	SW846 8260B	28-NOV-11 19:23	DFT			V8260SL+
MC5747-5 Collected: 21-NOV-11 00:00 By: LRDM Received: 22-NOV-11 By: JB TB-112111						
MC5747-5	SW846 8011	24-NOV-11 18:09	AP	23-NOV-11	AJ	V8011SL

# Accutest Internal Chain of Custody

Job Number: MC5747  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL  
 Received: 11/22/11

4.3

4

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
MC5747-1.4	Walk In Ref #22	Mahmoud Afzali	11/24/11 08:32	Retrieve from Storage
MC5747-1.4	Mahmoud Afzali		11/25/11 16:09	Depleted
MC5747-1.7	VOC Ref #3	Dana Tyron	11/28/11 13:13	Retrieve from Storage
MC5747-1.7	Dana Tyron	GCMSR	11/28/11 13:13	Load on Instrument
MC5747-1.7	GCMSR	Dana Tyron	11/29/11 12:05	Unload from Instrument
MC5747-1.7	Dana Tyron	VOC Ref #3	11/29/11 12:06	Return to Storage
MC5747-1.8	VOC Ref #3	Bijan Jafari	11/23/11 10:56	Retrieve from Storage
MC5747-1.8	Bijan Jafari		12/01/11 09:55	Depleted
MC5747-2.4	Walk In Ref #22	Mahmoud Afzali	11/24/11 08:32	Retrieve from Storage
MC5747-2.4	Mahmoud Afzali		11/25/11 16:09	Depleted
MC5747-2.7	VOC Ref #3	Dana Tyron	11/28/11 13:13	Retrieve from Storage
MC5747-2.7	Dana Tyron	GCMSR	11/28/11 13:13	Load on Instrument
MC5747-2.7	GCMSR	Dana Tyron	11/29/11 12:05	Unload from Instrument
MC5747-2.7	Dana Tyron	VOC Ref #3	11/29/11 12:06	Return to Storage
MC5747-2.8	VOC Ref #3	Bijan Jafari	11/23/11 10:56	Retrieve from Storage
MC5747-2.8	Bijan Jafari		12/01/11 09:55	Depleted
MC5747-3.2	Walk In Ref #22	Mahmoud Afzali	11/24/11 08:32	Retrieve from Storage
MC5747-3.2	Mahmoud Afzali		11/25/11 16:09	Depleted
MC5747-3.7	VOC Ref #3	Dana Tyron	11/28/11 13:13	Retrieve from Storage
MC5747-3.7	Dana Tyron	GCMSR	11/28/11 13:13	Load on Instrument
MC5747-3.7	GCMSR	Dana Tyron	11/29/11 12:05	Unload from Instrument
MC5747-3.7	Dana Tyron	VOC Ref #3	11/29/11 12:06	Return to Storage
MC5747-3.9	VOC Ref #3	Bijan Jafari	11/23/11 10:56	Retrieve from Storage
MC5747-3.9	Bijan Jafari		12/01/11 09:55	Depleted
MC5747-4.1	VOC Ref #3	Dana Tyron	11/28/11 13:13	Retrieve from Storage
MC5747-4.1	Dana Tyron	GCMSR	11/28/11 13:13	Load on Instrument
MC5747-4.1	GCMSR	Dana Tyron	11/29/11 12:05	Unload from Instrument
MC5747-4.1	Dana Tyron	VOC Ref #3	11/29/11 12:06	Return to Storage
MC5747-5.2	VOC Ref #3	Bijan Jafari	11/23/11 10:56	Retrieve from Storage
MC5747-5.2	Bijan Jafari		12/01/11 09:55	Depleted



## GC/MS Volatiles

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## QC Data Summaries

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Includes the following where applicable:

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

# Method Blank Summary

Job Number: MC5747

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSR912-MB	R24584.D	1	11/28/11	DFT	n/a	n/a	MSR912

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5747-1, MC5747-2, MC5747-3, MC5747-4

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	ND	0.50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.70	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	

5.1.1  
5

# Method Blank Summary

Job Number: MC5747

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSR912-MB	R24584.D	1	11/28/11	DFT	n/a	n/a	MSR912

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5747-1, MC5747-2, MC5747-3, MC5747-4

CAS No.	Compound	Result	RL	Units	Q
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	0.30	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	

5.1.1  
5

# Method Blank Summary

Job Number: MC5747

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSR912-MB	R24584.D	1	11/28/11	DFT	n/a	n/a	MSR912

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5747-1, MC5747-2, MC5747-3, MC5747-4

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	70%	70-130%
2037-26-5	Toluene-D8	73%	70-130%
460-00-4	4-Bromofluorobenzene	71%	70-130%

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

5.1.1



# Blank Spike Summary

Job Number: MC5747

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSR912-BS	R24582.D	1	11/28/11	DFT	n/a	n/a	MSR912

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5747-1, MC5747-2, MC5747-3, MC5747-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	50	23.4	47* a	70-130
107-02-8	Acrolein	250	262	105	70-130
107-13-1	Acrylonitrile	50	236	472* b	70-130
71-43-2	Benzene	50	47.9	96	70-130
108-86-1	Bromobenzene	50	47.5	95	70-130
74-97-5	Bromochloromethane	50	45.8	92	70-130
75-27-4	Bromodichloromethane	50	51.4	103	70-130
75-25-2	Bromoform	50	44.7	89	70-130
74-83-9	Bromomethane	50	43.6	87	70-130
78-93-3	2-Butanone (MEK)	50	35.6	71	70-130
104-51-8	n-Butylbenzene	50	52.0	104	70-130
135-98-8	sec-Butylbenzene	50	49.2	98	70-130
98-06-6	tert-Butylbenzene	50	48.2	96	70-130
75-15-0	Carbon disulfide	50	54.5	109	70-130
56-23-5	Carbon tetrachloride	50	49.3	99	70-130
108-90-7	Chlorobenzene	50	44.5	89	70-130
75-00-3	Chloroethane	50	47.0	94	70-130
110-75-8	2-Chloroethyl vinyl ether	50	23.1	46* a	70-130
67-66-3	Chloroform	50	45.7	91	70-130
74-87-3	Chloromethane	50	35.7	71	70-130
95-49-8	o-Chlorotoluene	50	47.9	96	70-130
106-43-4	p-Chlorotoluene	50	49.8	100	70-130
96-12-8	1,2-Dibromo-3-chloropropane	50	53.6	107	70-130
124-48-1	Dibromochloromethane	50	45.3	91	70-130
106-93-4	1,2-Dibromoethane	50	45.7	91	70-130
95-50-1	1,2-Dichlorobenzene	50	47.8	96	70-130
541-73-1	1,3-Dichlorobenzene	50	47.9	96	70-130
106-46-7	1,4-Dichlorobenzene	50	48.0	96	70-130
75-71-8	Dichlorodifluoromethane	50	32.5	65* a	70-130
75-34-3	1,1-Dichloroethane	50	46.6	93	70-130
107-06-2	1,2-Dichloroethane	50	47.8	96	70-130
75-35-4	1,1-Dichloroethene	50	46.9	94	70-130
156-59-2	cis-1,2-Dichloroethene	50	45.2	90	70-130
156-60-5	trans-1,2-Dichloroethene	50	45.2	90	70-130
78-87-5	1,2-Dichloropropane	50	48.2	96	70-130
142-28-9	1,3-Dichloropropane	50	45.5	91	70-130

5.2.1

5



# Blank Spike Summary

Job Number: MC5747

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSR912-BS	R24582.D	1	11/28/11	DFT	n/a	n/a	MSR912

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5747-1, MC5747-2, MC5747-3, MC5747-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
594-20-7	2,2-Dichloropropane	50	51.7	103	70-130
563-58-6	1,1-Dichloropropene	50	47.7	95	70-130
10061-01-5	cis-1,3-Dichloropropene	50	47.6	95	70-130
10061-02-6	trans-1,3-Dichloropropene	50	52.1	104	70-130
97-63-2	Ethyl methacrylate	50	52.0	104	77-137
100-41-4	Ethylbenzene	50	46.3	93	70-130
87-68-3	Hexachlorobutadiene	50	48.7	97	70-130
591-78-6	2-Hexanone	50	40.7	81	70-130
98-82-8	Isopropylbenzene	50	56.5	113	70-130
99-87-6	p-Isopropyltoluene	50	51.2	102	70-130
1634-04-4	Methyl Tert Butyl Ether	50	44.6	89	70-130
108-10-1	4-Methyl-2-pentanone (MIBK)	50	48.1	96	70-130
74-95-3	Methylene bromide	50	47.8	96	70-130
75-09-2	Methylene chloride	50	46.4	93	70-130
91-20-3	Naphthalene	50	52.4	105	70-130
103-65-1	n-Propylbenzene	50	50.2	100	70-130
100-42-5	Styrene	50	46.5	93	70-130
630-20-6	1,1,1,2-Tetrachloroethane	50	46.8	94	70-130
79-34-5	1,1,2,2-Tetrachloroethane	50	49.5	99	70-130
127-18-4	Tetrachloroethene	50	45.2	90	70-130
108-88-3	Toluene	50	49.7	99	70-130
87-61-6	1,2,3-Trichlorobenzene	50	49.1	98	70-130
120-82-1	1,2,4-Trichlorobenzene	50	49.4	99	70-130
71-55-6	1,1,1-Trichloroethane	50	44.6	89	70-130
79-00-5	1,1,2-Trichloroethane	50	49.8	100	70-130
79-01-6	Trichloroethene	50	46.6	93	70-130
75-69-4	Trichlorofluoromethane	50	44.9	90	70-130
96-18-4	1,2,3-Trichloropropane	50	53.0	106	70-130
95-63-6	1,2,4-Trimethylbenzene	50	49.2	98	70-130
108-67-8	1,3,5-Trimethylbenzene	50	48.3	97	70-130
108-05-4	Vinyl Acetate	50	31.3	63* a	70-130
75-01-4	Vinyl chloride	50	37.4	75	70-130
	m,p-Xylene	100	93.9	94	70-130
95-47-6	o-Xylene	50	46.4	93	70-130
1330-20-7	Xylene (total)	150	140	93	70-130

5.2.1  
5

# Blank Spike Summary

Job Number: MC5747

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSR912-BS	R24582.D	1	11/28/11	DFT	n/a	n/a	MSR912

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5747-1, MC5747-2, MC5747-3, MC5747-4

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	85%	70-130%
2037-26-5	Toluene-D8	90%	70-130%
460-00-4	4-Bromofluorobenzene	87%	70-130%

(a) Outside control limits. Blank Spike meets program technical requirements.

(b) Outside control limits. Associated samples are non-detect for this compound.

5.2.1  
5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5747

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5579-2MS	R24591.D	5	11/28/11	DFT	n/a	n/a	MSR912
MC5579-2MSD	R24592.D	5	11/28/11	DFT	n/a	n/a	MSR912
MC5579-2	R24588.D	1	11/28/11	DFT	n/a	n/a	MSR912

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5747-1, MC5747-2, MC5747-3, MC5747-4

CAS No.	Compound	MC5579-2 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND	250	137	55* a	139	56* a	1	70-130/30
107-02-8	Acrolein	ND	1250	633	51* a	1050	84	50* b	70-130/30
107-13-1	Acrylonitrile	ND	250	1170	468* c	1140	456* c	3	70-130/30
71-43-2	Benzene	ND	250	234	94	232	93	1	70-130/30
108-86-1	Bromobenzene	ND	250	227	91	228	91	0	70-130/30
74-97-5	Bromochloromethane	ND	250	231	92	225	90	3	70-130/30
75-27-4	Bromodichloromethane	ND	250	245	98	237	95	3	70-130/30
75-25-2	Bromoform	ND	250	202	81	205	82	1	70-130/30
74-83-9	Bromomethane	ND	250	221	88	214	86	3	70-130/30
78-93-3	2-Butanone (MEK)	ND	250	205	82	201	80	2	70-130/30
104-51-8	n-Butylbenzene	ND	250	251	100	247	99	2	70-130/30
135-98-8	sec-Butylbenzene	ND	250	240	96	239	96	0	70-130/30
98-06-6	tert-Butylbenzene	ND	250	233	93	233	93	0	70-130/30
75-15-0	Carbon disulfide	ND	250	205	82	204	82	0	70-130/30
56-23-5	Carbon tetrachloride	ND	250	244	98	240	96	2	70-130/30
108-90-7	Chlorobenzene	ND	250	218	87	221	88	1	70-130/30
75-00-3	Chloroethane	ND	250	237	95	231	92	3	70-130/30
110-75-8	2-Chloroethyl vinyl ether	ND	250	154	62* a	76.4	31* a	67* b	70-130/30
67-66-3	Chloroform	ND	250	233	93	224	90	4	70-130/30
74-87-3	Chloromethane	ND	250	168	67* a	170	68* a	1	70-130/30
95-49-8	o-Chlorotoluene	ND	250	234	94	233	93	0	70-130/30
106-43-4	p-Chlorotoluene	ND	250	234	94	233	93	0	70-130/30
96-12-8	1,2-Dibromo-3-cbloropropane	ND	250	254	102	250	100	2	70-130/30
124-48-1	Dibromochloromethane	ND	250	205	82	208	83	1	70-130/30
106-93-4	1,2-Dibromoethane	ND	250	218	87	219	88	0	70-130/30
95-50-1	1,2-Dichlorobenzene	ND	250	231	92	230	92	0	70-130/30
541-73-1	1,3-Dichlorobenzene	ND	250	231	92	228	91	1	70-130/30
106-46-7	1,4-Dichlorobenzene	ND	250	231	92	228	91	1	70-130/30
75-71-8	Dichlorodifluoromethane	ND	250	159	64* a	153	61* a	4	70-130/30
75-34-3	1,1-Dichloroethane	4.8	250	238	93	233	91	2	70-130/30
107-06-2	1,2-Dichloroethane	ND	250	233	93	227	91	3	70-130/30
75-35-4	1,1-Dichloroethene	ND	250	224	90	223	89	0	70-130/30
156-59-2	cis-1,2-Dichloroethene	79.7	250	290	84	284	82	2	70-130/30
156-60-5	trans-1,2-Dichloroethene	0.81	250	223	89	221	88	1	70-130/30
78-87-5	1,2-Dichloropropane	ND	250	238	95	237	95	0	70-130/30
142-28-9	1,3-Dichloropropane	ND	250	221	88	221	88	0	70-130/30

5.3.1  
5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5747

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5579-2MS	R24591.D	5	11/28/11	DFT	n/a	n/a	MSR912
MC5579-2MSD	R24592.D	5	11/28/11	DFT	n/a	n/a	MSR912
MC5579-2	R24588.D	1	11/28/11	DFT	n/a	n/a	MSR912

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5747-1, MC5747-2, MC5747-3, MC5747-4

CAS No.	Compound	MC5579-2 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
594-20-7	2,2-Dichloropropane	ND	250	270	108	263	105	3	70-130/30
563-58-6	1,1-Dichloropropene	ND	250	228	91	229	92	0	70-130/30
10061-01-5	cis-1,3-Dichloropropene	ND	250	227	91	225	90	1	70-130/30
10061-02-6	trans-1,3-Dichloropropene	ND	250	227	91	224	90	1	70-130/30
97-63-2	Ethyl methacrylate	ND	250	243	97	244	98	0	72-139/30
100-41-4	Ethylbenzene	ND	250	222	89	227	91	2	70-130/30
87-68-3	Hexachlorobutadiene	ND	250	229	92	232	93	1	70-130/30
591-78-6	2-Hexanone	ND	250	154	62* a	158	63* a	3	70-130/30
98-82-8	Isopropylbenzene	ND	250	235	94	237	95	1	70-130/30
99-87-6	p-Isopropyltoluene	ND	250	241	96	238	95	1	70-130/30
1634-04-4	Methyl Tert Butyl Ether	ND	250	219	88	218	87	0	70-130/30
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	250	228	91	226	90	1	70-130/30
74-95-3	Methylene bromide	ND	250	233	93	226	90	3	70-130/30
75-09-2	Methylene chloride	ND	250	226	90	219	88	3	70-130/30
91-20-3	Naphthalene	ND	250	247	99	246	98	0	70-130/30
103-65-1	n-Propylbenzene	ND	250	239	96	239	96	0	70-130/30
100-42-5	Styrene	ND	250	223	89	226	90	1	70-130/30
630-20-6	1,1,1,2-Tetrachloroethane	ND	250	231	92	233	93	1	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	ND	250	243	97	238	95	2	70-130/30
127-18-4	Tetrachloroethene	1.1	250	213	85	220	88	3	70-130/30
108-88-3	Toluene	ND	250	243	97	240	96	1	70-130/30
87-61-6	1,2,3-Trichlorobenzene	ND	250	235	94	234	94	0	70-130/30
120-82-1	1,2,4-Trichlorobenzene	ND	250	227	91	227	91	0	70-130/30
71-55-6	1,1,1-Trichloroethane	8.7	250	234	90	229	88	2	70-130/30
79-00-5	1,1,2-Trichloroethane	ND	250	243	97	238	95	2	70-130/30
79-01-6	Trichloroethene	2.9	250	230	91	228	90	1	70-130/30
75-69-4	Trichlorofluoromethane	ND	250	231	92	223	89	4	70-130/30
96-18-4	1,2,3-Trichloropropane	ND	250	251	100	246	98	2	70-130/30
95-63-6	1,2,4-Trimethylbenzene	ND	250	236	94	236	94	0	70-130/30
108-67-8	1,3,5-Trimethylbenzene	ND	250	237	95	236	94	0	70-130/30
108-05-4	Vinyl Acetate	ND	250	233	93	230	92	1	70-130/30
75-01-4	Vinyl chloride	ND	250	174	70	176	70	1	70-130/30
	m,p-Xylene	ND	500	454	91	460	92	1	70-130/30
95-47-6	o-Xylene	ND	250	226	90	228	91	1	70-130/30
1330-20-7	Xylene (total)	ND	750	680	91	689	92	1	70-130/30

5.3.1

5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5747

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5579-2MS	R24591.D	5	11/28/11	DFT	n/a	n/a	MSR912
MC5579-2MSD	R24592.D	5	11/28/11	DFT	n/a	n/a	MSR912
MC5579-2	R24588.D	1	11/28/11	DFT	n/a	n/a	MSR912

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5747-1, MC5747-2, MC5747-3, MC5747-4

CAS No.	Surrogate Recoveries	MS	MSD	MC5579-2	Limits
1868-53-7	Dibromofluoromethane	81%	78%	79%	70-130%
2037-26-5	Toluene-D8	83%	81%	80%	70-130%
460-00-4	4-Bromofluorobenzene	78%	78%	78%	70-130%

- (a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
- (b) High RPD due to possible matrix interference and/or sample non-homogeneity.
- (c) Outside control limits. Associated samples are non-detect for this compound.

5.3.1

5

# Volatile Internal Standard Area Summary

Job Number: MC5747  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSR912-CC899	Injection Date:	11/28/11
Lab File ID:	R24581.D	Injection Time:	11:43
Instrument ID:	GCMSR	Method:	SW846 8260B

	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
	AREA		AREA		AREA		AREA		AREA	
Check Std	110398	9.08	180988	9.95	105688	13.20	94548	15.76	46758	6.69
Upper Limit <sup>a</sup>	220796	9.58	361976	10.45	211376	13.70	189096	16.26	93516	7.19
Lower Limit <sup>b</sup>	55199	8.58	90494	9.45	52844	12.70	47274	15.26	23379	6.19

Lab Sample ID	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
	AREA		AREA		AREA		AREA		AREA	
MSR912-BS	131811	9.08	208999	9.95	120240	13.20	108244	15.76	46770	6.69
MSR912-MB	154475	9.08	242479	9.95	128918	13.21	119407	15.77	53626	6.70
ZZZZZZ	131332	9.08	207707	9.95	111656	13.21	101132	15.77	44801	6.69
ZZZZZZ	136407	9.08	214820	9.95	114847	13.21	103814	15.77	47578	6.69
ZZZZZZ	143915	9.08	225870	9.95	121075	13.21	109334	15.77	42302	6.69
MC5579-2	133567	9.08	209786	9.95	112075	13.21	100101	15.77	47191	6.68
ZZZZZZ	136702	9.08	217741	9.95	114193	13.21	100874	15.77	24833	6.67
ZZZZZZ	125777	9.08	202477	9.95	107484	13.21	97592	15.77	52455	6.70
MC5579-2MS	131094	9.08	209867	9.95	121405	13.20	110824	15.76	46618	6.70
MC5579-2MSD	142484	9.08	225661	9.95	127257	13.20	117441	15.76	53692	6.69
ZZZZZZ	141238	9.08	217979	9.95	116501	13.21	109574	15.77	51079	6.70
MC5747-1	135182	9.08	211319	9.95	111532	13.21	104765	15.77	53982	6.70
MC5747-2	126423	9.08	197502	9.95	104009	13.21	97316	15.77	51868	6.70
MC5747-3	126611	9.08	197191	9.95	104469	13.21	98182	15.77	49008	6.71
MC5747-4	124454	9.08	193909	9.95	103695	13.21	95527	15.77	48575	6.72
ZZZZZZ	120183	9.08	188433	9.95	101594	13.21	93163	15.77	45763	6.69
ZZZZZZ	120091	9.08	190795	9.95	101444	13.21	93798	15.77	43642	6.69
ZZZZZZ	123101	9.08	194325	9.95	103840	13.21	93702	15.77	49114	6.68
ZZZZZZ	122161	9.09	191705	9.96	102165	13.21	93761	15.77	47044	6.70
ZZZZZZ	116994	9.08	184877	9.95	99180	13.21	90523	15.77	42706	6.69
ZZZZZZ	123253	9.08	194133	9.95	104590	13.21	93097	15.77	45502	6.69
ZZZZZZ	113360	9.08	175541	9.95	91256	13.21	84808	15.77	49114	6.68
ZZZZZZ	107781	9.08	167002	9.95	87448	13.21	81145	15.77	47381	6.67

- IS 1 = Pentafluorobenzene
- IS 2 = 1,4-Difluorobenzene
- IS 3 = Chlorobenzene-D5
- IS 4 = 1,4-Dichlorobenzene-d4
- IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

5.4.1

# Volatile Surrogate Recovery Summary

Job Number: MC5747

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Method: SW846 8260B

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
MC5747-1	R24594.D	78.0	81.0	81.0
MC5747-2	R24595.D	84.0	86.0	87.0
MC5747-3	R24596.D	82.0	86.0	86.0
MC5747-4	R24597.D	85.0	86.0	86.0
MC5579-2MS	R24591.D	81.0	83.0	78.0
MC5579-2MSD	R24592.D	78.0	81.0	78.0
MSR912-BS	R24582.D	85.0	90.0	87.0
MSR912-MB	R24584.D	70.0	73.0	71.0

Surrogate Compounds	Recovery Limits
S1 = Dibromofluoromethane	70-130%
S2 = Toluene-D8	70-130%
S3 = 4-Bromofluorobenzene	70-130%

5.5.1

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## GC/MS Semi-volatiles

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## QC Data Summaries

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Includes the following where applicable:

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



# Method Blank Summary

Job Number: MC5747

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27047-MB	U3620.D	1	11/29/11	KR	11/23/11	OP27047	MSU219

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5747-1, MC5747-2, MC5747-3

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	10	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	ug/l	
51-28-5	2,4-Dinitrophenol	ND	20	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	ug/l	
95-48-7	2-Methylphenol	ND	10	ug/l	
	3&4-Methylphenol	ND	10	ug/l	
88-75-5	2-Nitrophenol	ND	10	ug/l	
100-02-7	4-Nitrophenol	ND	20	ug/l	
87-86-5	Pentachlorophenol	ND	10	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	10	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	ug/l	
62-53-3	Aniline	ND	10	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	ug/l	
100-51-6	Benzyl Alcohol	ND	10	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	ug/l	
106-47-8	4-Chloroaniline	ND	10	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	10	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.0	ug/l	
132-64-9	Dibenzofuran	ND	5.0	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	ug/l	
84-66-2	Diethyl phthalate	ND	5.0	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	ug/l	

6.1.1

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# Method Blank Summary

Job Number: MC5747

Account: SHELLWIC Shell Oil

Project: URMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27047-MB	U3620.D	1	11/29/11	KR	11/23/11	OP27047	MSU219

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5747-1, MC5747-2, MC5747-3

CAS No.	Compound	Result	RL	Units	Q
77-47-4	Hexachlorocyclopentadiene	ND	10	ug/l	
67-72-1	Hexachloroethane	ND	5.0	ug/l	
78-59-1	Isophorone	ND	5.0	ug/l	
88-74-4	2-Nitroaniline	ND	10	ug/l	
99-09-2	3-Nitroaniline	ND	10	ug/l	
100-01-6	4-Nitroaniline	ND	10	ug/l	
98-95-3	Nitrobenzene	ND	5.0	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	ug/l	
110-86-1	Pyridine	ND	10	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	44%	15-110%
4165-62-2	Phenol-d5	32%	15-110%
118-79-6	2,4,6-Tribromophenol	66%	15-110%
4165-60-0	Nitrobenzene-d5	89%	30-130%
321-60-8	2-Fluorobiphenyl	81%	30-130%
1718-51-0	Terphenyl-d14	68%	30-130%

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

6.1.1  
6

# Method Blank Summary

Job Number: MC5747

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27050-MB	I76568.D	1	11/29/11	KR	11/24/11	OP27050	MSI2818

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC5747-1, MC5747-2, MC5747-3

6.1.2  
6

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	0.10	ug/l	
208-96-8	Acenaphthylene	ND	0.10	ug/l	
120-12-7	Anthracene	ND	0.10	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.050	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.050	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	ug/l	
218-01-9	Chrysene	ND	0.10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	ug/l	
206-44-0	Fluoranthene	ND	0.10	ug/l	
86-73-7	Fluorene	ND	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.20	ug/l	
91-57-6	2-Methylnaphthalene	0.072	0.20	ug/l	J
91-20-3	Naphthalene	0.083	0.10	ug/l	J
85-01-8	Phenanthrene	ND	0.050	ug/l	
129-00-0	Pyrene	ND	0.10	ug/l	

CAS No.	Surrogate Recoveries	Limits
4165-60-0	Nitrobenzene-d5	120% 30-130%
321-60-8	2-Fluorobiphenyl	107% 30-130%
1718-51-0	Terphenyl-d14	93% 30-130%

# Blank Spike Summary

Job Number: MC5747  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27047-BS	U3621.D	1	11/29/11	KR	11/23/11	OP27047	MSU219

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5747-1, MC5747-2, MC5747-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
65-85-0	Benzoic Acid	100	25.8	26* a	30-130
95-57-8	2-Chlorophenol	100	64.1	64	30-130
59-50-7	4-Chloro-3-methyl phenol	100	65.1	65	30-130
120-83-2	2,4-Dichlorophenol	100	67.2	67	30-130
105-67-9	2,4-Dimethylphenol	100	69.6	70	30-130
51-28-5	2,4-Dinitrophenol	100	56.8	57	30-130
534-52-1	4,6-Dinitro-o-cresol	100	81.5	82	30-130
95-48-7	2-Methylphenol	100	62.0	62	30-130
	3&4-Methylphenol	200	110	55	30-130
88-75-5	2-Nitrophenol	100	71.9	72	30-130
100-02-7	4-Nitrophenol	100	38.0	38	30-130
87-86-5	Pentachlorophenol	100	70.8	71	30-130
108-95-2	Phenol	100	33.2	33	30-130
95-95-4	2,4,5-Trichlorophenol	100	67.9	68	30-130
88-06-2	2,4,6-Trichlorophenol	100	70.0	70	30-130
62-53-3	Aniline	50	31.7	63	40-140
101-55-3	4-Bromophenyl phenyl ether	50	40.7	81	40-140
85-68-7	Butyl benzyl phthalate	50	36.1	72	40-140
100-51-6	Benzyl Alcohol	50	32.4	65	40-140
91-58-7	2-Chloronaphthalene	50	39.6	79	40-140
106-47-8	4-Chloroaniline	50	26.2	52	40-140
111-91-1	bis(2-Chloroethoxy)methane	50	39.4	79	40-140
111-44-4	bis(2-Chloroethyl)ether	50	43.2	86	40-140
108-60-1	bis(2-Chloroisopropyl)ether	50	48.7	97	40-140
7005-72-3	4-Chlorophenyl phenyl ether	50	35.6	71	40-140
122-66-7	1,2-Diphenylhydrazine	50	44.4	89	40-140
121-14-2	2,4-Dinitrotoluene	50	33.6	67	40-140
606-20-2	2,6-Dinitrotoluene	50	36.1	72	40-140
91-94-1	3,3'-Dichlorohenzidine	50	32.5	65	40-140
132-64-9	Dibenzofuran	50	35.8	72	40-140
84-74-2	Di-n-butyl phthalate	50	39.8	80	40-140
117-84-0	Di-n-octyl phthalate	50	46.6	93	40-140
84-66-2	Diethyl phthalate	50	33.3	67	40-140
131-11-3	Dimethyl phthalate	50	26.2	52	40-140
117-81-7	bis(2-Ethylhexyl)phthalate	50	49.1	98	40-140
118-74-1	Hexachlorobenzene	50	37.1	74	40-140

6.2.1  
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# Blank Spike Summary

Job Number: MC5747

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27047-BS	U3621.D	1	11/29/11	KR	11/23/11	OP27047	MSU219

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5747-1, MC5747-2, MC5747-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
77-47-4	Hexachlorocyclopentadiene	50	20.4	41	40-140
67-72-1	Hexachloroethane	50	34.0	68	40-140
78-59-1	Isophorone	50	31.2	62	40-140
88-74-4	2-Nitroaniline	50	37.4	75	40-140
99-09-2	3-Nitroaniline	50	27.8	56	40-140
100-01-6	4-Nitroaniline	50	30.8	62	40-140
98-95-3	Nitrobenzene	50	41.8	84	40-140
62-75-9	n-Nitrosodimethylamine	50	24.9	50	40-140
621-64-7	N-Nitroso-di-n-propylamine	50	43.1	86	40-140
86-30-6	N-Nitrosodiphenylamine	50	42.4	85	40-140
110-86-1	Pyridine	50	23.8	48	40-140

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	48%	15-110%
4165-62-2	Phenol-d5	34%	15-110%
118-79-6	2,4,6-Tribromophenol	72%	15-110%
4165-60-0	Nitrobenzene-d5	87%	30-130%
321-60-8	2-Fluorobiphenyl	77%	30-130%
1718-51-0	Terphenyl-d14	71%	30-130%

(a) Outside control limits. Blank Spike meets program technical requirements.

6.2.1

6

# Blank Spike Summary

Job Number: MC5747

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27050-BS	I76569.D	1	11/29/11	KR	11/24/11	OP27050	MSI2818

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC5747-1, MC5747-2, MC5747-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
83-32-9	Acenaphthene	50	46.1	92	40-140
208-96-8	Acenaphthylene	50	35.9	72	40-140
120-12-7	Anthracene	50	45.9	92	40-140
56-55-3	Benzo(a)anthracene	50	65.0	130	40-140
50-32-8	Benzo(a)pyrene	50	45.1	90	40-140
205-99-2	Benzo(b)fluoranthene	50	48.3	97	40-140
191-24-2	Benzo(g,h,i)perylene	50	75.9	152* a	40-140
207-08-9	Benzo(k)fluoranthene	50	48.6	97	40-140
218-01-9	Chrysene	50	51.8	104	40-140
53-70-3	Dibenzo(a,h)anthracene	50	81.3	163* a	40-140
206-44-0	Fluoranthene	50	51.0	102	40-140
86-73-7	Fluorene	50	54.8	110	40-140
193-39-5	Indeno(1,2,3-cd)pyrene	50	76.9	154* a	40-140
90-12-0	1-Methylnaphthalene	50	ND	0* b	40-140
91-57-6	2-Methylnaphthalene	50	45.4	91	40-140
91-20-3	Naphthalene	50	37.5	75	40-140
85-01-8	Phenanthrene	50	44.4	89	40-140
129-00-0	Pyrene	50	55.2	110	40-140

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	117%	30-130%
321-60-8	2-Fluorobiphenyl	117%	30-130%
1718-51-0	Terphenyl-d14	95%	30-130%

(a) Outside control limits. Blank Spike meets program technical requirements.

(b) Analyte not present in spiking solution.

6.2.2  
6

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5747  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27047-MS	S28981.D	1	11/29/11	KR	11/23/11	OP27047	MSS1262
OP27047-MSD	S28982.D	1	11/29/11	KR	11/23/11	OP27047	MSS1262
MC5813-8	S28983.D	1	11/29/11	KR	11/23/11	OP27047	MSS1262

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5747-1, MC5747-2, MC5747-3

CAS No.	Compound	MC5813-8 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic Acid	ND	100	31.7	32	32.4	32	2	30-130/20
95-57-8	2-Chlorophenol	ND	100	69.9	70	74.2	74	6	30-130/20
59-50-7	4-Chloro-3-methyl phenol	ND	100	74.9	75	79.0	79	5	30-130/20
120-83-2	2,4-Dichlorophenol	ND	100	82.4	82	85.0	85	3	30-130/20
105-67-9	2,4-Dimethylphenol	ND	100	74.1	74	75.6	76	2	30-130/20
51-28-5	2,4-Dinitrophenol	ND	100	72.7	73	80.2	80	10	30-130/20
534-52-1	4,6-Dinitro-o-cresol	ND	100	89.5	90	95.5	96	6	30-130/20
95-48-7	2-Methylphenol	ND	100	68.0	68	71.1	71	4	30-130/20
	3&4-Methylphenol	ND	200	121	61	127	64	5	30-130/20
88-75-5	2-Nitrophenol	ND	100	85.0	85	86.6	87	2	30-130/20
100-02-7	4-Nitrophenol	ND	100	36.2	36	37.0	37	2	30-130/20
87-86-5	Pentachlorophenol	ND	100	79.7	80	86.4	86	8	30-130/20
108-95-2	Phenol	ND	100	35.0	35	35.9	36	3	30-130/20
95-95-4	2,4,5-Trichlorophenol	ND	100	87.3	87	92.4	92	6	30-130/20
88-06-2	2,4,6-Trichlorophenol	ND	100	84.6	85	90.0	90	6	30-130/20
62-53-3	Aniline	ND	50	20.3	41	19.9	40	2	40-140/20
101-55-3	4-Bromophenyl phenyl ether	ND	50	48.8	98	48.9	98	0	40-140/20
85-68-7	Butyl benzyl phthalate	0.29	50	45.7	91	47.6	95	4	40-140/20
100-51-6	Benzyl Alcohol	ND	50	35.2	70	35.0	70	1	40-140/20
91-58-7	2-Chloronaphthalene	ND	50	44.2	88	43.4	87	2	40-140/20
106-47-8	4-Chloroaniline	ND	50	33.3	67	33.5	67	1	40-140/20
111-91-1	bis(2-Chloroethoxy)methane	ND	50	43.3	87	42.5	85	2	40-140/20
111-44-4	bis(2-Chloroethyl)ether	ND	50	43.0	86	43.4	87	1	40-140/20
108-60-1	bis(2-Chloroisopropyl)ether	ND	50	43.4	87	42.9	86	1	40-140/20
7005-72-3	4-Chlorophenyl phenyl ether	ND	50	46.8	94	46.7	93	0	40-140/20
122-66-7	1,2-Diphenylhydrazine	ND	50	32.4	65	32.3	65	0	40-140/20
121-14-2	2,4-Dinitrotoluene	ND	50	46.3	93	46.8	94	1	40-140/20
606-20-2	2,6-Dinitrotoluene	ND	50	44.8	90	44.7	89	0	40-140/20
91-94-1	3,3'-Dichlorobenzidine	ND	50	45.8	92	46.4	93	1	40-140/20
132-64-9	Dibenzofuran	ND	50	42.3	85	42.7	85	1	40-140/20
84-74-2	Di-n-butyl phthalate	ND	50	45.8	92	46.0	92	0	40-140/20
117-84-0	Di-n-octyl phthalate	ND	50	52.6	105	54.0	108	3	40-140/20
84-66-2	Diethyl phthalate	ND	50	43.0	86	43.7	87	2	40-140/20
131-11-3	Dimethyl phthalate	ND	50	37.8	76	39.6	79	5	40-140/20
117-81-7	bis(2-Ethylhexyl)phthalate	ND	50	57.3	115	54.4	109	5	40-140/20
118-74-1	Hexachlorobenzene	ND	50	44.9	90	45.9	92	2	40-140/20

6.3.1  
**6**

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5747

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27047-MS	S28981.D	1	11/29/11	KR	11/23/11	OP27047	MSS1262
OP27047-MSD	S28982.D	1	11/29/11	KR	11/23/11	OP27047	MSS1262
MC5813-8	S28983.D	1	11/29/11	KR	11/23/11	OP27047	MSS1262

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5747-1, MC5747-2, MC5747-3

CAS No.	Compound	MC5813-8 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
77-47-4	Hexachlorocyclopentadiene	ND	50	21.2	42	20.2	40	5	40-140/20
67-72-1	Hexachloroethane	ND	50	34.8	70	32.9	66	6	40-140/20
78-59-1	Isophorone	ND	50	31.6	63	30.8	62	3	40-140/20
88-74-4	2-Nitroaniline	ND	50	48.0	96	48.0	96	0	40-140/20
99-09-2	3-Nitroaniline	ND	50	36.6	73	38.3	77	5	40-140/20
100-01-6	4-Nitroaniline	ND	50	41.3	83	42.4	85	3	40-140/20
98-95-3	Nitrobenzene	ND	50	38.3	77	37.4	75	2	40-140/20
62-75-9	n-Nitrosodimethylamine	ND	50	23.0	46	23.0	46	0	40-140/20
621-64-7	N-Nitroso-di-n-propylamine	ND	50	40.2	80	40.0	80	0	40-140/20
86-30-6	N-Nitrosodiphenylamine	ND	50	47.3	95	47.2	94	0	40-140/20
110-86-1	Pyridine	ND	50	20.3	41	18.4	37* a	10	40-140/20

CAS No.	Surrogate Recoveries	MS	MSD	MC5813-8	Limits
367-12-4	2-Fluorophenol	50%	51%	50%	15-110%
4165-62-2	Phenol-d5	35%	36%	35%	15-110%
118-79-6	2,4,6-Tribromophenol	89%	94%	85%	15-110%
4165-60-0	Nitrobenzene-d5	78%	76%	81%	30-130%
321-60-8	2-Fluorobiphenyl	84%	83%	89%	30-130%
1718-51-0	Terphenyl-d14	97%	101%	112%	30-130%

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

6.3.1  
6



# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5747

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27050-MS	176570.D	1	11/29/11	KR	11/24/11	OP27050	MSI2818
OP27050-MSD	176571.D	1	11/29/11	KR	11/24/11	OP27050	MSI2818
MC5800-4	176572.D	1	11/29/11	KR	11/24/11	OP27050	MSI2818

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC5747-1, MC5747-2, MC5747-3

CAS No.	Compound	MC5800-4 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	0.38	50	46.2	92	46.8	93	1	40-140/20
208-96-8	Acenaphthylene	0.23	50	36.2	72	36.7	73	1	40-140/20
120-12-7	Anthracene	0.15	50	42.6	85	44.6	89	5	40-140/20
56-55-3	Benzo(a)anthracene	0.17	50	55.1	110	57.8	115	5	40-140/20
50-32-8	Benzo(a)pyrene	0.096	50	36.7	73	38.6	77	5	40-140/20
205-99-2	Benzo(b)fluoranthene	0.11	50	39.3	78	41.8	83	6	40-140/20
191-24-2	Benzo(g,h,i)perylene	0.17	50	59.0	118	61.7	123	4	40-140/20
207-08-9	Benzo(k)fluoranthene	0.12	50	40.0	80	41.4	83	3	40-140/20
218-01-9	Chrysene	0.15	50	44.3	88	46.6	93	5	40-140/20
53-70-3	Dibenzo(a,h)anthracene	0.13	50	62.0	124	65.4	131	5	40-140/20
206-44-0	Fluoranthene	0.17	50	46.9	93	49.9	99	6	40-140/20
86-73-7	Fluorene	0.38	50	55.7	111	55.0	109	1	40-140/20
193-39-5	Indeno(1,2,3-cd)pyrene	0.13	50	58.9	118	61.8	123	5	40-140/20
90-12-0	1-Methylnaphthalene	ND	50	ND	0* a	ND	0* a	nc	40-140/20
91-57-6	2-Methylnaphthalene	0.94	50	47.6	93	47.2	93	1	40-140/20
91-20-3	Naphthalene	0.58	50	40.6	80	41.5	82	2	40-140/20
85-01-8	Phenanthrene	0.24	50	42.4	84	42.5	85	0	40-140/20
129-00-0	Pyrene	0.21	50	49.7	99	50.7	101	2	40-140/20

CAS No.	Surrogate Recoveries	MS	MSD	MC5800-4	Limits
4165-60-0	Nitrobenzene-d5	116%	116%	131%* b	30-130%
321-60-8	2-Fluorobiphenyl	111%	113%	114%	30-130%
1718-51-0	Terphenyl-d14	61%	64%	68%	30-130%

(a) Analyte not present in spiking solution.

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

6.3.2

6

# Semivolatile Internal Standard Area Summary

Job Number: MC5747

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSF2580-CC2576	Injection Date:	12/02/11
Lab File ID:	F53616A.D	Injection Time:	09:16
Instrument ID:	GCMSF	Method:	SW846 8270C BY SIM

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	145680	5.44	524247	6.73	266605	9.20	473213	11.70	532261	16.66	523744	19.20
Upper Limit <sup>a</sup>	291360	5.94	1048494	7.23	533210	9.70	946426	12.20	1064522	17.16	1047488	19.70
Lower Limit <sup>b</sup>	72840	4.94	262124	6.23	133303	8.70	236607	11.20	266131	16.16	261872	18.70

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP27027-MS	179356	5.44	619048	6.73	313828	9.20	531987	11.70	576305	16.67	542924	19.20
OP27027-MSD	157707	5.44	550392	6.73	269185	9.20	467312	11.70	511849	16.66	482813	19.20
MC5742-2	171169	5.44	642589	6.73	309128	9.20	557616	11.70	554634	16.66	549393	19.20
MC5747-1	134695	5.44	494622	6.73	245434	9.20	459596	11.70	496946	16.67	542801	19.21
MC5747-2	140120	5.44	510772	6.73	253633	9.20	477797	11.70	511847	16.67	566126	19.20
MC5747-3	149105	5.44	563725	6.73	269924	9.20	506297	11.70	547778	16.66	544775	19.20
ZZZZZZ	131163	5.44	494728	6.73	241776	9.20	427552	11.70	454298	16.66	451473	19.20
ZZZZZZ	131333	5.44	498882	6.73	244510	9.20	425563	11.70	452361	16.66	444240	19.20
ZZZZZZ	114741	5.44	437500	6.73	202352	9.18	367314	11.70	393509	16.66	419520	19.20
ZZZZZZ	112556	5.44	415051	6.73	201737	9.20	354298	11.70	379843	16.66	386717	19.20
ZZZZZZ	107716	5.44	412627	6.73	195089	9.18	355754	11.70	375330	16.66	393449	19.20
ZZZZZZ	101502	5.44	382829	6.73	185448	9.20	326709	11.70	358430	16.66	367849	19.20

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.4.1  
**6**

# Semivolatile Internal Standard Area Summary

Job Number: MC5747  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSI2818-CC2803	Injection Date:	11/29/11
Lab File ID:	I76567.D	Injection Time:	15:59
Instrument ID:	GCMSI	Method:	SW846 8270C BY SIM

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	244791	5.35	701243	6.61	440601	9.01	738568	11.50	619088	16.44	747693	18.97
Upper Limit <sup>a</sup>	489582	5.85	1402486	7.11	881202	9.51	1477136	12.00	1238176	16.94	1495386	19.47
Lower Limit <sup>b</sup>	122396	4.85	350622	6.11	220301	8.51	369284	11.00	309544	15.94	373847	18.47

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP27050-MB	226251	5.35	663104	6.61	378282	9.00	587227	11.50	419781	16.44	530849	18.97
OP27050-BS	203359	5.35	565402	6.61	333668	9.00	589145	11.50	506177	16.44	622118	18.97
OP27050-MS	194268	5.35	534135	6.61	325793	9.00	590435	11.50	510971	16.44	641464	18.97
OP27050-MSD	182911	5.35	494349	6.61	286611	9.00	501017	11.50	457794	16.44	582285	18.97
MC5800-4	184075	5.35	508158	6.59	293165	9.00	474291	11.49	365021	16.43	478708	18.96
OP27027-MB	212822	5.35	618372	6.59	355340	9.00	479532	11.49	572985	16.43	701576	18.97
ZZZZZ	163634	5.35	483136	6.59	290387	9.00	490472	11.49	585621	16.43	697502	18.96

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.4.2  
6

# Semivolatiles Internal Standard Area Summary

Job Number: MC5747  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSS1262-CC1238	Injection Date:	11/29/11
Lab File ID:	S28967.D	Injection Time:	09:01
Instrument ID:	GCMSS	Method:	SW846 8270C

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	217826	6.38	762818	7.77	421624	9.98	734787	12.18	773545	16.53	731105	18.75
Upper Limit <sup>a</sup>	435652	6.88	1525636	8.27	843248	10.48	1469574	12.68	1547090	17.03	1462210	19.25
Lower Limit <sup>b</sup>	108913	5.88	381409	7.27	210812	9.48	367394	11.68	386773	16.03	365553	18.25

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP27060-MS	207839	6.38	703515	7.77	380629	9.98	679159	12.18	688749	16.52	658697	18.75
OP27060-MSD	201959	6.38	693655	7.77	373295	9.98	653804	12.18	659055	16.53	657400	18.76
MC5761-1	191536	6.38	663304	7.77	368067	9.98	645167	12.18	647852	16.52	638920	18.75
ZZZZZZ	200203	6.38	680579	7.77	370847	9.98	665229	12.18	665171	16.52	654027	18.75
ZZZZZZ	224903	6.38	783756	7.77	420693	9.98	734504	12.18	688793	16.52	651816	18.75
ZZZZZZ	257994	6.38	894901	7.77	496574	9.98	871049	12.18	792884	16.52	702408	18.75
ZZZZZZ	199157	6.38	674867	7.77	360144	9.98	628285	12.18	602040	16.52	560452	18.75
ZZZZZZ	210019	6.38	726820	7.77	399495	9.98	691454	12.18	673737	16.52	605487	18.75
ZZZZZZ	195707	6.38	680355	7.77	373629	9.98	650194	12.18	617197	16.52	584179	18.75
ZZZZZZ	189379	6.38	660566	7.77	362160	9.98	639407	12.18	607899	16.52	550899	18.75
ZZZZZZ	190256	6.38	646592	7.77	360242	9.98	630147	12.18	630356	16.52	660687	18.75
ZZZZZZ	209462	6.38	725657	7.77	397945	9.99	703280	12.18	688969	16.52	680289	18.76
ZZZZZZ	226176	6.39	821767	7.78	460049	9.99	818538	12.18	794912	16.53	731395	18.76
OP27047-MS	200103	6.38	675511	7.77	367400	9.99	652952	12.18	652064	16.53	601715	18.76
OP27047-MSD	195275	6.38	669770	7.77	361789	9.99	651111	12.18	645950	16.53	585329	18.76
MC5813-8	227895	6.38	791269	7.77	429643	9.99	762439	12.18	710059	16.53	646014	18.76
OP27065-MB	262538	6.39	903733	7.77	481912	9.99	838664	12.18	762340	16.53	651024	18.76
OP27065-BS	275913	6.39	950985	7.77	515585	9.99	892655	12.18	805965	16.53	685069	18.76
OP27065-MS	437881 <sup>c</sup>	6.40	1469774	7.78	734088	9.99	1129513	12.19	992253	16.54	820973	18.76
OP27065-MSD	364273	6.39	1238890	7.78	630147	9.99	1002427	12.19	872414	16.53	721303	18.76
MC5698-16	389229	6.40	1308743	7.77	681790	9.99	1089776	12.18	919638	16.53	751733	18.76
ZZZZZZ	316161	6.40	1074247	7.77	562177	9.99	921532	12.18	830782	16.53	689376	18.76
ZZZZZZ	322946	6.40	1099177	7.77	570411	9.99	972176	12.20	868508	16.53	742689	18.77
ZZZZZZ	207044	6.39	718848	7.78	405766	9.99	707317	12.18	700865	16.53	708242	18.76

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.  
 (c) Outside control limits. Results confirmed by reanalysis.

6.4.3

6

# Semivolatle Internal Standard Area Summary

Job Number: MC5747

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSU219-CC202	Injection Date:	11/29/11
Lab File ID:	U3607.D	Injection Time:	07:49
Instrument ID:	GCMSU	Method:	SW846 8270C

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	133258	5.48	450193	6.78	201504	9.23	349105	11.76	415799	16.71	476656	19.25
Upper Limit <sup>a</sup>	266516	5.98	900386	7.28	403008	9.73	698210	12.26	831598	17.21	953312	19.75
Lower Limit <sup>b</sup>	66629	4.98	225097	6.28	100752	8.73	174553	11.26	207900	16.21	238328	18.75

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP27060-MB	111094	5.48	397745	6.78	163819	9.23	209457	11.76	171191 <sup>c</sup>	16.70	232351 <sup>c</sup>	19.24
OP27060-BS	105675	5.48	374501	6.78	160146	9.23	225661	11.76	218690	16.70	257091	19.23
ZZZZZZ	92198	5.48	333061	6.78	138830	9.23	182406	11.76	190344*	16.70	235981*	19.23
ZZZZZZ	175987	5.49	621389	6.78	255344	9.23	314422	11.76	221482	16.70	270419	19.24
ZZZZZZ	107764	5.48	379682	6.78	154654	9.23	205374	11.75	185609*	16.70	254281	19.24
ZZZZZZ	128068	5.48	448997	6.78	179928	9.23	214708	11.76	186184*	16.70	258400	19.24
ZZZZZZ	128020	5.48	451889	6.78	185955	9.23	219255	11.76	178423*	16.70	245219	19.23
ZZZZZZ	112061	5.48	391989	6.78	164632	9.23	217674	11.75	224697	16.70	281181	19.23
ZZZZZZ	101455	5.48	354655	6.78	151241	9.23	209791	11.75	226169	16.70	292369	19.24
ZZZZZZ	131634	5.48	449047	6.78	177594	9.23	219244	11.75	218333	16.70	302496	19.23
ZZZZZZ	104771	5.48	368073	6.78	156549	9.23	214929	11.75	263585	16.70	321718	19.24
ZZZZZZ	112979	5.48	382502	6.78	151683	9.23	204230	11.75	221795	16.70	308797	19.24
OP27047-MB	131464	5.48	453283	6.78	178133	9.23	230180	11.76	252814	16.70	330058	19.24
OP27047-BS	114659	5.48	385108	6.78	160577	9.23	224052	11.76	274677	16.71	347504	19.24
MC5747-1	100008	5.48	385501	6.78	196331	9.23	343704	11.76	391093	16.71	504289	19.25
MC5747-2	92292	5.48	323889	6.78	154047	9.23	275757	11.76	336387	16.71	422792	19.25
MC5747-3	114726	5.48	401275	6.78	177748	9.23	299111	11.76	391547	16.71	444786	19.24
ZZZZZZ	117504	5.48	403216	6.78	179095	9.23	272852	11.76	378391	16.71	451136	19.25
ZZZZZZ	116982	5.48	393146	6.78	163828	9.23	233144	11.76	348587	16.71	423662	19.25
ZZZZZZ	91589	5.48	325220	6.78	146578	9.23	222633	11.76	278390	16.70	323754	19.24
ZZZZZZ	99534	5.48	336559	6.78	140813	9.23	200679	11.75	269851	16.70	339021	19.24
ZZZZZZ	117073	5.48	391293	6.78	167970	9.23	252879	11.76	420417	16.71	352751	19.24
ZZZZZZ	89101	5.48	319605	6.78	150183	9.23	261784	11.76	438431	16.71	259105	19.24
ZZZZZZ	131590	5.49	455249	6.78	198006	9.23	295444	11.76	506785	16.71	392612	19.24
OP27060-MB <sup>d</sup>	97099	5.48	344572	6.78	167234	9.23	301551	11.76	463442	16.71	409611	19.25
ZZZZZZ	95456	5.48	345518	6.78	165661	9.23	286711	11.76	363075	16.70	340987	19.24
ZZZZZZ	99516	5.48	348028	6.78	169353	9.23	295227	11.76	430648	16.71	403807	19.24
ZZZZZZ	94414	5.48	334115	6.78	162638	9.23	294394	11.76	440694	16.71	373902	19.24
ZZZZZZ	97626	5.48	347632	6.78	166937	9.23	296507	11.76	425467	16.71	410856	19.24

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12

6.4.4  
**6**

# Semivolatle Internal Standard Area Summary

Job Number: MC5747

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std: MSU219-CC202	Injection Date: 11/29/11
Lab File ID: U3607.D	Injection Time: 07:49
Instrument ID: GCMSU	Method: SW846 8270C

Lab	IS 1	IS 2	IS 3	IS 4	IS 5	IS 6						
Sample ID	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT

IS 2 = Perylene-d12

- (a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
- (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
- (c) Outside control limits. Results confirmed by reanalysis.
- (d) Confirmation run.

6.4.4

6

# Semivolatle Surrogate Recovery Summary

Job Number: MC5747

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Method: SW846 8270C

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4	S5	S6
MC5747-1	U3623.D	44.0	36.0	72.0	88.0	72.0	81.0
MC5747-2	U3624.D	42.0	40.0	70.0	88.0	72.0	78.0
MC5747-3	U3625.D	38.0	27.0	66.0	77.0	67.0	71.0
OP27047-BS	U3621.D	48.0	34.0	72.0	87.0	77.0	71.0
OP27047-MB	U3620.D	44.0	32.0	66.0	89.0	81.0	68.0
OP27047-MS	S28981.D	50.0	35.0	89.0	78.0	84.0	97.0
OP27047-MSD	S28982.D	51.0	36.0	94.0	76.0	83.0	101.0

Surrogate Compounds	Recovery Limits
S1 = 2-Fluorophenol	15-110%
S2 = Phenol-d5	15-110%
S3 = 2,4,6-Tribromophenol	15-110%
S4 = Nitrobenzene-d5	30-130%
S5 = 2-Fluorobiphenyl	30-130%
S6 = Terphenyl-d14	30-130%

6.5.1

6

# Semivolatile Surrogate Recovery Summary

Job Number: MC5747

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Method: SW846 8270C BY SIM

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
MC5747-1	F53620.D	83.0	73.0	91.0
MC5747-2	F53621.D	81.0	73.0	88.0
MC5747-3	F53622.D	74.0	69.0	84.0
OP27050-BS	I76569.D	117.0	117.0	95.0
OP27050-MB	I76568.D	120.0	107.0	93.0
OP27050-MS	I76570.D	116.0	111.0	61.0
OP27050-MSD	I76571.D	116.0	113.0	64.0

Surrogate Compounds                      Recovery Limits

S1 = Nitrobenzene-d5                      30-130%  
S2 = 2-Fluorobiphenyl                      30-130%  
S3 = Terphenyl-d14                      30-130%

6.5.2

6



## GC Volatiles

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## QC Data Summaries

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7

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary

Job Number: MC5747

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27039-MB	BB39662A.D1		11/24/11	AP	11/23/11	OP27039	GBB2460

The QC reported here applies to the following samples:

Method: SW846 8011

MC5747-1, MC5747-2, MC5747-3, MC5747-5

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

CAS No.	Surrogate Recoveries		Limits
460-00-4	Bromofluorobenzene (S)	95%	36-173%
460-00-4	Bromofluorobenzene (S)	100%	36-173%

7.1.1



# Blank Spike Summary

Job Number: MC5747

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27039-BS	BB39663A.D1		11/24/11	AP	11/23/11	OP27039	GBB2460

The QC reported here applies to the following samples:

Method: SW846 8011

MC5747-1, MC5747-2, MC5747-3, MC5747-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
96-12-8	1,2-Dibromo-3-chloropropane	0.071	0.071	100	60-140
106-93-4	1,2-Dibromoethane	0.071	0.072	101	60-140

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	Bromofluorobenzene (S)	94%	36-173%
460-00-4	Bromofluorobenzene (S)	99%	36-173%

7.2.1  
7

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5747

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27039-MS	BB39664A.D1		11/24/11	AP	11/23/11	OP27039	GBB2460
OP27039-MSD	BB39665A.D1		11/24/11	AP	11/23/11	OP27039	GBB2460
MC5813-3	BB39666A.D1		11/24/11	AP	11/23/11	OP27039	GBB2460

The QC reported here applies to the following samples:

Method: SW846 8011

MC5747-1, MC5747-2, MC5747-3, MC5747-5

CAS No.	Compound	MC5813-3 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.071	0.069	97	0.069	97	0	64-141/29
106-93-4	1,2-Dibromoethane	ND	0.071	0.068	96	0.076	107	11	63-163/27

CAS No.	Surrogate Recoveries	MS	MSD	MC5813-3	Limits
460-00-4	Bromofluorobenzene (S)	105%	118%	99%	36-173%
460-00-4	Bromofluorobenzene (S)	112%	126%	108%	36-173%

7.3.1

7

# Volatile Surrogate Recovery Summary

Job Number: MC5747

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Method: SW846 8011

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 <sup>a</sup>	S1 <sup>b</sup>
MC5747-1	BB39670.D	113.0	160.0
MC5747-2	BB39672.D	99.0	143.0
MC5747-3	BB39673.D	118.0	157.0
MC5747-5	BB39674.D	118.0	139.0
OP27039-BS	BB39663A.D	94.0	99.0
OP27039-MB	BB39662A.D	95.0	100.0
OP27039-MS	BB39664A.D	105.0	112.0
OP27039-MSD	BB39665A.D	118.0	126.0

Surrogate Compounds                      Recovery Limits

S1 = Bromofluorobenzene (S)              36-173%

(a) Recovery from GC signal #1

(b) Recovery from GC signal #2

7.4.1

7

# GC Surrogate Retention Time Summary

Job Number: MC5747  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	GBB2460-ICC2460	Injection Date:	11/24/11
Lab File ID:	BB39656.D	Injection Time:	10:46
Instrument ID:	GCBB	Method:	SW846 8011

	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
Check Std	3.96	3.90

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
ZZZZZZ	BB39661.D	11/24/11	12:49	3.96	3.90
ZZZZZZ	BB39661A.D	11/24/11	12:49	3.96	3.90
OP27038-MB	BB39662.D	11/24/11	13:14	3.96	3.90
OP27039-MB	BB39662A.D	11/24/11	13:14	3.96	3.90
OP27038-BS	BB39663.D	11/24/11	13:39	3.96	3.90
OP27039-BS	BB39663A.D	11/24/11	13:39	3.96	3.90
OP27038-MS	BB39664.D	11/24/11	14:03	3.96	3.90
OP27039-MS	BB39664A.D	11/24/11	14:03	3.96	3.90
OP27038-MSD	BB39665.D	11/24/11	14:28	3.96	3.90
OP27039-MSD	BB39665A.D	11/24/11	14:28	3.96	3.90
MC5813-1	BB39666.D	11/24/11	14:52	3.96	3.90
MC5813-3	BB39666A.D	11/24/11	14:52	3.96	3.90
ZZZZZZ	BB39667.D	11/24/11	15:17	3.95	3.90
ZZZZZZ	BB39668.D	11/24/11	15:42	3.96	3.90
ZZZZZZ	BB39669.D	11/24/11	16:06	3.95	3.90
MC5747-1	BB39670.D	11/24/11	16:31	3.96	3.90

**Surrogate Compounds**

S1 = Bromofluorobenzene (S)

- (a) Retention time from GC signal #1
- (b) Retention time from GC signal #2

7.5.1  
7

# GC Surrogate Retention Time Summary

Job Number: MC5747

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	GBB2460-CC2460	Injection Date:	11/24/11
Lab File ID:	BB39671.D	Injection Time:	16:55
Instrument ID:	GCBB	Method:	SW846 8011

S1 <sup>a</sup>	S1 <sup>b</sup>
RT	RT

Check Std	3.96	3.90
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Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
MC5747-2	BB39672.D	11/24/11	17:20	3.96	3.90
MC5747-3	BB39673.D	11/24/11	17:44	3.96	3.90
MC5747-5	BB39674.D	11/24/11	18:09	3.96	3.90
GBB2460-ECC2460	BB39675.D	11/24/11	18:34	3.96	3.90

## Surrogate Compounds

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #1

(b) Retention time from GC signal #2

7.5.2

7

# Roxana Groundwater Quarterly – 4<sup>th</sup> Quarter 2011 Data Review

Laboratory SDG: MC5929

Data Reviewer: Melissa Mansker

Peer Reviewer: Elizabeth Kunkel

Date Reviewed: 12/15/2011

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

Sample Identification	Sample Identification
MW2-ROX-112811	MW3-ROX-112911
MW3-ROX-112911-Dup	MW3-ROX-112911-EB
TB-112811	TB-112811

## 1.0 Data Package Completeness

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

Yes

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

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

Yes, the laboratory case narrative indicated that VOC and SVOC LCS recoveries were outside evaluation criteria. These issues are addressed further in the appropriate sections below.

The cooler receipt form indicated samples in two of two coolers were received by the laboratory at temperatures of 1.8°C and 1.6 °C, which are outside the 4°C ± 2°C criteria. Samples were received in good condition; therefore, no qualification of data was required.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

Yes

## 4.0 Blank Contamination

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

No

## 5.0 Laboratory Control Sample

*Were LCS recoveries within evaluation criteria?*

No



LCS/ LCSD ID	Parameter	Analyte	LCS/LCSD Recovery	RPD	LCS/LCSD /RPD Criteria
MSM1464-BS	VOCs	Acrylonitrile	522	NA	70-130
MSM1464-BS	VOCs	2-Chloroethyl vinyl ether	42	NA	70-130
MSM1464-BS	VOCs	Vinyl chloride	140	NA	70-130
MSM1462- BS/BSD	VOCs	Acrolein	56/57	1	70-130/25
MSM1462- BS/BSD	VOCs	Acrylonitrile	492/500	2	70-130/25
MSM1462- BS/BSD	VOCs	2-Chloroethyl vinyl ether	46/44	5	70-130/25
MSM1462- BS/BSD	VOCs	Vinyl chloride	134/134	0	70-130/25
OP27106-BS	SVOCs	Benzoic Acid	28	NA	30-130
OP27106-BS	SVOCs	Phenol	28	NA	30-130
OP27106-BS	SVOCs	Aniline	30	NA	40-140
OP27106-BS	SVOCs	n-Nitrosodimethylamine	35	NA	40-140
OP27106-BS	SVOCs	Pyridine	28	NA	40-140

Analytical data that required qualification based on LCS data are included in the table below. Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. LCS MSM1464-BS and OP27106-BS were associated with equipment blank sample MW3-ROX-112911-EB, and LCS/LCSD MSM1462-BS/BSD was associated with trip blank sample TB-112811. Equipment and trip blank samples are quality control samples and are not qualified.

Sample ID	Parameter	Analyte	Qualification
MW2-ROX-112811	VOCs	2-Chloroethyl vinyl ether	UJ
MW3-ROX-112911	VOCs	2-Chloroethyl vinyl ether	UJ
MW3-ROX-112911-Dup	VOCs	2-Chloroethyl vinyl ether	UJ
MW2-ROX-112811	SVOCs	Benzoic Acid	UJ
MW2-ROX-112811	SVOCs	Phenol	UJ
MW2-ROX-112811	SVOCs	Aniline	UJ
MW2-ROX-112811	SVOCs	n-Nitrosodimethylamine	UJ
MW2-ROX-112811	SVOCs	Pyridine	UJ
MW3-ROX-112911	SVOCs	Benzoic Acid	UJ
MW3-ROX-112911	SVOCs	Phenol	UJ
MW3-ROX-112911	SVOCs	Aniline	UJ
MW3-ROX-112911	SVOCs	n-Nitrosodimethylamine	UJ
MW3-ROX-112911	SVOCs	Pyridine	UJ
MW3-ROX-112911-Dup	SVOCs	Benzoic Acid	UJ
MW3-ROX-112911-Dup	SVOCs	Phenol	UJ
MW3-ROX-112911-Dup	SVOCs	Aniline	UJ
MW3-ROX-112911-Dup	SVOCs	n-Nitrosodimethylamine	UJ
MW3-ROX-112911-Dup	SVOCs	Pyridine	UJ

**6.0 Surrogate Recoveries**

*Were surrogate recoveries within evaluation criteria?*

Yes

**7.0 Matrix Spike and Matrix Spike Duplicate Recoveries**

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

Yes, although not requested, the 5x diluted sample MW2-ROX-112811 was spiked and analyzed for VOCs.

*Were MS/MSD recoveries within evaluation criteria?*

Yes

**8.0 Internal Standard (IS) Recoveries**

*Were internal standard area recoveries within evaluation criteria?*

Yes

**9.0 Laboratory Duplicate Results**

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

No

**10.0 Field Duplicate Results**

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

Yes

Field ID	Field Duplicate ID
MW3-ROX-112911	MW3-ROX-112911-Dup

*Were field duplicates within evaluation criteria?*

Yes

**11.0 Sample Dilutions**

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

Not applicable; analytes were detected in samples that were diluted.

**12.0 Additional Qualifications**

*Were additional qualifications applied?*

No



12/15/11

Technical Report for

Shell Oil

URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana,

Accutest Job Number: MC5929

Sampling Dates: 11/28/11 - 11/29/11

Report to:

URS Corporation

Elizabeth\_Kunkel@URSCorp.com

ATTN: Elizabeth Kunkel

Total number of pages in report: 97



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

*Reza Pand*  
Reza Pand  
Lab Director  
*Reviewed on 12/15/2011*

Client Service contact: Jeremy Vienneau 508-481-6200

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

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Test results relate only to samples analyzed.

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### Sample Summary

Shell Oil

Job No: MC5929

URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample Number	Collected		Time By	Received	Matrix		Client Sample ID
	Date				Code	Type	
MC5929-1	11/28/11	14:44	LRJJ	11/30/11	AQ	Ground Water	MW2-ROX-112811
MC5929-2	11/29/11	14:39	LRJJ	11/30/11	AQ	Ground Water	MW3-ROX-112911
MC5929-3	11/29/11	14:39	LRJJ	11/30/11	AQ	Ground Water	MW3-ROX-112911-DUP
MC5929-4	11/29/11	14:50	LRJJ	11/30/11	AQ	Equipment Blank	MW3-ROX-112911-EB
MC5929-5	11/28/11	00:00	LRJJ	11/30/11	AQ	Trip Blank Water	TB-112811
MC5929-6	11/28/11	00:00	LRJJ	11/30/11	AQ	Trip Blank Water	TB-112811

## SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Shell Oil Job No MC5929  
 Site: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Report Date 12/14/2011 10:28:02 AM

4 Sample(s), 1 Trip Blank(s) and 0 Field Blank(s) were collected on between 11/28/2011 and 11/29/2011 and were received at Accutest on 11/30/2011 properly preserved, at 1.6 Deg. C and intact. These Samples received an Accutest job number of MC5929. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report. 1-Chlorohexane, Benzenethiol, Dibenz(a,h)acridine, Indene, and Quinoline were searched in the library search and reported only if detections were found.

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

### Volatiles by GCMS By Method SW846 8260B

Matrix AQ	Batch ID: MSM1462
-----------	-------------------

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC5718-1MS, MC5718-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- BS/BSD Recovery(s) for 2-Chloroethyl vinyl ether, Acrolein, Vinyl chloride are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for 2-Chloroethyl vinyl ether, Acetone, Acrolein, Acrylonitrile, Vinyl chloride are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 2-Hexanone, Acetone, Acrolein, 2-Chloroethyl vinyl ether are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- RPD(s) for MSD for 2-Chloroethyl vinyl ether are outside control limits for sample MC5718-1MSD. High RPD due to possible matrix interference and/or sample non-homogeneity.
- MSM1462-BS/BSD for Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.

Matrix AQ	Batch ID: MSM1464
-----------	-------------------

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC5817-2MS, MC5817-2MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for 2-Chloroethyl vinyl ether, Vinyl chloride are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for 2-Chloroethyl vinyl ether, Acetone, Acrolein, Vinyl chloride are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 2-Chloroethyl vinyl ether, Acetone, Acrolein are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- MSM1464-BS/MS/MSD for Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.

Matrix AQ	Batch ID: MSM1466
-----------	-------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC5929-1MS, MC5929-1MSD were used as the QC samples indicated.

### Extractables by GCMS By Method SW846 8270C

Matrix AQ	Batch ID: OP27106
-----------	-------------------

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC6005-1MS, MC6005-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for Aniline, Benzoic Acid, n-Nitrosodimethylamine, Phenol, Pyridine are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for Hexachlorocyclopentadiene are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 3,3'-Dichlorobenzidine, Hexachlorocyclopentadiene, 3-Nitroaniline, 4-Chloroaniline are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- RPD(s) for MSD for 3-Nitroaniline, 4-Chloroaniline are outside control limits for sample OP27106-MSD. High RPD due to possible matrix interference and/or sample non-homogeneity.
- MS/MSD Recovery(s) for Aniline, n-Nitrosodimethylamine, Phenol, Pyridine are outside control limits. Blank Spike meets program technical requirements.

### Extractables by GCMS By Method SW846 8270C BY SIM

Matrix AQ	Batch ID: OP27107
-----------	-------------------

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC5917-1MS, MC5917-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

### Volatiles by GC By Method SW846 8011

Matrix AQ	Batch ID: OP27113
-----------	-------------------

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC6005-2MS, MC6005-2MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report be used in its entirety. The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report (MC5929).



Sample Results

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Report of Analysis

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## Report of Analysis

Client Sample ID:	MW2-ROX-112811	Date Sampled:	11/28/11
Lab Sample ID:	MC5929-1	Date Received:	11/30/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M44771.D	1	12/03/11	AMY	n/a	n/a	MSM1464
Run #2	M44813.D	5	12/04/11	AMY	n/a	n/a	MSM1466

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

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	21.6	0.50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND <sup>a</sup>	25	ug/l	
135-98-8	sec-Butylbenzene	10.6	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	UJ
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	MW2-ROX-112811	Date Sampled:	11/28/11
Lab Sample ID:	MC5929-1	Date Received:	11/30/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	503 <sup>a</sup>	5.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	128	5.0	ug/l	
99-87-6	p-Isopropyltoluene	12.1	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	77.7	5.0	ug/l	
103-65-1	n-Propylbenzene	146	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	32.8	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	407 <sup>a</sup>	25	ug/l	
108-67-8	1,3,5-Trimethylbenzene	212	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	747	1.0	ug/l	
95-47-6	o-Xylene	57.4	1.0	ug/l	
1330-20-7	Xylene (total)	804	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

3.1  
3

<b>Client Sample ID:</b> MW2-ROX-112811 <b>Lab Sample ID:</b> MC5929-1 <b>Matrix:</b> AQ - Ground Water <b>Method:</b> SW846 8260B <b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	<b>Date Sampled:</b> 11/28/11 <b>Date Received:</b> 11/30/11 <b>Percent Solids:</b> n/a
---	---

**VOA Special List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	78%	80%	70-130%
2037-26-5	Toluene-D8	88%	89%	70-130%
460-00-4	4-Bromofluorobenzene	103%	105%	70-130%

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

(a) Result is from Run# 2

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID: MW2-ROX-112811	Date Sampled: 11/28/11
Lab Sample ID: MC5929-1	Date Received: 11/30/11
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8270C SW846 3510C	
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	S29098.D	1	12/05/11	KR	12/01/11	OP27106	MSS1268
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

## ABN Special List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	10	ug/l	WJ
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	ug/l	
51-28-5	2,4-Dinitrophenol	ND	20	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	ug/l	
95-48-7	2-Methylphenol	ND	10	ug/l	
	3&4-Methylphenol	ND	10	ug/l	
88-75-5	2-Nitrophenol	ND	10	ug/l	
100-02-7	4-Nitrophenol	ND	20	ug/l	
87-86-5	Pentachlorophenol	ND	10	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	WJ
95-95-4	2,4,5-Trichlorophenol	ND	10	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	ug/l	
62-53-3	Aniline	ND	10	ug/l	WJ
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	ug/l	
100-51-6	Benzyl Alcohol	ND	10	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	ug/l	
106-47-8	4-Chloroaniline	ND	10	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	10	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.0	ug/l	
132-64-9	Dibenzofuran	ND	5.0	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

### Report of Analysis

3

Client Sample ID:	MW2-ROX-112811	Date Sampled:	11/28/11
Lab Sample ID:	MC5929-1	Date Received:	11/30/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

**ABN Special List**

CAS No.	Compound	Result	RL	Units	Q
84-66-2	Diethyl phthalate	ND	5.0	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	ug/l	
67-72-1	Hexachloroethane	ND	5.0	ug/l	
78-59-1	Isophorone	ND	5.0	ug/l	
88-74-4	2-Nitroaniline	ND	10	ug/l	
99-09-2	3-Nitroaniline	ND	10	ug/l	
100-01-6	4-Nitroaniline	ND	10	ug/l	
98-95-3	Nitrobenzene	ND	5.0	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.0	ug/l	UJ
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	ug/l	
110-86-1	Pyridine	ND	10	ug/l	UJ

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	45%		15-110%
4165-62-2	Phenol-d5	39%		15-110%
118-79-6	2,4,6-Tribromophenol	98%		15-110%
4165-60-0	Nitrobenzene-d5	71%		30-130%
321-60-8	2-Fluorobiphenyl	76%		30-130%
1718-51-0	Terphenyl-d14	63%		30-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID:	MW2-ROX-112811	Date Sampled:	11/28/11
Lab Sample ID:	MC5929-1	Date Received:	11/30/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C BY SIM SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U3813.D	1	12/12/11	PR	12/01/11	OP27107	MSU230
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

## BN PAH List

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	0.10	ug/l	
208-96-8	Acenaphthylene	ND	0.10	ug/l	
120-12-7	Anthracene	ND	0.10	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.050	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.050	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	ug/l	
218-01-9	Chrysene	ND	0.10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	ug/l	
206-44-0	Fluoranthene	ND	0.10	ug/l	
86-73-7	Fluorene	ND	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	ug/l	
90-12-0	1-Methylnaphthalene	14.1	0.20	ug/l	
91-57-6	2-Methylnaphthalene	29.9	0.20	ug/l	
91-20-3	Naphthalene	54.8	0.10	ug/l	
85-01-8	Phenanthrene	ND	0.050	ug/l	
129-00-0	Pyrene	ND	0.10	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	81%		30-130%
321-60-8	2-Fluorobiphenyl	79%		30-130%
1718-51-0	Terphenyl-d14	59%		30-130%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis



Client Sample ID: MW2-ROX-112811 Lab Sample ID: MC5929-1 Matrix: AQ - Ground Water Method: SW846 8011 SW846 8011 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	Date Sampled: 11/28/11 Date Received: 11/30/11 Percent Solids: n/a
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Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39701.D	1	12/03/11	CZ	12/02/11	OP27113	GBB2462
Run #2							

Run #1	Initial Volume	Final Volume
Run #1	35.5 ml	2.0 ml
Run #2		

**VOA Special List**

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

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	126%		36-173%
460-00-4	Bromofluorobenzene (S)	145%		36-173%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

### Report of Analysis

Client Sample ID: MW3-ROX-112911	Date Sampled: 11/29/11
Lab Sample ID: MC5929-2	Date Received: 11/30/11
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8260B	
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M44772.D	1	12/03/11	AMY	n/a	n/a	MSM1464
Run #2							

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

VOA Special List

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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



## Report of Analysis

Client Sample ID:	MW3-ROX-112911	Date Sampled:	11/29/11
Lab Sample ID:	MC5929-2	Date Received:	11/30/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	1.4	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID: MW3-ROX-112911	Date Sampled: 11/29/11
Lab Sample ID: MC5929-2	Date Received: 11/30/11
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8260B	
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

**VOA Special List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	81%		70-130%
2037-26-5	Toluene-D8	89%		70-130%
460-00-4	4-Bromofluorobenzene	98%		70-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

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3

Client Sample ID: MW3-ROX-112911 Lab Sample ID: MC5929-2 Matrix: AQ - Ground Water Method: SW846 8270C SW846 3510C Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	Date Sampled: 11/29/11 Date Received: 11/30/11 Percent Solids: n/a
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Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	S29099.D	1	12/05/11	KR	12/01/11	OP27106	MSS1268
Run #2							

Run #	Initial Volume	Final Volume
Run #1	960 ml	1.0 ml
Run #2		

**ABN Special List**

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	10	ug/l	WJ
95-57-8	2-Chlorophenol	ND	5.2	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	ug/l	
51-28-5	2,4-Dinitrophenol	ND	21	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	ug/l	
95-48-7	2-Methylphenol	ND	10	ug/l	
	3&4-Methylphenol	ND	10	ug/l	
88-75-5	2-Nitrophenol	ND	10	ug/l	
100-02-7	4-Nitrophenol	ND	21	ug/l	
87-86-5	Pentachlorophenol	ND	10	ug/l	
108-95-2	Phenol	ND	5.2	ug/l	WJ
95-95-4	2,4,5-Trichlorophenol	ND	10	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	ug/l	
62-53-3	Aniline	ND	10	ug/l	WJ
101-55-3	4-Bromophenyl phenyl ether	ND	5.2	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.2	ug/l	
100-51-6	Benzyl Alcohol	ND	10	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.2	ug/l	
106-47-8	4-Chloroaniline	ND	10	ug/l	
111-91-1	his(2-Chloroethoxy)methane	ND	5.2	ug/l	
111-44-4	his(2-Chloroethyl)ether	ND	5.2	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.2	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.2	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.2	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	10	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.2	ug/l	
132-64-9	Dibenzofuran	ND	5.2	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.2	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.2	ug/l	

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

### Report of Analysis

<b>Client Sample ID:</b> MW3-ROX-112911	<b>Date Sampled:</b> 11/29/11
<b>Lab Sample ID:</b> MC5929-2	<b>Date Received:</b> 11/30/11
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8270C SW846 3510C	
<b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

**ABN Special List**

CAS No.	Compound	Result	RL	Units	Q
84-66-2	Diethyl phthalate	ND	5.2	ug/l	
131-11-3	Dimethyl phthalate	ND	5.2	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.1	ug/l	
118-74-1	Hexachlorobenzene	ND	5.2	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	ug/l	
67-72-1	Hexachloroethane	ND	5.2	ug/l	
78-59-1	Isophorone	ND	5.2	ug/l	
88-74-4	2-Nitroaniline	ND	10	ug/l	
99-09-2	3-Nitroaniline	ND	10	ug/l	
100-01-6	4-Nitroaniline	ND	10	ug/l	
98-95-3	Nitrobenzene	ND	5.2	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.2	ug/l	UJ
621-64-7	N-Nitroso-di-n-propylamine	ND	5.2	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.2	ug/l	
110-86-1	Pyridine	ND	10	ug/l	UJ

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	15%		15-110%
4165-62-2	Phenol-d5	15%		15-110%
118-79-6	2,4,6-Tribromophenol	45%		15-110%
4165-60-0	Nitrobenzene-d5	60%		30-130%
321-60-8	2-Fluorobiphenyl	63%		30-130%
1718-51-0	Terphenyl-d14	67%		30-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Page 1 of 1

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Client Sample ID:	MW3-ROX-112911	Date Sampled:	11/29/11
Lab Sample ID:	MC5929-2	Date Received:	11/30/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C BY SIM SW846 3510C	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	U3814.D	1	12/12/11	PR	12/01/11	OP27107	MSU230

Run #1	Initial Volume	Final Volume
Run #2	960 ml	1.0 ml

## BN PAH List

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	0.10	ug/l	
208-96-8	Acenaphthylene	ND	0.10	ug/l	
120-12-7	Anthracene	ND	0.10	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.052	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.052	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	ug/l	
218-01-9	Chrysene	ND	0.10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	ug/l	
206-44-0	Fluoranthene	ND	0.10	ug/l	
86-73-7	Fluorene	ND	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.21	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.21	ug/l	
91-20-3	Naphthalene	ND	0.10	ug/l	
85-01-8	Phenanthrene	ND	0.052	ug/l	
129-00-0	Pyrene	ND	0.10	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	71%		30-130%
321-60-8	2-Fluorobiphenyl	65%		30-130%
1718-51-0	Terphenyl-d14	63%		30-130%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

<b>Client Sample ID:</b> MW3-ROX-112911 <b>Lab Sample ID:</b> MC5929-2 <b>Matrix:</b> AQ - Ground Water <b>Method:</b> SW846 8011 SW846 8011 <b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	<b>Date Sampled:</b> 11/29/11 <b>Date Received:</b> 11/30/11 <b>Percent Solids:</b> n/a
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Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39702.D	1	12/03/11	CZ	12/02/11	OP27113	GBB2462
Run #2							

Run #	Initial Volume	Final Volume
Run #1	34.8 ml	2.0 ml
Run #2		

**VOA Special List**

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

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	112%		36-173%
460-00-4	Bromofluorobenzene (S)	111%		36-173%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID: MW3-ROX-112911-DUP	Date Sampled: 11/29/11
Lab Sample ID: MC5929-3	Date Received: 11/30/11
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8260B	
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M44773.D	1	12/03/11	AMY	n/a	n/a	MSM1464
Run #2							

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

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	0.52	0.50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	W
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	MW3-ROX-112911-DUP	Date Sampled:	11/29/11
Lab Sample ID:	MC5929-3	Date Received:	11/30/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	1.4	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



## Report of Analysis

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3

<b>Client Sample ID:</b> MW3-ROX-112911-DUP	<b>Date Sampled:</b> 11/29/11
<b>Lab Sample ID:</b> MC5929-3	<b>Date Received:</b> 11/30/11
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8260B	
<b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

**VOA Special List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	80%		70-130%
2037-26-5	Toluene-D8	83%		70-130%
460-00-4	4-Bromofluorobenzene	97%		70-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID:	MW3-ROX-112911-DUP	Date Sampled:	11/29/11
Lab Sample ID:	MC5929-3	Date Received:	11/30/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	S29100.D	1	12/05/11	KR	12/01/11	OP27106	MSS1268
Run #2							

Run #1	Initial Volume	Final Volume
Run #1	980 ml	1.0 ml
Run #2		

## ABN Special List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	10	ug/l	WJ
95-57-8	2-Chlorophenol	ND	5.1	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	ug/l	
51-28-5	2,4-Dinitrophenol	ND	20	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	ug/l	
95-48-7	2-Methylphenol	ND	10	ug/l	
	3&4-Methylphenol	ND	10	ug/l	
88-75-5	2-Nitrophenol	ND	10	ug/l	
100-02-7	4-Nitrophenol	ND	20	ug/l	
87-86-5	Pentachlorophenol	ND	10	ug/l	
108-95-2	Phenol	ND	5.1	ug/l	WJ
95-95-4	2,4,5-Trichlorophenol	ND	10	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	ug/l	
62-53-3	Aniline	ND	10	ug/l	WJ
101-55-3	4-Bromophenyl phenyl ether	ND	5.1	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.1	ug/l	
100-51-6	Benzyl Alcohol	ND	10	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.1	ug/l	
106-47-8	4-Chloroaniline	ND	10	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.1	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.1	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.1	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.1	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.1	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	10	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.1	ug/l	
132-64-9	Dibenzofuran	ND	5.1	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.1	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.1	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis



Client Sample ID:	MW3-ROX-112911-DUP	Date Sampled:	11/29/11
Lab Sample ID:	MC5929-3	Date Received:	11/30/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

## ABN Special List

CAS No.	Compound	Result	RL	Units	Q
84-66-2	Diethyl phthalate	ND	5.1	ug/l	
131-11-3	Dimethyl phthalate	ND	5.1	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	ug/l	
118-74-1	Hexachlorobenzene	ND	5.1	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	ug/l	
67-72-1	Hexachloroethane	ND	5.1	ug/l	
78-59-1	Isophorone	ND	5.1	ug/l	
88-74-4	2-Nitroaniline	ND	10	ug/l	
99-09-2	3-Nitroaniline	ND	10	ug/l	
100-01-6	4-Nitroaniline	ND	10	ug/l	
98-95-3	Nitrobenzene	ND	5.1	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.1	ug/l	KS
621-64-7	N-Nitroso-di-n-propylamine	ND	5.1	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.1	ug/l	
110-86-1	Pyridine	ND	10	ug/l	KS

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	34%		15-110%
4165-62-2	Phenol-d5	23%		15-110%
118-79-6	2,4,6-Tribromophenol	94%		15-110%
4165-60-0	Nitrobenzene-d5	53%		30-130%
321-60-8	2-Fluorobiphenyl	64%		30-130%
1718-51-0	Terphenyl-d14	85%		30-130%

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

ND = Not detected  
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J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	MW3-ROX-112911-DUP	Date Sampled:	11/29/11
Lab Sample ID:	MC5929-3	Date Received:	11/30/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C BY SIM SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U3815.D	1	12/12/11	PR	12/01/11	OP27107	MSU230
Run #2							

Run #	Initial Volume	Final Volume
Run #1	980 ml	1.0 ml
Run #2		

## BN PAH List

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	0.10	ug/l	
208-96-8	Acenaphthylene	ND	0.10	ug/l	
120-12-7	Anthracene	ND	0.10	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.051	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.051	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	ug/l	
218-01-9	Chrysene	ND	0.10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	ug/l	
206-44-0	Fluoranthene	ND	0.10	ug/l	
86-73-7	Fluorene	ND	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.20	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	0.10	ug/l	
85-01-8	Phenanthrene	ND	0.051	ug/l	
129-00-0	Pyrene	ND	0.10	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	63%		30-130%
321-60-8	2-Fluorobiphenyl	63%		30-130%
1718-51-0	Terphenyl-d14	79%		30-130%

ND = Not detected  
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J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

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Client Sample ID:	MW3-ROX-112911-DUP	Date Sampled:	11/29/11
Lab Sample ID:	MC5929-3	Date Received:	11/30/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8011 SW846 8011		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39703.D	1	12/03/11	CZ	12/02/11	OP27113	GBB2462
Run #2							

Run #	Initial Volume	Final Volume
Run #1	34.8 ml	2.0 ml
Run #2		

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.015	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.015	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits	
460-00-4	Bromofluorobenzene (S)	105%		36-173%	
460-00-4	Bromofluorobenzene (S)	110%		36-173%	

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID: MW3-ROX-112911-EB		Date Sampled: 11/29/11
Lab Sample ID: MC5929-4		Date Received: 11/30/11
Matrix: AQ - Equipment Blank	Percent Solids: n/a	
Method: SW846 8260B		
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M44774.D	1	12/03/11	AMY	n/a	n/a	MSM1464
Run #2							

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

## VOA Special List

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

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

3.4  
3

Client Sample ID: MW3-ROX-112911-EB	Date Sampled: 11/29/11
Lab Sample ID: MC5929-4	Date Received: 11/30/11
Matrix: AQ - Equipment Blank	Percent Solids: n/a
Method: SW846 8260B	
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

VOA Special List

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

3.4  
3

Client Sample ID: MW3-ROX-112911-EB	Date Sampled: 11/29/11
Lab Sample ID: MC5929-4	Date Received: 11/30/11
Matrix: AQ - Equipment Blank	Percent Solids: n/a
Method: SW846 8260B	
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

**VOA Special List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	82%		70-130%
2037-26-5	Toluene-D8	85%		70-130%
460-00-4	4-Bromofluorobenzene	97%		70-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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



## Report of Analysis

Client Sample ID:	MW3-ROX-112911-EB	Date Sampled:	11/29/11
Lab Sample ID:	MC5929-4	Date Received:	11/30/11
Matrix:	AQ - Equipment Blank	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	S29101.D	1	12/05/11	KR	12/01/11	OP27106	MSS1268
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

## ABN Special List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	10	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	ug/l	
51-28-5	2,4-Dinitrophenol	ND	20	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	ug/l	
95-48-7	2-Methylphenol	ND	10	ug/l	
	3&4-Methylphenol	ND	10	ug/l	
88-75-5	2-Nitrophenol	ND	10	ug/l	
100-02-7	4-Nitrophenol	ND	20	ug/l	
87-86-5	Pentachlorophenol	ND	10	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	10	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	ug/l	
62-53-3	Aniline	ND	10	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	ug/l	
100-51-6	Benzyl Alcohol	18.5	10	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	ug/l	
106-47-8	4-Chloroaniline	ND	10	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	10	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.0	ug/l	
132-64-9	Dibenzofuran	ND	5.0	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis



Client Sample ID: MW3-ROX-112911-EB	Date Sampled: 11/29/11
Lab Sample ID: MC5929-4	Date Received: 11/30/11
Matrix: AQ - Equipment Blank	Percent Solids: n/a
Method: SW846 8270C SW846 3510C	
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

**ABN Special List**

CAS No.	Compound	Result	RL	Units	Q
84-66-2	Diethyl phthalate	ND	5.0	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	ug/l	
67-72-1	Hexachloroethane	ND	5.0	ug/l	
78-59-1	Isophorone	ND	5.0	ug/l	
88-74-4	2-Nitroaniline	ND	10	ug/l	
99-09-2	3-Nitroaniline	ND	10	ug/l	
100-01-6	4-Nitroaniline	ND	10	ug/l	
98-95-3	Nitrobenzene	ND	5.0	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	ug/l	
110-86-1	Pyridine	ND	10	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	45%		15-110%
4165-62-2	Phenol-d5	27%		15-110%
118-79-6	2,4,6-Tribromophenol	98%		15-110%
4165-60-0	Nitrobenzene-d5	75%		30-130%
321-60-8	2-Fluorobiphenyl	80%		30-130%
1718-51-0	Terphenyl-d14	86%		30-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Page 1 of 1

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3

Client Sample ID: MW3-ROX-112911-EB	Date Sampled: 11/29/11
Lab Sample ID: MC5929-4	Date Received: 11/30/11
Matrix: AQ - Equipment Blank	Percent Solids: n/a
Method: SW846 8270C BY SIM SW846 3510C	
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U3816.D	1	12/12/11	PR	12/01/11	OP27107	MSU230
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

## BN PAH List

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	0.10	ug/l	
208-96-8	Acenaphthylene	ND	0.10	ug/l	
120-12-7	Anthracene	ND	0.10	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.050	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.050	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	ug/l	
218-01-9	Chrysene	ND	0.10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	ug/l	
206-44-0	Fluoranthene	ND	0.10	ug/l	
86-73-7	Fluorene	ND	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.20	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	0.10	ug/l	
85-01-8	Phenanthrene	ND	0.050	ug/l	
129-00-0	Pyrene	ND	0.10	ug/l	

CAS No.	Surr ogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	88%		30-130%
321-60-8	2-Fluorobiphenyl	81%		30-130%
1718-51-0	Terphenyl-d14	81%		30-130%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis



Client Sample ID: MW3-ROX-112911-EB Lab Sample ID: MC5929-4 Matrix: AQ - Equipment Blank Method: SW846 8011 SW846 8011 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	Date Sampled: 11/29/11 Date Received: 11/30/11 Percent Solids: n/a
--	--

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39704.D	1	12/03/11	CZ	12/02/11	OP27113	GBB2462
Run #2							

Run #	Initial Volume	Final Volume
Run #1	34.4 ml	2.0 ml
Run #2		

**VOA Special List**

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

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	112%		36-173%
460-00-4	Bromofluorobenzene (S)	121%		36-173%

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

Client Sample ID: TB-112811	Date Sampled: 11/28/11
Lab Sample ID: MC5929-5	Date Received: 11/30/11
Matrix: AQ - Trip Blank Water	Percent Solids: n/a
Method: SW846 8260B	
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M44716.D	1	12/02/11	AMY	n/a	n/a	MSM1462
Run #2							

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

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	ND	0.50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis



Client Sample ID: TB-112811	Date Sampled: 11/28/11
Lab Sample ID: MC5929-5	Date Received: 11/30/11
Matrix: AQ - Trip Blank Water	Percent Solids: n/a
Method: SW846 8260B	
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

3.5  
3

Client Sample ID: TB-112811	
Lab Sample ID: MC5929-5	Date Sampled: 11/28/11
Matrix: AQ - Trip Blank Water	Date Received: 11/30/11
Method: SW846 8260B	Percent Solids: n/a
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

**VOA Special List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	84%		70-130%
2037-26-5	Toluene-D8	87%		70-130%
460-00-4	4-Bromofluorobenzene	96%		70-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis



<b>Client Sample ID:</b> TB-112811 <b>Lab Sample ID:</b> MC5929-6 <b>Matrix:</b> AQ - Trip Blank Water <b>Method:</b> SW846 8011 SW846 8011 <b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	<b>Date Sampled:</b> 11/28/11 <b>Date Received:</b> 11/30/11 <b>Percent Solids:</b> n/a
--	---

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39706.D	1	12/03/11	CZ	12/02/11	OP27113	GBB2462
Run #2							

Run #	Initial Volume	Final Volume
Run #1	35.1 ml	2.0 ml
Run #2		

**VOA Special List**

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

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	121%		36-173%
460-00-4	Bromofluorobenzene (S)	120%		36-173%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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



## Misc. Forms

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## Custody Documents and Other Forms

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Includes the following where applicable:

- Certification Exceptions
- Certification Exceptions (IL)
- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody

LAB (LOCATION)



Shell Oil Products Chain Of Custody Record

URS

EMERGENCY ( )  
 CALCULATED ( )  
 OTHER ( )  
 Lab Vendor #

Please Check Appropriate Box:

<input type="checkbox"/> RELY SERVICES	<input type="checkbox"/> MOTIVE RETAIL	<input type="checkbox"/> SHELL RETAIL
<input type="checkbox"/> MOTIVE S&C/R	<input type="checkbox"/> CONSULTANT	<input type="checkbox"/> CHARGES
<input type="checkbox"/> SHELL PIPELINE	<input type="checkbox"/> OTHER	

Print/Bill To Contact Name: Erik Arthur  
 INCIDENT # (ENV SERVICES): 9 7 2 1 8 4 0  
 DATE: 11/29/11  
 PAGE: 1 of 1

URS CORPORATION  
 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300, ST. LOUIS, MO 63110

SITE ADDRESS: 900 South Central Ave; ROXANA, IL  
 ROZANA QUARTERLY GW / 21582593.000076

ENR: Erik Arthur  
 TEL: 314.743.4168 or 314.452.6929  
 FAX: 314.429.0462  
 EMAIL: enr@urscorp.com

SAMPLE NUMBER(S): L. Hathaway, J Jackson  
 LAB USE ONLY: MC5929

TURNAROUND TIME (CALENDAR DAYS):  
 31 DAYS  14 DAYS  7 DAYS  4 HOURS  
 LA - RWQCS REPORT FORMAT  UST AGENCY  
 DELIVERABLES:  LEVEL 1  LEVEL 2  LEVEL 3  LEVEL 4  OTHER (SPECIFY) ... EDO ...  
 TEMPERATURE ON RECEIPT: Cooler #1, Cooler #2, Cooler #3

REQUESTED ANALYSIS  
 FIELD NOTES:  
 TEMPERATURE ON RECEIPT: °C  
 Container PID Readings or Laboratory Noise

SPECIAL INSTRUCTIONS OR RUSH!  
 \* Please include "J" values on RUSH!  
 \* Please provide sample receipt ID.  
 SPECIAL CONTRACT RATE APPLIES  
 EXTRA FEE FOR RESHIRT PART APPLIES  
 CLOTH NOT REQUIRED  
 RECEIPT VERIFICATION REQUESTED  
 PROVIDE LOG DISK

LAB USE ONLY	Field Sample Identification	SAMPLING		MATERIAL	PRESERVATION					ML OF CONT.	VOC 8261B SL+TICS	VOC 8011	SVOC 8270C SL+TICS	PAH 8270LL	PID (ppm)	FIELD NOTES
		DATE	TIME		INCL	HEED	HEEDH	NONE	OTHER							
1	MW2-ROX-112811	11/28/11	1444	Water	X			X	X	9	X	X	X		0	
2	MW3-ROX-112911	11/29/11	1439													
3	MW3-ROX-112911-NUP		1439													
4	MW3-ROX-112911-EB		1450													
5	TB-112811	11/29/11	-							2						
6	TB-112911	11/29/11	-					X		2	X					

Received by (Signature): [Signature] Date: 11/29/11 Time: 10:00  
 Received by (Signature): [Signature] Date: 11/30/11 Time: 10:00  
 Received by (Signature): [Signature] Date: 1-8-1-6 Time: 10:00

FED EX

4.1  
4

Accutest Job Number: MC5929      Client: URS      Immediate Client Services Action Required: No  
 Date / Time Received: 11/30/2011      Delivery Method: \_\_\_\_\_      Client Service Action Required at LogIn: No  
 Project: 900 SOUTH CENTRAL AVE ROXANA      No. Coolers: 2      AirBlk #'s: \_\_\_\_\_

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

**Cooler Temperature**      Y or N  
 1. Temp criteria achieved:    
 2. Cooler temp verification: Infrared gun  
 3. Cooler media: Ice (bag)

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

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

**Sample Integrity - Condition**      Y or N  
 1. Sample recvd within HT:    
 2. All containers accounted for:    
 3. Condition of sample: Intact

**Sample Integrity - Instructions**      Y or N      N/A  
 1. Analysis requested is clear:    
 2. Bottles received for unspecified tests:    
 3. Sufficient volume recvd for analysis:    
 4. Compositing instructions clear:     
 5. Filling instructions clear:

Comments

4.1  
4

Internal Sample Tracking Chronicle

4.2  
4

Shell Oil

Job No: MC5929

URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
MC5929-1 Collected: 28-NOV-11 14:44 By: LRJJ Received: 30-NOV-11 By: JB MW2-ROX-112811						
MC5929-1	SW846 8011	03-DEC-11 00:17	CZ	02-DEC-11	BJ	V8011SL
MC5929-1	SW846 8260B	03-DEC-11 17:50	AMY			V8260SL+
MC5929-1	SW846 8260B	04-DEC-11 14:34	AMY			V8260SL+
MC5929-1	SW846 8270C	05-DEC-11 11:53	KR	01-DEC-11	PA	AB8270SL+
MC5929-1	SW846 8270C BY SIM	12-DEC-11 12:55	PR	01-DEC-11	PA	B8270SIMPAH
MC5929-2 Collected: 29-NOV-11 14:39 By: LRJJ Received: 30-NOV-11 By: JB MW3-ROX-112911						
MC5929-2	SW846 8011	03-DEC-11 00:42	CZ	02-DEC-11	BJ	V8011SL
MC5929-2	SW846 8260B	03-DEC-11 18:19	AMY			V8260SL+
MC5929-2	SW846 8270C	05-DEC-11 12:21	KR	01-DEC-11	PA	AB8270SL+
MC5929-2	SW846 8270C BY SIM	12-DEC-11 13:27	PR	01-DEC-11	PA	B8270SIMPAH
MC5929-3 Collected: 29-NOV-11 14:39 By: LRJJ Received: 30-NOV-11 By: JB MW3-ROX-112911-DUP						
MC5929-3	SW846 8011	03-DEC-11 01:06	CZ	02-DEC-11	BJ	V8011SL
MC5929-3	SW846 8260B	03-DEC-11 18:49	AMY			V8260SL+
MC5929-3	SW846 8270C	05-DEC-11 12:50	KR	01-DEC-11	PA	AB8270SL+
MC5929-3	SW846 8270C BY SIM	12-DEC-11 13:58	PR	01-DEC-11	PA	B8270SIMPAH
MC5929-4 Collected: 29-NOV-11 14:50 By: LRJJ Received: 30-NOV-11 By: JB MW3-ROX-112911-EB						
MC5929-4	SW846 8011	03-DEC-11 01:31	CZ	02-DEC-11	BJ	V8011SL
MC5929-4	SW846 8260B	03-DEC-11 19:18	AMY			V8260SL+
MC5929-4	SW846 8270C	05-DEC-11 13:18	KR	01-DEC-11	PA	AB8270SL+
MC5929-4	SW846 8270C BY SIM	12-DEC-11 14:30	PR	01-DEC-11	PA	B8270SIMPAH
MC5929-5 Collected: 28-NOV-11 00:00 By: LRJJ Received: 30-NOV-11 By: JB TB-112811						
MC5929-5	SW846 8260B	02-DEC-11 14:29	AMY			V8260SL+

### Internal Sample Tracking Chronicle

Shell Oil

Job No: MC5929

URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

4.2  
4

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
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MC5929-6 Collected: 28-NOV-11 00:00 By: LRJJ Received: 30-NOV-11 By: JB  
TB-112811

MC5929-6 SW846 8011 03-DEC-11 02:20 CZ 02-DEC-11 BJ V8011SL

# Accutest Internal Chain of Custody

Job Number: MC5929  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL  
 Received: 11/30/11

4.3  
**4**

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
MC5929-1.1	Walk In Ref #22	Nick Krasinski	12/01/11 14:43	Retrieve from Storage
MC5929-1.1	Nick Krasinski		12/01/11 22:50	Depleted
MC5929-1.5	VOC Ref #4	Dana Tyron	12/02/11 11:05	Retrieve from Storage
MC5929-1.5	Dana Tyron	GCMSM	12/02/11 11:06	Load on Instrument
MC5929-1.5	GCMSM	Dana Tyron	12/03/11 12:00	Unload from Instrument
MC5929-1.5	Dana Tyron	VOC Ref #4	12/03/11 12:00	Return to Storage
MC5929-1.6	VOC Ref #4	Dana Tyron	12/03/11 12:51	Retrieve from Storage
MC5929-1.6	Dana Tyron	GCMSM	12/03/11 12:51	Load on Instrument
MC5929-1.6	GCMSM	Emily Kozlowski	12/05/11 11:01	Unload from Instrument
MC5929-1.6	Emily Kozlowski	VOC Ref #4	12/05/11 11:02	Return to Storage
MC5929-1.8	VOC Ref #4	Bijan Jafari	12/02/11 14:57	Retrieve from Storage
MC5929-1.8	Bijan Jafari		12/06/11 09:49	Depleted
MC5929-1.9	VOC Ref #4	Dana Tyron	12/04/11 13:07	Retrieve from Storage
MC5929-1.9	Dana Tyron	GCMSM	12/04/11 13:07	Load on Instrument
MC5929-1.9	GCMSM	Emily Kozlowski	12/05/11 11:01	Unload from Instrument
MC5929-1.9	Emily Kozlowski	VOC Ref #4	12/05/11 11:02	Return to Storage
MC5929-2.2	Walk In Ref #22	Nick Krasinski	12/01/11 14:43	Retrieve from Storage
MC5929-2.2	Nick Krasinski		12/01/11 22:50	Depleted
MC5929-2.5	VOC Ref #4	Dana Tyron	12/03/11 12:51	Retrieve from Storage
MC5929-2.5	Dana Tyron	GCMSM	12/03/11 12:51	Load on Instrument
MC5929-2.5	GCMSM	Emily Kozlowski	12/05/11 11:01	Unload from Instrument
MC5929-2.5	Emily Kozlowski	VOC Ref #4	12/05/11 11:02	Return to Storage
MC5929-2.7	VOC Ref #4	Dana Tyron	12/02/11 11:05	Retrieve from Storage
MC5929-2.7	Dana Tyron	GCMSM	12/02/11 11:06	Load on Instrument
MC5929-2.7	GCMSM	Dana Tyron	12/03/11 12:00	Unload from Instrument
MC5929-2.7	Dana Tyron	VOC Ref #4	12/03/11 12:00	Return to Storage
MC5929-2.8	VOC Ref #4	Bijan Jafari	12/02/11 14:57	Retrieve from Storage
MC5929-2.8	Bijan Jafari		12/06/11 09:49	Depleted
MC5929-3.1	Walk In Ref #22	Nick Krasinski	12/01/11 14:43	Retrieve from Storage
MC5929-3.1	Nick Krasinski		12/01/11 22:50	Depleted
MC5929-3.4	Walk In Ref #22	Michael Rolo	12/01/11 21:09	Retrieve from Storage
MC5929-3.4	Michael Rolo		12/01/11 22:50	Depleted
MC5929-3.5	VOC Ref #4	Dana Tyron	12/03/11 12:51	Retrieve from Storage

# Accutest Internal Chain of Custody

Job Number: MC5929  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL  
 Received: 11/30/11

4.3

4

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
MC5929-3.5	Dana Tyron	GCMSM	12/03/11 12:51	Load on Instrument
MC5929-3.5	GCMSM	Emily Kozlowski	12/05/11 11:01	Unload from Instrument
MC5929-3.5	Emily Kozlowski	VOC Ref #4	12/05/11 11:02	Return to Storage
MC5929-3.7	VOC Ref #4	Dana Tyron	12/02/11 11:05	Retrieve from Storage
MC5929-3.7	Dana Tyron	GCMSM	12/02/11 11:06	Load on Instrument
MC5929-3.7	GCMSM	Dana Tyron	12/03/11 12:00	Unload from Instrument
MC5929-3.7	Dana Tyron	VOC Ref #4	12/03/11 12:00	Return to Storage
MC5929-3.9	VOC Ref #4	Bijan Jafari	12/02/11 14:57	Retrieve from Storage
MC5929-3.9	Bijan Jafari		12/06/11 09:49	Depleted
MC5929-4.1	Walk In Ref #22	Nick Krasinski	12/01/11 14:43	Retrieve from Storage
MC5929-4.1	Nick Krasinski		12/01/11 22:50	Depleted
MC5929-4.6	VOC Ref #4	Dana Tyron	12/02/11 11:05	Retrieve from Storage
MC5929-4.6	Dana Tyron	GCMSM	12/02/11 11:06	Load on Instrument
MC5929-4.6	GCMSM	Dana Tyron	12/03/11 12:00	Unload from Instrument
MC5929-4.6	Dana Tyron	VOC Ref #4	12/03/11 12:00	Return to Storage
MC5929-4.7	VOC Ref #4	Dana Tyron	12/03/11 12:51	Retrieve from Storage
MC5929-4.7	Dana Tyron	GCMSM	12/03/11 12:51	Load on Instrument
MC5929-4.7	GCMSM	Emily Kozlowski	12/05/11 11:01	Unload from Instrument
MC5929-4.7	Emily Kozlowski	VOC Ref #4	12/05/11 11:02	Return to Storage
MC5929-4.9	VOC Ref #4	Bijan Jafari	12/02/11 14:57	Retrieve from Storage
MC5929-4.9	Bijan Jafari		12/06/11 09:49	Depleted
MC5929-5.2	VOC Ref #4	Dana Tyron	12/02/11 11:05	Retrieve from Storage
MC5929-5.2	Dana Tyron	GCMSM	12/02/11 11:06	Load on Instrument
MC5929-5.2	GCMSM	Dana Tyron	12/03/11 12:00	Unload from Instrument
MC5929-5.2	Dana Tyron	VOC Ref #4	12/03/11 12:00	Return to Storage
MC5929-6.1	VOC Ref #4	Bijan Jafari	12/02/11 14:57	Retrieve from Storage
MC5929-6.1	Bijan Jafari		12/06/11 09:49	Depleted

## GC/MS Volatiles

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## QC Data Summaries

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Includes the following where applicable:

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



# Method Blank Summary

Job Number: MC5929

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1462-MB	M44712.D	1	12/02/11	AMY	n/a	n/a	MSM1462

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5929-5

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	ND	0.50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
96-12-8	1,2-Dibromo-3-cbloropropane	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	

5.1.1

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# Method Blank Summary

Job Number: MC5929

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1462-MB	M44712.D	1	12/02/11	AMY	n/a	n/a	MSM1462

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5929-5

CAS No.	Compound	Result	RL	Units	Q
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	

5.1.1  
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# Method Blank Summary

Job Number: MC5929

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1462-MB	M44712.D	1	12/02/11	AMY	n/a	n/a	MSM1462

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5929-5

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	83%	70-130%
2037-26-5	Toluene-D8	87%	70-130%
460-00-4	4-Bromofluorobenzene	95%	70-130%

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

5.1.1  
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# Method Blank Summary

Job Number: MC5929  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1464-MB	M44763.D	1	12/03/11	AMY	n/a	n/a	MSM1464

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5929-1, MC5929-2, MC5929-3, MC5929-4

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	ND	0.50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	

5.1.2

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# Method Blank Summary

Job Number: MC5929  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1464-MB	M44763.D	1	12/03/11	AMY	n/a	n/a	MSM1464

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5929-1, MC5929-2, MC5929-3, MC5929-4

CAS No.	Compound	Result	RL	Units	Q
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	

5.1.2  
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# Method Blank Summary

Job Number: MC5929

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1464-MB	M44763.D	1	12/03/11	AMY	n/a	n/a	MSM1464

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5929-1, MC5929-2, MC5929-3, MC5929-4

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	85%	70-130%
2037-26-5	Toluene-D8	84%	70-130%
460-00-4	4-Bromofluorobenzene	97%	70-130%

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

5.1.2

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# Method Blank Summary

Job Number: MC5929

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1466-MB	M44812.D	1	12/04/11	AMY	n/a	n/a	MSM1466

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5929-1

CAS No.	Compound	Result	RL	Units	Q
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	82%	70-130%
2037-26-5	Toluene-D8	88%	70-130%
460-00-4	4-Bromofluorobenzene	97%	70-130%

5.1.3

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# Method Blank Summary

Job Number: MC5929

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1462-MB2	M44763.D	1	12/03/11	AMY	n/a	n/a	MSM1462

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5718-1MS, MC5718-1MSD

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	ND	0.50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	

5.1.4  
5



# Method Blank Summary

Job Number: MC5929

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1462-MB2	M44763.D	1	12/03/11	AMY	n/a	n/a	MSM1462

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5718-1MS, MC5718-1MSD

CAS No.	Compound	Result	RL	Units	Q
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	

5.1.4  
5

# Method Blank Summary

Job Number: MC5929

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1462-MB2	M44763.D	1	12/03/11	AMY	n/a	n/a	MSM1462

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5718-1MS, MC5718-1MSD

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	85%	70-130%
2037-26-5	Toluene-D8	84%	70-130%
460-00-4	4-Bromofluorobenzene	97%	70-130%

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

5.1.4

5

# Blank Spike Summary

Job Number: MC5929  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1464-BS	M44760.D	1	12/03/11	AMY	n/a	n/a	MSM1464

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5929-1, MC5929-2, MC5929-3, MC5929-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	50	42.6	85	70-130
107-02-8	Acrolein	250	187	75	70-130
107-13-1	Acrylonitrile	50	261	522* a	70-130
71-43-2	Benzene	50	52.1	104	70-130
108-86-1	Bromobenzene	50	51.6	103	70-130
74-97-5	Bromochloromethane	50	53.1	106	70-130
75-27-4	Bromodichloromethane	50	52.9	106	70-130
75-25-2	Bromoform	50	48.8	98	70-130
74-83-9	Bromomethane	50	52.1	104	70-130
78-93-3	2-Butanone (MEK)	50	61.1	122	70-130
104-51-8	n-Butylbenzene	50	56.2	112	70-130
135-98-8	sec-Butylbenzene	50	55.5	111	70-130
98-06-6	tert-Butylbenzene	50	55.7	111	70-130
75-15-0	Carbon disulfide	50	53.4	107	70-130
56-23-5	Carbon tetrachloride	50	54.0	108	70-130
108-90-7	Chlorobenzene	50	47.9	96	70-130
75-00-3	Chloroethane	50	57.8	116	70-130
110-75-8	2-Chloroethyl vinyl ether	50	21.2	42* b	70-130
67-66-3	Chloroform	50	52.4	105	70-130
74-87-3	Chloromethane	50	55.4	111	70-130
95-49-8	o-Chlorotoluene	50	52.6	105	70-130
106-43-4	p-Chlorotoluene	50	55.8	112	70-130
124-48-1	Dibromochloromethane	50	51.0	102	70-130
95-50-1	1,2-Dichlorobenzene	50	50.1	100	70-130
541-73-1	1,3-Dichlorobenzene	50	49.9	100	70-130
106-46-7	1,4-Dichlorobenzene	50	48.1	96	70-130
75-71-8	Dichlorodifluoromethane	50	58.7	117	70-130
75-34-3	1,1-Dichloroethane	50	52.8	106	70-130
107-06-2	1,2-Dichloroethane	50	50.7	101	70-130
75-35-4	1,1-Dichloroethene	50	57.4	115	70-130
156-59-2	cis-1,2-Dichloroethene	50	51.2	102	70-130
156-60-5	trans-1,2-Dichloroethene	50	53.8	108	70-130
78-87-5	1,2-Dichloropropane	50	52.9	106	70-130
142-28-9	1,3-Dichloropropane	50	49.5	99	70-130
594-20-7	2,2-Dichloropropane	50	57.6	115	70-130
563-58-6	1,1-Dichloropropene	50	55.8	112	70-130

5.2.1  
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# Blank Spike Summary

Job Number: MC5929  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1464-BS	M44760.D	1	12/03/11	AMY	n/a	n/a	MSM1464

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5929-1, MC5929-2, MC5929-3, MC5929-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
10061-01-5	cis-1,3-Dichloropropene	50	52.6	105	70-130
10061-02-6	trans-1,3-Dichloropropene	50	55.4	111	70-130
123-91-1	1,4-Dioxane	250	238	95	70-130
97-63-2	Ethyl methacrylate	50	50.9	102	77-137
100-41-4	Ethylbenzene	50	51.8	104	70-130
87-68-3	Hexachlorobutadiene	50	49.6	99	70-130
591-78-6	2-Hexanone	50	47.6	95	70-130
98-82-8	Isopropylbenzene	50	65.2	130	70-130
99-87-6	p-Isopropyltoluene	50	54.2	108	70-130
1634-04-4	Methyl Tert Butyl Ether	50	51.6	103	70-130
108-10-1	4-Methyl-2-pentanone (MIBK)	50	50.1	100	70-130
74-95-3	Methylene bromide	50	52.5	105	70-130
75-09-2	Methylene chloride	50	52.0	104	70-130
91-20-3	Naphthalene	50	50.6	101	70-130
103-65-1	n-Propylbenzene	50	56.8	114	70-130
100-42-5	Styrene	50	54.8	110	70-130
630-20-6	1,1,1,2-Tetrachloroethane	50	49.5	99	70-130
79-34-5	1,1,2,2-Tetrachloroethane	50	52.8	106	70-130
127-18-4	Tetrachloroethene	50	48.5	97	70-130
108-88-3	Toluene	50	54.9	110	70-130
87-61-6	1,2,3-Trichlorobenzene	50	49.1	98	70-130
120-82-1	1,2,4-Trichlorobenzene	50	50.5	101	70-130
71-55-6	1,1,1-Trichloroethane	50	52.8	106	70-130
79-00-5	1,1,2-Trichloroethane	50	51.9	104	70-130
79-01-6	Trichloroethene	50	51.4	103	70-130
75-69-4	Trichlorofluoromethane	50	58.9	118	70-130
96-18-4	1,2,3-Trichloropropane	50	50.3	101	70-130
95-63-6	1,2,4-Trimethylbenzene	50	54.7	109	70-130
108-67-8	1,3,5-Trimethylbenzene	50	54.1	108	70-130
108-05-4	Vinyl Acetate	50	41.5	83	70-130
75-01-4	Vinyl chloride	50	70.0	140* b	70-130
	m,p-Xylene	100	106	106	70-130
95-47-6	o-Xylene	50	52.5	105	70-130
1330-20-7	Xylene (total)	150	159	106	70-130

5.2.1

5

# Blank Spike Summary

Job Number: MC5929

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1464-BS	M44760.D	1	12/03/11	AMY	n/a	n/a	MSM1464

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5929-1, MC5929-2, MC5929-3, MC5929-4

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	82%	70-130%
2037-26-5	Toluene-D8	87%	70-130%
460-00-4	4-Bromofluorobenzene	98%	70-130%

- (a) Outside control limits. Associated samples are non-detect for this compound.
- (b) Outside control limits. Blank Spike meets program technical requirements.

5.2.1

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# Blank Spike/Blank Spike Duplicate Summary

Job Number: MC5929

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1462-BS	M44709.D	1	12/02/11	AMY	n/a	n/a	MSM1462
MSM1462-BSD	M44710.D	1	12/02/11	AMY	n/a	n/a	MSM1462

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5929-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	50	46.1	92	39.2	78	16	70-130/25
107-02-8	Acrolein	250	141	56* a	143	57* a	1	70-130/25
107-13-1	Acrylonitrile	50	246	492* b	250	500* b	2	70-130/25
71-43-2	Benzene	50	50.5	101	50.7	101	0	70-130/25
108-86-1	Bromobenzene	50	52.0	104	52.3	105	1	70-130/25
74-97-5	Bromochloromethane	50	51.6	103	51.2	102	1	70-130/25
75-27-4	Bromodichloromethane	50	51.1	102	51.2	102	0	70-130/25
75-25-2	Bromoform	50	51.9	104	52.1	104	0	70-130/25
74-83-9	Bromomethane	50	52.4	105	51.2	102	2	70-130/25
78-93-3	2-Butanone (MEK)	50	57.5	115	56.2	112	2	70-130/25
104-51-8	n-Butylbenzene	50	54.2	108	54.3	109	0	70-130/25
135-98-8	sec-Butylbenzene	50	54.4	109	54.6	109	0	70-130/25
98-06-6	tert-Butylbenzene	50	53.8	108	54.3	109	1	70-130/25
75-15-0	Carbon disulfide	50	52.4	105	51.4	103	2	70-130/25
56-23-5	Carbon tetrachloride	50	53.3	107	52.7	105	1	70-130/25
108-90-7	Chlorobenzene	50	49.3	99	48.9	98	1	70-130/25
75-00-3	Chloroethane	50	56.5	113	54.5	109	4	70-130/25
110-75-8	2-Chloroethyl vinyl ether	50	22.9	46* a	21.8	44* a	5	70-130/25
67-66-3	Chloroform	50	48.8	98	48.8	98	0	70-130/25
74-87-3	Chloromethane	50	55.4	111	55.1	110	1	70-130/25
95-49-8	o-Chlorotoluene	50	51.1	102	51.5	103	1	70-130/25
106-43-4	p-Chlorotoluene	50	54.1	108	54.4	109	1	70-130/25
96-12-8	1,2-Dibromo-3-chloropropane	50	48.1	96	48.3	97	0	70-130/25
124-48-1	Dibromochloromethane	50	52.5	105	53.0	106	1	70-130/25
106-93-4	1,2-Dibromoethane	50	51.3	103	51.4	103	0	70-130/25
95-50-1	1,2-Dichlorobenzene	50	50.0	100	50.4	101	1	70-130/25
541-73-1	1,3-Dichlorobenzene	50	49.8	100	50.2	100	1	70-130/25
106-46-7	1,4-Dichlorobenzene	50	47.8	96	48.3	97	1	70-130/25
75-71-8	Dichlorodifluoromethane	50	61.1	122	58.6	117	4	70-130/25
75-34-3	1,1-Dichloroethane	50	49.7	99	49.7	99	0	70-130/25
107-06-2	1,2-Dichloroethane	50	48.8	98	48.7	97	0	70-130/25
75-35-4	1,1-Dichloroethene	50	56.5	113	56.5	113	0	70-130/25
156-59-2	cis-1,2-Dichloroethene	50	49.9	100	49.0	98	2	70-130/25
156-60-5	trans-1,2-Dichloroethene	50	52.2	104	51.8	104	1	70-130/25
78-87-5	1,2-Dichloropropane	50	50.4	101	50.6	101	0	70-130/25
142-28-9	1,3-Dichloropropane	50	49.1	98	49.1	98	0	70-130/25

5.3.1

5

# Blank Spike/Blank Spike Duplicate Summary

Job Number: MC5929  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1462-BS	M44709.D	1	12/02/11	AMY	n/a	n/a	MSM1462
MSM1462-BSD	M44710.D	1	12/02/11	AMY	n/a	n/a	MSM1462

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5929-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
594-20-7	2,2-Dichloropropane	50	56.5	113	54.5	109	4	70-130/25
563-58-6	1,1-Dichloropropene	50	54.4	109	55.0	110	1	70-130/25
10061-01-5	cis-1,3-Dichloropropene	50	52.6	105	52.3	105	1	70-130/25
10061-02-6	trans-1,3-Dichloropropene	50	54.9	110	55.7	111	1	70-130/25
123-91-1	1,4-Dioxane	250	248	99	244	98	2	70-130/25
97-63-2	Ethyl methacrylate	50	51.7	103	51.0	102	1	77-137/25
100-41-4	Ethylbenzene	50	52.3	105	52.5	105	0	70-130/25
87-68-3	Hexachlorobutadiene	50	51.9	104	51.9	104	0	70-130/25
591-78-6	2-Hexanone	50	51.2	102	46.0	92	11	70-130/25
98-82-8	Isopropylbenzene	50	63.3	127	64.3	129	2	70-130/25
99-87-6	p-Isopropyltoluene	50	53.5	107	53.5	107	0	70-130/25
1634-04-4	Methyl Tert Butyl Ether	50	51.2	102	51.1	102	0	70-130/25
108-10-1	4-Methyl-2-pentanone (MIBK)	50	48.6	97	48.8	98	0	70-130/25
74-95-3	Methylene bromide	50	51.0	102	52.1	104	2	70-130/25
75-09-2	Methylene chloride	50	50.5	101	50.2	100	1	70-130/25
91-20-3	Naphthalene	50	51.2	102	51.7	103	1	70-130/25
103-65-1	n-Propylbenzene	50	55.3	111	55.4	111	0	70-130/25
100-42-5	Styrene	50	55.9	112	55.7	111	0	70-130/25
630-20-6	1,1,1,2-Tetrachloroethane	50	51.3	103	51.5	103	0	70-130/25
79-34-5	1,1,2,2-Tetrachloroethane	50	50.1	100	51.4	103	3	70-130/25
127-18-4	Tetrachloroethene	50	51.0	102	50.9	102	0	70-130/25
108-88-3	Toluene	50	54.3	109	53.9	108	1	70-130/25
87-61-6	1,2,3-Trichlorobenzene	50	50.3	101	51.2	102	2	70-130/25
120-82-1	1,2,4-Trichlorobenzene	50	52.5	105	52.6	105	0	70-130/25
71-55-6	1,1,1-Trichloroethane	50	50.7	101	49.7	99	2	70-130/25
79-00-5	1,1,2-Trichloroethane	50	50.4	101	51.0	102	1	70-130/25
79-01-6	Trichloroethene	50	50.6	101	50.4	101	0	70-130/25
75-69-4	Trichlorofluoromethane	50	57.1	114	56.0	112	2	70-130/25
96-18-4	1,2,3-Trichloropropane	50	49.6	99	50.6	101	2	70-130/25
95-63-6	1,2,4-Trimethylbenzene	50	53.6	107	53.9	108	1	70-130/25
108-67-8	1,3,5-Trimethylbenzene	50	53.3	107	53.5	107	0	70-130/25
108-05-4	Vinyl Acetate	50	41.1	82	40.6	81	1	70-130/25
75-01-4	Vinyl chloride	50	67.2	134* a	67.1	134* a	0	70-130/25
	m,p-Xylene	100	107	107	107	107	0	70-130/25
95-47-6	o-Xylene	50	52.9	106	52.8	106	0	70-130/25
1330-20-7	Xylene (total)	150	160	107	160	107	0	70-130/25

5.3.1

5

# Blank Spike/Blank Spike Duplicate Summary

Job Number: MC5929

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1462-BS	M44709.D	1	12/02/11	AMY	n/a	n/a	MSM1462
MSM1462-BSD	M44710.D	1	12/02/11	AMY	n/a	n/a	MSM1462

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5929-5

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	80%	79%	70-130%
2037-26-5	Toluene-D8	87%	86%	70-130%
460-00-4	4-Bromofluorobenzene	97%	96%	70-130%

- (a) Outside control limits. Blank Spike meets program technical requirements.
- (b) Outside control limits. Associated samples are non-detect for this compound.

5.3.1  
5



# Blank Spike/Blank Spike Duplicate Summary

Job Number: MC5929

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1466-BS	M44809.D	1	12/04/11	AMY	n/a	n/a	MSM1466
MSM1466-BSD	M44810.D	1	12/04/11	AMY	n/a	n/a	MSM1466

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5929-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
104-51-8	n-Butylbenzene	50	55.9	112	56.6	113	1	70-130/25
100-41-4	Ethylbenzene	50	52.0	104	54.0	108	4	70-130/25
95-63-6	1,2,4-Trimethylbenzene	50	56.0	112	56.2	112	0	70-130/25

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	80%	81%	70-130%
2037-26-5	Toluene-D8	86%	86%	70-130%
460-00-4	4-Bromofluorobenzene	99%	96%	70-130%

5.3.2

5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5929

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5718-1MS	M44764.D	5	12/03/11	AMY	n/a	n/a	MSM1462
MC5718-1MSD	M44765.D	5	12/03/11	AMY	n/a	n/a	MSM1462
MC5718-1	M44714.D	1	12/02/11	AMY	n/a	n/a	MSM1462

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5929-5

CAS No.	Compound	MC5718-1 ug/l	Spike Q	ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND	250	110	44* a	109	44* a	1	70-130/30	
107-02-8	Acrolein	ND	1250	2540	203* a	2490	199* a	2	70-130/30	
107-13-1	Acrylonitrile	ND	250	1220	488* a	1200	480* a	2	70-130/30	
71-43-2	Benzene	ND	250	244	98	237	95	3	70-130/30	
108-86-1	Bromobenzene	ND	250	240	96	239	96	0	70-130/30	
74-97-5	Bromochloromethane	ND	250	257	103	246	98	4	70-130/30	
75-27-4	Bromodichloromethane	ND	250	249	100	241	96	3	70-130/30	
75-25-2	Bromoform	ND	250	238	95	225	90	6	70-130/30	
74-83-9	Bromomethane	ND	250	245	98	239	96	2	70-130/30	
78-93-3	2-Butanone (MEK)	ND	250	294	118	275	110	7	70-130/30	
104-51-8	n-Butylbenzene	ND	250	261	104	256	102	2	70-130/30	
135-98-8	sec-Butylbenzene	ND	250	261	104	249	100	5	70-130/30	
98-06-6	tert-Butylbenzene	ND	250	265	106	248	99	7	70-130/30	
75-15-0	Carbon disulfide	ND	250	254	102	239	96	6	70-130/30	
56-23-5	Carbon tetrachloride	ND	250	253	101	242	97	4	70-130/30	
108-90-7	Chlorobenzene	ND	250	230	92	222	89	4	70-130/30	
75-00-3	Chloroethane	ND	250	268	107	260	104	3	70-130/30	
110-75-8	2-Chloroethyl vinyl ether	ND	250	ND	0* a	26.0	10* a	200* b	70-130/30	
67-66-3	Chloroform	ND	250	247	99	234	94	5	70-130/30	
74-87-3	Chloromethane	ND	250	269	108	249	100	8	70-130/30	
95-49-8	o-Chlorotoluene	ND	250	247	99	238	95	4	70-130/30	
106-43-4	p-Chlorotoluene	ND	250	261	104	249	100	5	70-130/30	
96-12-8	1,2-Dibromo-3-chloropropane	ND	250	227	91	239	96	5	70-130/30	
124-48-1	Dibromochloromethane	ND	250	244	98	233	93	5	70-130/30	
106-93-4	1,2-Dibromoethane	ND	250	238	95	227	91	5	70-130/30	
95-50-1	1,2-Dichlorobenzene	ND	250	235	94	230	92	2	70-130/30	
541-73-1	1,3-Dichlorobenzene	ND	250	238	95	230	92	3	70-130/30	
106-46-7	1,4-Dichlorobenzene	ND	250	228	91	221	88	3	70-130/30	
75-71-8	Dichlorodifluoromethane	ND	250	277	111	262	105	6	70-130/30	
75-34-3	1,1-Dichloroethane	ND	250	256	102	243	97	5	70-130/30	
107-06-2	1,2-Dichloroethane	ND	250	237	95	235	94	1	70-130/30	
75-35-4	1,1-Dichloroethene	ND	250	276	110	258	103	7	70-130/30	
156-59-2	cis-1,2-Dichloroethene	ND	250	245	98	236	94	4	70-130/30	
156-60-5	trans-1,2-Dichloroethene	ND	250	259	104	244	98	6	70-130/30	
78-87-5	1,2-Dichloropropane	ND	250	250	100	241	96	4	70-130/30	
142-28-9	1,3-Dichloropropane	ND	250	237	95	222	89	7	70-130/30	

5.4.1

5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5929  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5718-1MS	M44764.D	5	12/03/11	AMY	n/a	n/a	MSM1462
MC5718-1MSD	M44765.D	5	12/03/11	AMY	n/a	n/a	MSM1462
MC5718-1	M44714.D	1	12/02/11	AMY	n/a	n/a	MSM1462

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5929-5

CAS No.	Compound	MC5718-1 ug/l	Spike Q	ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
594-20-7	2,2-Dichloropropane	ND		250	278	111	257	103	8	70-130/30
563-58-6	1,1-Dichloropropene	ND		250	262	105	251	100	4	70-130/30
10061-01-5	cis-1,3-Dichloropropene	ND		250	244	98	237	95	3	70-130/30
10061-02-6	trans-1,3-Dichloropropene	ND		250	257	103	257	103	0	70-130/30
123-91-1	1,4-Dioxane	ND		1250	1110	89	1150	92	4	70-130/30
97-63-2	Ethyl methacrylate	ND		250	236	94	235	94	0	72-139/30
100-41-4	Ethylbenzene	ND		250	247	99	233	93	6	70-130/30
87-68-3	Hexachlorobutadiene	ND		250	234	94	230	92	2	70-130/30
591-78-6	2-Hexanone	ND		250	176	70	165	66* a	6	70-130/30
98-82-8	Isopropylbenzene	ND		250	307	123	300	120	2	70-130/30
99-87-6	p-Isopropyltoluene	ND		250	253	101	246	98	3	70-130/30
1634-04-4	Methyl Tert Butyl Ether	6.7		250	254	99	244	95	4	70-130/30
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		250	234	94	228	91	3	70-130/30
74-95-3	Methylene bromide	ND		250	246	98	244	98	1	70-130/30
75-09-2	Methylene chloride	ND		250	250	100	237	95	5	70-130/30
91-20-3	Naphthalene	ND		250	238	95	235	94	1	70-130/30
103-65-1	n-Propylbenzene	ND		250	266	106	257	103	3	70-130/30
100-42-5	Styrene	ND		250	267	107	247	99	8	70-130/30
630-20-6	1,1,1,2-Tetrachloroethane	ND		250	237	95	228	91	4	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	ND		250	243	97	244	98	0	70-130/30
127-18-4	Tetrachloroethene	ND		250	235	94	219	88	7	70-130/30
108-88-3	Toluene	ND		250	255	102	252	101	1	70-130/30
87-61-6	1,2,3-Trichlorobenzene	ND		250	233	93	227	91	3	70-130/30
120-82-1	1,2,4-Trichlorobenzene	ND		250	241	96	237	95	2	70-130/30
71-55-6	1,1,1-Trichloroethane	ND		250	247	99	230	92	7	70-130/30
79-00-5	1,1,2-Trichloroethane	ND		250	242	97	239	96	1	70-130/30
79-01-6	Trichloroethene	ND		250	245	98	235	94	4	70-130/30
75-69-4	Trichlorofluoromethane	ND		250	279	112	262	105	6	70-130/30
96-18-4	1,2,3-Trichloropropane	ND		250	233	93	233	93	0	70-130/30
95-63-6	1,2,4-Trimethylbenzene	ND		250	256	102	249	100	3	70-130/30
108-67-8	1,3,5-Trimethylbenzene	ND		250	253	101	244	98	4	70-130/30
108-05-4	Vinyl Acetate	ND		250	205	82	197	79	4	70-130/30
75-01-4	Vinyl chloride	ND		250	328	131* a	321	128	2	70-130/30
	m,p-Xylene	ND		500	518	104	488	98	6	70-130/30
95-47-6	o-Xylene	ND		250	250	100	234	94	7	70-130/30
1330-20-7	Xylene (total)	ND		750	769	103	723	96	6	70-130/30

5.4.1  
5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5929

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5718-1MS	M44764.D	5	12/03/11	AMY	n/a	n/a	MSM1462
MC5718-1MSD	M44765.D	5	12/03/11	AMY	n/a	n/a	MSM1462
MC5718-1	M44714.D	1	12/02/11	AMY	n/a	n/a	MSM1462

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5929-5

CAS No.	Surrogate Recoveries	MS	MSD	MC5718-1	Limits
1868-53-7	Dibromofluoromethane	83%	81%	82%	70-130%
2037-26-5	Toluene-D8	85%	86%	86%	70-130%
460-00-4	4-Bromofluorobenzene	98%	99%	96%	70-130%

- (a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
- (b) High RPD due to possible matrix interference and/or sample non-homogeneity.

5.4.1

5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5929

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5817-2MS	M44767.D	5	12/03/11	AMY	n/a	n/a	MSM1464
MC5817-2MSD	M44768.D	5	12/03/11	AMY	n/a	n/a	MSM1464
MC5817-2	M44766.D	5	12/03/11	AMY	n/a	n/a	MSM1464

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5929-1, MC5929-2, MC5929-3, MC5929-4

CAS No.	Compound	MC5817-2 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND	250	120	48* a	115	46* a	4	70-130/30
107-02-8	Acrolein	ND	1250	2730	218* a	2620	210* a	4	70-130/30
107-13-1	Acrylonitrile	ND	250	1320	528* b	1250	500* b	5	70-130/30
71-43-2	Benzene	ND	250	250	100	256	102	2	70-130/30
108-86-1	Bromobenzene	ND	250	251	100	253	101	1	70-130/30
74-97-5	Bromochloromethane	ND	250	268	107	255	102	5	70-130/30
75-27-4	Bromodichloromethane	ND	250	256	102	253	101	1	70-130/30
75-25-2	Bromoform	ND	250	237	95	240	96	1	70-130/30
74-83-9	Bromomethane	ND	250	248	99	242	97	2	70-130/30
78-93-3	2-Butanone (MEK)	ND	250	277	111	281	112	1	70-130/30
104-51-8	n-Butylbenzene	ND	250	264	106	272	109	3	70-130/30
135-98-8	sec-Butylbenzene	ND	250	262	105	272	109	4	70-130/30
98-06-6	tert-Butylbenzene	ND	250	264	106	274	110	4	70-130/30
75-15-0	Carbon disulfide	ND	250	257	103	252	101	2	70-130/30
56-23-5	Carbon tetrachloride	ND	250	256	102	255	102	0	70-130/30
108-90-7	Chlorobenzene	ND	250	237	95	240	96	1	70-130/30
75-00-3	Chloroethane	ND	250	282	113	268	107	5	70-130/30
110-75-8	2-Chloroethyl vinyl ether	ND	250	34.2	14* a	29.9	12* a	13	70-130/30
67-66-3	Chloroform	ND	250	258	103	249	100	4	70-130/30
74-87-3	Chloromethane	ND	250	254	102	260	104	2	70-130/30
95-49-8	o-Chlorotoluene	ND	250	259	104	260	104	0	70-130/30
106-43-4	p-Chlorotoluene	ND	250	279	112	277	111	1	70-130/30
124-48-1	Dibromochloromethane	ND	250	248	99	251	100	1	70-130/30
95-50-1	1,2-Dichlorobenzene	ND	250	246	98	244	98	1	70-130/30
541-73-1	1,3-Dichlorobenzene	ND	250	244	98	245	98	0	70-130/30
106-46-7	1,4-Dichlorobenzene	ND	250	234	94	235	94	0	70-130/30
75-71-8	Dichlorodifluoromethane	ND	250	250	100	240	96	4	70-130/30
75-34-3	1,1-Dichloroethane	46.0	250	306	104	299	101	2	70-130/30
107-06-2	1,2-Dichloroethane	ND	250	247	99	244	98	1	70-130/30
75-35-4	1,1-Dichloroethene	53.5	250	324	108	320	107	1	70-130/30
156-59-2	cis-1,2-Dichloroethene	120	250	372	101	366	98	2	70-130/30
156-60-5	trans-1,2-Dichloroethene	124	250	378	102	368	98	3	70-130/30
78-87-5	1,2-Dichloropropane	ND	250	256	102	259	104	1	70-130/30
142-28-9	1,3-Dichloropropane	ND	250	242	97	248	99	2	70-130/30
594-20-7	2,2-Dichloropropane	ND	250	273	109	262	105	4	70-130/30
563-58-6	1,1-Dichloropropene	ND	250	266	106	273	109	3	70-130/30

5.4.2

5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5929

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5817-2MS	M44767.D	5	12/03/11	AMY	n/a	n/a	MSM1464
MC5817-2MSD	M44768.D	5	12/03/11	AMY	n/a	n/a	MSM1464
MC5817-2	M44766.D	5	12/03/11	AMY	n/a	n/a	MSM1464

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5929-1, MC5929-2, MC5929-3, MC5929-4

CAS No.	Compound	MC5817-2 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
10061-01-5	cis-1,3-Dichloropropene	ND	250	264	106	254	102	4	70-130/30
10061-02-6	trans-1,3-Dichloropropene	ND	250	278	111	269	108	3	70-130/30
123-91-1	1,4-Dioxane	ND	1250	1360	109	1280	102	6	70-130/30
97-63-2	Ethyl methacrylate	ND	250	260	104	249	100	4	72-139/30
100-41-4	Ethylbenzene	ND	250	253	101	254	102	0	70-130/30
87-68-3	Hexachlorobutadiene	ND	250	242	97	238	95	2	70-130/30
591-78-6	2-Hexanone	ND	250	181	72	180	72	1	70-130/30
98-82-8	Isopropylbenzene	ND	250	319	128	313	125	2	70-130/30
99-87-6	p-Isopropyltoluene	ND	250	257	103	264	106	3	70-130/30
1634-04-4	Methyl Tert Butyl Ether	ND	250	260	104	249	100	4	70-130/30
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	250	253	101	239	96	6	70-130/30
74-95-3	Methylene bromide	ND	250	262	105	253	101	3	70-130/30
75-09-2	Methylene chloride	ND	250	263	105	253	101	4	70-130/30
91-20-3	Naphthalene	ND	250	250	100	241	96	4	70-130/30
103-65-1	n-Propylbenzene	ND	250	273	109	282	113	3	70-130/30
100-42-5	Styrene	ND	250	270	108	273	109	1	70-130/30
630-20-6	1,1,1,2-Tetrachloroethane	ND	250	245	98	242	97	1	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	ND	250	263	105	247	99	6	70-130/30
127-18-4	Tetrachloroethene	ND	250	232	93	239	96	3	70-130/30
108-88-3	Toluene	ND	250	275	110	271	108	1	70-130/30
87-61-6	1,2,3-Trichlorobenzene	ND	250	244	98	235	94	4	70-130/30
120-82-1	1,2,4-Trichlorobenzene	ND	250	252	101	246	98	2	70-130/30
71-55-6	1,1,1-Trichloroethane	ND	250	249	100	252	101	1	70-130/30
79-00-5	1,1,2-Trichloroethane	ND	250	262	105	248	99	5	70-130/30
79-01-6	Trichloroethene	806	250	989	73	997	76	1	70-130/30
75-69-4	Trichlorofluoromethane	ND	250	276	110	275	110	0	70-130/30
96-18-4	1,2,3-Trichloropropane	ND	250	249	100	233	93	7	70-130/30
95-63-6	1,2,4-Trimethylbenzene	ND	250	262	105	272	109	4	70-130/30
108-67-8	1,3,5-Trimethylbenzene	ND	250	258	103	266	106	3	70-130/30
108-05-4	Vinyl Acetate	ND	250	212	85	207	83	2	70-130/30
75-01-4	Vinyl chloride	ND	250	333	133* a	326	130	2	70-130/30
	m,p-Xylene	ND	500	505	101	523	105	4	70-130/30
95-47-6	o-Xylene	ND	250	258	103	257	103	0	70-130/30
1330-20-7	Xylene (total)	ND	750	763	102	780	104	2	70-130/30

5.4.2

5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5929

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5817-2MS	M44767.D	5	12/03/11	AMY	n/a	n/a	MSM1464
MC5817-2MSD	M44768.D	5	12/03/11	AMY	n/a	n/a	MSM1464
MC5817-2	M44766.D	5	12/03/11	AMY	n/a	n/a	MSM1464

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5929-1, MC5929-2, MC5929-3, MC5929-4

CAS No.	Surrogate Recoveries	MS	MSD	MC5817-2	Limits
1868-53-7	Dibromofluoromethane	85%	80%	82%	70-130%
2037-26-5	Toluene-D8	90%	85%	88%	70-130%
460-00-4	4-Bromofluorobenzene	101%	96%	97%	70-130%

- (a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
- (b) Outside control limits. Associated samples are non-detect for this compound.

5.4.2

5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5929

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC5929-1MS	M44814.D	5	12/04/11	AMY	n/a	n/a	MSM1466
MC5929-1MSD	M44815.D	5	12/04/11	AMY	n/a	n/a	MSM1466
MC5929-1	M44813.D	5	12/04/11	AMY	n/a	n/a	MSM1466

The QC reported here applies to the following samples:

Method: SW846 8260B

MC5929-1

CAS No.	Compound	MC5929-1 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
104-51-8	n-Butylbenzene	20.2	250	277	103	282	105	2	70-130/30
100-41-4	Ethylbenzene	503	250	729	90	743	96	2	70-130/30
95-63-6	1,2,4-Trimethylbenzene	407	250	663	102	670	105	1	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	MC5929-1	Limits
1868-53-7	Dibromofluoromethane	80%	81%	80%	70-130%
2037-26-5	Toluene-D8	88%	88%	89%	70-130%
460-00-4	4-Bromofluorobenzene	100%	99%	105%	70-130%

5.4.3  
5



# Volatile Internal Standard Area Summary

Job Number: MC5929

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSM1462-CC1461	Injection Date:	12/02/11
Lab File ID:	M44708.D	Injection Time:	10:22
Instrument ID:	GCM5M	Method:	SW846 8260B

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	90705	9.19	140471	10.06	72918	13.33	88014	15.90	26820	6.74
Upper Limit <sup>a</sup>	181410	9.69	280942	10.56	145836	13.83	176028	16.40	53640	7.24
Lower Limit <sup>b</sup>	45353	8.69	70236	9.56	36459	12.83	44007	15.40	13410	6.24

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
MSM1462-BS	86221	9.18	135877	10.06	71323	13.33	86045	15.90	28155	6.74
MSM1462-BSD	89098	9.19	139915	10.06	72851	13.33	86938	15.90	28135	6.74
MSM1462-MB	83010	9.19	129740	10.06	65163	13.33	79748	15.90	26821	6.74
ZZZZZZ	80562	9.19	126646	10.06	63400	13.33	76201	15.90	26260	6.74
MC5718-1	79913	9.19	126249	10.06	63547	13.33	75953	15.90	26908	6.74
ZZZZZZ	77855	9.19	123813	10.06	61898	13.33	74852	15.90	25671	6.73
MC5929-5	78318	9.19	124062	10.07	63647	13.34	75429	15.90	26193	6.74
ZZZZZZ	78146	9.19	123611	10.06	62416	13.33	73373	15.90	25886	6.74
ZZZZZZ	74706	9.19	118002	10.06	60489	13.33	71724	15.90	24898	6.73
ZZZZZZ	75005	9.19	119785	10.06	60514	13.33	74530	15.90	24442	6.73
ZZZZZZ	77034	9.19	120262	10.07	61211	13.33	72685	15.90	24820	6.74
ZZZZZZ	74210	9.19	119094	10.07	60178	13.33	71599	15.90	24525	6.74
ZZZZZZ	75782	9.19	119940	10.07	60972	13.33	71209	15.90	24448	6.74
ZZZZZZ	75103	9.19	120716	10.07	60603	13.33	72778	15.90	24738	6.74
ZZZZZZ	77121	9.19	122283	10.06	62027	13.33	75857	15.90	25161	6.74
ZZZZZZ	81255	9.19	126526	10.07	63940	13.33	78728	15.90	25858	6.73
ZZZZZZ	80370	9.19	125606	10.06	64024	13.33	78798	15.90	26299	6.74
ZZZZZZ	77662	9.19	128404	10.06	63868	13.33	75145	15.90	25925	6.73
ZZZZZZ	79732	9.19	131391	10.07	65150	13.33	76167	15.90	25424	6.74
ZZZZZZ	77411	9.19	127003	10.07	63257	13.33	73832	15.90	24034	6.74
ZZZZZZ	75745	9.19	125193	10.07	62122	13.33	72798	15.90	23981	6.74

- IS 1 = Pentafluorobenzene
- IS 2 = 1,4-Difluorobenzene
- IS 3 = Chlorobenzene-D5
- IS 4 = 1,4-Dichlorobenzene-d4
- IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

5.5.1

# Volatile Internal Standard Area Summary

Job Number: MC5929  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSM1464-CC1461	Injection Date:	12/03/11
Lab File ID:	M44759.D	Injection Time:	11:58
Instrument ID:	GCMSM	Method:	SW846 8260B

	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
	AREA		AREA		AREA		AREA		AREA	
Check Std	82969	9.19	133685	10.06	72160	13.35	86317	15.90	25800	6.74
Upper Limit <sup>a</sup>	165938	9.69	267370	10.56	144320	13.83	172634	16.40	51600	7.24
Lower Limit <sup>b</sup>	41485	8.69	66843	9.56	36080	12.83	43159	15.40	12900	6.24

Lab Sample ID	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
	AREA		AREA		AREA		AREA		AREA	
MSM1464-BS	88282	9.19	142663	10.06	76264	13.33	89437	15.90	27443	6.74
MSM1462-BS2	88282	9.19	142663	10.06	76264	13.33	89437	15.90	27443	6.74
MSM1464-MB	85272	9.19	137267	10.07	71727	13.33	80469	15.90	27670	6.74
MSM1462-MB2	85272	9.19	137267	10.07	71727	13.33	80469	15.90	27670	6.74
MC5718-1MS	86279	9.19	141602	10.06	73115	13.33	88197	15.90	26781	6.74
MC5718-1MSD	91520	9.19	144541	10.06	79140	13.33	90647	15.90	28561	6.74
MC5817-2	87110	9.19	138684	10.06	72207	13.33	82316	15.90	28241	6.74
MC5817-2MS	87381	9.19	140455	10.06	76790	13.33	88942	15.90	28804	6.74
MC5817-2MSD	95039	9.19	154584	10.06	79422	13.33	95382	15.90	29912	6.74
ZZZZZZ	90732	9.19	143535	10.06	71782	13.33	84443	15.90	28771	6.74
ZZZZZZ	88380	9.19	137307	10.06	70830	13.33	82826	15.90	27308	6.74
MC5929-1	93481	9.19	149374	10.06	84274	13.33	92571	15.90	33850	6.74
MC5929-2	99722	9.19	155307	10.06	79480	13.33	91695	15.90	30202	6.74
MC5929-3	102166	9.19	164342	10.06	77279	13.33	92252	15.90	31816	6.74
MC5929-4	95014	9.19	150452	10.07	74309	13.33	89602	15.90	30797	6.74
ZZZZZZ	91203	9.19	145109	10.06	74867	13.33	87589	15.90	29403	6.73

- IS 1 = Pentafluorobenzene
- IS 2 = 1,4-Difluorobenzene
- IS 3 = Chlorobenzene-D5
- IS 4 = 1,4-Dichlorobenzene-d4
- IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

5.5.2  
5

# Volatile Internal Standard Area Summary

Job Number: MC5929

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSM1466-CC1461	Injection Date:	12/04/11
Lab File ID:	M44808.D	Injection Time:	12:05
Instrument ID:	GCM5M	Method:	SW846 8260B

	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
	AREA		AREA		AREA		AREA		AREA	
Check Std	56840	9.19	90115	10.06	48022	13.33	56894	15.90	18474	6.74
Upper Limit <sup>a</sup>	113680	9.69	180230	10.56	96044	13.83	113788	16.40	36948	7.24
Lower Limit <sup>b</sup>	28420	8.69	45058	9.56	24011	12.83	28447	15.40	9237	6.24

Lab	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
Sample ID	AREA		AREA		AREA		AREA		AREA	
MSM1466-BS	57162	9.19	91180	10.06	48658	13.33	56987	15.90	18774	6.74
MSM1466-BSD	56636	9.19	89922	10.06	47640	13.33	57573	15.90	19062	6.73
MSM1466-MB	54825	9.19	85743	10.06	44296	13.33	53885	15.90	18930	6.74
MC5929-1	58084	9.19	90104	10.06	47222	13.33	55501	15.90	18798	6.74
MC5929-1MS	58679	9.19	92500	10.06	49734	13.33	59069	15.90	20382	6.73
MC5929-1MSD	60009	9.19	94708	10.06	51058	13.33	60434	15.90	21340	6.74
ZZZZZZ	60548	9.19	93522	10.07	48667	13.33	57221	15.90	20278	6.74
ZZZZZZ	58527	9.19	92250	10.07	47092	13.33	56359	15.90	19728	6.74
ZZZZZZ	57281	9.19	89417	10.07	46402	13.33	54633	15.90	18762	6.74
ZZZZZZ	55032	9.19	87035	10.06	45482	13.33	53376	15.90	18191	6.73
ZZZZZZ	56741	9.19	88582	10.07	45623	13.33	53466	15.90	17837	6.74
ZZZZZZ	56482	9.19	88541	10.06	45909	13.33	53428	15.90	17527	6.73
ZZZZZZ	53924	9.19	83916	10.06	43525	13.33	50904	15.90	16858	6.74
ZZZZZZ	53211	9.19	83683	10.06	43161	13.33	53401	15.90	16131	6.73
ZZZZZZ	54047	9.18	84114	10.06	43198	13.33	53410	15.90	17331	6.73
ZZZZZZ	56027	9.19	86962	10.06	45144	13.33	53469	15.90	17147	6.74
ZZZZZZ	56918	9.19	90092	10.06	45939	13.33	57049	15.90	17770	6.73
ZZZZZZ	56469	9.19	89190	10.06	45990	13.33	55355	15.89	18654	6.74
ZZZZZZ	54609	9.19	83468	10.06	44367	13.33	53107	15.90	17992	6.73
ZZZZZZ	55797	9.19	87001	10.07	45039	13.33	54683	15.90	18232	6.74
ZZZZZZ	55129	9.19	86333	10.06	44986	13.33	53241	15.90	17519	6.74

- IS 1 = Pentafluorobenzene
- IS 2 = 1,4-Difluorobenzene
- IS 3 = Chlorobenzene-D5
- IS 4 = 1,4-Dichlorobenzene-d4
- IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

5.5.3  
5

# Volatile Surrogate Recovery Summary

Job Number: MC5929

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Method: SW846 8260B	Matrix: AQ
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Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
MC5929-1	M44813.D	80.0	89.0	105.0
MC5929-1	M44771.D	78.0	88.0	103.0
MC5929-2	M44772.D	81.0	89.0	98.0
MC5929-3	M44773.D	80.0	83.0	97.0
MC5929-4	M44774.D	82.0	85.0	97.0
MC5929-5	M44716.D	84.0	87.0	96.0
MC5718-1MS	M44764.D	83.0	85.0	98.0
MC5718-1MSD	M44765.D	81.0	86.0	99.0
MC5817-2MS	M44767.D	85.0	90.0	101.0
MC5817-2MSD	M44768.D	80.0	85.0	96.0
MC5929-1MS	M44814.D	80.0	88.0	100.0
MC5929-1MSD	M44815.D	81.0	88.0	99.0
MSM1462-BS	M44709.D	80.0	87.0	97.0
MSM1462-BSD	M44710.D	79.0	86.0	96.0
MSM1462-MB	M44712.D	83.0	87.0	95.0
MSM1464-BS	M44760.D	82.0	87.0	98.0
MSM1464-MB	M44763.D	85.0	84.0	97.0
MSM1466-BS	M44809.D	80.0	86.0	99.0
MSM1466-BSD	M44810.D	81.0	86.0	96.0
MSM1466-MB	M44812.D	82.0	88.0	97.0
MSM1462-MB2	M44763.D	85.0	84.0	97.0

**Surrogate Compounds**                      **Recovery Limits**

S1 = Dibromofluoromethane              70-130%  
 S2 = Toluene-D8                              70-130%  
 S3 = 4-Bromofluorobenzene              70-130%

5.6.1  
5

## GC/MS Semi-volatiles

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9

## QC Data Summaries

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Includes the following where applicable:

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

## Method Blank Summary

Job Number: MC5929

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27106-MB	S29093.D	1	12/05/11	KR	12/01/11	OP27106	MSS1268

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5929-1, MC5929-2, MC5929-3, MC5929-4

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	10	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	ug/l	
51-28-5	2,4-Dinitrophenol	ND	20	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	ug/l	
95-48-7	2-Methylphenol	ND	10	ug/l	
	3&4-Methylphenol	ND	10	ug/l	
88-75-5	2-Nitrophenol	ND	10	ug/l	
100-02-7	4-Nitrophenol	ND	20	ug/l	
87-86-5	Pentachlorophenol	ND	10	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	10	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	ug/l	
62-53-3	Aniline	ND	10	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	ug/l	
100-51-6	Benzyl Alcohol	ND	10	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	ug/l	
106-47-8	4-Chloroaniline	ND	10	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	10	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.0	ug/l	
132-64-9	Dibenzofuran	ND	5.0	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	ug/l	
84-66-2	Diethyl phthalate	ND	5.0	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	ug/l	

6.1.1

6

# Method Blank Summary

Job Number: MC5929

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27106-MB	S29093.D	1	12/05/11	KR	12/01/11	OP27106	MSS1268

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5929-1, MC5929-2, MC5929-3, MC5929-4

CAS No.	Compound	Result	RL	Units	Q
77-47-4	Hexachlorocyclopentadiene	ND	10	ug/l	
67-72-1	Hexachloroethane	ND	5.0	ug/l	
78-59-1	Isophorone	ND	5.0	ug/l	
88-74-4	2-Nitroaniline	ND	10	ug/l	
99-09-2	3-Nitroaniline	ND	10	ug/l	
100-01-6	4-Nitroaniline	ND	10	ug/l	
98-95-3	Nitrobenzene	ND	5.0	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	ug/l	
110-86-1	Pyridine	ND	10	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	41%	15-110%
4165-62-2	Phenol-d5	25%	15-110%
118-79-6	2,4,6-Tribromophenol	92%	15-110%
4165-60-0	Nitrobenzene-d5	72%	30-130%
321-60-8	2-Fluorobiphenyl	76%	30-130%
1718-51-0	Terphenyl-d14	92%	30-130%

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

6.1.1

6

# Method Blank Summary

Job Number: MC5929

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27107-MB	F53685.D	1	12/06/11	KR	12/01/11	OP27107	MSF2583

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC5929-1, MC5929-2, MC5929-3, MC5929-4

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	0.10	ug/l	
208-96-8	Acenaphthylene	ND	0.10	ug/l	
120-12-7	Anthracene	ND	0.10	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.050	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.050	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	ug/l	
218-01-9	Chrysene	ND	0.10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	ug/l	
206-44-0	Fluoranthene	ND	0.10	ug/l	
86-73-7	Fluorene	ND	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.20	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	0.10	ug/l	
85-01-8	Phenanthrene	ND	0.050	ug/l	
129-00-0	Pyrene	ND	0.10	ug/l	

CAS No.	Surrogate Recoveries		Limits
4165-60-0	Nitrobenzene-d5	85%	30-130%
321-60-8	2-Fluorobiphenyl	79%	30-130%
1718-51-0	Terphenyl-d14	104%	30-130%

6.1.2

6



# Blank Spike Summary

Job Number: MC5929

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27106-BS	S29094.D	1	12/05/11	KR	12/01/11	OP27106	MSS1268

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5929-1, MC5929-2, MC5929-3, MC5929-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
65-85-0	Benzoic Acid	100	28.1	28* a	30-130
95-57-8	2-Chlorophenol	100	64.9	65	30-130
59-50-7	4-Chloro-3-methyl phenol	100	81.1	81	30-130
120-83-2	2,4-Dichlorophenol	100	84.5	85	30-130
105-67-9	2,4-Dimethylphenol	100	77.8	78	30-130
51-28-5	2,4-Dinitrophenol	100	75.4	75	30-130
534-52-1	4,6-Dinitro-o-cresol	100	96.9	97	30-130
95-48-7	2-Methylphenol	100	60.6	61	30-130
	3&4-Methylphenol	200	104	52	30-130
88-75-5	2-Nitrophenol	100	80.1	80	30-130
100-02-7	4-Nitrophenol	100	41.9	42	30-130
87-86-5	Pentachlorophenol	100	91.8	92	30-130
108-95-2	Phenol	100	28.0	28* a	30-130
95-95-4	2,4,5-Trichlorophenol	100	92.6	93	30-130
88-06-2	2,4,6-Trichlorophenol	100	87.9	88	30-130
62-53-3	Aniline	50	14.8	30* a	40-140
101-55-3	4-Bromophenyl phenyl ether	50	51.0	102	40-140
85-68-7	Butyl benzyl phthalate	50	44.2	88	40-140
100-51-6	Benzyl Alcohol	50	21.8	44	40-140
91-58-7	2-Chloronaphthalene	50	40.9	82	40-140
106-47-8	4-Chloroaniline	50	22.2	44	40-140
111-91-1	bis(2-Chloroethoxy)methane	50	33.4	67	40-140
111-44-4	bis(2-Chloroethyl)ether	50	33.0	66	40-140
108-60-1	bis(2-Chloroisopropyl)ether	50	26.9	54	40-140
7005-72-3	4-Chlorophenyl phenyl ether	50	49.0	98	40-140
122-66-7	1,2-Diphenylhydrazine	50	31.4	63	40-140
121-14-2	2,4-Dinitrotoluene	50	45.3	91	40-140
606-20-2	2,6-Dinitrotoluene	50	42.0	84	40-140
91-94-1	3,3'-Dichlorobenzidine	50	35.1	70	40-140
132-64-9	Dibenzofuran	50	42.3	85	40-140
84-74-2	Di-n-butyl phthalate	50	44.3	89	40-140
117-84-0	Di-n-octyl phthalate	50	56.8	114	40-140
84-66-2	Diethyl phthalate	50	47.2	94	40-140
131-11-3	Dimethyl phthalate	50	43.2	86	40-140
117-81-7	bis(2-Ethylhexyl)phthalate	50	46.4	93	40-140
118-74-1	Hexachlorobenzene	50	49.1	98	40-140

6.2.1

6

# Blank Spike Summary

Job Number: MC5929

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27106-BS	S29094.D	1	12/05/11	KR	12/01/11	OP27106	MSS1268

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5929-1, MC5929-2, MC5929-3, MC5929-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
77-47-4	Hexachlorocyclopentadiene	50	29.7	59	40-140
67-72-1	Hexachloroethane	50	35.7	71	40-140
78-59-1	Isophorone	50	26.3	53	40-140
88-74-4	2-Nitroaniline	50	41.9	84	40-140
99-09-2	3-Nitroaniline	50	23.1	46	40-140
100-01-6	4-Nitroaniline	50	33.8	68	40-140
98-95-3	Nitrobenzene	50	35.2	70	40-140
62-75-9	n-Nitrosodimethylamine	50	17.7	35* a	40-140
621-64-7	N-Nitroso-di-n-propylamine	50	36.1	72	40-140
86-30-6	N-Nitrosodiphenylamine	50	45.3	91	40-140
110-86-1	Pyridine	50	14.1	28* a	40-140

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	44%	15-110%
4165-62-2	Phenol-d5	28%	15-110%
118-79-6	2,4,6-Tribromophenol	103%	15-110%
4165-60-0	Nitrobenzene-d5	74%	30-130%
321-60-8	2-Fluorobiphenyl	82%	30-130%
1718-51-0	Terphenyl-d14	97%	30-130%

(a) Outside control limits. Blank Spike meets program technical requirements.

6.2.1  
6

# Blank Spike Summary

Job Number: MC5929

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27107-BS	F53686.D	1	12/06/11	KR	12/01/11	OP27107	MSF2583

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC5929-1, MC5929-2, MC5929-3, MC5929-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
83-32-9	Acenaphthene	50	43.7	87	40-140
208-96-8	Acenaphthylene	50	28.9	58	40-140
120-12-7	Anthracene	50	40.8	82	40-140
56-55-3	Benzo(a)anthracene	50	50.0	100	40-140
50-32-8	Benzo(a)pyrene	50	44.3	89	40-140
205-99-2	Benzo(b)fluoranthene	50	49.1	98	40-140
191-24-2	Benzo(g,h,i)perylene	50	63.0	126	40-140
207-08-9	Benzo(k)fluoranthene	50	53.1	106	40-140
218-01-9	Chrysene	50	48.0	96	40-140
53-70-3	Dibenzo(a,h)anthracene	50	56.0	112	40-140
206-44-0	Fluoranthene	50	40.7	81	40-140
86-73-7	Fluorene	50	46.7	93	40-140
193-39-5	Indeno(1,2,3-cd)pyrene	50	56.6	113	40-140
90-12-0	1-Methylnaphthalene	50	35.6	71	40-140
91-57-6	2-Methylnaphthalene	50	42.7	85	40-140
91-20-3	Naphthalene	50	41.5	83	40-140
85-01-8	Phenanthrene	50	43.1	86	40-140
129-00-0	Pyrene	50	51.9	104	40-140

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	91%	30-130%
321-60-8	2-Fluorobiphenyl	84%	30-130%
1718-51-0	Terphenyl-d14	108%	30-130%

6.2.2  
6

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5929  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27106-MS	S29095.D	1	12/05/11	KR	12/01/11	OP27106	MSS1268
OP27106-MSD	S29096.D	1	12/05/11	KR	12/01/11	OP27106	MSS1268
MC6005-1	S29097.D	1	12/05/11	KR	12/01/11	OP27106	MSS1268

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5929-1, MC5929-2, MC5929-3, MC5929-4

CAS No.	Compound	MC6005-1 ug/l	Spike Q	ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic Acid	ND	100	31.7	32	33.1	33	4	30-130/20	
95-57-8	2-Chlorophenol	ND	100	61.4	61	62.9	63	2	30-130/20	
59-50-7	4-Chloro-3-methyl phenol	ND	100	78.4	78	81.8	82	4	30-130/20	
120-83-2	2,4-Dichlorophenol	ND	100	83.7	84	85.6	86	2	30-130/20	
105-67-9	2,4-Dimethylphenol	ND	100	71.0	71	76.0	76	7	30-130/20	
51-28-5	2,4-Dinitrophenol	ND	100	83.0	83	86.0	86	4	30-130/20	
534-52-1	4,6-Dinitro-o-cresol	ND	100	96.5	97	100	100	4	30-130/20	
95-48-7	2-Methylphenol	ND	100	56.8	57	59.7	60	5	30-130/20	
	3&4-Methylphenol	ND	200	99.5	50	104	52	4	30-130/20	
88-75-5	2-Nitrophenol	ND	100	78.3	78	79.8	80	2	30-130/20	
100-02-7	4-Nitrophenol	ND	100	43.2	43	46.5	47	7	30-130/20	
87-86-5	Pentachlorophenol	ND	100	71.9	72	78.4	78	9	30-130/20	
108-95-2	Phenol	ND	100	26.5	27* a	26.5	27* a	0	30-130/20	
95-95-4	2,4,5-Trichlorophenol	ND	100	92.4	92	96.6	97	4	30-130/20	
88-06-2	2,4,6-Trichlorophenol	ND	100	88.3	88	92.9	93	5	30-130/20	
62-53-3	Aniline	ND	50	14.0	28* a	12.7	25* a	10	40-140/20	
101-55-3	4-Bromophenyl phenyl ether	ND	50	40.8	82	43.8	88	7	40-140/20	
85-68-7	Butyl benzyl phthalate	ND	50	33.1	66	33.0	66	0	40-140/20	
100-51-6	Benzyl Alcohol	ND	50	22.2	44	22.8	46	3	40-140/20	
91-58-7	2-Chloronaphthalene	ND	50	35.1	70	37.5	75	7	40-140/20	
106-47-8	4-Chloroaniline	ND	50	21.4	43	13.8	28* b	43* c	40-140/20	
111-91-1	bis(2-Chloroethoxy)methane	ND	50	32.7	65	32.1	64	2	40-140/20	
111-44-4	bis(2-Chloroethyl)ether	ND	50	31.2	62	30.6	61	2	40-140/20	
108-60-1	bis(2-Chloroisopropyl)ether	ND	50	24.9	50	24.8	50	0	40-140/20	
7005-72-3	4-Chlorophenyl phenyl ether	ND	50	40.3	81	42.9	86	6	40-140/20	
122-66-7	1,2-Diphenylhydrazine	ND	50	29.9	60	30.7	61	3	40-140/20	
121-14-2	2,4-Dinitrotoluene	ND	50	42.0	84	45.7	91	8	40-140/20	
606-20-2	2,6-Dinitrotoluene	ND	50	39.3	79	42.8	86	9	40-140/20	
91-94-1	3,3'-Dichlorobenzidine	ND	50	20.6	41	17.6	35* b	16	40-140/20	
132-64-9	Dibenzofuran	ND	50	36.2	72	39.5	79	9	40-140/20	
84-74-2	Di-n-butyl phthalate	0.38	50	35.0	69	37.2	74	6	40-140/20	
117-84-0	Di-n-octyl phthalate	ND	50	29.1	58	32.3	65	10	40-140/20	
84-66-2	Diethyl phthalate	0.56	50	37.8	74	41.6	82	10	40-140/20	
131-11-3	Dimethyl phthalate	ND	50	26.4	53	30.5	61	14	40-140/20	
117-81-7	bis(2-Ethylhexyl)phthalate	0.85	50	25.8	50	28.6	56	10	40-140/20	
118-74-1	Hexachlorobenzene	ND	50	31.1	62	35.3	71	13	40-140/20	

6.3.1

6

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5929

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27106-MS	S29095.D	1	12/05/11	KR	12/01/11	OP27106	MSS1268
OP27106-MSD	S29096.D	1	12/05/11	KR	12/01/11	OP27106	MSS1268
MC6005-1	S29097.D	1	12/05/11	KR	12/01/11	OP27106	MSS1268

The QC reported here applies to the following samples:

Method: SW846 8270C

MC5929-1, MC5929-2, MC5929-3, MC5929-4

CAS No.	Compound	MC6005-1 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
77-47-4	Hexachlorocyclopentadiene	ND	50	17.2	34* b	18.6	37* b	8	40-140/20
67-72-1	Hexachloroethane	ND	50	28.6	57	27.6	55	4	40-140/20
78-59-1	Isophorone	ND	50	25.1	50	26.1	52	4	40-140/20
88-74-4	2-Nitroaniline	ND	50	40.7	81	43.1	86	6	40-140/20
99-09-2	3-Nitroaniline	ND	50	20.9	42	12.7	25* b	49* c	40-140/20
100-01-6	4-Nitroaniline	ND	50	32.8	66	33.7	67	3	40-140/20
98-95-3	Nitrobenzene	ND	50	32.9	66	32.6	65	1	40-140/20
62-75-9	n-Nitrosodimethylamine	ND	50	18.0	36* a	17.2	34* a	5	40-140/20
621-64-7	N-Nitroso-di-n-propylamine	ND	50	32.6	65	34.6	69	6	40-140/20
86-30-6	N-Nitrosodiphenylamine	ND	50	40.2	80	42.8	86	6	40-140/20
110-86-1	Pyridine	ND	50	16.0	32* a	13.6	27* a	16	40-140/20

CAS No.	Surrogate Recoveries	MS	MSD	MC6005-1	Limits
367-12-4	2-Fluorophenol	41%	41%	37%	15-110%
4165-62-2	Phenol-d5	27%	28%	24%	15-110%
118-79-6	2,4,6-Tribromophenol	97%	101%	93%	15-110%
4165-60-0	Nitrobenzene-d5	70%	68%	60%	30-130%
321-60-8	2-Fluorobiphenyl	70%	74%	65%	30-130%
1718-51-0	Terphenyl-d14	55%	55%	66%	30-130%

- (a) Outside control limits. Blank Spike meets program technical requirements.
- (b) Outside control limits due to possible matrix interference. Refer to Blank Spike.
- (c) High RPD due to possible matrix interference and/or sample non-homogeneity.

6.3.1

6

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5929

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27107-MS	U3811.D	1	12/12/11	PR	12/01/11	OP27107	MSU230
OP27107-MSD	U3812.D	1	12/12/11	PR	12/01/11	OP27107	MSU230
MC5917-1	U3810.D	1	12/12/11	PR	12/01/11	OP27107	MSU230

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC5929-1, MC5929-2, MC5929-3, MC5929-4

CAS No.	Compound	MC5917-1 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	0.12	50	37.2	74	39.8	79	7	40-140/20
208-96-8	Acenaphthylene	ND	50	27.0	54	29.4	59	9	40-140/20
120-12-7	Anthracene	0.059	50	35.2	70	38.4	77	9	40-140/20
56-55-3	Benzo(a)anthracene	0.16	50	33.0	66	35.8	71	8	40-140/20
50-32-8	Benzo(a)pyrene	0.14	50	24.3	48	26.2	52	8	40-140/20
205-99-2	Benzo(b)fluoranthene	0.20	50	27.9	55	30.6	61	9	40-140/20
191-24-2	Benzo(g,h,i)perylene	0.20	50	28.8	57	28.4	56	1	40-140/20
207-08-9	Benzo(k)fluoranthene	0.18	50	28.9	57	30.9	61	7	40-140/20
218-01-9	Chrysene	0.20	50	28.3	56	31.2	62	10	40-140/20
53-70-3	Dibenzo(a,h)anthracene	0.096	50	27.3	54	27.3	54	0	40-140/20
206-44-0	Fluoranthene	0.69	50	34.8	68	38.4	75	10	40-140/20
86-73-7	Fluorene	ND	50	38.0	76	41.4	83	9	40-140/20
193-39-5	Indeno(1,2,3-cd)pyrene	0.16	50	27.9	55	28.0	56	0	40-140/20
90-12-0	1-Methylnaphthalene	ND	50	34.2	68	36.3	73	6	40-140/20
91-57-6	2-Methylnaphthalene	0.013	50	32.9	66	34.9	70	6	40-140/20
91-20-3	Naphthalene	ND	50	34.6	69	35.4	71	2	40-140/20
85-01-8	Phenanthrene	0.099	50	35.1	70	37.5	75	7	40-140/20
129-00-0	Pyrene	0.50	50	34.3	68	36.2	71	5	40-140/20

CAS No.	Surrogate Recoveries	MS	MSD	MC5917-1	Limits
4165-60-0	Nitrobenzene-d5	82%	82%	74%	30-130%
321-60-8	2-Fluorobiphenyl	73%	76%	67%	30-130%
1718-51-0	Terphenyl-d14	47%	49%	57%	30-130%

6.3.2

6

# Semivolatile Internal Standard Area Summary

Job Number: MC5929  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSF2583-CC2576	Injection Date:	12/05/11
Lab File ID:	F53669.D	Injection Time:	17:15
Instrument ID:	GCMSF	Method:	SW846 8270C BY SIM

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	168092	5.44	591871	6.73	319591	9.20	533214	11.70	595669	16.67	603339	19.20
Upper Limit <sup>a</sup>	336184	5.94	1183742	7.23	639182	9.70	1066428	12.20	1191338	17.17	1206678	19.70
Lower Limit <sup>b</sup>	84046	4.94	295936	6.23	159796	8.70	266607	11.20	297835	16.17	301670	18.70

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP27122-MB	187169	5.44	654864	6.74	336049	9.20	555144	11.70	543560	16.67	524161	19.20
OP27122-BS	170606	5.44	587344	6.73	287828	9.20	454788	11.70	435555	16.67	413032	19.20
OP27122-MS	215510	5.44	741982	6.73	371851	9.20	578109	11.70	543681	16.67	498544	19.20
OP27122-MSD	157999	5.44	546896	6.74	273273	9.20	439877	11.70	421490	16.67	396323	19.20
ZZZZZZ	157284	5.44	551836	6.74	280587	9.20	472250	11.70	464994	16.66	451164	19.20
ZZZZZZ	165409	5.44	584091	6.73	290284	9.20	495393	11.70	464820	16.66	464020	19.20
ZZZZZZ	139154	5.44	485811	6.73	238426	9.20	392711	11.70	370220	16.66	333695	19.20
ZZZZZZ	153959	5.44	540092	6.73	270715	9.20	452332	11.70	447692	16.66	453557	19.20
ZZZZZZ	150483	5.44	532136	6.73	266407	9.20	454280	11.70	438230	16.66	435764	19.20
ZZZZZZ	183620	5.44	637809	6.73	324413	9.20	543751	11.70	519272	16.66	503678	19.20
ZZZZZZ	174476	5.44	606585	6.73	306111	9.20	520718	11.70	495775	16.66	481635	19.20
D29909-9	158091	5.44	552925	6.73	279101	9.20	463133	11.70	432793	16.66	421597	19.20
ZZZZZZ	134026	5.44	471471	6.73	234410	9.20	399020	11.70	391354	16.66	404865	19.19
ZZZZZZ	150134	5.44	524336	6.73	262925	9.20	437272	11.70	420067	16.66	426807	19.20
ZZZZZZ	140780	5.44	505232	6.73	252629	9.20	428493	11.70	419743	16.66	431774	19.20
OP27107-MB	157358	5.44	553517	6.73	274032	9.20	468023	11.70	464511	16.66	428002	19.20
OP27107-BS	154660	5.44	526973	6.73	265917	9.20	447434	11.70	431858	16.66	385668	19.20
ZZZZZZ	118765	5.44	437417	6.73	217635	9.20	361399	11.70	382738	16.66	427593	19.20
ZZZZZZ	171679	5.44	574065	6.73	283029	9.20	460442	11.70	424015	16.66	407240	19.19
ZZZZZZ	175972	5.44	601265	6.73	288075	9.18	464187	11.70	393900	16.66	461231	19.20
ZZZZZZ	167820	5.44	566903	6.73	276135	9.18	459377	11.70	413177	16.66	421197	19.20
ZZZZZZ	169305	5.44	557778	6.73	274277	9.20	447484	11.71	389834	16.66	436862	19.19

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.4.1

6

# Semivolatile Internal Standard Area Summary

Job Number: MC5929  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSS1269-CC1240	Injection Date:	12/05/11
Lab File ID:	S29092A.D	Injection Time:	09:03
Instrument ID:	GCMSS	Method:	SW846 8270C

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	331095	6.34	1120971	7.72	704964	9.92	1316694	12.12	1523465	16.46	1308672	18.69
Upper Limit <sup>a</sup>	662190	6.84	2241942	8.22	1409928	10.42	2633388	12.62	3046930	16.96	2617344	19.19
Lower Limit <sup>b</sup>	165548	5.84	560486	7.22	352482	9.42	658347	11.62	761733	15.96	654336	18.19

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP27106-MB	338561	6.34	1144426	7.72	680519	9.92	1271031	12.11	1386309	16.46	1099066	18.69
OP27106-BS	338212	6.34	1141784	7.72	692148	9.92	1279263	12.12	1365799	16.46	1023334	18.69
OP27106-MS	332199	6.34	1105394	7.72	658286	9.92	1223669	12.11	1169466	16.46	1064259	18.69
OP27106-MSD	363134	6.34	1233244	7.72	727613	9.92	1365523	12.12	1371077	16.46	1062866	18.69
MC6005-1	309845	6.34	1064478	7.72	646629	9.92	1217591	12.11	1226407	16.46	1203559	18.69
MC5929-1	323894	6.34	1126832	7.72	678718	9.92	1302489	12.11	1412014	16.46	1191626	18.69
MC5929-2	332208	6.34	1119319	7.72	674440	9.92	1280034	12.11	1455200	16.46	1277278	18.69
MC5929-3	339395	6.34	1141399	7.72	670225	9.92	1276291	12.11	1429961	16.46	1299518	18.69
MC5929-4	343390	6.34	1161559	7.72	697510	9.92	1301214	12.11	1439718	16.46	1277477	18.69
OP27119-MB	287133	6.34	983290	7.72	584260	9.92	1112073	12.11	1251298	16.46	1114849	18.69
OP27119-BS	317509	6.34	1053964	7.72	647905	9.92	1231044	12.12	1313942	16.46	1068533	18.69
OP27119-MS	313275	6.34	1051649	7.72	646692	9.92	1227088	12.12	1311044	16.46	1034387	18.69
OP27119-MSD	307860	6.34	1049159	7.72	641698	9.92	1197010	12.12	1308338	16.46	1057469	18.69
MC6005-5	294941	6.34	970329	7.72	590075	9.92	1121527	12.11	1229233	16.46	1064118	18.69
ZZZZZZ	293812	6.34	878143	7.72	555024	9.93	1111484	12.12	1439851	16.47	2030302	18.71

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.4.2  
6



# Semivolatile Internal Standard Area Summary

Job Number: MC5929  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSS1268-CC1238	Injection Date:	12/05/11
Lab File ID:	S29092A.D	Injection Time:	09:03
Instrument ID:	GCMSS	Method:	SW846 8270C

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	331095	6.34	1120971	7.72	704964	9.92	1317118	12.12	1523465	16.46	1308672	18.69
Upper Limit <sup>a</sup>	662190	6.84	2241942	8.22	1409928	10.42	2634236	12.62	3046930	16.96	2617344	19.19
Lower Limit <sup>b</sup>	165548	5.84	560486	7.22	352482	9.42	658559	11.62	761733	15.96	654336	18.19

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP27106-MB	338561	6.34	1144426	7.72	680519	9.92	1271031	12.11	1386309	16.46	1099066	18.69
OP27106-BS	338212	6.34	1141784	7.72	692148	9.92	1279263	12.12	1365799	16.46	1023334	18.69
OP27106-MS	332199	6.34	1105394	7.72	658286	9.92	1223669	12.11	1169466	16.46	1064259	18.69
OP27106-MSD	363134	6.34	1233244	7.72	727613	9.92	1365523	12.12	1371077	16.46	1062866	18.69
MC6005-1	309845	6.34	1064478	7.72	646629	9.92	1217591	12.11	1226407	16.46	1203559	18.69
MC5929-1	323894	6.34	1126832	7.72	678718	9.92	1302489	12.11	1412014	16.46	1191626	18.69
MC5929-2	332208	6.34	1119319	7.72	674440	9.92	1280034	12.11	1455200	16.46	1277278	18.69
MC5929-3	339395	6.34	1141399	7.72	670225	9.92	1276291	12.11	1429961	16.46	1299518	18.69
MC5929-4	343390	6.34	1161559	7.72	697510	9.92	1301214	12.11	1439718	16.46	1277477	18.69
OP27119-MB	287133	6.34	983290	7.72	584260	9.92	1112073	12.11	1251298	16.46	1114849	18.69
OP27119-BS	317509	6.34	1053964	7.72	647905	9.92	1231044	12.12	1313942	16.46	1068533	18.69
OP27119-MS	313275	6.34	1051649	7.72	646692	9.92	1227088	12.12	1311044	16.46	1034387	18.69
OP27119-MSD	307860	6.34	1049159	7.72	641698	9.92	1197010	12.12	1308338	16.46	1057469	18.69
MC6005-5	294941	6.34	970329	7.72	590075	9.92	1121527	12.11	1229233	16.46	1064118	18.69
ZZZZZZ	293812	6.34	878143	7.72	555024	9.93	1111484	12.12	1439851	16.47	2030302	18.71

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.4.3  
6

# Semivolatiles Internal Standard Area Summary

Job Number: MC5929  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSU230-CC226	Injection Date:	12/12/11
Lab File ID:	U3809.D	Injection Time:	10:29
Instrument ID:	GCMSU	Method:	SW846 8270C BY SIM

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	245099	5.43	862178	6.73	494293	9.19	975622	11.71	1108621	16.68	983851	19.21
Upper Limit <sup>a</sup>	490198	5.93	1724356	7.23	988586	9.69	1951244	12.21	2217242	17.18	1967702	19.71
Lower Limit <sup>b</sup>	122550	4.93	431089	6.23	247147	8.69	487811	11.21	554311	16.18	491926	18.71

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
MC5917-1	169942	5.43	592657	6.73	333238	9.19	649329	11.71	721682	16.67	609069	19.21
OP27107-MS	200274	5.43	672790	6.73	361961	9.19	679232	11.71	703973	16.67	619191	19.21
OP27107-MSD	153548	5.43	520174	6.73	289730	9.19	568962	11.71	619140	16.67	533652	19.21
MC5929-1	160182	5.43	555707	6.73	316028	9.19	629284	11.71	700333	16.67	613575	19.20
MC5929-2	178657	5.43	612739	6.73	338394	9.19	657356	11.71	738967	16.67	667221	19.21
MC5929-3	176657	5.43	608755	6.73	339800	9.19	670190	11.71	746136	16.67	656906	19.21
MC5929-4	181126	5.43	626813	6.73	353913	9.19	703711	11.71	745380	16.67	698353	19.21
ZZZZZ	213844	5.45	703934	6.73	354491	9.19	593109	11.71	511747 <sup>c</sup>	16.67	461993 <sup>c</sup>	19.20
OP27143-MS	155131	5.43	519615	6.73	288701	9.19	572201	11.71	630529	16.67	581309	19.21
OP27143-MSD	151396	5.43	498796	6.73	278466	9.19	551543	11.71	601771	16.67	557484	19.21
MC6054-10	156058	5.43	532121	6.73	303955	9.19	593701	11.71	650221	16.67	604881	19.21

IS 1 = 1,4-Dichlorobenzene-d4  
 IS 2 = Naphthalene-d8  
 IS 3 = Acenaphthene-D10  
 IS 4 = Phenanthrene-d10  
 IS 5 = Chrysene-d12  
 IS 6 = Perylene-d12

- (a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
- (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
- (c) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

6.4.4  
**6**

# Semivolatile Surrogate Recovery Summary

Job Number: MC5929

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Method: SW846 8270C	Matrix: AQ
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Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4	S5	S6
MC5929-1	S29098.D	45.0	39.0	98.0	71.0	76.0	63.0
MC5929-2	S29099.D	15.0	15.0	45.0	60.0	63.0	67.0
MC5929-3	S29100.D	34.0	23.0	94.0	53.0	64.0	85.0
MC5929-4	S29101.D	45.0	27.0	98.0	75.0	80.0	86.0
OP27106-BS	S29094.D	44.0	28.0	103.0	74.0	82.0	97.0
OP27106-MB	S29093.D	41.0	25.0	92.0	72.0	76.0	92.0
OP27106-MS	S29095.D	41.0	27.0	97.0	70.0	70.0	55.0
OP27106-MSD	S29096.D	41.0	28.0	101.0	68.0	74.0	55.0

Surrogate Compounds	Recovery Limits
S1 = 2-Fluorophenol	15-110%
S2 = Phenol-d5	15-110%
S3 = 2,4,6-Tribromophenol	15-110%
S4 = Nitrobenzene-d5	30-130%
S5 = 2-Fluorobiphenyl	30-130%
S6 = Terphenyl-d14	30-130%

6.5.1  
6

# Semivolatile Surrogate Recovery Summary

Job Number: MC5929

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Method: SW846 8270C BY SIM

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
MC5929-1	U3813.D	81.0	79.0	59.0
MC5929-2	U3814.D	71.0	65.0	63.0
MC5929-3	U3815.D	63.0	63.0	79.0
MC5929-4	U3816.D	88.0	81.0	81.0
OP27107-BS	F53686.D	91.0	84.0	108.0
OP27107-MB	F53685.D	85.0	79.0	104.0
OP27107-MS	U3811.D	82.0	73.0	47.0
OP27107-MSD	U3812.D	32.0	76.0	49.0

Surrogate Compounds	Recovery Limits
S1 = Nitrobenzene-d5	30-130%
S2 = 2-Fluorobiphenyl	30-130%
S3 = Terphenyl-d14	30-130%

6.5.2

6

## GC Volatiles

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## QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary

Job Number: MC5929

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27113-MB	BB39695.D	1	12/02/11	CZ	12/02/11	OP27113	GBB2462

The QC reported here applies to the following samples:

Method: SW846 8011

MC5929-1, MC5929-2, MC5929-3, MC5929-4, MC5929-6

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

CAS No.	Surrogate Recoveries		Limits
460-00-4	Bromofluorobenzene (S)	112%	36-173%
460-00-4	Bromofluorobenzene (S)	118%	36-173%

7.1.1  
7

# Blank Spike Summary

Job Number: MC5929

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27113-BS	BB39696.D	1	12/02/11	CZ	12/02/11	OP27113	GBB2462

The QC reported here applies to the following samples:

Method: SW846 8011

MC5929-1, MC5929-2, MC5929-3, MC5929-4, MC5929-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
96-12-8	1,2-Dibromo-3-chloropropane	0.071	0.073	103	60-140
106-93-4	1,2-Dibromoethane	0.071	0.078	110	60-140

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	Bromofluorobenzene (S)	104%	36-173%
460-00-4	Bromofluorobenzene (S)	113%	36-173%

7.2.1  
7

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC5929

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27113-MS	BB39697.D	1	12/02/11	CZ	12/02/11	OP27113	GBB2462
OP27113-MSD	BB39698.D	1	12/02/11	CZ	12/02/11	OP27113	GBB2462
MC6005-2	BB39699.D	1	12/02/11	CZ	12/02/11	OP27113	GBB2462

The QC reported here applies to the following samples:

Method: SW846 8011

MC5929-1, MC5929-2, MC5929-3, MC5929-4, MC5929-6

CAS No.	Compound	MC6005-2 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.071	0.068	96	0.078	110	14	64-141/29
106-93-4	1,2-Dibromoethane	ND	0.071	0.076	107	0.082	115	8	63-163/27

CAS No.	Surrogate Recoveries	MS	MSD	MC6005-2	Limits
460-00-4	Bromofluorobenzene (S)	104%	112%	118%	36-173%
460-00-4	Bromofluorobenzene (S)	102%	104%	109%	36-173%

7.3.1

7



# Volatile Surrogate Recovery Summary

Job Number: MC5929

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Method: SW846 8011

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 <sup>a</sup>	S1 <sup>b</sup>
MC5929-1	BB39701.D	126.0	145.0
MC5929-2	BB39702.D	112.0	111.0
MC5929-3	BB39703.D	105.0	110.0
MC5929-4	BB39704.D	112.0	121.0
MC5929-6	BB39706.D	121.0	120.0
OP27113-BS	BB39696.D	104.0	113.0
OP27113-MB	BB39695.D	112.0	118.0
OP27113-MS	BB39697.D	104.0	102.0
OP27113-MSD	BB39698.D	112.0	104.0

Surrogate Compounds                      Recovery Limits

S1 = Bromofluorobenzene (S)              36-173%

(a) Recovery from GC signal #1

(b) Recovery from GC signal #2

7.4.1  
7

# GC Surrogate Retention Time Summary

Job Number: MC5929

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	GBB2462-ICC2462	Injection Date:	12/02/11
Lab File ID:	BB39690.D	Injection Time:	19:44
Instrument ID:	GCB8	Method:	SW846 8011

	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
Check Std	3.97	3.92

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
OP27113-MB	BB39695.D	12/02/11	21:48	3.97	3.92
OP27114-MB	BB39695A.D	12/02/11	21:48	3.97	3.92
OP27113-BS	BB39696.D	12/02/11	22:13	3.97	3.92
OP27114-BS	BB39696A.D	12/02/11	22:13	3.97	3.92
OP27113-MS	BB39697.D	12/02/11	22:38	3.97	3.92
OP27113-MSD	BB39698.D	12/02/11	23:03	3.97	3.92
MC6005-2	BB39699.D	12/02/11	23:27	3.97	3.92
ZZZZZZ	BB39700.D	12/02/11	23:52	3.97	3.92
ZZZZZZ	BB39700A.D	12/02/11	23:52	3.97	3.92
MC5929-1	BB39701.D	12/03/11	00:17	3.95	3.90
MC5929-2	BB39702.D	12/03/11	00:42	3.96	3.92
MC5929-3	BB39703.D	12/03/11	01:06	3.96	3.92
MC5929-4	BB39704.D	12/03/11	01:31	3.97	3.92

**Surrogate  
Compounds**

S1 = Bromofluorobenzene (S)

- (a) Retention time from GC signal #1
- (b) Retention time from GC signal #2

7.5.1  
7

# GC Surrogate Retention Time Summary

Job Number: MC5929

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	GBB2462-CC2462	Injection Date:	12/03/11
Lab File ID:	BB39705.D	Injection Time:	01:56
Instrument ID:	GCB	Method:	SW846 8011

	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
Check Std	3.96	3.91

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
MC5929-6	BB39706.D	12/03/11	02:20	3.96	3.91
OP27114-BSD	BB39707.D	12/03/11	02:45	3.96	3.92
ZZZZZZ	BB39708.D	12/03/11	03:10	3.96	3.92
ZZZZZZ	BB39709.D	12/03/11	03:35	3.97	3.92
ZZZZZZ	BB39710.D	12/03/11	03:59	3.96	3.91
ZZZZZZ	BB39711.D	12/03/11	04:24	3.96	3.91
ZZZZZZ	BB39712.D	12/03/11	04:49	3.96	3.91
GBB2462-ECC246	BB39713.D	12/03/11	05:13	3.96	3.91

**Surrogate  
Compounds**

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #1

(b) Retention time from GC signal #2

7.5.2  
7

# Roxana Groundwater Quarterly – 4<sup>th</sup> Quarter 2011 Data Review

Laboratory SDG: MC6107

Data Reviewer: Melissa Mansker

Peer Reviewer: Elizabeth Kunkel

Date Reviewed: 12/15/2011

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

Sample Identification	Sample Identification
MW1-ROX-120511	MW1-ROX-120511-EB
TB-120511	TB-120511

## 1.0 Data Package Completeness

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

Yes

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

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

Yes, the laboratory case narrative indicated that VOC and SVOC LCS recoveries were outside evaluation criteria. VOC and SVOC MS/MSD recoveries and SVOC MS/MSD RPD recoveries were outside evaluation criteria. Although not indicated in the laboratory case narrative, SVOCs and PAHs were detected in the method blank. These issues are addressed further in the appropriate sections below.

The cooler receipt form indicated samples in one of two coolers were received by the laboratory at a temperature of 1.6°C, which is outside the 4°C ± 2°C criteria. Samples were received in good condition; therefore, no qualification of data was required.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

Yes

## 4.0 Blank Contamination

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

Yes

Blank ID	Parameter	Analyte	Concentration/ Amount
OP27161-MB	SVOCs	Butyl benzyl phthalate	0.30 ug/L
OP27161-MB	SVOCs	Diethyl phthalate	1.0 ug/L
OP27162-MB	PAHs	Benzo(a)anthracene	0.19 ug/L
OP27162-MB	PAHs	Benzo(a)pyrene	0.099 ug/L
OP27162-MB	PAHs	Benzo(b)fluoranthene	0.091 ug/L

Blank ID	Parameter	Analyte	Concentration/ Amount
OP27162-MB	PAHs	Benzo(k)fluoranthene	0.11 ug/L
OP27162-MB	PAHs	Chrysene	0.21 ug/L
OP27162-MB	PAHs	Indeno(1,2,3-cd)pyrene	0.13 ug/L
OP27162-MB	PAHs	Pyrene	0.13 ug/L

Qualifications due to blank contamination are included in the table below. Analytical data that were reported non-detect or at concentrations greater than five times (5X) the associated blank concentration (10X for common laboratory contaminants) did not require qualification.

Sample ID	Parameter	Analyte	New Reporting Limit (RL)	Qualification
MW1-ROX-120511	PAHs	Benzo(b)fluoranthene	0.056 ug/L	<b>U</b>

## 5.0 Laboratory Control Sample

*Were LCS recoveries within evaluation criteria?*

No

LCS/ LCSD ID	Parameter	Analyte	LCS/LCSD Recovery	RPD	LCS/LCSD /RPD Criteria
MSN2174- BS/BSD	VOCs	Acetone	73/69	5	70-130/25
MSN2174- BS/BSD	VOCs	Acrolein	218/229	5	70-130/25
MSN2174- BS/BSD	VOCs	Acrylonitrile	518/488	6	70-130/25
OP27161- BS/BSD	SVOCs	Benzoic Acid	27/25	10	30-130/20

Analytical data that required qualification based on LCS data are included in the table below. Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. LCS/LCSD MSN2174-BS/BSD was associated with equipment blank sample MW1-ROX-120511-EB and trip blank sample TB-120511, and LCS/LCSD OP27161-BS/BSD was associated with equipment blank sample MW1-ROX-120511-EB. Equipment and trip blank samples are quality control samples and are not qualified.

Sample ID	Parameter	Analyte	Qualification
MW1-ROX-120511	VOCs	Acetone	<b>UJ</b>
MW1-ROX-120511	SVOCs	Benzoic Acid	<b>UJ</b>

## 6.0 Surrogate Recoveries

*Were surrogate recoveries within evaluation criteria?*

Yes

## 7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

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

Yes, samples MW1-ROX-120511 and MW1-ROX-120511-EB were spiked and analyzed for VOCs, SVOCs, PAHs and VOCs by 8011, and sample TB-120511 was spiked and analyzed for VOCs and VOCs by 8011.

*Were MS/MSD recoveries within evaluation criteria?*

No

MS/MSD ID	Parameter	Analyte	MS/MSD Recovery (%)	RPD	MS/MSD/ RPD Criteria
MC6107-1MS/MSD	VOCs	Acetone	55/52	6	70-130/30
MC6107-1MS/MSD	VOCs	Acrolein	183/188	3	70-130/30
MC6107-1MS/MSD	VOCs	Acrylonitrile	470/476	1	70-130/30
MC6107-1MS/MSD	VOCs	Bromomethane	67/79	17	70-130/30
MC6107-1MS/MSD	VOCs	Isopropylbenzene	132/132	0	70-130/30
OP27161-MS/MSD	SVOCs	Benzoic Acid	27/33	19	30-130/20
OP27161-MS/MSD	SVOCs	3&4-Methylphenol	28/32	12	30-130/20
OP27161-MS/MSD	SVOCs	Aniline	33/31	6	40-140/20
OP27161-MS/MSD	SVOCs	4-Chloroaniline	53/28	62	40-140/20
OP27161-MS/MSD	SVOCs	4-Nitroaniline	65/47	33	40-140/20

Analytical results reported as non-detect and associated with MS/MSD recoveries above evaluation criteria, indicating a high bias, did not require qualification. USEPA National Functional Guidelines for Organic Data Review indicates that organic data does not require qualification based on MS/MSD data alone. LCS/LCSD recoveries were within evaluation criteria with the exception of compounds listed and qualified as appropriate in Section 5.0 of this data review. No further qualification of data was required.

**8.0 Internal Standard (IS) Recoveries**

*Were internal standard area recoveries within evaluation criteria?*

Yes

**9.0 Laboratory Duplicate Results**

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

No

**10.0 Field Duplicate Results**

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

No

**11.0 Sample Dilutions**

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

Not applicable; samples analyzed did not require dilution.

**12.0 Additional Qualifications**

*Were additional qualifications applied?*

No



12/14/11

Technical Report for

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Shell Oil

URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana,

Accutest Job Number: MC6107

Sampling Date: 12/05/11

---

Report to:

URS Corporation

Elizabeth\_Kunkel@URSCorp.com

ATTN: Elizabeth Kunkel

Total number of pages in report: 62



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

*Reviewed on 12/15/2011*  
*Reza Fand*  
Reza Fand  
Lab Director

Client Service contact: Jeremy Vienneau 508-481-6200

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

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Test results relate only to samples analyzed.



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### Sample Summary

Shell Oil

Job No: MC6107

URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
MC6107-1	12/05/11	11:20 LRDM	12/06/11	AQ	Ground Water	MW1-ROX-120511 ✓
MC6107-1D	12/05/11	11:20 LRDM	12/06/11	AQ	Water Dup/MSD	MW1-ROX-120511 ✓
MC6107-1S	12/05/11	11:20 LRDM	12/06/11	AQ	Water Matrix Spike	MW1-ROX-120511 ✓
MC6107-2	12/05/11	11:50 LRDM	12/06/11	AQ	Equipment Blank	MW1-ROX-120511-EB ✓
MC6107-3	12/05/11	00:00 LRDM	12/06/11	AQ	Trip Blank Water	TB-120511 ✓
MC6107-4	12/05/11	00:00 LRDM	12/06/11	AQ	Trip Blank Water	TB-120511 ✓

## SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Shell Oil Job No MC6107  
 Site: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Report Date 12/12/2011 3:25:42 PM

2 Sample(s), 1 Trip Blank(s) and 0 Field Blank(s) were collected on 12/05/2011 and were received at Accutest on 12/06/2011 properly preserved, at 1.6 Deg. C and intact. These Samples received an Accutest job number of MC6107. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report. 1-

Chlorohexane, Benzenethiol, Dibenz(a,h)acridine, Indene, and Quinoline were searched in the library search and reported only if detections were found.

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

### Volatiles by GCMS By Method SW846 8260B

Matrix AQ	Batch ID: MSN2174
-----------	-------------------

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC6107-IMS, MC6107-IMSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- BS/BSD Recovery(s) for Acrolein, Acrylonitrile are outside control limits. Associated samples are non-detect for this compound.
- Matrix Spike Recovery(s) for Acetone, Bromomethane, Isopropylbenzene are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for Acetone are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- MSN2174-BSBSD/MS/MSD for Acrolein, Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.
- BSD Recovery(s) for Acetone are outside control limits. Blank Spike meets program technical requirements.

### Extractables by GCMS By Method SW846 8270C

Matrix AQ	Batch ID: OP27161
-----------	-------------------

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC6107-IMS, MC6107-IMSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- BS/BSD/MS Recovery(s) for Benzoic Acid are outside control limits. Blank Spike meets program technical requirements. its.
- Matrix Spike Recovery(s) for 3&4-Methylphenol, Aniline are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for Aniline, 4-Chloroaniline are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- RPD(s) for MSD for 3-Nitroaniline, 4-Chloroaniline are outside control limits for sample OP27161-MSD. High RPD due to possible matrix interference and/or sample non-homogeneity.

## Extractables by GCMS By Method SW846 8270C BY SIM

Matrix	AQ	Batch ID:	OP27162
--------	----	-----------	---------

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC6107-IMS, MC6107-1MSD were used as the QC samples indicated.
- Sample(s) MC6107-1, MC6107-2 have compound(s) reported with a "B" qualifier, indicating analyte is found in the associated method blank.

## Volatiles by GC By Method SW846 8011

Matrix	AQ	Batch ID:	OP27156
--------	----	-----------	---------

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC6107-IMS, MC6107-1MSD were used as the QC samples indicated.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety. The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC6107).



**Sample Results**

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**Report of Analysis**

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## Report of Analysis

Client Sample ID:	MW1-ROX-120511	Date Sampled:	12/05/11
Lab Sample ID:	MC6107-1	Date Received:	12/06/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N58125.D	1	12/07/11	JP	n/a	n/a	MSN2174
Run #2							

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

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	4.1	ug/l	WJ
107-02-8	Acrolein	ND	25	13	ug/l	
107-13-1	Acrylonitrile	ND	5.0	4.3	ug/l	
71-43-2	Benzene	0.97	0.50	0.46	ug/l	
108-86-1	Bromobenzene	ND	5.0	0.99	ug/l	
74-97-5	Bromochloromethane	ND	5.0	0.92	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.49	ug/l	
75-25-2	Bromoform	ND	1.0	0.71	ug/l	
74-83-9	Bromomethane	ND	2.0	1.3	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.7	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	1.1	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	1.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	0.82	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.62	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.58	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.44	ug/l	
75-00-3	Chloroethane	ND	2.0	0.32	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	0.58	ug/l	
74-87-3	Chloromethane	ND	2.0	0.71	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	1.1	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	0.98	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.89	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.41	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.44	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.42	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.1	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.33	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.44	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.80	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.69	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.64	ug/l	

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

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

## Report of Analysis

Client Sample ID:	MW1-ROX-120511	Date Sampled:	12/05/11
Lab Sample ID:	MC6107-1	Date Received:	12/06/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2.0	0.71	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	0.75	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	0.78	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.41	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.49	ug/l	
123-91-1	1,4-Dioxane	ND	25	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	0.70	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.80	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.3	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	0.94	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	0.88	ug/l	
1634-04-4	Methyl Tert Butyl Ether	2.7	1.0	0.61	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	0.76	ug/l	
74-95-3	Methylene bromide	ND	5.0	0.52	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.99	ug/l	
91-20-3	Naphthalene	ND	5.0	0.70	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	0.89	ug/l	
100-42-5	Styrene	ND	5.0	0.97	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	0.83	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.79	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.36	ug/l	
108-88-3	Toluene	ND	1.0	0.59	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	1.1	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.55	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.74	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.75	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.40	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.70	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.98	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.90	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	1.1	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.82	ug/l	
	m,p-Xylene	ND	1.0	0.90	ug/l	
95-47-6	o-Xylene	ND	1.0	0.32	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.32	ug/l	

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

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

## Report of Analysis



<b>Client Sample ID:</b> MW1-ROX-120511	
<b>Lab Sample ID:</b> MC6107-1	<b>Date Sampled:</b> 12/05/11
<b>Matrix:</b> AQ - Ground Water	<b>Date Received:</b> 12/06/11
<b>Method:</b> SW846 8260B	<b>Percent Solids:</b> n/a
<b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

**VOA Special List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	93%		70-130%
2037-26-5	Toluene-D8	88%		70-130%
460-00-4	4-Bromofluorobenzene	91%		70-130%

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

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

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



## Report of Analysis

Client Sample ID: MW1-ROX-120511	Date Sampled: 12/05/11
Lab Sample ID: MC6107-1	Date Received: 12/06/11
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8270C SW846 3510C	
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U3712.D	1	12/09/11	KR	12/07/11	OP27161	MSU225
Run #2							

Run #	Initial Volume	Final Volume
Run #1	980 ml	1.0 ml
Run #2		

## ABN Special List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	10	ug/l	WJ
95-57-8	2-Chlorophenol	ND	5.1	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	ug/l	
51-28-5	2,4-Dinitrophenol	ND	20	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	ug/l	
95-48-7	2-Methylphenol	ND	10	ug/l	
	3&4-Methylphenol	ND	10	ug/l	
88-75-5	2-Nitrophenol	ND	10	ug/l	
100-02-7	4-Nitrophenol	ND	20	ug/l	
87-86-5	Pentachlorophenol	ND	10	ug/l	
108-95-2	Phenol	ND	5.1	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	10	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	ug/l	
62-53-3	Aniline	ND	10	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.1	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.1	ug/l	
100-51-6	Benzyl Alcohol	ND	10	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.1	ug/l	
106-47-8	4-Chloroaniline	ND	10	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.1	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.1	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.1	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.1	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.1	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	10	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.1	ug/l	
132-64-9	Dibenzofuran	ND	5.1	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.1	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.1	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis



Client Sample ID:	MW1-ROX-120511	Date Sampled:	12/05/11
Lab Sample ID:	MC6107-1	Date Received:	12/06/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
84-66-2	Diethyl phthalate	ND	5.1	ug/l	
131-11-3	Dimethyl phthalate	ND	5.1	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	ug/l	
118-74-1	Hexachlorobenzene	ND	5.1	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	ug/l	
67-72-1	Hexachloroethane	ND	5.1	ug/l	
78-59-1	Isophorone	ND	5.1	ug/l	
88-74-4	2-Nitroaniline	ND	10	ug/l	
99-09-2	3-Nitroaniline	ND	10	ug/l	
100-01-6	4-Nitroaniline	ND	10	ug/l	
98-95-3	Nitrobenzene	ND	5.1	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.1	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.1	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.1	ug/l	
110-86-1	Pyridine	ND	10	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	53%		15-110%
4165-62-2	Phenol-d5	34%		15-110%
118-79-6	2,4,6-Tribromophenol	93%		15-110%
4165-60-0	Nitrobenzene-d5	92%		30-130%
321-60-8	2-Fluorobiphenyl	88%		30-130%
1718-51-0	Terphenyl-d14	58%		30-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

Report of Analysis

Client Sample ID:	MW1-ROX-120511	Date Sampled:	12/05/11
Lab Sample ID:	MC6107-1	Date Received:	12/06/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C BY SIM SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	U3746.D	1	12/09/11	KR	12/07/11	OP27162	MSU227

Run #1	Initial Volume	Final Volume
Run #2	980 ml	1.0 ml

BN PAH List

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	0.10	ug/l	
208-96-8	Acenaphthylene	ND	0.10	ug/l	
120-12-7	Anthracene	ND	0.10	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.051	ug/l	B
50-32-8	Benzo(a)pyrene	ND	0.10	ug/l	B
205-99-2	Benzo(b)fluoranthene	<del>0.056</del> u	<del>0.051</del> 0.056	ug/l	B u
191-24-2	Benzo(g,h,i)perylene	ND	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	ug/l	B
218-01-9	Chrysene	ND	0.10	ug/l	B
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	ug/l	
206-44-0	Fluoranthene	ND	0.10	ug/l	
86-73-7	Fluorene	ND	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	ug/l	B
90-12-0	1-Methylnaphthalene	ND	0.20	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	0.10	ug/l	
85-01-8	Phenanthrene	ND	0.051	ug/l	
129-00-0	Pyrene	ND	0.10	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	98%		30-130%
321-60-8	2-Fluorobiphenyl	89%		30-130%
1718-51-0	Terphenyl-d14	61%		30-130%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

3.1  
3

Client Sample ID: MW1-ROX-120511 Lab Sample ID: MC6107-1 Matrix: AQ - Ground Water Method: SW846 8011 SW846 8011 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	Date Sampled: 12/05/11 Date Received: 12/06/11 Percent Solids: n/a
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Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39770.D	1	12/07/11	CZ	12/07/11	OP27156	GBB2466
Run #2							

Run #	Initial Volume	Final Volume
Run #1	36.6 ml	2.0 ml
Run #2		

**VOA Special List**

CAS No.	Compound	Result	RL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.014	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.014	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	97%		36-173%
460-00-4	Bromofluorobenzene (S)	115%		36-173%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID:	MW1-ROX-120511-EB	Date Sampled:	12/05/11
Lab Sample ID:	MC6107-2	Date Received:	12/06/11
Matrix:	AQ - Equipment Blank	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N58123.D	1	12/07/11	JP	n/a	n/a	MSN2174
Run #2							

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

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	4.1	ug/l	
107-02-8	Acrolein	ND	25	13	ug/l	
107-13-1	Acrylonitrile	ND	5.0	4.3	ug/l	
71-43-2	Benzene	ND	0.50	0.46	ug/l	
108-86-1	Bromobenzene	ND	5.0	0.99	ug/l	
74-97-5	Bromochloromethane	ND	5.0	0.92	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.49	ug/l	
75-25-2	Bromoform	ND	1.0	0.71	ug/l	
74-83-9	Bromomethane	ND	2.0	1.3	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.7	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	1.1	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	1.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	0.82	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.62	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.58	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.44	ug/l	
75-00-3	Chloroethane	ND	2.0	0.32	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	0.58	ug/l	
74-87-3	Chloromethane	ND	2.0	0.71	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	1.1	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	0.98	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.89	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.41	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.44	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.42	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.1	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.33	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.44	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.80	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.69	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.64	ug/l	

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

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

## Report of Analysis

Client Sample ID:	MW1-ROX-120511-EB	Date Sampled:	12/05/11
Lab Sample ID:	MC6107-2	Date Received:	12/06/11
Matrix:	AQ - Equipment Blank	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2.0	0.71	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	0.75	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	0.78	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.41	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.49	ug/l	
123-91-1	1,4-Dioxane	ND	25	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	0.70	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.80	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.3	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	0.94	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	0.88	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.61	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	0.76	ug/l	
74-95-3	Methylene bromide	ND	5.0	0.52	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.99	ug/l	
91-20-3	Naphthalene	ND	5.0	0.70	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	0.89	ug/l	
100-42-5	Styrene	ND	5.0	0.97	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	0.83	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.79	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.36	ug/l	
108-88-3	Toluene	ND	1.0	0.59	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	1.1	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.55	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.74	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.75	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.40	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.70	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.98	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.90	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	1.1	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.82	ug/l	
	m,p-Xylene	ND	1.0	0.90	ug/l	
95-47-6	o-Xylene	ND	1.0	0.32	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.32	ug/l	

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

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

## Report of Analysis

<b>Client Sample ID:</b> MW1-ROX-120511-EB		<b>Date Sampled:</b> 12/05/11
<b>Lab Sample ID:</b> MC6107-2		<b>Date Received:</b> 12/06/11
<b>Matrix:</b> AQ - Equipment Blank		<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8260B		
<b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

**VOA Special List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	91%		70-130%
2037-26-5	Toluene-D8	87%		70-130%
460-00-4	4-Bromofluorobenzene	89%		70-130%

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

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

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

Report of Analysis

3.2  
3

Client Sample ID: MW1-ROX-120511-EB	Date Sampled: 12/05/11
Lab Sample ID: MC6107-2	Date Received: 12/06/11
Matrix: AQ - Equipment Blank	Percent Solids: n/a
Method: SW846 8270C SW846 3510C	
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U3713.D	1	12/09/11	KR	12/07/11	OP27161	MSU225
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	10	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	ug/l	
51-28-5	2,4-Dinitrophenol	ND	20	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	ug/l	
95-48-7	2-Methylphenol	ND	10	ug/l	
	3&4-Methylphenol	ND	10	ug/l	
88-75-5	2-Nitrophenol	ND	10	ug/l	
100-02-7	4-Nitrophenol	ND	20	ug/l	
87-86-5	Pentachlorophenol	ND	10	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	10	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	ug/l	
62-53-3	Aniline	ND	10	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	ug/l	
100-51-6	Benzyl Alcohol	ND	10	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	ug/l	
106-47-8	4-Chloroaniline	ND	10	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	10	ug/l	
91-94-1	3,3'-Dichlorohenzidine	ND	5.0	ug/l	
132-64-9	Dibenzofuran	ND	5.0	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	ug/l	

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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



Report of Analysis



Client Sample ID:	MW1-ROX-120511-EB	Date Sampled:	12/05/11
Lab Sample ID:	MC6107-2	Date Received:	12/06/11
Matrix:	AQ - Equipment Blank	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
84-66-2	Diethyl phthalate	ND	5.0	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	ug/l	
67-72-1	Hexachloroethane	ND	5.0	ug/l	
78-59-1	Isophorone	ND	5.0	ug/l	
88-74-4	2-Nitroaniline	ND	10	ug/l	
99-09-2	3-Nitroaniline	ND	10	ug/l	
100-01-6	4-Nitroaniline	ND	10	ug/l	
98-95-3	Nitrobenzene	ND	5.0	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	ug/l	
110-86-1	Pyridine	ND	10	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	54%		15-110%
4165-62-2	Phenol-d5	35%		15-110%
118-79-6	2,4,6-Tribromophenol	89%		15-110%
4165-60-0	Nitrobenzene-d5	95%		30-130%
321-60-8	2-Fluorobiphenyl	92%		30-130%
1718-51-0	Terphenyl-d14	89%		30-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

### Report of Analysis

3.2  
3

<b>Client Sample ID:</b> MW1-ROX-120511-EB	<b>Date Sampled:</b> 12/05/11
<b>Lab Sample ID:</b> MC6107-2	<b>Date Received:</b> 12/06/11
<b>Matrix:</b> AQ - Equipment Blank	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8270C BY SIM SW846 3510C	
<b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U3747.D	1	12/09/11	KR	12/07/11	OP27162	MSU227
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

**BN PAH List**

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	0.10	ug/l	
208-96-8	Acenaphthylene	ND	0.10	ug/l	
120-12-7	Anthracene	ND	0.10	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.050	ug/l	B
50-32-8	Benzo(a)pyrene	ND	0.10	ug/l	B
205-99-2	Benzo(b)fluoranthene	ND	0.050	ug/l	B
191-24-2	Benzo(g,h,i)perylene	ND	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	ug/l	B
218-01-9	Chrysene	ND	0.10	ug/l	B
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	ug/l	
206-44-0	Fluoranthene	ND	0.10	ug/l	
86-73-7	Fluorene	ND	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	ug/l	B
90-12-0	1-Methylnaphthalene	ND	0.20	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	0.10	ug/l	
85-01-8	Phenanthrene	ND	0.050	ug/l	
129-00-0	Pyrene	ND	0.10	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	100%		30-130%
321-60-8	2-Fluorobiphenyl	92%		30-130%
1718-51-0	Terphenyl-d14	91%		30-130%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

### Report of Analysis



<b>Client Sample ID:</b> MW1-ROX-120511-EB	<b>Date Sampled:</b> 12/05/11
<b>Lab Sample ID:</b> MC6107-2	<b>Date Received:</b> 12/06/11
<b>Matrix:</b> AQ - Equipment Blank	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8011 SW846 8011	
<b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39771.D	1	12/07/11	CZ	12/07/11	OP27156	GBB2466
Run #2							

Run #	Initial Volume	Final Volume
Run #1	36.5 ml	2.0 ml
Run #2		

**VOA Special List**

CAS No.	Compound	Result	RL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.014	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.014	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits	
460-00-4	Bromofluorobenzene (S)	102%		36-173%	
460-00-4	Bromofluorobenzene (S)	116%		36-173%	

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID:	TB-120511	Date Sampled:	12/05/11
Lab Sample ID:	MC6107-3	Date Received:	12/06/11
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N58124.D	1	12/07/11	JP	n/a	n/a	MSN2174
Run #2							

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

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	4.1	ug/l	
107-02-8	Acrolein	ND	25	13	ug/l	
107-13-1	Acrylonitrile	ND	5.0	4.3	ug/l	
71-43-2	Benzene	ND	0.50	0.46	ug/l	
108-86-1	Bromobenzene	ND	5.0	0.99	ug/l	
74-97-5	Bromochloromethane	ND	5.0	0.92	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.49	ug/l	
75-25-2	Bromoform	ND	1.0	0.71	ug/l	
74-83-9	Bromomethane	ND	2.0	1.3	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.7	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	1.1	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	1.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	0.82	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.62	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.58	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.44	ug/l	
75-00-3	Chloroethane	ND	2.0	0.32	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	0.58	ug/l	
74-87-3	Chloromethane	ND	2.0	0.71	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	1.1	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	0.98	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	1.6	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.89	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	0.48	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.41	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.44	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.42	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.1	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.33	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.44	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.80	ug/l	

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

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

## Report of Analysis

Client Sample ID:	TB-120511	Date Sampled:	12/05/11
Lab Sample ID:	MC6107-3	Date Received:	12/06/11
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

## VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.69	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.64	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	0.71	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	0.75	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	0.78	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.41	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.49	ug/l	
123-91-1	1,4-Dioxane	ND	25	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	0.70	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.80	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.3	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	0.94	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	0.88	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.61	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	0.76	ug/l	
74-95-3	Methylene bromide	ND	5.0	0.52	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.99	ug/l	
91-20-3	Naphthalene	ND	5.0	0.70	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	0.89	ug/l	
100-42-5	Styrene	ND	5.0	0.97	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	0.83	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.79	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.36	ug/l	
108-88-3	Toluene	ND	1.0	0.59	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	1.1	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.55	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.74	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.75	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.40	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.70	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.98	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.90	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	1.1	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.82	ug/l	
	m,p-Xylene	ND	1.0	0.90	ug/l	
95-47-6	o-Xylene	ND	1.0	0.32	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.32	ug/l	

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

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

## Report of Analysis

33  
3

<b>Client Sample ID:</b> TB-120511		<b>Date Sampled:</b> 12/05/11
<b>Lab Sample ID:</b> MC6107-3		<b>Date Received:</b> 12/06/11
<b>Matrix:</b> AQ - Trip Blank Water		<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8260B		
<b>Project:</b> URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

**VOA Special List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	93%		70-130%
2037-26-5	Toluene-D8	88%		70-130%
460-00-4	4-Bromofluorobenzene	91%		70-130%

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

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

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

## Report of Analysis

3.4  
3

Client Sample ID:	TB-120511	Date Sampled:	12/05/11
Lab Sample ID:	MC6107-4	Date Received:	12/06/11
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8011 SW846 8011	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39772.D	1	12/07/11	CZ	12/07/11	OP27156	GBB2466
Run #2							

Run #	Initial Volume	Final Volume
Run #1	37.5 ml	2.0 ml
Run #2		

**VOA Special List**

CAS No.	Compound	Result	RL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.014	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.014	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits	
460-00-4	Bromofluorobenzene (S)	82%		36-173%	
460-00-4	Bromofluorobenzene (S)	98%		36-173%	

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Misc. Forms

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## Custody Documents and Other Forms

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Includes the following where applicable:

- Certification Exceptions
- Certification Exceptions (IL)
- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody





# Shell Oil Products Chain Of Custody Record

**URS**

LAB (LOCATION) \_\_\_\_\_  
 DRUM NO. \_\_\_\_\_  
 CONTACT ( ) \_\_\_\_\_  
 ADDRESS ( ) \_\_\_\_\_  
 CITY ( ) \_\_\_\_\_  
 STATE ( ) \_\_\_\_\_  
 ZIP ( ) \_\_\_\_\_  
 PHONE ( ) \_\_\_\_\_  
 FAX ( ) \_\_\_\_\_  
 E-MAIL ( ) \_\_\_\_\_  
 Lab Vendor # \_\_\_\_\_

Please Check Appropriate Box:

<input type="checkbox"/> ENV. SERVICES	<input type="checkbox"/> MOTIVE RETAIL	<input type="checkbox"/> SHELL RETAIL
<input type="checkbox"/> MOTIVE SOLO	<input type="checkbox"/> CONSULTANT	<input type="checkbox"/> OTHER
<input type="checkbox"/> SHELL PIPELINE	<input type="checkbox"/> OTHER	

Print Bill To Contact Name: Erik Arthur  
 INCIDENT # (ENV SERVICES): 9 7 2 1 4 8 4 0  
 CHECK IF NO INCIDENT # APPLIES  
 DATE: 12/5/11  
 PAGE: 1 of 1

URS CORPORATION  
 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300, ST. LOUIS, MO 63110  
 PHONE: 314-743-4168 or 341-452-8022 / 314-429-0462  
 FAX: 314-743-4168  
 E-MAIL: erik.a.arthur@urscorp.com  
 RUSH!

500 South Central Ave. ROXANA, ILL. 61274  
 L. Potvin, D. Mattingly  
 MC6107

LAB SAMPLE NO.	Field Sample Identification	SAMPLING		MATERIAL	PRESERVATION					NO. OF CONT.	VOC B260B SL-TICS	VOC 8011	SVOC B270C SL-TICS	PAH B270L	PID (ppm)	FIELD NOTES:
		DATE	TIME		HEAT	COOL	SHAKE	OTHER								
1	MWJ-ROK-120511	12/5/11	11:20	Water	X		X	X	9	X	X	X				
2	MWJ-ROK-120511-TMS															
3	MWJ-ROK-120511-TMS															
4	MWJ-ROK-120511-EB		11:50													
5	TB-120511								2							
6	TB-120511							X	2	X						

Released by (Signature): [Signature] Date: 12/5/11 Time: \_\_\_\_\_  
 Received by (Signature): [Signature] Date: 12/6/11 Time: 10:00  
 FedEx  
 1.6, 2.3

4.1 4



# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC6107 Client: URS Immediate Client Services Action Required: No  
 Date / Time Received: 12/6/2011 Delivery Method: \_\_\_\_\_ Client Service Action Required at Login: No  
 Project: 900 SOUTH CENTRAL AVE ROXANA No. Coolers: 2 Airbill #'s: N/A

**Cooler Security**      Y or N      Y or N  
 1. Custody Seals Present:        3. COC Present:    
 2. Custody Seals Intact:        4. Smp Dates/Time OK

**Cooler Temperature**      Y or N  
 1. Temp criteria achieved:    
 2. Cooler temp verification: Infrared gun  
 3. Cooler media: Ice (bag)

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

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

**Sample Integrity - Condition**      Y or N  
 1. Sample recvd within HT:    
 2. All containers accounted for:    
 3. Condition of sample: Intact

**Sample Integrity - Instructions**      Y or N      N/A  
 1. Analysis requested is clear:    
 2. Bottles received for unspecified tests    
 3. Sufficient volume recvd for analysis:    
 4. Compositing instructions clear:     
 5. Filtering instructions clear:

Comments

4.1  
4

### Internal Sample Tracking Chronicle

Shell Oil

Job No: MC6107

URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

4.2  
4

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
MC6107-1 Collected: 05-DEC-11 11:20 By: LRDM Received: 06-DEC-11 By: JB MW1-ROX-120511						
MC6107-1	SW846 8260B	07-DEC-11 11:52	JP			V8260SL+
MC6107-1	SW846 8011	07-DEC-11 20:32	CZ	07-DEC-11	BJ	V8011SL
MC6107-1	SW846 8270C	09-DEC-11 01:17	KR	07-DEC-11	MEW	AB8270SL+
MC6107-1	SW846 8270C BY SIM	09-DEC-11 19:09	KR	07-DEC-11	MEW	B8270SIMPAAH
MC6107-2 Collected: 05-DEC-11 11:50 By: LRDM Received: 06-DEC-11 By: JB MW1-ROX-120511-EB						
MC6107-2	SW846 8260B	07-DEC-11 10:56	JP			V8260SL+
MC6107-2	SW846 8011	07-DEC-11 20:57	CZ	07-DEC-11	BJ	V8011SL
MC6107-2	SW846 8270C	09-DEC-11 01:49	KR	07-DEC-11	MEW	AB8270SL+
MC6107-2	SW846 8270C BY SIM	09-DEC-11 19:41	KR	07-DEC-11	MEW	B8270SIMPAAH
MC6107-3 Collected: 05-DEC-11 00:00 By: LRDM Received: 06-DEC-11 By: JB TB-120511						
MC6107-3	SW846 8260B	07-DEC-11 11:24	JP			V8260SL+
MC6107-4 Collected: 05-DEC-11 00:00 By: LRDM Received: 06-DEC-11 By: JB TB-120511						
MC6107-4	SW846 8011	07-DEC-11 21:22	CZ	07-DEC-11	BJ	V8011SL

# Accutest Internal Chain of Custody

Job Number: MC6107  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL  
 Received: 12/06/11

4.3  
**4**

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
MC6107-1.4	Walk In Ref #22	Nick Krasinski	12/07/11 15:08	Retrieve from Storage
MC6107-1.4	Nick Krasinski		12/07/11 21:23	Depleted
MC6107-1.5	Walk In Ref #22	Nick Krasinski	12/07/11 15:08	Retrieve from Storage
MC6107-1.5	Nick Krasinski		12/07/11 21:23	Depleted
MC6107-1.10	Walk In Ref #22	Nick Krasinski	12/07/11 15:08	Retrieve from Storage
MC6107-1.10	Nick Krasinski		12/07/11 21:23	Depleted
MC6107-1.13	VOC Ref #4	Dana Tyron	12/07/11 09:46	Retrieve from Storage
MC6107-1.13	Dana Tyron	GCMSN	12/07/11 09:46	Load on Instrument
MC6107-1.13	GCMSN	Jugal Patel	12/07/11 16:59	Unload from Instrument
MC6107-1.13	Jugal Patel	VOC Ref #4	12/07/11 16:59	Return to Storage
MC6107-1.16	VOC Ref #4	Dana Tyron	12/07/11 09:46	Retrieve from Storage
MC6107-1.16	Dana Tyron	GCMSN	12/07/11 09:46	Load on Instrument
MC6107-1.16	GCMSN	Jugal Patel	12/07/11 16:59	Unload from Instrument
MC6107-1.16	Jugal Patel	VOC Ref #4	12/07/11 16:59	Return to Storage
MC6107-1.17	VOC Ref #4	Dana Tyron	12/07/11 09:46	Retrieve from Storage
MC6107-1.17	Dana Tyron	GCMSN	12/07/11 09:46	Load on Instrument
MC6107-1.17	GCMSN	Jugal Patel	12/07/11 16:59	Unload from Instrument
MC6107-1.17	Jugal Patel	VOC Ref #4	12/07/11 16:59	Return to Storage
MC6107-1.19	VOC Ref #4	Dana Tyron	12/07/11 09:46	Retrieve from Storage
MC6107-1.19	Dana Tyron	GCMSN	12/07/11 09:46	Load on Instrument
MC6107-1.19	GCMSN	Jugal Patel	12/07/11 16:59	Unload from Instrument
MC6107-1.19	Jugal Patel	VOC Ref #4	12/07/11 16:59	Return to Storage
MC6107-1.23	VOC Ref #4	Bijan Jafari	12/07/11 11:15	Retrieve from Storage
MC6107-1.23	Bijan Jafari		12/08/11 10:52	Depleted
MC6107-1.26	VOC Ref #4	Bijan Jafari	12/07/11 11:15	Retrieve from Storage
MC6107-1.26	Bijan Jafari		12/08/11 10:52	Depleted
MC6107-1.27	VOC Ref #4	Bijan Jafari	12/07/11 11:15	Retrieve from Storage
MC6107-1.27	Bijan Jafari		12/08/11 10:52	Depleted
MC6107-2.3	Walk In Ref #22	Nick Krasinski	12/07/11 15:08	Retrieve from Storage
MC6107-2.3	Nick Krasinski		12/07/11 21:23	Depleted
MC6107-2.6	VOC Ref #4	Dana Tyron	12/07/11 09:46	Retrieve from Storage
MC6107-2.6	Dana Tyron	GCMSN	12/07/11 09:46	Load on Instrument
MC6107-2.6	GCMSN	Jugal Patel	12/07/11 16:59	Unload from Instrument

# Accutest Internal Chain of Custody

**Job Number:** MC6107  
**Account:** SHELLWIC Shell Oil  
**Project:** URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL  
**Received:** 12/06/11

4.3  
4

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
MC6107-2.6	Jugal Patel	VOC Ref #4	12/07/11 16:59	Return to Storage
MC6107-2.9	VOC Ref #4	Bijan Jafari	12/07/11 11:15	Retrieve from Storage
MC6107-2.9	Bijan Jafari		12/08/11 10:52	Depleted
MC6107-3.1	VOC Ref #4	Dana Tyron	12/07/11 09:46	Retrieve from Storage
MC6107-3.1	Dana Tyron	GCMSN	12/07/11 09:46	Load on Instrument
MC6107-3.1	GCMSN	Jugal Patel	12/07/11 16:59	Unload from Instrument
MC6107-3.1	Jugal Patel	VOC Ref #4	12/07/11 16:59	Return to Storage
MC6107-4.1	VOC Ref #4	Bijan Jafari	12/07/11 11:15	Retrieve from Storage
MC6107-4.1	Bijan Jafari		12/08/11 10:52	Depleted

## GC/MS Volatiles

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## QC Data Summaries

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Includes the following where applicable:

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

# Method Blank Summary

Job Number: MC6107

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2174-MB	N58112.D	1	12/07/11	JP	n/a	n/a	MSN2174

The QC reported here applies to the following samples:

Method: SW846 8260B

MC6107-1, MC6107-2, MC6107-3

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	ND	0.50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	

5.1.1  
5

# Method Blank Summary

Job Number: MC6107  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2174-MB	N58112.D	1	12/07/11	JP	n/a	n/a	MSN2174

The QC reported here applies to the following samples:

Method: SW846 8260B

MC6107-1, MC6107-2, MC6107-3

CAS No.	Compound	Result	RL	Units	Q
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	

5.1.1  
5



# Method Blank Summary

Job Number: MC6107

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2174-MB	N58112.D	1	12/07/11	JP	n/a	n/a	MSN2174

The QC reported here applies to the following samples:

Method: SW846 8260B

MC6107-1, MC6107-2, MC6107-3

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	98%	70-130%
2037-26-5	Toluene-D8	89%	70-130%
460-00-4	4-Bromofluorobenzene	91%	70-130%

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

5.1.1



# Blank Spike/Blank Spike Duplicate Summary

Job Number: MC6107

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2174-BS	N58109.D	1	12/07/11	JP	n/a	n/a	MSN2174
MSN2174-BSD	N58110.D	1	12/07/11	JP	n/a	n/a	MSN2174

The QC reported here applies to the following samples:

Method: SW846 8260B

MC6107-1, MC6107-2, MC6107-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	50	36.3	73	34.5	69* a	5	70-130/25
107-02-8	Acrolein	250	546	218* b	573	229* b	5	70-130/25
107-13-1	Acrylonitrile	50	259	518* b	244	488* b	6	70-130/25
71-43-2	Benzene	50	47.6	95	46.7	93	2	70-130/25
108-86-1	Bromobenzene	50	55.6	111	53.4	107	4	70-130/25
74-97-5	Bromochloromethane	50	52.6	105	51.2	102	3	70-130/25
75-27-4	Bromodichloromethane	50	60.9	122	59.2	118	3	70-130/25
75-25-2	Bromoform	50	52.8	106	51.8	104	2	70-130/25
74-83-9	Bromomethane	50	39.7	79	44.2	88	11	70-130/25
78-93-3	2-Butanone (MEK)	50	42.3	85	41.3	83	2	70-130/25
104-51-8	n-Butylbenzene	50	59.9	120	57.1	114	5	70-130/25
135-98-8	sec-Butylbenzene	50	58.5	117	55.2	110	6	70-130/25
98-06-6	tert-Butylbenzene	50	59.2	118	56.0	112	6	70-130/25
75-15-0	Carbon disulfide	50	54.1	108	52.9	106	2	70-130/25
56-23-5	Carbon tetrachloride	50	60.4	121	57.2	114	5	70-130/25
108-90-7	Chlorobenzene	50	52.7	105	51.3	103	3	70-130/25
75-00-3	Chloroethane	50	49.8	100	47.7	95	4	70-130/25
110-75-8	2-Chloroethyl vinyl ether	50	53.0	106	51.3	103	3	70-130/25
67-66-3	Chloroform	50	54.4	109	52.8	106	3	70-130/25
74-87-3	Chloromethane	50	50.8	102	46.9	94	8	70-130/25
95-49-8	o-Chlorotoluene	50	54.5	109	52.2	104	4	70-130/25
106-43-4	p-Chlorotoluene	50	57.9	116	55.8	112	4	70-130/25
96-12-8	1,2-Dibromo-3-cbloropropane	50	54.4	109	55.0	110	1	70-130/25
124-48-1	Dibromochloromethane	50	59.9	120	57.4	115	4	70-130/25
106-93-4	1,2-Dibromoethane	50	52.4	105	52.2	104	0	70-130/25
95-50-1	1,2-Dichlorobenzene	50	56.7	113	54.8	110	3	70-130/25
541-73-1	1,3-Dichlorobenzene	50	56.6	113	54.8	110	3	70-130/25
106-46-7	1,4-Dichlorobenzene	50	56.5	113	54.3	109	4	70-130/25
75-71-8	Dichlorodifluoromethane	50	57.1	114	54.5	109	5	70-130/25
75-34-3	1,1-Dichloroethane	50	52.2	104	52.2	104	0	70-130/25
107-06-2	1,2-Dichloroethane	50	59.8	120	56.9	114	5	70-130/25
75-35-4	1,1-Dichloroethene	50	52.9	106	51.3	103	3	70-130/25
156-59-2	cis-1,2-Dichloroethene	50	49.8	100	50.3	101	1	70-130/25
156-60-5	trans-1,2-Dichloroethene	50	50.7	101	51.0	102	1	70-130/25
78-87-5	1,2-Dichloropropane	50	53.0	106	51.3	103	3	70-130/25
142-28-9	1,3-Dichloropropane	50	51.8	104	50.5	101	3	70-130/25

5.2.1

5

# Blank Spike/Blank Spike Duplicate Summary

Job Number: MC6107

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2174-BS	N58109.D	1	12/07/11	JP	n/a	n/a	MSN2174
MSN2174-BSD	N58110.D	1	12/07/11	JP	n/a	n/a	MSN2174

The QC reported here applies to the following samples:

Method: SW846 8260B

MC6107-1, MC6107-2, MC6107-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
594-20-7	2,2-Dichloropropane	50	37.9	76	36.7	73	3	70-130/25
563-58-6	1,1-Dichloropropene	50	56.1	112	54.7	109	3	70-130/25
10061-01-5	cis-1,3-Dichloropropene	50	54.9	110	53.3	107	3	70-130/25
10061-02-6	trans-1,3-Dichloropropene	50	52.3	105	52.2	104	0	70-130/25
123-91-1	1,4-Dioxane	250	247	99	235	94	5	70-130/25
97-63-2	Ethyl methacrylate	50	48.3	97	47.6	95	1	77-137/25
100-41-4	Ethylbenzene	50	55.2	110	53.4	107	3	70-130/25
87-68-3	Hexachlorobutadiene	50	63.1	126	60.5	121	4	70-130/25
591-78-6	2-Hexanone	50	42.4	85	41.6	83	2	70-130/25
98-82-8	Isopropylbenzene	50	64.7	129	62.5	125	3	70-130/25
99-87-6	p-Isopropyltoluene	50	59.8	120	57.1	114	5	70-130/25
1634-04-4	Methyl Tert Butyl Ether	50	38.2	76	37.6	75	2	70-130/25
108-10-1	4-Methyl-2-pentanone (MIBK)	50	54.0	108	54.0	108	0	70-130/25
74-95-3	Methylene bromide	50	58.1	116	56.6	113	3	70-130/25
75-09-2	Methylene chloride	50	48.5	97	47.9	96	1	70-130/25
91-20-3	Naphthalene	50	46.9	94	45.8	92	2	70-130/25
103-65-1	n-Propylbenzene	50	57.0	114	54.6	109	4	70-130/25
100-42-5	Styrene	50	52.8	106	52.3	105	1	70-130/25
630-20-6	1,1,1,2-Tetrachloroethane	50	58.6	117	55.7	111	5	70-130/25
79-34-5	1,1,2,2-Tetrachloroethane	50	51.3	103	50.0	100	3	70-130/25
127-18-4	Tetrachloroethene	50	54.6	109	53.0	106	3	70-130/25
108-88-3	Toluene	50	54.9	110	53.3	107	3	70-130/25
87-61-6	1,2,3-Trichlorobenzene	50	52.2	104	49.3	99	6	70-130/25
120-82-1	1,2,4-Trichlorobenzene	50	58.4	117	56.2	112	4	70-130/25
71-55-6	1,1,1-Trichloroethane	50	57.4	115	54.5	109	5	70-130/25
79-00-5	1,1,2-Trichloroethane	50	54.9	110	53.5	107	3	70-130/25
79-01-6	Trichloroethene	50	56.6	113	55.1	110	3	70-130/25
75-69-4	Trichlorofluoromethane	50	57.7	115	55.5	111	4	70-130/25
96-18-4	1,2,3-Trichloropropane	50	49.9	100	48.1	96	4	70-130/25
95-63-6	1,2,4-Trimethylbenzene	50	57.9	116	55.3	111	5	70-130/25
108-67-8	1,3,5-Trimethylbenzene	50	58.2	116	55.5	111	5	70-130/25
108-05-4	Vinyl Acetate	50	62.6	125	63.1	126	1	70-130/25
75-01-4	Vinyl chloride	50	52.3	105	50.0	100	4	70-130/25
	m,p-Xylene	100	110	110	108	108	2	70-130/25
95-47-6	o-Xylene	50	54.8	110	53.8	108	2	70-130/25
1330-20-7	Xylene (total)	150	165	110	161	107	2	70-130/25

5.2.1  
5

# Blank Spike/Blank Spike Duplicate Summary

Job Number: MC6107

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2174-BS	N58109.D	1	12/07/11	JP	n/a	n/a	MSN2174
MSN2174-BSD	N58110.D	1	12/07/11	JP	n/a	n/a	MSN2174

The QC reported here applies to the following samples:

Method: SW846 8260B

MC6107-1, MC6107-2, MC6107-3

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	92%	93%	70-130%
2037-26-5	Toluene-D8	90%	89%	70-130%
460-00-4	4-Bromofluorobenzene	90%	89%	70-130%

- (a) Outside control limits. Blank Spike meets program technical requirements.
- (b) Outside control limits. Associated samples are non-detect for this compound.

5.2.1

5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC6107

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC6107-1MS	N58126.D	1	12/07/11	JP	n/a	n/a	MSN2174
MC6107-1MSD	N58127.D	1	12/07/11	JP	n/a	n/a	MSN2174
MC6107-1	N58125.D	1	12/07/11	JP	n/a	n/a	MSN2174

The QC reported here applies to the following samples:

Method: SW846 8260B

MC6107-1, MC6107-2, MC6107-3

CAS No.	Compound	MC6107-1 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND	50	27.6	55* a	26.1	52* a	6	70-130/30
107-02-8	Acrolein	ND	250	457	183* b	471	188* b	3	70-130/30
107-13-1	Acrylonitrile	ND	50	235	470* b	238	476* b	1	70-130/30
71-43-2	Benzene	0.97	50	48.8	96	48.9	96	0	70-130/30
108-86-1	Bromobenzene	ND	50	55.2	110	55.7	111	1	70-130/30
74-97-5	Bromochloromethane	ND	50	52.6	105	49.9	100	5	70-130/30
75-27-4	Bromodichloromethane	ND	50	58.9	118	58.1	116	1	70-130/30
75-25-2	Bromoform	ND	50	51.9	104	50.0	100	4	70-130/30
74-83-9	Bromomethane	ND	50	33.3	67* a	39.4	79	17	70-130/30
78-93-3	2-Butanone (MEK)	ND	50	38.1	76	37.3	75	2	70-130/30
104-51-8	n-Butylbenzene	ND	50	61.4	123	60.9	122	1	70-130/30
135-98-8	sec-Butylbenzene	ND	50	58.8	118	57.9	116	2	70-130/30
98-06-6	tert-Butylbenzene	ND	50	58.6	117	58.1	116	1	70-130/30
75-15-0	Carbon disulfide	ND	50	55.5	111	54.1	108	3	70-130/30
56-23-5	Carbon tetrachloride	ND	50	57.6	115	56.5	113	2	70-130/30
108-90-7	Chlorobenzene	ND	50	55.3	111	52.3	105	6	70-130/30
75-00-3	Chloroethane	ND	50	49.6	99	50.2	100	1	70-130/30
110-75-8	2-Chloroethyl vinyl ether	ND	50	52.1	104	52.8	106	1	70-130/30
67-66-3	Chloroform	ND	50	54.6	109	52.9	106	3	70-130/30
74-87-3	Chloromethane	ND	50	46.4	93	46.7	93	1	70-130/30
95-49-8	o-Chlorotoluene	ND	50	55.5	111	54.6	109	2	70-130/30
106-43-4	p-Chlorotoluene	ND	50	57.9	116	57.1	114	1	70-130/30
96-12-8	1,2-Dibromo-3-chloropropane	ND	50	48.4	97	49.5	99	2	70-130/30
124-48-1	Dibromochloromethane	ND	50	59.9	120	57.8	116	4	70-130/30
106-93-4	1,2-Dibromoethane	ND	50	52.9	106	51.6	103	2	70-130/30
95-50-1	1,2-Dichlorobenzene	ND	50	56.5	113	56.5	113	0	70-130/30
541-73-1	1,3-Dichlorobenzene	ND	50	56.6	113	56.3	113	1	70-130/30
106-46-7	1,4-Dichlorobenzene	ND	50	56.4	113	55.9	112	1	70-130/30
75-71-8	Dichlorodifluoromethane	ND	50	55.3	111	53.4	107	3	70-130/30
75-34-3	1,1-Dichloroethane	ND	50	52.9	106	52.4	105	1	70-130/30
107-06-2	1,2-Dichloroethane	ND	50	56.3	113	55.4	111	2	70-130/30
75-35-4	1,1-Dichloroethene	ND	50	54.8	110	53.9	108	2	70-130/30
156-59-2	cis-1,2-Dichloroethene	ND	50	49.7	99	50.6	101	2	70-130/30
156-60-5	trans-1,2-Dichloroethene	ND	50	52.3	105	51.6	103	1	70-130/30
78-87-5	1,2-Dichloropropane	ND	50	52.2	104	52.9	106	1	70-130/30
142-28-9	1,3-Dichloropropane	ND	50	53.4	107	51.0	102	5	70-130/30

5.3.1  
5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC6107

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC6107-1MS	N58126.D	1	12/07/11	JP	n/a	n/a	MSN2174
MC6107-1MSD	N58127.D	1	12/07/11	JP	n/a	n/a	MSN2174
MC6107-1	N58125.D	1	12/07/11	JP	n/a	n/a	MSN2174

The QC reported here applies to the following samples:

Method: SW846 8260B

MC6107-1, MC6107-2, MC6107-3

CAS No.	Compound	MC6107-1 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
594-20-7	2,2-Dichloropropane	ND	50	47.7	95	46.8	94	2	70-130/30
563-58-6	1,1-Dichloropropene	ND	50	56.9	114	55.5	111	2	70-130/30
10061-01-5	cis-1,3-Dichloropropene	ND	50	57.0	114	55.6	111	2	70-130/30
10061-02-6	trans-1,3-Dichloropropene	ND	50	54.0	108	53.1	106	2	70-130/30
123-91-1	1,4-Dioxane	ND	250	225	90	224	90	0	70-130/30
97-63-2	Ethyl methacrylate	ND	50	47.0	94	47.2	94	0	72-139/30
100-41-4	Ethylbenzene	ND	50	58.4	117	55.2	110	6	70-130/30
87-68-3	Hexachlorobutadiene	ND	50	63.7	127	64.1	128	1	70-130/30
591-78-6	2-Hexanone	ND	50	40.7	81	40.3	81	1	70-130/30
98-82-8	Isopropylbenzene	ND	50	65.8	132* a	65.8	132* a	0	70-130/30
99-87-6	p-Isopropyltoluene	ND	50	60.6	121	59.7	119	1	70-130/30
1634-04-4	Methyl Tert Butyl Ether	2.7	50	40.0	75	41.2	77	3	70-130/30
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	50	49.6	99	51.2	102	3	70-130/30
74-95-3	Methylene bromide	ND	50	56.1	112	55.5	111	1	70-130/30
75-09-2	Methylene chloride	ND	50	49.1	98	47.2	94	4	70-130/30
91-20-3	Naphthalene	ND	50	44.0	88	46.5	93	6	70-130/30
103-65-1	n-Propylbenzene	ND	50	58.0	116	57.4	115	1	70-130/30
100-42-5	Styrene	ND	50	55.2	110	53.2	106	4	70-130/30
630-20-6	1,1,1,2-Tetrachloroethane	ND	50	59.6	119	56.9	114	5	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	ND	50	49.0	98	49.7	99	1	70-130/30
127-18-4	Tetrachloroethene	ND	50	58.4	117	56.8	114	3	70-130/30
108-88-3	Toluene	ND	50	55.7	111	54.4	109	2	70-130/30
87-61-6	1,2,3-Trichlorobenzene	ND	50	49.6	99	51.3	103	3	70-130/30
120-82-1	1,2,4-Trichlorobenzene	ND	50	57.6	115	58.9	118	2	70-130/30
71-55-6	1,1,1-Trichloroethane	ND	50	56.9	114	55.4	111	3	70-130/30
79-00-5	1,1,2-Trichloroethane	ND	50	53.1	106	53.2	106	0	70-130/30
79-01-6	Trichloroethene	ND	50	56.6	113	56.8	114	0	70-130/30
75-69-4	Trichlorofluoromethane	ND	50	56.7	113	55.0	110	3	70-130/30
96-18-4	1,2,3-Trichloropropane	ND	50	46.6	93	47.3	95	1	70-130/30
95-63-6	1,2,4-Trimethylbenzene	ND	50	58.1	116	57.5	115	1	70-130/30
108-67-8	1,3,5-Trimethylbenzene	ND	50	57.9	116	57.0	114	2	70-130/30
108-05-4	Vinyl Acetate	ND	50	58.2	116	59.1	118	2	70-130/30
75-01-4	Vinyl chloride	ND	50	51.3	103	51.0	102	1	70-130/30
	m,p-Xylene	ND	100	117	117	111	111	5	70-130/30
95-47-6	o-Xylene	ND	50	57.5	115	55.9	112	3	70-130/30
1330-20-7	Xylene (total)	ND	150	175	117	167	111	5	70-130/30

5.3.1  
5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC6107

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC6107-1MS	N58126.D	1	12/07/11	JP	n/a	n/a	MSN2174
MC6107-1MSD	N58127.D	1	12/07/11	JP	n/a	n/a	MSN2174
MC6107-1	N58125.D	1	12/07/11	JP	n/a	n/a	MSN2174

The QC reported here applies to the following samples:

Method: SW846 8260B

MC6107-1, MC6107-2, MC6107-3

CAS No.	Surrogate Recoveries	MS	MSD	MC6107-1	Limits
1868-53-7	Dibromofluoromethane	92%	92%	93%	70-130%
2037-26-5	Toluene-D8	91%	90%	88%	70-130%
460-00-4	4-Bromofluorobenzene	89%	89%	91%	70-130%

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

(b) Outside control limits. Associated samples are non-detect for this compound.

5.3.1

5

# Volatile Internal Standard Area Summary

Job Number: MC6107  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSN2174-CC2146	Injection Date:	12/07/11
Lab File ID:	N58109.D	Injection Time:	04:19
Instrument ID:	GCMSN	Method:	SW846 8260B

	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
	AREA		AREA		AREA		AREA		AREA	
Check Std	234085	9.03	323912	9.90	160994	13.16	182969	15.72	79286	6.58
Upper Limit <sup>a</sup>	468170	9.53	647824	10.40	321988	13.66	365938	16.22	158572	7.08
Lower Limit <sup>b</sup>	117043	8.53	161956	9.40	80497	12.66	91485	15.22	39643	6.08

Lab Sample ID	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
	AREA		AREA		AREA		AREA		AREA	
MSN2174-BS	234085	9.03	323912	9.90	160994	13.16	182969	15.72	79286	6.58
MSN2174-BSD	241832	9.03	337382	9.90	166482	13.16	190509	15.72	90443	6.58
MSN2174-MB	221886	9.03	313776	9.91	145234	13.16	158267	15.72	76710	6.58
ZZZZZZ	213599	9.03	303907	9.91	139226	13.16	147429	15.72	64609	6.58
ZZZZZZ	206897	9.03	291379	9.90	134884	13.16	144244	15.72	70032	6.58
ZZZZZZ	200867	9.03	286910	9.91	135278	13.16	142689	15.72	68553	6.58
ZZZZZZ	205274	9.03	285890	9.90	134054	13.16	152252	15.72	63306	6.58
MC5935-4	204532	9.03	285993	9.90	133107	13.16	141590	15.72	67382	6.58
MC5935-4MS	215271	9.03	300076	9.90	145049	13.16	177389	15.72	72963	6.57
MC5935-4MSD	232734	9.03	325184	9.90	164554	13.16	185751	15.72	74972	6.57
ZZZZZZ	237212	9.03	327767	9.90	165792	13.16	203885	15.72	83626	6.58
ZZZZZZ	286019	9.03	390154	9.90	181370	13.16	210108	15.72	84485	6.58
MC6107-2	274016	9.03	381286	9.90	171608	13.16	191024	15.72	87261	6.58
MC6107-3	257379	9.03	361391	9.90	159247	13.16	180045	15.72	73565	6.58
MC6107-1	244186	9.03	341679	9.90	153803	13.16	171599	15.72	67472	6.58
MC6107-1MS	247972	9.03	348959	9.90	165078	13.16	195755	15.72	78527	6.58
MC6107-1MSD	258398	9.03	363005	9.90	177253	13.16	200146	15.72	77984	6.58
ZZZZZZ	264057	9.03	365132	9.90	168844	13.16	196484	15.72	77622	6.58
ZZZZZZ	272921	9.03	383920	9.90	189363	13.16	221498	15.72	82458	6.58
ZZZZZZ	298038	9.03	403877	9.90	180923	13.16	207618	15.72	79998	6.58
ZZZZZZ	297952	9.03	410757	9.90	187112	13.16	219532	15.72	86965	6.58
ZZZZZZ	301324	9.03	418450	9.90	192640	13.16	223466	15.72	92794	6.58

- IS 1 = Pentafluorobenzene
- IS 2 = 1,4-Difluorobenzene
- IS 3 = Chlorobenzene-D5
- IS 4 = 1,4-Dichlorobenzene-d4
- IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

5.4.1  
5



# Volatile Surrogate Recovery Summary

Job Number: MC6107

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Method: SW846 8260B

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
MC6107-1	N58125.D	93.0	88.0	91.0
MC6107-2	N58123.D	91.0	87.0	89.0
MC6107-3	N58124.D	93.0	88.0	91.0
MC6107-1MS	N58126.D	92.0	91.0	89.0
MC6107-1MSD	N58127.D	92.0	90.0	89.0
MSN2174-BS	N58109.D	92.0	90.0	90.0
MSN2174-BSD	N58110.D	93.0	89.0	89.0
MSN2174-MB	N58112.D	98.0	89.0	91.0

**Surrogate Compounds**                      **Recovery Limits**

S1 = Dibromofluoromethane              70-130%  
S2 = Toluene-D8                              70-130%  
S3 = 4-Bromofluorobenzene              70-130%

5.5.1  
5

## GC/MS Semi-volatiles

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## QC Data Summaries

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Includes the following where applicable:

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

6

# Method Blank Summary

Job Number: MC6107  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27161-MB	U3707.D	1	12/08/11	KR	12/07/11	OP27161	MSU225

The QC reported here applies to the following samples:

Method: SW846 8270C

MC6107-1, MC6107-2

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	10	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	ug/l	
51-28-5	2,4-Dinitrophenol	ND	20	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	ug/l	
95-48-7	2-Methylphenol	ND	10	ug/l	
	3&4-Methylphenol	ND	10	ug/l	
88-75-5	2-Nitrophenol	ND	10	ug/l	
100-02-7	4-Nitrophenol	ND	20	ug/l	
87-86-5	Pentachlorophenol	ND	10	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	10	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	ug/l	
62-53-3	Aniline	ND	10	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	ug/l	
85-68-7	Butyl benzyl phthalate	0.30	5.0	ug/l	J
100-51-6	Benzyl Alcohol	ND	10	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	ug/l	
106-47-8	4-Chloroaniline	ND	10	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	10	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.0	ug/l	
132-64-9	Dibenzofuran	ND	5.0	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	ug/l	
84-66-2	Diethyl phthalate	1.0	5.0	ug/l	J
131-11-3	Dimethyl phthalate	ND	5.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	ug/l	

6.1.1  
6

# Method Blank Summary

Job Number: MC6107

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27161-MB	U3707.D	1	12/08/11	KR	12/07/11	OP27161	MSU225

The QC reported here applies to the following samples:

Method: SW846 8270C

MC6107-1, MC6107-2

6.1.1  
6

CAS No.	Compound	Result	RL	Units	Q
77-47-4	Hexachlorocyclopentadiene	ND	10	ug/l	
67-72-1	Hexachloroethane	ND	5.0	ug/l	
78-59-1	Isophorone	ND	5.0	ug/l	
88-74-4	2-Nitroaniline	ND	10	ug/l	
99-09-2	3-Nitroaniline	ND	10	ug/l	
100-01-6	4-Nitroaniline	ND	10	ug/l	
98-95-3	Nitrobenzene	ND	5.0	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	ug/l	
110-86-1	Pyridine	ND	10	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	51%	15-110%
4165-62-2	Phenol-d5	33%	15-110%
118-79-6	2,4,6-Tribromophenol	87%	15-110%
4165-60-0	Nitrobenzene-d5	90%	30-130%
321-60-8	2-Fluorobiphenyl	84%	30-130%
1718-51-0	Terphenyl-d14	90%	30-130%

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

# Method Blank Summary

Job Number: MC6107

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27162-MB	U3742.D	1	12/09/11	KR	12/07/11	OP27162	MSU227

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC6107-1, MC6107-2

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	0.10	ug/l	
208-96-8	Acenaphthylene	ND	0.10	ug/l	
120-12-7	Anthracene	ND	0.10	ug/l	
56-55-3	Benzo(a)anthracene	0.19	0.050	ug/l	
50-32-8	Benzo(a)pyrene	0.099	0.10	ug/l	J
205-99-2	Benzo(b)fluoranthene	0.091	0.050	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	0.11	0.10	ug/l	
218-01-9	Chrysene	0.21	0.10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	ug/l	
206-44-0	Fluoranthene	ND	0.10	ug/l	
86-73-7	Fluorene	ND	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	0.13	0.10	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.20	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	0.10	ug/l	
85-01-8	Phenanthrene	ND	0.050	ug/l	
129-00-0	Pyrene	0.13	0.10	ug/l	

CAS No.	Surrogate Recoveries		Limits
4165-60-0	Nitrobenzene-d5	93%	30-130%
321-60-8	2-Fluorobiphenyl	84%	30-130%
1718-51-0	Terphenyl-d14	93%	30-130%

6.1.2

6

# Blank Spike Summary

Job Number: MC6107

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27162-BS	U3743.D	1	12/09/11	KR	12/07/11	OP27162	MSU227

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC6107-1, MC6107-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
83-32-9	Acenaphthene	50	43.9	88	40-140
208-96-8	Acenaphthylene	50	32.1	64	40-140
120-12-7	Anthracene	50	44.2	88	40-140
56-55-3	Benzo(a)anthracene	50	52.7	105	40-140
50-32-8	Benzo(a)pyrene	50	39.6	79	40-140
205-99-2	Benzo(b)fluoranthene	50	44.0	88	40-140
191-24-2	Benzo(g,h,i)perylene	50	46.6	93	40-140
207-08-9	Benzo(k)fluoranthene	50	46.2	92	40-140
218-01-9	Chrysene	50	46.0	92	40-140
53-70-3	Dibenzo(a,h)anthracene	50	45.7	91	40-140
206-44-0	Fluoranthene	50	43.7	87	40-140
86-73-7	Fluorene	50	44.0	88	40-140
193-39-5	Indeno(1,2,3-cd)pyrene	50	46.3	93	40-140
90-12-0	1-Methylnaphthalene	50	43.4	87	40-140
91-57-6	2-Methylnaphthalene	50	40.7	81	40-140
91-20-3	Naphthalene	50	42.0	84	40-140
85-01-8	Phenanthrene	50	42.5	85	40-140
129-00-0	Pyrene	50	47.7	95	40-140

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	97%	30-130%
321-60-8	2-Fluorobiphenyl	90%	30-130%
1718-51-0	Terphenyl-d14	100%	30-130%

6.2.1

6

# Blank Spike/Blank Spike Duplicate Summary

Job Number: MC6107

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27161-BS	U3708.D	1	12/08/11	KR	12/07/11	OP27161	MSU225
OP27161-BSD	U3709.D	1	12/08/11	KR	12/07/11	OP27161	MSU225

The QC reported here applies to the following samples:

Method: SW846 8270C

MC6107-1, MC6107-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic Acid	100	27.1	27* a	24.6	25* a	10	30-130/20
95-57-8	2-Chlorophenol	100	75.8	76	77.2	77	2	30-130/20
59-50-7	4-Chloro-3-methyl phenol	100	85.4	85	84.2	84	1	30-130/20
120-83-2	2,4-Dichlorophenol	100	87.4	87	85.4	85	2	30-130/20
105-67-9	2,4-Dimethylphenol	100	84.9	85	85.3	85	0	30-130/20
51-28-5	2,4-Dinitrophenol	100	84.5	85	89.0	89	5	30-130/20
534-52-1	4,6-Dinitro-o-cresol	100	94.7	95	95.5	96	1	30-130/20
95-48-7	2-Methylphenol	100	71.2	71	70.5	71	1	30-130/20
	3&4-Methylphenol	200	64.7	32	64.6	32	0	30-130/20
88-75-5	2-Nitrophenol	100	92.5	93	89.0	89	4	30-130/20
100-02-7	4-Nitrophenol	100	48.6	49	50.0	50	3	30-130/20
87-86-5	Pentachlorophenol	100	94.7	95	91.3	91	4	30-130/20
108-95-2	Phenol	100	37.2	37	37.7	38	1	30-130/20
95-95-4	2,4,5-Trichlorophenol	100	92.3	92	93.0	93	1	30-130/20
88-06-2	2,4,6-Trichlorophenol	100	93.0	93	93.7	94	1	30-130/20
62-53-3	Aniline	50	27.2	54	27.7	55	2	40-140/20
101-55-3	4-Bromophenyl phenyl ether	50	45.9	92	45.3	91	1	40-140/20
85-68-7	Butyl benzyl phthalate	50	47.9	96	46.8	94	2	40-140/20
100-51-6	Benzyl Alcohol	50	38.2	76	36.7	73	4	40-140/20
91-58-7	2-Chloronaphthalene	50	43.0	86	43.2	86	0	40-140/20
106-47-8	4-Chloroaniline	50	26.0	52	24.5	49	6	40-140/20
111-91-1	bis(2-Chloroethoxy)methane	50	46.0	92	45.3	91	2	40-140/20
111-44-4	bis(2-Chloroethyl)ether	50	46.2	92	45.0	90	3	40-140/20
108-60-1	bis(2-Chloroisopropyl)ether	50	45.6	91	45.5	91	0	40-140/20
7005-72-3	4-Chlorophenyl phenyl ether	50	44.5	89	45.1	90	1	40-140/20
122-66-7	1,2-Diphenylhydrazine	50	39.7	79	38.5	77	3	40-140/20
121-14-2	2,4-Dinitrotoluene	50	45.0	90	46.4	93	3	40-140/20
606-20-2	2,6-Dinitrotoluene	50	44.7	89	45.1	90	1	40-140/20
91-94-1	3,3'-Dichlorobenzidine	50	25.7	51	26.2	52	2	40-140/20
132-64-9	Dibenzofuran	50	41.7	83	42.2	84	1	40-140/20
84-74-2	Di-n-butyl phthalate	50	46.9	94	46.9	94	0	40-140/20
117-84-0	Di-n-octyl phthalate	50	49.4	99	48.1	96	3	40-140/20
84-66-2	Diethyl phthalate	50	47.2	94	48.5	97	3	40-140/20
131-11-3	Dimethyl phthalate	50	45.9	92	45.9	92	0	40-140/20
117-81-7	bis(2-Ethylhexyl)phthalate	50	47.2	94	47.9	96	1	40-140/20
118-74-1	Hexachlorobenzene	50	44.6	89	44.3	89	1	40-140/20

6.3.1



# Blank Spike/Blank Spike Duplicate Summary

Job Number: MC6107

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27161-BS	U3708.D	1	12/08/11	KR	12/07/11	OP27161	MSU225
OP27161-BSD	U3709.D	1	12/08/11	KR	12/07/11	OP27161	MSU225

The QC reported here applies to the following samples:

Method: SW846 8270C

MC6107-1, MC6107-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
77-47-4	Hexachlorocyclopentadiene	50	25.0	50	23.6	47	6	40-140/20
67-72-1	Hexachloroethane	50	37.6	75	36.6	73	3	40-140/20
78-59-1	Isophorone	50	35.3	71	33.8	68	4	40-140/20
88-74-4	2-Nitroaniline	50	46.6	93	47.2	94	1	40-140/20
99-09-2	3-Nitroaniline	50	30.1	60	30.1	60	0	40-140/20
100-01-6	4-Nitroaniline	50	41.5	83	41.7	83	0	40-140/20
98-95-3	Nitrobenzene	50	44.1	88	43.2	86	2	40-140/20
62-75-9	n-Nitrosodimethylamine	50	31.2	62	30.1	60	4	40-140/20
621-64-7	N-Nitroso-di-n-propylamine	50	49.0	98	49.8	100	2	40-140/20
86-30-6	N-Nitrosodiphenylamine	50	46.0	92	46.2	92	0	40-140/20
110-86-1	Pyridine	50	28.3	57	27.9	56	1	40-140/20

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
367-12-4	2-Fluorophenol	57%	56%	15-110%
4165-62-2	Phenol-d5	39%	38%	15-110%
118-79-6	2,4,6-Tribromophenol	92%	90%	15-110%
4165-60-0	Nitrobenzene-d5	95%	91%	30-130%
321-60-8	2-Fluorobiphenyl	87%	86%	30-130%
1718-51-0	Terphenyl-d14	97%	95%	30-130%

(a) Outside control limits. Blank Spike meets program technical requirements.

6.3.1

6



# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC6107

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27161-MS	U3710.D	1	12/09/11	KR	12/07/11	OP27161	MSU225
OP27161-MSD	U3711.D	1	12/09/11	KR	12/07/11	OP27161	MSU225
MC6107-1	U3712.D	1	12/09/11	KR	12/07/11	OP27161	MSU225

The QC reported here applies to the following samples:

Method: SW846 8270C

MC6107-1, MC6107-2

CAS No.	Compound	MC6107-1 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic Acid	ND	102	27.4	27* a	33.1	33	19	30-130/20
95-57-8	2-Chlorophenol	ND	102	66.4	65	74.8	74	12	30-130/20
59-50-7	4-Chloro-3-methyl phenol	ND	102	81.9	80	83.8	83	2	30-130/20
120-83-2	2,4-Dichlorophenol	ND	102	79.8	78	86.0	85	7	30-130/20
105-67-9	2,4-Dimethylphenol	ND	102	78.3	77	81.2	80	4	30-130/20
51-28-5	2,4-Dinitrophenol	ND	102	68.0	67	78.8	78	15	30-130/20
534-52-1	4,6-Dinitro-o-cresol	ND	102	81.8	80	89.0	88	8	30-130/20
95-48-7	2-Methylphenol	ND	102	63.8	63	71.6	71	12	30-130/20
	3&4-Methylphenol	ND	204	57.5	28* b	64.6	32	12	30-130/20
88-75-5	2-Nitrophenol	ND	102	82.4	81	87.9	87	6	30-130/20
100-02-7	4-Nitrophenol	ND	102	44.4	44	47.6	47	7	30-130/20
87-86-5	Pentachlorophenol	ND	102	86.8	85	89.8	89	3	30-130/20
108-95-2	Phenol	ND	102	34.0	33	37.4	37	10	30-130/20
95-95-4	2,4,5-Trichlorophenol	ND	102	89.7	88	90.9	90	1	30-130/20
88-06-2	2,4,6-Trichlorophenol	ND	102	86.8	85	90.8	90	5	30-130/20
62-53-3	Aniline	ND	51	16.8	33* b	15.9	31* b	6	40-140/20
101-55-3	4-Bromophenyl phenyl ether	ND	51	42.6	83	43.8	87	3	40-140/20
85-68-7	Butyl benzyl phthalate	0.41	51	44.1	86	46.1	90	4	40-140/20
100-51-6	Benzyl Alcohol	ND	51	33.9	66	38.0	75	11	40-140/20
91-58-7	2-Chloronaphthalene	ND	51	41.1	81	43.9	87	7	40-140/20
106-47-8	4-Chloroaniline	ND	51	26.8	53	14.1	28* b	62* c	40-140/20
111-91-1	bis(2-Chloroethoxy)methane	ND	51	42.5	83	45.0	89	6	40-140/20
111-44-4	bis(2-Chloroethyl)ether	ND	51	39.8	78	45.0	89	12	40-140/20
108-60-1	bis(2-Chloroisopropyl)ether	ND	51	39.9	78	44.2	88	10	40-140/20
7005-72-3	4-Chlorophenyl phenyl ether	ND	51	43.0	84	44.1	87	3	40-140/20
122-66-7	1,2-Diphenylhydrazine	ND	51	38.6	76	39.0	77	1	40-140/20
121-14-2	2,4-Dinitrotoluene	ND	51	43.8	86	44.3	88	1	40-140/20
606-20-2	2,6-Dinitrotoluene	ND	51	43.0	84	45.1	89	5	40-140/20
91-94-1	3,3'-Dichlorobenzidine	ND	51	25.7	50	22.2	44	15	40-140/20
132-64-9	Dibenzofuran	ND	51	41.1	81	42.1	83	2	40-140/20
84-74-2	Di-n-butyl phthalate	0.46	51	43.5	84	44.9	88	3	40-140/20
117-84-0	Di-n-octyl phthalate	ND	51	44.5	87	44.6	88	0	40-140/20
84-66-2	Diethyl phthalate	0.43	51	47.4	92	48.2	95	2	40-140/20
131-11-3	Dimethyl phthalate	ND	51	44.6	87	46.8	93	5	40-140/20
117-81-7	bis(2-Ethylhexyl)phthalate	ND	51	48.2	94	43.4	86	10	40-140/20
118-74-1	Hexachlorobenzene	ND	51	40.3	79	41.5	82	3	40-140/20

6.4.1

6

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC6107

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27161-MS	U3710.D	1	12/09/11	KR	12/07/11	OP27161	MSU225
OP27161-MSD	U3711.D	1	12/09/11	KR	12/07/11	OP27161	MSU225
MC6107-1	U3712.D	1	12/09/11	KR	12/07/11	OP27161	MSU225

The QC reported here applies to the following samples:

Method: SW846 8270C

MC6107-1, MC6107-2

CAS No.	Compound	MC6107-1 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
77-47-4	Hexachlorocyclopentadiene	ND	51	24.9	49	27.0	53	8	40-140/20
67-72-1	Hexachloroethane	ND	51	32.2	63	37.7	75	16	40-140/20
78-59-1	Isophorone	ND	51	33.3	65	34.0	67	2	40-140/20
88-74-4	2-Nitroaniline	ND	51	44.0	86	45.6	90	4	40-140/20
99-09-2	3-Nitroaniline	ND	51	33.3	65	23.8	47	33* c	40-140/20
100-01-6	4-Nitroaniline	ND	51	41.4	81	41.6	82	0	40-140/20
98-95-3	Nitrobenzene	ND	51	41.1	81	42.6	84	4	40-140/20
62-75-9	n-Nitrosodimethylamine	ND	51	25.6	50	30.5	60	17	40-140/20
621-64-7	N-Nitroso-di-n-propylamine	ND	51	44.1	86	49.1	97	11	40-140/20
86-30-6	N-Nitrosodiphenylamine	ND	51	42.9	84	45.2	89	5	40-140/20
110-86-1	Pyridine	ND	51	22.6	44	27.7	55	20	40-140/20

CAS No.	Surrogate Recoveries	MS	MSD	MC6107-1	Limits
367-12-4	2-Fluorophenol	47%	53%	53%	15-110%
4165-62-2	Phenol-d5	33%	37%	34%	15-110%
118-79-6	2,4,6-Tribromophenol	86%	83%	93%	15-110%
4165-60-0	Nitrobenzene-d5	85%	90%	92%	30-130%
321-60-8	2-Fluorobiphenyl	81%	86%	88%	30-130%
1718-51-0	Terphenyl-d14	49%	50%	58%	30-130%

- (a) Outside control limits. Blank Spike meets program technical requirements.
- (b) Outside control limits due to possible matrix interference. Refer to Blank Spike.
- (c) High RPD due to possible matrix interference and/or sample non-homogeneity.

6.4.1

6

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC6107

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27162-MS	U3744.D	1	12/09/11	KR	12/07/11	OP27162	MSU227
OP27162-MSD	U3745.D	1	12/09/11	KR	12/07/11	OP27162	MSU227
MC6107-1	U3746.D	1	12/09/11	KR	12/07/11	OP27162	MSU227

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC6107-1, MC6107-2

CAS No.	Compound	MC6107-1 ug/l	Spike Q	ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND	51	41.4	81	43.9	87	6	40-140/20	
208-96-8	Acenaphthylene	ND	51	29.7	58	31.7	63	7	40-140/20	
120-12-7	Anthracene	ND	51	40.2	79	42.5	84	6	40-140/20	
56-55-3	Benzo(a)anthracene	0.036	B	51	47.3	93	48.5	96	3	40-140/20
50-32-8	Benzo(a)pyrene	0.056	B	51	34.7	68	35.5	70	2	40-140/20
205-99-2	Benzo(b)fluoranthene	0.056	B	51	39.1	77	39.7	78	2	40-140/20
191-24-2	Benzo(g,h,i)perylene	0.037	51	39.9	78	42.9	85	7	40-140/20	
207-08-9	Benzo(k)fluoranthene	0.061	B	51	40.1	78	41.2	81	3	40-140/20
218-01-9	Chrysene	0.046	B	51	41.2	81	42.5	84	3	40-140/20
53-70-3	Dibenzo(a,h)anthracene	0.038	51	38.9	76	41.7	82	7	40-140/20	
206-44-0	Fluoranthene	ND	51	40.9	80	41.3	82	1	40-140/20	
86-73-7	Fluorene	ND	51	42.0	82	43.9	87	4	40-140/20	
193-39-5	Indeno(1,2,3-cd)pyrene	0.038	B	51	39.5	77	42.2	83	7	40-140/20
90-12-0	1-Methylnaphthalene	ND	51	41.0	80	44.5	88	8	40-140/20	
91-57-6	2-Methylnaphthalene	ND	51	38.2	75	41.0	81	7	40-140/20	
91-20-3	Naphthalene	0.020	51	38.7	76	42.7	85	10	40-140/20	
85-01-8	Phenanthrene	ND	51	39.2	77	41.7	83	6	40-140/20	
129-00-0	Pyrene	ND	51	42.3	83	45.7	90	8	40-140/20	

CAS No.	Surrogate Recoveries	MS	MSD	MC6107-1	Limits
4165-60-0	Nitrobenzene-d5	87%	95%	98%	30-130%
321-60-8	2-Fluorobiphenyl	82%	89%	89%	30-130%
1718-51-0	Terphenyl-d14	50%	53%	61%	30-130%

6.4.2

6

# Semivolatile Internal Standard Area Summary

Job Number: MC6107  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSU225-CC224	Injection Date:	12/08/11
Lab File ID:	U3706.D	Injection Time:	22:05
Instrument ID:	GCMSU	Method:	SW846 8270C

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	86728	5.43	326877	6.74	195409	9.19	374681	11.71	443589	16.67	403483	19.21
Upper Limit <sup>a</sup>	173456	5.93	653754	7.24	390818	9.69	749362	12.21	887178	17.17	806966	19.71
Lower Limit <sup>b</sup>	43364	4.93	163439	6.24	97705	8.69	187341	11.21	221795	16.17	201742	18.71

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP27161-MB	78444	5.43	275615	6.74	144387	9.19	258315	11.71	293512	16.66	294139	19.20
OP27161-BS	92182	5.44	316793	6.74	173558	9.19	311236	11.71	329749	16.67	303911	19.20
OP27161-BSD	80084	5.44	283142	6.74	151131	9.19	277195	11.71	297902	16.66	292150	19.20
OP27161-MS	85007	5.44	286355	6.74	152685	9.19	287104	11.71	317411	16.67	316138	19.20
OP27161-MSD	83358	5.44	288268	6.74	156339	9.19	290622	11.71	310178	16.67	307416	19.20
MC6107-1	82190	5.43	282545	6.74	156188	9.19	289365	11.71	353845	16.66	351071	19.20
MC6107-2	79324	5.43	285787	6.74	154416	9.19	290104	11.71	340271	16.66	335166	19.20
OP27142-MB	80621	5.43	275184	6.74	139792	9.19	261686	11.71	298440	16.66	305979	19.20
OP27142-BS	79479	5.43	273757	6.74	150408	9.19	274609	11.71	324614	16.67	314481	19.20
OP27142-BSD	81108	5.43	274105	6.74	152613	9.19	291439	11.71	344961	16.67	335034	19.20
OP27142-MS	79125	5.43	271949	6.74	149517	9.19	278030	11.71	314151	16.67	304508	19.20
OP27142-MSD	78404	5.43	269045	6.74	146610	9.19	272657	11.71	326087	16.67	310393	19.20
MC6093-1	74253	5.43	263612	6.74	151861	9.19	294458	11.71	346373	16.66	334791	19.20
ZZZZZZ	73252	5.43	260537	6.74	146096	9.19	279965	11.71	319326	16.66	306514	19.20
ZZZZZZ	77709	5.43	280007	6.74	156030	9.19	306901	11.71	353710	16.66	336301	19.20
ZZZZZZ	76423	5.43	268503	6.74	150891	9.19	293724	11.71	335518	16.66	325624	19.20
ZZZZZZ	73094	5.43	266399	6.74	144622	9.19	259351	11.71	305004	16.66	316771	19.20
ZZZZZZ	147944	5.44	520998	6.74	273929	9.19	482016	11.71	444453	16.66	356854	19.20
ZZZZZZ	113787	5.44	408597	6.74	213074	9.19	381341	11.71	401587	16.66	397140	19.20
ZZZZZZ	123598	5.44	411434	6.74	208958	9.19	350927	11.71	324932	16.66	392001	19.21
ZZZZZZ	148402	5.44	496162	6.74	264415	9.19	440241	11.71	390528	16.66	365725	19.20

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.5.1

6

# Semivolatile Internal Standard Area Summary

Job Number: MC6107  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSU227-CC226	Injection Date:	12/09/11
Lab File ID:	U3741.D	Injection Time:	16:30
Instrument ID:	GCMSU	Method:	SW846 8270C

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	206325	5.43	697576	6.73	391917	9.19	721977	11.71	820761	16.68	800712	19.21
Upper Limit <sup>a</sup>	412650	5.93	1395152	7.23	783834	9.69	1443954	12.21	1641522	17.18	1601424	19.71
Lower Limit <sup>b</sup>	103163	4.93	348788	6.23	195959	8.69	360989	11.21	410381	16.18	400356	18.71

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP27162-MB	151973	5.43	530880	6.73	285534	9.19	536777	11.71	550470	16.67	543615	19.20
OP27162-BS	191467	5.45	649994	6.73	348394	9.19	631189	11.71	587962	16.67	539423	19.21
OP27162-MS	164408	5.45	555127	6.73	302441	9.19	567735	11.71	563846	16.67	532607	19.21
OP27162-MSD	173655	5.45	589457	6.73	317306	9.19	577694	11.71	536045	16.67	506615	19.20
MC6107-1	166936	5.43	578537	6.73	311153	9.19	580076	11.71	595058	16.67	595796	19.20
MC6107-2	154723	5.43	534782	6.73	290257	9.19	562345	11.71	590177	16.67	575837	19.20
OP27178-MB	149114	5.45	514808	6.73	277846	9.19	512629	11.71	476947	16.67	424405	19.20
OP27178-BS	152057	5.45	514352	6.73	279674	9.19	518755	11.71	496740	16.67	440249	19.21
OP27178-MS	141948	5.45	491231	6.73	265963	9.19	496974	11.71	529204	16.67	521616	19.20
OP27178-MSD	145444	5.43	501420	6.73	273418	9.19	532401	11.71	572990	16.67	553830	19.20
MC5698-5	141990	5.45	493118	6.73	272199	9.19	528524	11.71	586192	16.67	552608	19.20
ZZZZZZ	141262	5.43	484215	6.73	267735	9.19	503079	11.71	588622	16.67	573863	19.20
ZZZZZZ	139214	5.45	472094	6.73	269336	9.19	534889	11.71	593734	16.67	584839	19.20
ZZZZZZ	151842	5.45	507934	6.73	270902	9.19	496756	11.71	487197	16.67	512596	19.20
ZZZZZZ	137151	5.45	477102	6.73	266806	9.19	524386	11.71	596232	16.67	570914	19.20
ZZZZZZ	139515	5.43	486558	6.73	281428	9.19	547331	11.71	628285	16.67	582507	19.20
ZZZZZZ	147164	5.43	520845	6.73	297834	9.20	579639	11.71	656571	16.67	629655	19.20
ZZZZZZ	151700	5.45	539241	6.73	305344	9.19	607196	11.71	681341	16.67	633310	19.21
ZZZZZZ	196831	5.45	655117	6.73	340568	9.19	602442	11.71	520506	16.67	600357	19.21
ZZZZZZ	188622	5.45	621664	6.73	321837	9.19	558220	11.71	558903	16.67	713225	19.21
ZZZZZZ	181761	5.45	591646	6.73	307154	9.19	544557	11.71	560557	16.67	717348	19.21
ZZZZZZ	168594	5.45	548175	6.73	289571	9.19	520706	11.71	578355	16.67	759001	19.22
ZZZZZZ	139855	5.44	481520	6.74	248967	9.19	412083	11.71	433978	16.67	575746	19.21

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.5.2  
6

# Semivolatile Surrogate Recovery Summary

Job Number: MC6107

Account: SHELLWIC Shell Oil

Project: URSMOSTI, Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Method: SW846 8270C

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4	S5	S6
MC6107-1	U3712.D	53.0	34.0	93.0	92.0	88.0	58.0
MC6107-2	U3713.D	54.0	35.0	89.0	95.0	92.0	89.0
OP27161-RS	U3708.D	57.0	39.0	92.0	95.0	87.0	97.0
OP27161-BSD	U3709.D	56.0	38.0	90.0	91.0	86.0	95.0
OP27161-MB	U3707.D	51.0	33.0	87.0	90.0	84.0	90.0
OP27161-MS	U3710.D	47.0	33.0	86.0	85.0	81.0	49.0
OP27161-MSD	U3711.D	53.0	37.0	83.0	90.0	86.0	50.0

### Surrogate Compounds Recovery Limits

S1 = 2-Fluorophenol	15-110%
S2 = Phenol-d5	15-110%
S3 = 2,4,6-Tribromophenol	15-110%
S4 = Nitrobenzene-d5	30-130%
S5 = 2-Fluorobiphenyl	30-130%
S6 = Terphenyl-d14	30-130%

6.6.1

6

# Semivolatile Surrogate Recovery Summary

Job Number: MC6107

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Method: SW846 8270C BY SIM

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
MC6107-1	U3746.D	98.0	89.0	61.0
MC6107-2	U3747.D	100.0	92.0	91.0
OP27162-BS	U3743.D	97.0	90.0	100.0
OP27162-MB	U3742.D	93.0	84.0	93.0
OP27162-MS	U3744.D	87.0	82.0	50.0
OP27162-MSD	U3745.D	95.0	89.0	53.0

Surrogate Compounds	Recovery Limits
S1 = Nitrobenzene-d5	30-130%
S2 = 2-Fluorobiphenyl	30-130%
S3 = Terphenyl-d14	30-130%

6.6.2

6



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## GC Volatiles

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## QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries



# Method Blank Summary

Job Number: MC6107

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27156-MB	BB39766.D	1	12/07/11	CZ	12/07/11	OP27156	GBB2466

The QC reported here applies to the following samples:

Method: SW846 8011

MC6107-1, MC6107-2, MC6107-4

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

CAS No.	Surrogate Recoveries		Limits
460-00-4	Bromofluorobenzene (S)	115%	36-173%
460-00-4	Bromofluorobenzene (S)	118%	36-173%

7.1.1

7

# Blank Spike Summary

Job Number: MC6107

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27156-BS	BB39767.D	1	12/07/11	CZ	12/07/11	OP27156	GBB2466

The QC reported here applies to the following samples:

Method: SW846 8011

MC6107-1, MC6107-2, MC6107-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
96-12-8	1,2-Dibromo-3-chloropropane	0.071	0.074	104	60-140
106-93-4	1,2-Dibromoethane	0.071	0.074	104	60-140

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	Bromofluorobenzene (S)	112%	36-173%
460-00-4	Bromofluorobenzene (S)	115%	36-173%

7.2.1

7

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC6107

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27156-MS	BB39768.D	1	12/07/11	CZ	12/07/11	OP27156	GBB2466
OP27156-MSD	BB39769.D	1	12/07/11	CZ	12/07/11	OP27156	GBB2466
MC6107-1	BB39770.D	1	12/07/11	CZ	12/07/11	OP27156	GBB2466

The QC reported here applies to the following samples:

Method: SW846 8011

MC6107-1, MC6107-2, MC6107-4

CAS No.	Compound	MC6107-1 ug/l	Spike Q	ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
96-12-8	1,2-Dibromo-3-chloropropane	ND		0.0681	0.063	93	0.064	94	2	64-141/29
106-93-4	1,2-Dibromoethane	ND		0.0681	0.061	90	0.068	100	11	63-163/27

CAS No.	Surrogate Recoveries	MS	MSD	MC6107-1	Limits
460-00-4	Bromofluorobenzene (S)	94%	91%	97%	36-173%
460-00-4	Bromofluorobenzene (S)	125%	117%	115%	36-173%

7.3.1

7

# Volatile Surrogate Recovery Summary

Job Number: MC6107

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Method: SW846 8011

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 <sup>a</sup>	S1 <sup>b</sup>
MC6107-1	BB39770.D	97.0	115.0
MC6107-2	BB39771.D	102.0	116.0
MC6107-4	BB39772.D	82.0	98.0
OP27156-BS	BB39767.D	112.0	115.0
OP27156-MB	BB39766.D	115.0	118.0
OP27156-MS	BB39768.D	94.0	125.0
OP27156-MSD	BB39769.D	91.0	117.0

Surrogate Compounds                      Recovery Limits

S1 = Bromofluorobenzene (S)              36-173%

(a) Recovery from GC signal #1

(b) Recovery from GC signal #2

7.4.1  
7

# GC Surrogate Retention Time Summary

Job Number: MC6107  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	GBB2466-ICC2466	Injection Date:	12/07/11
Lab File ID:	BB39761.D	Injection Time:	16:49
Instrument ID:	GCB	Method:	SW846 8011

	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
Check Std	3.88	3.84

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
OP27156-MB	BB39766.D	12/07/11	18:53	3.88	3.84
OP27156-BS	BB39767.D	12/07/11	19:18	3.88	3.84
OP27156-MS	BB39768.D	12/07/11	19:42	3.88	3.84
OP27156-MSD	BB39769.D	12/07/11	20:07	3.88	3.84
MC6107-1	BB39770.D	12/07/11	20:32	3.88	3.84
MC6107-2	BB39771.D	12/07/11	20:57	3.88	3.84
MC6107-4	BB39772.D	12/07/11	21:22	3.88	3.84
ZZZZZ	BB39773.D	12/07/11	21:47	3.88	3.84
GBB2466-ECC246	BB39774.D	12/07/11	22:12	3.88	3.84

**Surrogate  
Compounds**

S1 = Bromofluorobenzene (S)

- (a) Retention time from GC signal #1
- (b) Retention time from GC signal #2

7.5.1  
7

# Roxana Groundwater Quarterly – 4<sup>th</sup> Quarter 2011 Data Review

Laboratory SDG: MC6521

Data Reviewer: Melissa Mansker

Peer Reviewer: Tony Sedlacek

Date Reviewed: 12/22/2011

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

Sample Identification	Sample Identification
MW4-ROX-121511	MW4-ROX-121511-EB
TB-121511	TB-121511

## 1.0 Data Package Completeness

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

Yes

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

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

Yes, the laboratory case narrative indicated that VOC and SVOC LCS/LCSD recoveries were outside evaluation criteria. SVOC MS/MSD recoveries and MS/MSD RPD recoveries were outside evaluation criteria. Although not indicated in the laboratory case narrative, SVOCs and PAHs were detected in the equipment blank, and SVOCs were detected in the method blank. These issues are addressed further in the appropriate sections below.

The cooler receipt form indicated samples in one of two coolers were received by the laboratory at a temperature of 1.4°C, which is outside the 4°C ± 2°C criteria. Samples were received in good condition; therefore, no qualification of data was required.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

Yes

## 4.0 Blank Contamination

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

Yes

Blank ID	Parameter	Analyte	Concentration/ Amount
MW4-ROX-121511-EB	SVOCs	Benzyl alcohol	26.0 ug/L
MW4-ROX-121511-EB	SVOCs	bis(2-Ethylhexyl)phthalate	4.0 ug/L
MW4-ROX-121511-EB	PAHs	Benzo(b)fluoranthene	0.059 ug/L
MW4-ROX-121511-EB	PAHs	Benzo(g,h,i)perylene	0.32 ug/L

Blank ID	Parameter	Analyte	Concentration/ Amount
MW4-ROX-121511-EB	PAHs	Dibenzo(a,h)anthracene	0.18 ug/L
MW4-ROX-121511-EB	PAHs	Indeno(1,2,3-cd)pyrene	0.22 ug/L
OP27269-MB	SVOCs	Butyl benzyl phthalate	0.54 ug/L
OP27269-MB	SVOCs	Di-n-butyl phthalate	0.41 ug/L
OP27269-MB	SVOCs	bis(2-Ethylhexyl)phthalate	1.7 ug/L

Qualifications due to blank contamination are included in the table below. Analytical data that were reported non-detect or at concentrations greater than five times (5X) the associated blank concentration did not require qualification.

Sample ID	Parameter	Analyte	New Reporting Limit (RL)	Qualification
MW4-ROX-121511	SVOCs	bis(2-Ethylhexyl)phthalate	2.8 ug/L	<b>U</b>
MW4-ROX-121511	PAHs	Benzo(b)fluoranthene	0.087 ug/L	<b>U</b>
MW4-ROX-121511	PAHs	Benzo(g,h,i)perylene	0.63 ug/L	<b>U</b>
MW4-ROX-121511	PAHs	Dibenzo(a,h)anthracene	0.22 ug/L	<b>U</b>
MW4-ROX-121511	PAHs	Indeno(1,2,3-cd)pyrene	0.43 ug/L	<b>U</b>

## 5.0 Laboratory Control Sample

*Were LCS recoveries within evaluation criteria?*

No

LCS/ LCSD ID	Parameter	Analyte	LCS/LCSD Recovery	RPD	LCS/LCSD /RPD Criteria
MSN2189- BS/BSD	VOCs	Acrolein	<b>174/165</b>	6	70-130/25
MSN2189- BS/BSD	VOCs	Acrylonitrile	<b>486/428</b>	13	70-130/25
MSN2189- BS/BSD	VOCs	Methyl tert butyl ether	<b>70/64</b>	9	70-130/25
MSN2190- BS/BSD	VOCs	Acrolein	<b>172/180</b>	5	70-130/25
MSN2190- BS/BSD	VOCs	Acrylonitrile	<b>468/468</b>	0	70-130/25
MSN2190- BS/BSD	VOCs	Methyl tert butyl ether	<b>69/71</b>	2	70-130/25
OP27269- BS/BSD	SVOCs	Benzoic Acid	<b>9/19</b>	<b>70</b>	30-130/20
OP27269- BS/BSD	SVOCs	4-Nitrophenol	46/62	<b>31</b>	30-130/20
OP27269- BS/BSD	SVOCs	Phenol	38/54	<b>34</b>	30-130/20

LCS/LCSD ID	Parameter	Analyte	LCS/LCSD Recovery	RPD	LCS/LCSD /RPD Criteria
OP27269-BS/BSD	SVOCs	Aniline	58/7	157	40-140/20
OP27269-BS/BSD	SVOCs	4-Chloroaniline	50/37	29	40-140/20
OP27269-BS/BSD	SVOCs	Pyridine	48/0	200	40-140/20

Analytical data that required qualification based on LCS data are included in the table below. Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. LCS/LCSD MSN2189-BS/BSD was associated with equipment blank sample MW4-ROX-121511-EB and trip blank sample TB-121511, and LCS/LCSD OP27269-BS/BSD was associated with equipment blank sample MW4-ROX-121511-EB. Equipment and trip blank samples are quality control samples and are not qualified. LCS samples are not qualified based on RPD alone and LCS recoveries were within acceptance criteria, therefore, did not require qualification.

Sample ID	Parameter	Analyte	Qualification
MW4-ROX-121511	VOCs	Methyl tert butyl ether	J
MW4-ROX-121511	SVOCs	Benzoic Acid	UJ
MW4-ROX-121511	SVOCs	Aniline	UJ
MW4-ROX-121511	SVOCs	4-Chloroaniline	UJ
MW4-ROX-121511	SVOCs	Pyridine	UJ

## 6.0 Surrogate Recoveries

*Were surrogate recoveries within evaluation criteria?*

Yes

## 7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

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

Yes, although not requested, samples MW4-ROX-121511 and MW4-ROX-121511-EB were spiked and analyzed for SVOCs and PAHs.

*Were MS/MSD recoveries within evaluation criteria?*

No

MS/MSD ID	Parameter	Analyte	MS/MSD Recovery (%)	RPD	MS/MSD/ RPD Criteria
OP27269-MS/MSD	SVOCs	4-Chloroaniline	20/29	37	40-140/20
OP27269-MS/MSD	SVOCs	3-Nitroaniline	30/39	27	40-140/20



Analytical results reported as non-detect and associated with MS/MSD recoveries above evaluation criteria, indicating a high bias, did not require qualification. USEPA National Functional Guidelines for Organic Data Review indicates that organic data does not require qualification based on MS/MSD data alone. LCS/LCSD recoveries were within evaluation criteria with the exception of compounds listed and qualified as appropriate in Section 5.0 of this data review. No further qualification of data was required.

**8.0 Internal Standard (IS) Recoveries**

*Were internal standard area recoveries within evaluation criteria?*

Yes

**9.0 Laboratory Duplicate Results**

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

No

**10.0 Field Duplicate Results**

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

No

**11.0 Sample Dilutions**

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

Not applicable; analytes were detected in samples that were diluted.

**12.0 Additional Qualifications**

*Were additional qualifications applied?*

No



12/21/11

Technical Report for

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Shell Oil

URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana,

Accutest Job Number: MC6521

Sampling Date: 12/15/11

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Report to:

URS Corporation

Elizabeth\_Kunkel@URSCorp.com

ATTN: Elizabeth Kunkel

Total number of pages in report: 71



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

*Reviewed on 12/24/2011*

*Reza Fand*  
Reza Fand  
Lab Director

Client Service contact: Jeremy Vienneau 508-481-6200

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

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Test results relate only to samples analyzed.

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### Sample Summary

Shell Oil

Job No: MC6521

URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
MC6521-1	12/15/11	15:15 LRJJ	12/16/11	AQ	Ground Water	MW4-ROX-121511 ✓
MC6521-2	12/15/11	15:45 LRJJ	12/16/11	AQ	Equipment Blank	MW4-ROX-121511-EB ✓
MC6521-3	12/15/11	00:00 LRJJ	12/16/11	AQ	Trip Blank Water	TB-121511 ✓
MC6521-4	12/15/11	00:00 LRJJ	12/16/11	AQ	Trip Blank Water	TB-121511 ✓

## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** Shell Oil **Job No** MC6521  
**Site:** URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central **Report Date** 12/21/2011 3:56:16 PM

2 Sample(s), 2 Trip Blank(s) and 0 Field Blank(s) were collected on 12/15/2011 and were received at Accutest on 12/16/2011 properly preserved, at 1.4 Deg. C and intact. These Samples received an Accutest job number of MC6521. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report. 1-Chlorohexane, Benzenethiol, Dibenz(a,h)acridine, Indene, and Quinoline were searched in the library search and reported only if detections were found.

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

### Volatiles by GCMS By Method SW846 8260B

<b>Matrix</b> AQ	<b>Batch ID:</b> MSN2189
------------------	--------------------------

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC6287-IMS, MC6287-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- BS/BSD/MS/MSD Recovery(s) for Acrolein, Acrylonitrile are outside control limits. Associated samples are non-detect for this compound.
- Matrix Spike Recovery(s) for 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, Acetone, Ethyl methacrylate, Isopropylbenzene, n-Propylbenzene, o-Chlorotoluene, Toluene are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, Acetone, Ethyl methacrylate, Isopropylbenzene, n-Propylbenzene, o-Chlorotoluene, Toluene are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Recovery(s) for Benzene, Ethylbenzene, m,p-Xylene, Xylene (total) are outside control limits. Outside control limits due to high level in sample relative to spike amount.
- MSN2189-BSD for Methyl Tert Butyl Ether: Outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Duplicate Recovery(s) for Benzene, o-Xylene, m,p-Xylene, Xylene (total) are outside control limits. Outside control limits due to high level in sample relative to spike amount.

<b>Matrix</b> AQ	<b>Batch ID:</b> MSN2190
------------------	--------------------------

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC6290-5MS, MC6290-5MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- BS/BSD/MS/MSD Recovery(s) for Acrolein, Acrylonitrile are outside control limits. Associated samples are non-detect for this compound.
- Matrix Spike Recovery(s) for Acetone, Methyl Tert Butyl Ether are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for Acetone are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- MSN2189-BS for Methyl Tert Butyl Ether: Outside control limits. Blank Spike meets program technical requirements.

### Extractables by GCMS By Method SW846 8270C

<b>Matrix</b> AQ	<b>Batch ID:</b> OP27269
------------------	--------------------------

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC6521-IMS, MC6521-IMSD were used as the QC samples indicated.
- Sample(s) MC6521-1, MC6521-2 have compound(s) reported with a "B" qualifier, indicating analyte is found in the associated method blank.
- BS Recovery(s) for Benzoic Acid are outside control limits. Blank Spike meets program technical requirements.
- MS/MSD Recovery(s) for 3-Nitroaniline are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- RPD(s) for MSD for 3-Nitroaniline are outside control limits for sample OP27269-MSD. High RPD due to possible matrix interference and/or sample non-homogeneity.
- OP27269-MS/MSD for 4-Chloroaniline: Outside control limits. Blank Spike meets program technical requirements.
- RPD of OP27269-MSD for 4-Chloroaniline: Outside control limits. Blank Spike meets program technical requirements.
- BSD Recovery(s) for Benzoic Acid, Aniline, Pyridine are outside control limits. Refer to Blank Spike.
- RPD of BSD Recovery(s) for Benzoic Acid, 4-Nitrophenol, Pheno, Aniline, 4-Chloroaniline, Pyridine are outside control limits. Associated samples are non-detect for this compound.

### Extractables by GCMS By Method SW846 8270C BY SIM

<b>Matrix</b> AQ	<b>Batch ID:</b> OP27270
------------------	--------------------------

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC6521-IMS, MC6521-IMSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

### Volatiles by GC By Method SW846 8011

<b>Matrix</b> AQ	<b>Batch ID:</b> OP27266
------------------	--------------------------

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC6502-3MS, MC6502-3MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety. The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC6521).



Sample Results

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Report of Analysis

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## Report of Analysis

Client Sample ID:	MW4-ROX-121511	Date Sampled:	12/15/11
Lab Sample ID:	MC652I-1	Date Received:	12/16/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N58576.D	1	12/19/11	JP	n/a	n/a	MSN2190
Run #2							

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

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
I07-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	38.1	0.50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanoue (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



## Report of Analysis

3.1  


Client Sample ID:	MW4-ROX-121511	Date Sampled:	12/15/11
Lab Sample ID:	MC6521-1	Date Received:	12/16/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	7.3	1.0	ug/l	J
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	9.2	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	6.9	1.0	ug/l	
95-47-6	o-Xylene	1.0	1.0	ug/l	
1330-20-7	Xylene (total)	7.9	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

3.1



Client Sample ID:	MW4-ROX-121511	Date Sampled:	12/15/11
Lab Sample ID:	MC6521-1	Date Received:	12/16/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL.:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

**VOA Special List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%		70-130%
2037-26-5	Toluene-D8	92%		70-130%
460-00-4	4-Bromofluorobenzene	97%		70-130%
CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units Q
	Total TIC, Volatile		0	ug/l

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID:	MW4-ROX-121511	Date Sampled:	12/15/11
Lab Sample ID:	MC6521-1	Date Received:	12/16/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U4096.D	1	12/20/11	KR	12/17/11	OP27269	MSU249
Run #2							

Run #	Initial Volume	Final Volume
Run #1	960 ml	1.0 ml
Run #2		

## ABN Special List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	10	ug/l	UJ
95-57-8	2-Chlorophenol	ND	5.2	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	ug/l	
51-28-5	2,4-Dinitrophenol	ND	21	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	ug/l	
95-48-7	2-Methylphenol	ND	10	ug/l	
	3&4-Methylphenol	ND	10	ug/l	
88-75-5	2-Nitrophenol	ND	10	ug/l	
100-02-7	4-Nitrophenol	ND	21	ug/l	
87-86-5	Pentachlorophenol	ND	10	ug/l	
108-95-2	Phenol	ND	5.2	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	10	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	ug/l	
62-53-3	Aniline	ND	10	ug/l	UJ
101-55-3	4-Bromophenyl phenyl ether	ND	5.2	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.2	ug/l	B
100-51-6	Benzyl Alcohol	ND	10	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.2	ug/l	
106-47-8	4-Chloroaniline	ND	10	ug/l	UJ
111-91-1	bis(2-Chloroethoxy)methane	ND	5.2	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.2	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.2	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.2	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.2	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	10	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.2	ug/l	
132-64-9	Dibenzofuran	ND	5.2	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.2	ug/l	B
117-84-0	Di-n-octyl phthalate	ND	5.2	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	MW4-ROX-121511	Date Sampled:	12/15/11
Lab Sample ID:	MC6521-1	Date Received:	12/16/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

## ABN Special List

CAS No.	Compound	Result	RL	Units	Q
84-66-2	Diethyl phthalate	ND	5.2	ug/l	
131-11-3	Dimethyl phthalate	ND	5.2	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	<del>2.8</del> u	<del>2.1</del> 2.8	ug/l	B u
118-74-1	Hexachlorobenzene	ND	5.2	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	ug/l	
67-72-1	Hexachloroethane	ND	5.2	ug/l	
78-59-1	Isophorone	ND	5.2	ug/l	
88-74-4	2-Nitroaniline	ND	10	ug/l	
99-09-2	3-Nitroaniline	ND	10	ug/l	
100-01-6	4-Nitroaniline	ND	10	ug/l	
98-95-3	Nitrobenzene	ND	5.2	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.2	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.2	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.2	ug/l	
110-86-1	Pyridine	ND	10	ug/l	u

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	47%		15-110%
4165-62-2	Phenol-d5	35%		15-110%
118-79-6	2,4,6-Tribromophenol	89%		15-110%
4165-60-0	Nitrobenzene-d5	82%		30-130%
321-60-8	2-Fluorobiphenyl	86%		30-130%
1718-51-0	Terphenyl-d14	97%		30-130%

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

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 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

Report of Analysis



Client Sample ID:	MW4-ROX-121511	Date Sampled:	12/15/11
Lab Sample ID:	MC6521-1	Date Received:	12/16/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C BY SIM SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U4083.D	1	12/19/11	KR	12/17/11	OP27270	MSU250
Run #2							

Run #	Initial Volume	Final Volume
Run #1	960 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	0.10	ug/l	
208-96-8	Acenaphthylene	0.11	0.10	ug/l	
120-12-7	Anthracene	ND	0.10	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.052	ug/l	
50-32-8	Benzo(a)pyrene	0.12	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	<del>0.087</del> u	<del>0.052</del>	0.087 ug/l	u
191-24-2	Benzo(g,h,i)perylene	<del>0.63</del> u	0.10	0.63 ug/l	u
207-08-9	Benzo(k)fluoranthene	ND	0.10	ug/l	
218-01-9	Chrysene	ND	0.10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	<del>0.35</del> u	0.10	0.35 ug/l	u
206-44-0	Fluoranthene	ND	0.10	ug/l	
86-73-7	Fluorene	ND	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	<del>0.43</del> u	<del>0.10</del>	0.43 ug/l	u
90-12-0	1-Methylnaphthalene	0.28	0.21	ug/l	
91-57-6	2-Methylnaphthalene	0.26	0.21	ug/l	
91-20-3	Naphthalene	0.23	0.10	ug/l	
85-01-8	Phenanthrene	ND	0.052	ug/l	
129-00-0	Pyrene	ND	0.10	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	91%		30-130%
321-60-8	2-Fluorobiphenyl	91%		30-130%
1718-51-0	Terphenyl-d14	97%		30-130%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID:	MW4-ROX-121511	Date Sampled:	12/15/11
Lab Sample ID:	MC6521-1	Date Received:	12/16/11
Matrix:	AQ - Ground Water	Percnt Solids:	n/a
Method:	SW846 8011 SW846 8011		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39976.D	1	12/17/11	AP	12/16/11	OP27266	GBB2475
Run #2							

Run #	Initial Volume	Final Volume
Run #1	36.4 ml	2.0 ml
Run #2		

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.014	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.014	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	82%		36-173%
460-00-4	Bromofluorobenzene (S)	75%		36-173%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID:	MW4-ROX-121511-EB	Date Sampled:	12/15/11
Lab Sample ID:	MC6521-2	Date Received:	12/16/11
Matrix:	AQ - Equipment Blank	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL.:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N58536.D	1	12/18/11	JP	n/a	n/a	MSN2189
Run #2							

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

## VOA Special List

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

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	MW4-ROX-121511-EB	Date Sampled:	12/15/11
Lab Sample ID:	MC6521-2	Date Received:	12/16/11
Matrix:	AQ - Equipment Blank	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

## VOA Special List

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

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



## Report of Analysis



Client Sample ID:	MW4-ROX-121511-EB	Date Sampled:	12/15/11
Lab Sample ID:	MC6521-2	Date Received:	12/16/11
Matrix:	AQ - Equipment Blank	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

## VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		70-130%
2037-26-5	Toluene-D8	91%		70-130%
460-00-4	4-Bromofluorobenzene	92%		70-130%

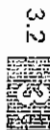
  

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis



Client Sample ID:	MW4-ROX-121511-EB	Date Sampled:	12/15/11
Lab Sample ID:	MC6521-2	Date Received:	12/16/11
Matrix:	AQ - Equipment Blank	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U4095.D	1	12/20/11	KR	12/17/11	OP27269	MSU249
Run #2							

Run #	Initial Volume	Final Volume
Run #1	950 ml	1.0 ml
Run #2		

## ABN Special List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	11	ug/l	
95-57-8	2-Chlorophenol	ND	5.3	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	11	ug/l	
120-83-2	2,4-Dichlorophenol	ND	11	ug/l	
105-67-9	2,4-Dimethylphenol	ND	11	ug/l	
51-28-5	2,4-Dinitrophenol	ND	21	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	11	ug/l	
95-48-7	2-Methylphenol	ND	11	ug/l	
	3&4-Methylphenol	ND	11	ug/l	
88-75-5	2-Nitrophenol	ND	11	ug/l	
100-02-7	4-Nitrophenol	ND	21	ug/l	
87-86-5	Pentachlorophenol	ND	11	ug/l	
108-95-2	Phenol	ND	5.3	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	11	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	11	ug/l	
62-53-3	Aniline	ND	11	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.3	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.3	ug/l	B
100-51-6	Benzyl Alcohol	26.0	11	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.3	ug/l	
106-47-8	4-Chloroaniline	ND	11	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.3	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.3	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.3	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.3	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.3	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	11	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	11	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.3	ug/l	
132-64-9	Dibenzofuran	ND	5.3	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.3	ug/l	B
117-84-0	Di-n-octyl phthalate	ND	5.3	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	MW4-ROX-121511-EB	Date Sampled:	12/15/11
Lab Sample ID:	MC6521-2	Date Received:	12/16/11
Matrix:	AQ - Equipment Blank	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

## ABN Special List

CAS No.	Compound	Result	RL	Units	Q
84-66-2	Diethyl phthalate	ND	5.3	ug/l	
131-11-3	Dimethyl phthalate	ND	5.3	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	4.0	2.1	ug/l	B
118-74-1	Hexachlorobenzene	ND	5.3	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	11	ug/l	
67-72-1	Hexachloroethane	ND	5.3	ug/l	
78-59-1	Isophorone	ND	5.3	ug/l	
88-74-4	2-Nitroaniline	ND	11	ug/l	
99-09-2	3-Nitroaniline	ND	11	ug/l	
100-01-6	4-Nitroaniline	ND	11	ug/l	
98-95-3	Nitrobenzene	ND	5.3	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.3	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.3	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.3	ug/l	
110-86-1	Pyridine	ND	11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	74%		15-110%
4165-62-2	Phenol-d5	55%		15-110%
118-79-6	2,4,6-Tribromophenol	92%		15-110%
4165-60-0	Nitrobenzene-d5	90%		30-130%
321-60-8	2-Fluorobiphenyl	92%		30-130%
1718-51-0	Terphenyl-d14	105%		30-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID:	MW4-ROX-121511-EB	Date Sampled:	12/15/11
Lab Sample ID:	MC6521-2	Date Received:	12/16/11
Matrix:	AQ - Equipment Blank	Percent Solids:	n/a
Method:	SW846 8270C BY SIM SW846 3510C		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U4082.D	1	12/19/11	KR	12/17/11	OP27270	MSU250
Run #2							

Run #	Initial Volume	Final Volume
Run #1	950 ml	1.0 ml
Run #2		

## BN PAH List

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	0.11	ug/l	
208-96-8	Acenaphthylene	ND	0.11	ug/l	
120-12-7	Anthracene	ND	0.11	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.053	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.11	ug/l	
205-99-2	Benzo(b)fluoranthene	0.059	0.053	ug/l	
191-24-2	Benzo(g,h,i)perylene	0.32	0.11	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.11	ug/l	
218-01-9	Chrysene	ND	0.11	ug/l	
53-70-3	Dibenzo(a,h)anthracene	0.18	0.11	ug/l	
206-44-0	Fluoranthene	ND	0.11	ug/l	
86-73-7	Fluorene	ND	0.11	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	0.22	0.11	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.21	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.21	ug/l	
91-20-3	Naphthalene	ND	0.11	ug/l	
85-01-8	Phenanthrene	ND	0.053	ug/l	
129-00-0	Pyrene	ND	0.11	ug/l	

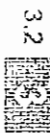
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	95%		30-130%
321-60-8	2-Fluorobiphenyl	94%		30-130%
1718-51-0	Terphenyl-d14	108%		30-130%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Page 1 of 1



Client Sample ID:	MW4-ROX-121511-EB	Date Sampled:	12/15/11
Lab Sample ID:	MC6521-2	Date Received:	12/16/11
Matrix:	AQ - Equipment Blank	Percent Solids:	n/a
Method:	SW846 8011 SW846 8011		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39977.D	1	12/17/11	AP	12/16/11	OP27266	GBB2475
Run #2							

Run #	Initial Volume	Final Volume
Run #1	34.0 ml	2.0 ml
Run #2		

## VOA Special List

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

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	98%		36-173%
460-00-4	Bromofluorobenzene (S)	76%		36-173%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

Client Sample ID:	TB-121511	Date Sampled:	12/15/11
Lab Sample ID:	MC6521-3	Date Received:	12/16/11
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N58535.D	1	12/18/11	JP	n/a	n/a	MSN2189
Run #2							

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

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	ND	0.50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	TB-121511	Date Sampled:	12/15/11
Lab Sample ID:	MC6521-3	Date Received:	12/16/11
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

## VOA Special List

CAS No.	Compound	Result	RL	Units	Q
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis



Client Sample ID:	TB-121511	Date Sampled:	12/15/11
Lab Sample ID:	MC6521-3	Date Received:	12/16/11
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260B	Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL	

**VOA Special List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		70-130%
2037-26-5	Toluene-D8	89%		70-130%
460-00-4	4-Bromofluorobenzene	92%		70-130%

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

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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



## Report of Analysis



Client Sample ID:	TB-121511	Date Sampled:	12/15/11
Lab Sample ID:	MC6521-4	Date Received:	12/16/11
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8011 SW846 8011		
Project:	URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB39978.D	1	12/17/11	AP	12/16/11	OP27266	GBB2475
Run #2							

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

**VOA Special List**

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

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	125%		36-173%
460-00-4	Bromofluorobenzene (S)	106%		36-173%

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

Misc. Forms

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Custody Documents and Other Forms

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Includes the following where applicable:

- Certification Exceptions
- Certification Exceptions (IL)
- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody

LAB (LOCATION)  
 URS CORP  
 CALCASCENCE  
 1001 Highlands Plaza Drive West - Suite 300, St. Louis, MO 63110  
 OTHER: 314-743-4166 or 314-452-8922  
 FAX: 314-429-0462  
 Lab Vendor #



Shell Oil Products Chain Of Custody Record

URS

Please Check Appropriate Box:

<input type="checkbox"/> ENV. SERVICES	<input type="checkbox"/> MOTIVA RETAIL	<input type="checkbox"/> SHELL RETAIL
<input type="checkbox"/> MOTIVA SDBOH	<input type="checkbox"/> CONSULTANT	<input type="checkbox"/> URS
<input type="checkbox"/> SHELL PIPELINE	<input type="checkbox"/> OTHER	

Print Bill To Contact Name: Enk Arthur  
 INCIDENT # (ENV SERVICES) 9 7 2 7 0 6 4 0  
 DATE 12/15/11  
 PO # SAP #  
 PAGE 1 of 1

ADDRESS: 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300, ST. LOUIS, MO 63110  
 PROJECT CONTACT (Name & Phone #): Enk Arthur  
 TELEPHONE: 314-743-4166 or 314-452-8922  
 FAX: 314-429-0462  
 TURN/AROUND TIME (CALENDAR DAYS):  
 STANDARD (10 DAY)  5 DAYS  3 DAYS  2 DAYS  24 HOURS  0 hour ON WEEKEND  
 IA - AMQC REPORT FORMAT  UST AGENCY:  
 DELIVERABLES:  LEVEL 1  LEVEL 2  LEVEL 3  LEVEL 4  OTHER (SPECIFY) EOD  
 TEMPERATURE ON RECEIPT C° Cooler #1 Cooler #2 Cooler #3

SITE ADDRESS: 900 South Central Ave. ROXANA  
 STATE: IL  
 COUNTY: ROXANA QUARTERLY GW / 21562591.00005  
 ANALYST(S) (Name): L. Rathnow, J. Jackson  
 LAB USE ONLY: MC6521

SPECIAL INSTRUCTIONS OR NOTES:  
 \* Please include "J" values on Reports.  
 \* Please provide sample receipt upon login.

REQUESTED ANALYSIS

VOC 8260B SL+TICS	VOC 8011	SVOC 8270C SL+TICS	PAH 8270LL
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LAB ID	Field Sample Identification		SAMPLING		MATRIX	PRESERVATIVE					NO. OF CONT.	VOC 8260B SL+TICS	VOC 8011	SVOC 8270C SL+TICS	PAH 8270LL	P10 (ppm)	FIELD NOTES:
	DATE	TIME	DATE	TIME		ML	PHEN	POB	NONE	OTHER							
1	MW4-ROX-121511	12/15/11	1515		Water	X			X	X	9	X	X	X	X	0	0 hr turn
2	MW4-ROX-121511-EB	12/15/11	1545								9					0	0 hr turn
3	TB-121511										2					0	0 hr turn
4	TB-121511								X	X	2	X				0	0 hr turn

Requested by (Signature): *L. Rathnow* Retained by (Signature): FED EX Date: 12/15/11 Time:  
 Requested by (Signature): FedEx Retained by (Signature): *J. Jackson* Date: 12/16/11 Time: 9:30  
 Requested by (Signature): Retained by (Signature): Date: Time:  
 1.4

**RUSH!**

4.1  
4



# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC6521 Client: URS Immediate Client Services Action Required: No  
 Date / Time Received: 12/16/2011 Delivery Method: \_\_\_\_\_ Client Service Action Required at Login: No  
 Project: \_\_\_\_\_ No. Coolers: 1 Airbill #'s: \_\_\_\_\_

**Cooler Security** Y or N Y or N  
 1. Custody Seals Present:   3. COC Present:    
 2. Custody Seals Intact:   4. Smp'l Dates/Time OK

**Cooler Temperature** Y or N  
 1. Temp criteria achieved:    
 2. Cooler temp verification: Infrared gun \_\_\_\_\_  
 3. Cooler media: Ice (bag) \_\_\_\_\_

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

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

**Sample Integrity - Condition** Y or N  
 1. Sample recvd within HT:    
 2. All containers accounted for:    
 3. Condition of sample: Intact

**Sample Integrity - Instructions** Y or N N/A  
 1. Analysis requested is clear:    
 2. Bottles received for unspecified tests:    
 3. Sufficient volume recvd for analysis:    
 4. Compositing instructions clear:     
 5. Filtering instructions clear:

Comments

4.1  
4

### Internal Sample Tracking Chronicle

Shell Oil

Job No: MC6521

URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

4.2  
4

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
MC6521-1 Collected: 15-DEC-11 15:15 By: LRJJ Received: 16-DEC-11 By: JB MW4-ROX-121511						
MC6521-1	SW846 8011	17-DEC-11 11:19	AP	16-DEC-11 CA		V8011SL
MC6521-1	SW846 8260B	19-DEC-11 20:52	JP			V8260SL+
MC6521-1	SW846 8270C BY SIM	19-DEC-11 21:08	KR	17-DEC-11 MEW		B8270SIMPAAH
MC6521-1	SW846 8270C	20-DEC-11 04:05	KR	17-DEC-11 MEW		AB8270SL+
MC6521-2 Collected: 15-DEC-11 15:45 By: LRJJ Received: 16-DEC-11 By: JB MW4-ROX-121511-EB						
MC6521-2	SW846 8011	17-DEC-11 11:44	AP	16-DEC-11 CA		V8011SL
MC6521-2	SW846 8260B	18-DEC-11 18:01	JP			V8260SL+
MC6521-2	SW846 8270C BY SIM	19-DEC-11 20:36	KR	17-DEC-11 MEW		B8270SIMPAAH
MC6521-2	SW846 8270C	20-DEC-11 03:33	KR	17-DEC-11 MEW		AB8270SL+
MC6521-3 Collected: 15-DEC-11 00:00 By: LRJJ Received: 16-DEC-11 By: JB TB-121511						
MC6521-3	SW846 8260B	18-DEC-11 17:32	JP			V8260SL+
MC6521-4 Collected: 15-DEC-11 00:00 By: LRJJ Received: 16-DEC-11 By: JB TB-121511						
MC6521-4	SW846 8011	17-DEC-11 12:09	AP	16-DEC-11 CA		V8011SL

# Accutest Internal Chain of Custody

Job Number: MC6521  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL  
 Received: 12/16/11

4.3  
**4**

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
MC6521-1.1	Walk In Ref #22	Amirhossein Farvardin	12/17/11 15:42	Retrieve from Storage
MC6521-1.1	Amirhossein Farvardin		12/17/11 15:43	Depleted
MC6521-1.2	Walk In Ref #22	Amirhossein Farvardin	12/17/11 15:42	Retrieve from Storage
MC6521-1.2	Amirhossein Farvardin		12/17/11 15:43	Depleted
MC6521-1.5	VOC Ref #5	Jugal Patel	12/18/11 14:24	Retrieve from Storage
MC6521-1.5	Jugal Patel	GCMSM	12/18/11 14:24	Load on Instrument
MC6521-1.5	GCMSM	Emily Kozlowski	12/19/11 10:58	Unload from Instrument
MC6521-1.5	Emily Kozlowski	VOC Ref #5	12/19/11 11:02	Return to Storage
MC6521-1.6	VOC Ref #1	Jugal Patel	12/19/11 10:16	Retrieve from Storage
MC6521-1.6	Jugal Patel	GCMSN	12/19/11 10:16	Load on Instrument
MC6521-1.6	GCMSN	Jugal Patel	12/20/11 15:24	Unload from Instrument
MC6521-1.6	Jugal Patel	VOC Ref #1	12/20/11 15:24	Return to Storage
MC6521-2.1	Walk In Ref #22	Amirhossein Farvardin	12/17/11 15:42	Retrieve from Storage
MC6521-2.1	Amirhossein Farvardin		12/17/11 15:43	Depleted
MC6521-2.5	VOC Ref #1	Jugal Patel	12/18/11 14:25	Retrieve from Storage
MC6521-2.5	Jugal Patel	GCMSN	12/18/11 14:25	Load on Instrument
MC6521-2.5	GCMSN	Jugal Patel	12/19/11 11:16	Unload from Instrument
MC6521-2.5	Jugal Patel	VOC Ref #1	12/19/11 11:16	Return to Storage
MC6521-3.1	VOC Ref #1	Jugal Patel	12/18/11 14:25	Retrieve from Storage
MC6521-3.1	Jugal Patel	GCMSN	12/18/11 14:25	Load on Instrument
MC6521-3.1	GCMSN	Jugal Patel	12/19/11 11:16	Unload from Instrument
MC6521-3.1	Jugal Patel	VOC Ref #1	12/19/11 11:16	Return to Storage

## GC/MS Volatiles

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## QC Data Summaries

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Includes the following where applicable:

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

## Method Blank Summary

Page 1 of 3

Job Number: MC6521

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2189-MB	N58534.D	1	12/18/11	JP	n/a	n/a	MSN2189

The QC reported here applies to the following samples:

Method: SW846 8260B

MC6521-2, MC6521-3

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	ND	0.50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	

5.1.1

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## Method Blank Summary

Job Number: MC6521  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2189-MB	N58534.D	1	12/18/11	JP	n/a	n/a	MSN2189

The QC reported here applies to the following samples:

Method: SW846 8260B

MC6521-2, MC6521-3

CAS No.	Compound	Result	RL	Units	Q
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	

5.1.1  
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## Method Blank Summary

Page 3 of 3

Job Number: MC6521

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2189-MB	N58534.D	I	12/18/11	JP	n/a	n/a	MSN2189

The QC reported here applies to the following samples:

Method: SW846 8260B

MC6521-2, MC6521-3

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	98%	70-130%
2037-26-5	Toluene-D8	89%	70-130%
460-00-4	4-Bromofluorobenzene	96%	70-130%

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

5.1.1

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# Method Blank Summary

Job Number: MC6521  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2190-MB	N58561.D	1	12/19/11	JP	n/a	n/a	MSN2190

The QC reported here applies to the following samples:

Method: SW846 8260B

MC6521-1

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
107-13-1	Acrylonitrile	ND	5.0	ug/l	
71-43-2	Benzene	ND	0.50	ug/l	
108-86-1	Bromobenzene	ND	5.0	ug/l	
74-97-5	Bromochloromethane	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	2.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/l	

5.1.2  
5

# Method Blank Summary

Job Number: MC6521  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2190-MB	N58561.D	1	12/19/11	JP	n/a	n/a	MSN2190

The QC reported here applies to the following samples:

Method: SW846 8260B

MC6521-1

CAS No.	Compound	Result	RL	Units	Q
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
74-95-3	Methylene bromide	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ng/l	
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
100-42-5	Styrene	ND	5.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	

5.1.2  
5

# Method Blank Summary

Job Number: MC6521

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2190-MB	N58561.D	1	12/19/11	JP	n/a	n/a	MSN2190

The QC reported here applies to the following samples:

Method: SW846 8260B

MC6521-1

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	96%	70-130%
2037-26-5	Toluene-D8	89%	70-130%
460-00-4	4-Bromofluorobenzene	91%	70-130%

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

5.1.2

5

# Blank Spike/Blank Spike Duplicate Summary

Job Number: MC6521  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2189-BS	N58531.D	1	12/18/11	JP	n/a	n/a	MSN2189
MSN2189-BSD	N58532.D	1	12/18/11	JP	n/a	n/a	MSN2189

The QC reported here applies to the following samples:

Method: SW846 8260B

MC6521-2, MC6521-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	50	51.4	103	41.6	83	21	70-130/25
107-02-8	Acrolein	250	436	174* a	412	165* a	6	70-130/25
107-13-1	Acrylonitrile	50	243	486* a	214	428* a	13	70-130/25
71-43-2	Benzene	50	47.4	95	44.9	90	5	70-130/25
108-86-1	Bromobenzene	50	55.3	111	53.8	108	3	70-130/25
74-97-5	Bromochloromethane	50	53.2	106	50.5	101	5	70-130/25
75-27-4	Bromodichloromethane	50	61.5	123	58.2	116	6	70-130/25
75-25-2	Bromoform	50	49.6	99	48.2	96	3	70-130/25
74-83-9	Bromomethane	50	50.0	100	49.9	100	0	70-130/25
78-93-3	2-Butanone (MEK)	50	52.1	104	42.6	85	20	70-130/25
104-51-8	n-Butylbenzene	50	59.8	120	57.6	115	4	70-130/25
135-98-8	sec-Butylbenzene	50	57.1	114	54.7	109	4	70-130/25
98-06-6	tert-Butylbenzene	50	58.5	117	56.9	114	3	70-130/25
75-15-0	Carbon disulfide	50	55.7	111	53.4	107	4	70-130/25
56-23-5	Carbon tetrachloride	50	64.6	129	59.7	119	8	70-130/25
108-90-7	Chlorobenzene	50	50.3	101	51.0	102	1	70-130/25
75-00-3	Chloroethane	50	50.1	100	46.3	93	8	70-130/25
110-75-8	2-Chloroethyl vinyl ether	50	52.6	105	49.2	98	7	70-130/25
67-66-3	Chloroform	50	55.0	110	51.8	104	6	70-130/25
74-87-3	Chloromethane	50	49.9	100	46.0	92	8	70-130/25
95-49-8	o-Chlorotoluene	50	54.3	109	53.1	106	2	70-130/25
106-43-4	p-Chlorotoluene	50	57.4	115	55.6	111	3	70-130/25
96-12-8	1,2-Dibromo-3-chloropropane	50	48.6	97	45.8	92	6	70-130/25
124-48-1	Dibromochloromethane	50	57.5	115	57.9	116	1	70-130/25
106-93-4	1,2-Dibromoethane	50	48.4	97	48.1	96	1	70-130/25
95-50-1	1,2-Dichlorobenzene	50	54.9	110	53.1	106	3	70-130/25
541-73-1	1,3-Dichlorobenzene	50	54.2	108	53.3	107	2	70-130/25
106-46-7	1,4-Dichlorobenzene	50	53.8	108	52.4	105	3	70-130/25
75-71-8	Dichlorodifluoromethane	50	59.1	118	54.4	109	8	70-130/25
75-34-3	1,1-Dichloroethane	50	53.8	108	50.8	102	6	70-130/25
107-06-2	1,2-Dichloroethane	50	61.4	123	57.5	115	7	70-130/25
75-35-4	1,1-Dichloroethene	50	52.7	105	50.3	101	5	70-130/25
156-59-2	cis-1,2-Dichloroethene	50	50.1	100	48.1	96	4	70-130/25
156-60-5	trans-1,2-Dichloroethene	50	51.5	103	48.4	97	6	70-130/25
78-87-5	1,2-Dichloropropane	50	52.6	105	49.2	98	7	70-130/25
142-28-9	1,3-Dichloropropane	50	48.4	97	48.7	97	1	70-130/25

5.2.1  
5

# Blank Spike/Blank Spike Duplicate Summary

Job Number: MC6521  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2189-BS	N58531.D	1	12/18/11	JP	n/a	n/a	MSN2189
MSN2189-BSD	N58532.D	1	12/18/11	JP	n/a	n/a	MSN2189

The QC reported here applies to the following samples:

Method: SW846 8260B

MC6521-2, MC6521-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
594-20-7	2,2-Dichloropropane	50	46.0	92	41.4	83	11	70-130/25
563-58-6	1,1-Dichloropropene	50	58.0	116	54.9	110	5	70-130/25
10061-01-5	cis-1,3-Dichloropropene	50	57.3	115	54.0	108	6	70-130/25
10061-02-6	trans-1,3-Dichloropropene	50	54.8	110	51.3	103	7	70-130/25
123-91-1	1,4-Dioxane	250	217	87	181	72	18	70-130/25
97-63-2	Ethyl methacrylate	50	44.2	88	40.1	80	10	77-137/25
100-41-4	Ethylbenzene	50	53.0	106	53.4	107	1	70-130/25
87-68-3	Hexachlorobutadiene	50	62.4	125	59.0	118	6	70-130/25
591-78-6	2-Hexanone	50	44.6	89	39.1	78	13	70-130/25
98-82-8	Isopropylbenzene	50	64.2	128	62.7	125	2	70-130/25
99-87-6	p-Isopropyltoluene	50	59.3	119	57.7	115	3	70-130/25
1634-04-4	Methyl Tert Butyl Ether	50	34.8	70	31.9	64* b	9	70-130/25
108-10-1	4-Methyl-2-pentanone (MIBK)	50	48.4	97	43.8	88	10	70-130/25
74-95-3	Methylene bromide	50	56.8	114	54.1	108	5	70-130/25
75-09-2	Methylene chloride	50	48.9	98	46.0	92	6	70-130/25
91-20-3	Naphthalene	50	44.1	88	42.5	85	4	70-130/25
103-65-1	n-Propylbenzene	50	57.3	115	55.0	110	4	70-130/25
100-42-5	Styrene	50	49.8	100	50.9	102	2	70-130/25
630-20-6	1,1,1,2-Tetrachloroethane	50	55.7	111	55.8	112	0	70-130/25
79-34-5	1,1,2,2-Tetrachloroethane	50	46.4	93	44.1	88	5	70-130/25
127-18-4	Tetrachloroethene	50	53.2	106	53.9	108	1	70-130/25
108-88-3	Toluene	50	54.6	109	51.9	104	5	70-130/25
87-61-6	1,2,3-Trichlorobenzene	50	49.3	99	48.6	97	1	70-130/25
120-82-1	1,2,4-Trichlorobenzene	50	55.5	111	54.7	109	1	70-130/25
71-55-6	1,1,1-Trichloroethane	50	58.9	118	55.7	111	6	70-130/25
79-00-5	1,1,2-Trichloroethane	50	53.7	107	49.9	100	7	70-130/25
79-01-6	Trichloroethene	50	57.6	115	54.3	109	6	70-130/25
75-69-4	Trichlorofluoromethane	50	62.6	125	57.6	115	8	70-130/25
96-18-4	1,2,3-Trichloropropane	50	45.4	91	41.4	83	9	70-130/25
95-63-6	1,2,4-Trimethylbenzene	50	56.9	114	55.2	110	3	70-130/25
108-67-8	1,3,5-Trimethylbenzene	50	57.5	115	55.4	111	4	70-130/25
108-05-4	Vinyl Acetate	50	59.2	118	55.2	110	7	70-130/25
75-01-4	Vinyl chloride	50	43.3	87	39.9	80	8	70-130/25
	m,p-Xylene	100	106	106	108	108	2	70-130/25
95-47-6	o-Xylene	50	51.4	103	53.3	107	4	70-130/25
1330-20-7	Xylene (total)	150	157	105	161	107	3	70-130/25

5.2.1  
5

# Blank Spike/Blank Spike Duplicate Summary

Job Number: MC6521

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2189-BS	N58531.D	1	12/18/11	JP	n/a	n/a	MSN2189
MSN2189-BSD	N58532.D	1	12/18/11	JP	n/a	n/a	MSN2189

The QC reported here applies to the following samples:

Method: SW846 8260B

MC6521-2, MC6521-3

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	95%	95%	70-130%
2037-26-5	Toluene-D8	91%	91%	70-130%
460-00-4	4-Bromofluorobenzene	90%	92%	70-130%

- (a) Outside control limits. Associated samples are non-detect for this compound.
- (b) Outside control limits. Blank Spike meets program technical requirements.

5.2.1

5



# Blank Spike/Blank Spike Duplicate Summary

Job Number: MC6521

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2190-BS	N58558.D	1	12/19/11	JP	n/a	n/a	MSN2190
MSN2190-BSD	N58559.D	1	12/19/11	JP	n/a	n/a	MSN2190

The QC reported here applies to the following samples:

Method: SW846 8260B

MC6521-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	50	37.4	75	37.7	75	1	70-130/25
107-02-8	Acrolein	250	430	172* a	451	180* a	5	70-130/25
107-13-1	Acrylonitrile	50	234	468* a	234	468* a	0	70-130/25
71-43-2	Benzene	50	48.0	96	46.5	93	3	70-130/25
108-86-1	Bromobenzene	50	54.5	109	54.0	108	1	70-130/25
74-97-5	Bromochloromethane	50	52.0	104	51.1	102	2	70-130/25
75-27-4	Bromodichloromethane	50	59.2	118	56.5	113	5	70-130/25
75-25-2	Bromoform	50	52.6	105	49.9	100	5	70-130/25
74-83-9	Bromomethane	50	48.3	97	48.6	97	1	70-130/25
78-93-3	2-Butanone (MEK)	50	41.2	82	43.3	87	5	70-130/25
104-51-8	n-Butylbenzene	50	58.6	117	56.5	113	4	70-130/25
135-98-8	sec-Butylbenzene	50	56.2	112	54.2	108	4	70-130/25
98-06-6	tert-Butylbenzene	50	56.6	113	54.2	108	4	70-130/25
75-15-0	Carbon disulfide	50	54.0	108	53.0	106	2	70-130/25
56-23-5	Carbon tetrachloride	50	61.2	122	58.5	117	5	70-130/25
108-90-7	Chlorobenzene	50	54.3	109	50.8	102	7	70-130/25
75-00-3	Chloroethane	50	46.9	94	46.0	92	2	70-130/25
110-75-8	2-Chloroethyl vinyl ether	50	52.2	104	49.9	100	5	70-130/25
67-66-3	Chloroform	50	51.2	102	51.1	102	0	70-130/25
74-87-3	Chloromethane	50	45.0	90	41.6	83	8	70-130/25
95-49-8	o-Chlorotoluene	50	54.0	108	51.5	103	5	70-130/25
106-43-4	p-Chlorotoluene	50	56.1	112	53.4	107	5	70-130/25
124-48-1	Dibromochloromethane	50	59.8	120	57.0	114	5	70-130/25
95-50-1	1,2-Dichlorobenzene	50	54.1	108	52.7	105	3	70-130/25
541-73-1	1,3-Dichlorobenzene	50	54.8	110	52.9	106	4	70-130/25
106-46-7	1,4-Dichlorobenzene	50	53.9	108	52.6	105	2	70-130/25
75-71-8	Dichlorodifluoromethane	50	48.7	97	46.6	93	4	70-130/25
75-34-3	1,1-Dichloroethane	50	51.2	102	51.1	102	0	70-130/25
107-06-2	1,2-Dichloroethane	50	57.5	115	55.4	111	4	70-130/25
75-35-4	1,1-Dichloroethene	50	52.1	104	49.6	99	5	70-130/25
156-59-2	cis-1,2-Dichloroethene	50	48.9	98	48.6	97	1	70-130/25
156-60-5	trans-1,2-Dichloroethene	50	51.1	102	49.4	99	3	70-130/25
78-87-5	1,2-Dichloropropane	50	52.3	105	49.9	100	5	70-130/25
142-28-9	1,3-Dichloropropane	50	51.9	104	49.7	99	4	70-130/25
594-20-7	2,2-Dichloropropane	50	43.7	87	43.1	86	1	70-130/25
563-58-6	1,1-Dichloropropene	50	57.8	116	55.1	110	5	70-130/25

5.2.2  
5

# Blank Spike/Blank Spike Duplicate Summary

Job Number: MC6521  
 Account: SHELLWIC Shell Oil  
 Project: URMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2190-BS	N58558.D	1	12/19/11	JP	n/a	n/a	MSN2190
MSN2190-BSD	N58559.D	1	12/19/11	JP	n/a	n/a	MSN2190

The QC reported here applies to the following samples:

Method: SW846 8260B

MC6521-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
10061-01-5	cis-1,3-Dichloropropene	50	56.9	114	54.8	110	4	70-130/25
10061-02-6	trans-1,3-Dichloropropene	50	53.6	107	53.0	106	1	70-130/25
123-91-1	1,4-Dioxane	250	203	81	228	91	12	70-130/25
97-63-2	Ethyl methacrylate	50	46.4	93	45.1	90	3	77-137/25
100-41-4	Ethylbenzene	50	56.8	114	52.9	106	7	70-130/25
87-68-3	Hexachlorobutadiene	50	60.8	122	60.0	120	1	70-130/25
591-78-6	2-Hexanone	50	41.9	84	40.6	81	3	70-130/25
98-82-8	Isopropylbenzene	50	63.9	128	61.7	123	4	70-130/25
99-87-6	p-Isopropyltoluene	50	58.3	117	56.0	112	4	70-130/25
1634-04-4	Methyl Tert Butyl Ether	50	34.6	69* b	35.3	71	2	70-130/25
108-10-1	4-Methyl-2-pentanone (MIBK)	50	48.5	97	48.2	96	1	70-130/25
74-95-3	Methylene bromide	50	56.8	114	54.4	109	4	70-130/25
75-09-2	Methylene chloride	50	47.0	94	46.8	94	0	70-130/25
91-20-3	Naphthalene	50	44.9	90	46.6	93	4	70-130/25
103-65-1	n-Propylbenzene	50	56.3	113	54.0	108	4	70-130/25
100-42-5	Styrene	50	54.5	109	50.6	101	7	70-130/25
630-20-6	1,1,1,2-Tetrachloroethane	50	58.2	116	55.3	111	5	70-130/25
79-34-5	1,1,2,2-Tetrachloroethane	50	46.9	94	45.8	92	2	70-130/25
127-18-4	Tetrachloroethene	50	58.3	117	53.9	108	8	70-130/25
108-88-3	Toluene	50	55.2	110	52.8	106	4	70-130/25
87-61-6	1,2,3-Trichlorobenzene	50	48.9	98	49.9	100	2	70-130/25
120-82-1	1,2,4-Trichlorobenzene	50	56.3	113	55.4	111	2	70-130/25
71-55-6	1,1,1-Trichloroethane	50	55.0	110	53.9	108	2	70-130/25
79-00-5	1,1,2-Trichloroethane	50	53.1	106	51.5	103	3	70-130/25
79-01-6	Trichloroethene	50	56.9	114	54.1	108	5	70-130/25
75-69-4	Trichlorofluoromethane	50	55.8	112	53.6	107	4	70-130/25
96-18-4	1,2,3-Trichloropropane	50	46.0	92	45.6	91	1	70-130/25
95-63-6	1,2,4-Trimethylbenzene	50	56.2	112	54.3	109	3	70-130/25
108-67-8	1,3,5-Trimethylbenzene	50	56.3	113	54.0	108	4	70-130/25
108-05-4	Vinyl Acetate	50	56.8	114	59.4	119	4	70-130/25
75-01-4	Vinyl chloride	50	40.3	81	39.1	78	3	70-130/25
	m,p-Xylene	100	115	115	107	107	7	70-130/25
95-47-6	o-Xylene	50	56.4	113	51.7	103	9	70-130/25
1330-20-7	Xylene (total)	150	172	115	158	105	8	70-130/25

5.2.2

5

# Blank Spike/Blank Spike Duplicate Summary

Job Number: MC6521

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2190-BS	N58558.D	1	12/19/11	JP	n/a	n/a	MSN2190
MSN2190-BSD	N58559.D	1	12/19/11	JP	n/a	n/a	MSN2190

The QC reported here applies to the following samples:

Method: SW846 8260B

MC6521-1

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	92%	92%	70-130%
2037-26-5	Toluene-D8	92%	92%	70-130%
460-00-4	4-Bromofluorobenzene	91%	90%	70-130%

- (a) Outside control limits. Associated samples are non-detect for this compound.
- (b) Outside control limits. Blank Spike meets program technical requirements.

5.2.2

5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC6521  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC6287-1MS	N58552.D	5	12/19/11	JP	n/a	n/a	MSN2189
MC6287-1MSD	N58553.D	5	12/19/11	JP	n/a	n/a	MSN2189
MC6287-1	N58538.D	1	12/18/11	JP	n/a	n/a	MSN2189

The QC reported here applies to the following samples:

Method: SW846 8260B

MC6521-2, MC6521-3

CAS No.	Compound	MC6287-1 ug/l	Spike Q	ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND		250	63.2	25* a	77.3	31* a	20	70-130/30
107-02-8	Acrolein	ND		1250	2060	165* b	2090	167* b	1	70-130/30
107-13-1	Acrylonitrile	ND		250	1330	532* b	1300	520* b	2	70-130/30
71-43-2	Benzene	2910	E	250	4650	696* c	4600	676* c	1	70-130/30
108-86-1	Bromobenzene	ND		250	274	110	270	108	1	70-130/30
74-97-5	Bromochloromethane	ND		250	255	102	260	104	2	70-130/30
75-27-4	Bromodichloromethane	ND		250	281	112	278	111	1	70-130/30
75-25-2	Bromoform	ND		250	255	102	257	103	1	70-130/30
74-83-9	Bromomethane	ND		250	184	74	222	89	19	70-130/30
78-93-3	2-Butanone (MEK)	ND		250	198	79	203	81	2	70-130/30
104-51-8	n-Butylbenzene	ND		250	307	123	303	121	1	70-130/30
135-98-8	sec-Butylbenzene	ND		250	276	110	272	109	1	70-130/30
98-06-6	tert-Butylbenzene	ND		250	276	110	268	107	3	70-130/30
75-15-0	Carbon disulfide	ND		250	279	112	260	104	7	70-130/30
56-23-5	Carbon tetrachloride	ND		250	286	114	274	110	4	70-130/30
108-90-7	Chlorobenzene	ND		250	258	103	256	102	1	70-130/30
75-00-3	Chloroethane	ND		250	234	94	222	89	5	70-130/30
110-75-8	2-Chloroethyl vinyl ether	ND		250	253	101	250	100	1	70-130/30
67-66-3	Chloroform	ND		250	262	105	244	98	7	70-130/30
74-87-3	Chloromethane	ND		250	243	97	184	74	28	70-130/30
95-49-8	o-Chlorotoluene	ND		250	391	156* a	383	153* a	2	70-130/30
106-43-4	p-Chlorotoluene	ND		250	282	113	281	112	0	70-130/30
96-12-8	1,2-Dibromo-3-chloropropane	ND		250	267	107	267	107	0	70-130/30
124-48-1	Dibromochloromethane	ND		250	283	113	282	113	0	70-130/30
106-93-4	1,2-Dibromoethane	ND		250	254	102	254	102	0	70-130/30
95-50-1	1,2-Dichlorobenzene	ND		250	268	107	268	107	0	70-130/30
541-73-1	1,3-Dichlorobenzene	ND		250	265	106	267	107	1	70-130/30
106-46-7	1,4-Dichlorobenzene	ND		250	261	104	265	106	2	70-130/30
75-71-8	Dichlorodifluoromethane	ND		250	255	102	236	94	8	70-130/30
75-34-3	1,1-Dichloroethane	ND		250	257	103	243	97	6	70-130/30
107-06-2	1,2-Dichloroethane	ND		250	280	112	267	107	5	70-130/30
75-35-4	1,1-Dichloroethene	ND		250	252	101	241	96	4	70-130/30
156-59-2	cis-1,2-Dichloroethene	ND		250	249	100	238	95	5	70-130/30
156-60-5	trans-1,2-Dichloroethene	ND		250	251	100	240	96	4	70-130/30
78-87-5	1,2-Dichloropropane	ND		250	253	101	250	100	1	70-130/30
142-28-9	1,3-Dichloropropane	ND		250	247	99	245	98	1	70-130/30

5.3.1  
5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC6521  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC6287-1MS	N58552.D	5	12/19/11	JP	n/a	n/a	MSN2189
MC6287-1MSD	N58553.D	5	12/19/11	JP	n/a	n/a	MSN2189
MC6287-1	N58538.D	1	12/18/11	JP	n/a	n/a	MSN2189

The QC reported here applies to the following samples:

Method: SW846 8260B

MC652I-2, MC652I-3

CAS No.	Compound	MC6287-1 ug/l	Spike Q	ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
594-20-7	2,2-Dichloropropane	ND		250	207	83	191	76	8	70-130/30
563-58-6	1,1-Dichloropropene	ND		250	271	108	271	108	0	70-130/30
10061-01-5	cis-1,3-Dichloropropene	ND		250	266	106	264	106	1	70-130/30
10061-02-6	trans-1,3-Dichloropropene	ND		250	254	102	254	102	0	70-130/30
123-91-1	1,4-Dioxane	ND		1250	1090	87	1150	92	5	70-130/30
97-63-2	Ethyl methacrylate	ND		250	4.9	2* a	4.0	2* a	20	72-139/30
100-41-4	Ethylbenzene	1550	E	250	1880	132* c	1840	116	2	70-130/30
87-68-3	Hexachlorobutadiene	ND		250	291	116	280	112	4	70-130/30
591-78-6	2-Hexanone	ND		250	215	86	219	88	2	70-130/30
98-82-8	Isopropylbenzene	ND		250	376	150* a	367	147* a	2	70-130/30
99-87-6	p-Isopropyltoluene	ND		250	281	112	280	112	0	70-130/30
1634-04-4	Methyl Tert Butyl Ether	ND		250	207	83	200	80	3	70-130/30
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		250	257	103	265	106	3	70-130/30
74-95-3	Methylene bromide	ND		250	250	100	247	99	1	70-130/30
75-09-2	Methylene chloride	ND		250	228	91	221	88	3	70-130/30
91-20-3	Naphthalene	507	E	250	761	102	743	94	2	70-130/30
103-65-1	n-Propylbenzene	ND		250	404	162* a	398	159* a	1	70-130/30
100-42-5	Styrene	ND		250	263	105	259	104	2	70-130/30
630-20-6	1,1,1,2-Tetrachloroethane	ND		250	275	110	270	108	2	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	ND		250	215	86	219	88	2	70-130/30
127-18-4	Tetrachloroethene	ND		250	267	107	264	106	1	70-130/30
108-88-3	Toluene	ND		250	5130	2052* a	5040	2016* a	2	70-130/30
87-61-6	1,2,3-Trichlorobenzene	ND		250	281	112	281	112	0	70-130/30
120-82-1	1,2,4-Trichlorobenzene	ND		250	301	120	302	121	0	70-130/30
71-55-6	1,1,1-Trichloroethane	ND		250	279	112	263	105	6	70-130/30
79-00-5	1,1,2-Trichloroethane	ND		250	258	103	256	102	1	70-130/30
79-01-6	Trichloroethene	ND		250	274	110	262	105	4	70-130/30
75-69-4	Trichlorofluoromethane	ND		250	274	110	255	102	7	70-130/30
96-18-4	1,2,3-Trichloropropane	ND		250	236	94	238	95	1	70-130/30
95-63-6	1,2,4-Trimethylbenzene	ND		250	1540	616* a	1520	608* a	1	70-130/30
108-67-8	1,3,5-Trimethylbenzene	ND		250	587	235* a	576	230* a	2	70-130/30
108-05-4	Vinyl Acetate	ND		250	320	128	265	106	19	70-130/30
75-01-4	Vinyl chloride	ND		250	208	83	194	78	7	70-130/30
	m,p-Xylene	3720	E	500	5120	280* c	5020	260* c	2	70-130/30
95-47-6	o-Xylene	2320	E	250	2530	84	2490	68* c	2	70-130/30
1330-20-7	Xylene (total)	6040	E	750	7640	213* c	7520	197* c	2	70-130/30

5.3.1  
5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC6521

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC6287-1MS	N58552.D	5	12/19/11	JP	n/a	n/a	MSN2189
MC6287-1MSD	N58553.D	5	12/19/11	JP	n/a	n/a	MSN2189
MC6287-1	N58538.D	1	12/18/11	JP	n/a	n/a	MSN2189

The QC reported here applies to the following samples:

Method: SW846 8260B

MC6521-2, MC6521-3

CAS No.	Surrogate Recoveries	MS	MSD	MC6287-1	Limits
1868-53-7	Dibromofluoromethane	91%	88%	93%	70-130%
2037-26-5	Toluene-D8	92%	91%	94%	70-130%
460-00-4	4-Bromofluorobenzene	90%	89%	90%	70-130%

- (a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
- (b) Outside control limits. Associated samples are non-detect for this compound.
- (c) Outside control limits due to high level in sample relative to spike amount.

5.3.1

5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC6521  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC6290-5MS	N58577.D	10	12/19/11	JP	n/a	n/a	MSN2190
MC6290-5MSD	N58578.D	10	12/19/11	JP	n/a	n/a	MSN2190
MC6290-5	N58572.D	1	12/19/11	JP	n/a	n/a	MSN2190

The QC reported here applies to the following samples:

Method: SW846 8260B

MC6521-1

CAS No.	Compound	MC6290-5 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND	500	271	54* <sup>a</sup>	271	54* <sup>a</sup>	0	70-130/30
107-02-8	Acrolein	ND	2500	3970	159* <sup>b</sup>	4060	162* <sup>b</sup>	2	70-130/30
107-13-1	Acrylonitrile	ND	500	2360	472* <sup>b</sup>	2480	496* <sup>b</sup>	5	70-130/30
71-43-2	Benzene	4.9	500	479	95	471	93	2	70-130/30
108-86-1	Bromobenzene	ND	500	528	106	545	109	3	70-130/30
74-97-5	Bromochloromethane	ND	500	531	106	519	104	2	70-130/30
75-27-4	Bromodichloromethane	ND	500	590	118	588	118	0	70-130/30
75-25-2	Bromoform	ND	500	491	98	522	104	6	70-130/30
74-83-9	Bromomethane	ND	500	401	80	464	93	15	70-130/30
78-93-3	2-Butanone (MEK)	ND	500	366	73	390	78	6	70-130/30
104-51-8	n-Butylbenzene	ND	500	566	113	575	115	2	70-130/30
135-98-8	sec-Butylbenzene	ND	500	549	110	556	111	1	70-130/30
98-06-6	tert-Butylbenzene	ND	500	563	113	575	115	2	70-130/30
75-15-0	Carbon disulfide	ND	500	547	109	535	107	2	70-130/30
56-23-5	Carbon tetrachloride	ND	500	604	121	596	119	1	70-130/30
108-90-7	Chlorobenzene	ND	500	513	103	524	105	2	70-130/30
75-00-3	Chloroethane	ND	500	470	94	465	93	1	70-130/30
110-75-8	2-Chloroethyl vinyl ether	ND	500	519	104	516	103	1	70-130/30
67-66-3	Chloroform	ND	500	538	108	532	106	1	70-130/30
74-87-3	Chloromethane	ND	500	418	84	421	84	1	70-130/30
95-49-8	o-Chlorotoluene	ND	500	519	104	527	105	2	70-130/30
106-43-4	p-Chlorotoluene	ND	500	550	110	558	112	1	70-130/30
124-48-1	Dibromochloromethane	ND	500	571	114	596	119	4	70-130/30
95-50-1	1,2-Dichlorobenzene	ND	500	530	106	542	108	2	70-130/30
541-73-1	1,3-Dichlorobenzene	ND	500	526	105	540	108	3	70-130/30
106-46-7	1,4-Dichlorobenzene	ND	500	527	105	539	108	2	70-130/30
75-71-8	Dichlorodifluoromethane	ND	500	462	92	438	88	5	70-130/30
75-34-3	1,1-Dichloroethane	ND	500	527	105	523	105	1	70-130/30
107-06-2	1,2-Dichloroethane	ND	500	576	115	586	117	2	70-130/30
75-35-4	1,1-Dichloroethene	ND	500	521	104	511	102	2	70-130/30
156-59-2	cis-1,2-Dichloroethene	ND	500	496	99	490	98	1	70-130/30
156-60-5	trans-1,2-Dichloroethene	ND	500	507	101	512	102	1	70-130/30
78-87-5	1,2-Dichloropropane	ND	500	519	104	516	103	1	70-130/30
142-28-9	1,3-Dichloropropane	ND	500	498	100	518	104	4	70-130/30
594-20-7	2,2-Dichloropropane	ND	500	426	85	443	89	4	70-130/30
563-58-6	1,1-Dichloropropene	ND	500	572	114	547	109	4	70-130/30

5.3.2  
5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC6521  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC6290-5MS	N58577.D	10	12/19/11	JP	n/a	n/a	MSN2190
MC6290-5MSD	N58578.D	10	12/19/11	JP	n/a	n/a	MSN2190
MC6290-5	N58572.D	1	12/19/11	JP	n/a	n/a	MSN2190

The QC reported here applies to the following samples:

Method: SW846 8260B

MC6521-1

CAS No.	Compound	MC6290-5 ug/l	Spike Q	ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
10061-01-5	cis-1,3-Dichloropropene	ND	500	550	110	558	112	1	70-130/30	
10061-02-6	trans-1,3-Dichloropropene	ND	500	526	105	539	108	2	70-130/30	
123-91-1	1,4-Dioxane	ND	2500	2180	87	2270	91	4	70-130/30	
97-63-2	Ethyl methacrylate	ND	500	473	95	475	95	0	72-139/30	
100-41-4	Ethylbenzene	7.2	500	544	107	563	111	3	70-130/30	
87-68-3	Hexachlorobutadiene	ND	500	590	118	609	122	3	70-130/30	
591-78-6	2-Hexanone	ND	500	378	76	401	80	6	70-130/30	
98-82-8	Isopropylbenzene	5.2	500	628	125	641	127	2	70-130/30	
99-87-6	p-Isopropyltoluene	ND	500	573	115	571	114	0	70-130/30	
1634-04-4	Methyl Tert Butyl Ether	ND	500	325	65* a	361	72	10	70-130/30	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	500	495	99	494	99	0	70-130/30	
74-95-3	Methylene bromide	ND	500	565	113	563	113	0	70-130/30	
75-09-2	Methylene chloride	ND	500	482	96	481	96	0	70-130/30	
91-20-3	Naphthalene	ND	500	430	86	462	92	7	70-130/30	
103-65-1	n-Propylbenzene	12.6	500	557	109	568	111	2	70-130/30	
100-42-5	Styrene	ND	500	511	102	526	105	3	70-130/30	
630-20-6	1,1,1,2-Tetrachloroethane	ND	500	559	112	575	115	3	70-130/30	
79-34-5	1,1,2,2-Tetrachloroethane	ND	500	465	93	484	97	4	70-130/30	
127-18-4	Tetrachloroethene	ND	500	537	107	563	113	5	70-130/30	
108-88-3	Toluene	ND	500	544	109	530	106	3	70-130/30	
87-61-6	1,2,3-Trichlorobenzene	ND	500	477	95	503	101	5	70-130/30	
120-82-1	1,2,4-Trichlorobenzene	ND	500	530	106	555	111	5	70-130/30	
71-55-6	1,1,1-Trichloroethane	ND	500	565	113	571	114	1	70-130/30	
79-00-5	1,1,2-Trichloroethane	ND	500	526	105	523	105	1	70-130/30	
79-01-6	Trichloroethene	ND	500	564	113	545	109	3	70-130/30	
75-69-4	Trichlorofluoromethane	ND	500	572	114	561	112	2	70-130/30	
96-18-4	1,2,3-Trichloropropane	ND	500	454	91	474	95	4	70-130/30	
95-63-6	1,2,4-Trimethylbenzene	4.2	500	555	110	560	111	1	70-130/30	
108-67-8	1,3,5-Trimethylbenzene	ND	500	549	110	558	112	2	70-130/30	
108-05-4	Vinyl Acetate	ND	500	607	121	611	122	1	70-130/30	
75-01-4	Vinyl chloride	ND	500	409	82	399	80	2	70-130/30	
	m,p-Xylene	4.5	1000	1080	108	1120	112	4	70-130/30	
95-47-6	o-Xylene	0.38	500	530	106	553	111	4	70-130/30	
1330-20-7	Xylene (total)	4.9	1500	1610	107	1680	112	4	70-130/30	

5.3.2  
5



# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC6521  
Account: SHELLWIC Shell Oil  
Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC6290-5MS	N58577.D	10	12/19/11	JP	n/a	n/a	MSN2190
MC6290-5MSD	N58578.D	10	12/19/11	JP	n/a	n/a	MSN2190
MC6290-5	N58572.D	1	12/19/11	JP	n/a	n/a	MSN2190

The QC reported here applies to the following samples:

Method: SW846 8260B

MC6521-1

CAS No.	Surrogate Recoveries	MS	MSD	MC6290-5	Limits
1868-53-7	Dibromofluoromethane	94%	96%	99%	70-130%
2037-26-5	Toluene-D8	90%	90%	92%	70-130%
460-00-4	4-Bromofluorobenzene	88%	91%	96%	70-130%

- (a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
- (b) Outside control limits. Associated samples are non-detect for this compound.

5.3.2

5

# Volatile Internal Standard Area Summary

Job Number: MC6521  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSN2189-CC2146	Injection Date:	12/18/11
Lab File ID:	N58530.D	Injection Time:	15:11
Instrument ID:	GCM5N	Method:	SW846 8260B

	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
	AREA		AREA		AREA		AREA		AREA	
Check Std	277406	9.03	387506	9.90	191630	13.16	222286	15.72	93858	6.57
Upper Limit <sup>a</sup>	554812	9.53	775012	10.40	383260	13.66	444572	16.22	187716	7.07
Lower Limit <sup>b</sup>	138703	8.53	193753	9.40	95815	12.66	111143	15.22	46929	6.07

Lab Sample ID	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
	AREA		AREA		AREA		AREA		AREA	
MSN2189-BS	290573	9.02	402227	9.90	206638	13.15	225962	15.72	82475	6.58
MSN2189-BSD	298451	9.03	415065	9.90	201047	13.16	228638	15.72	73913	6.58
MSN2189-MB	280267	9.03	391340	9.90	180210	13.16	191996	15.72	88529	6.58
MC6521-3	265847	9.03	375751	9.90	177553	13.16	189944	15.72	77276	6.58
MC6521-2	255452	9.03	357927	9.90	169513	13.16	183231	15.72	65223	6.58
ZZZZZZ	245527	9.03	348393	9.90	163598	13.16	175080	15.72	50143	6.58
MC6287-1	289513	9.03	405317	9.90	208488	13.16	252454	15.72	100237	6.58
ZZZZZZ	339139	9.03	474756	9.90	212413	13.16	240450	15.72	100083	6.58
ZZZZZZ	328508	9.03	457198	9.90	211111	13.16	229903	15.72	94659	6.58
ZZZZZZ	305228	9.03	424021	9.90	196119	13.16	211871	15.72	98725	6.57
ZZZZZZ	293689	9.03	408150	9.90	187103	13.16	213038	15.72	88179	6.58
ZZZZZZ	293663	9.03	406372	9.90	190473	13.16	213863	15.72	81627	6.57
ZZZZZZ	298390	9.03	413563	9.90	198015	13.16	224823	15.72	79911	6.57
ZZZZZZ	284256	9.03	401885	9.90	184929	13.16	202930	15.72	74476	6.58
ZZZZZZ	284963	9.03	398803	9.90	186041	13.16	206034	15.72	72231	6.58
ZZZZZZ	273616	9.03	377020	9.90	179083	13.16	191203	15.72	77598	6.57
ZZZZZZ	257581	9.03	367517	9.90	172867	13.16	187505	15.72	70433	6.58
ZZZZZZ	251698	9.03	349435	9.90	167031	13.16	174267	15.72	74290	6.58
ZZZZZZ	261232	9.03	359950	9.90	184662	13.16	214079	15.72	75093	6.58
ZZZZZZ	308414	9.03	426456	9.90	211109	13.16	251315	15.72	106757	6.57
MC6287-1MS	344388	9.03	485089	9.90	238231	13.16	275266	15.72	88377	6.57
MC6287-1MSD	373183	9.03	509975	9.90	249790	13.16	287624	15.72	114918	6.57

- IS 1 = Pentafluorobenzene
- IS 2 = 1,4-Difluorobenzene
- IS 3 = Chlorobenzene-D5
- IS 4 = 1,4-Dichlorobenzene-d4
- IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

5.4.1  
5

# Volatile Internal Standard Area Summary

Job Number: MC6521  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSN2190-CC2146	Injection Date:	12/19/11
Lab File ID:	N58557.D	Injection Time:	11:55
Instrument ID:	GCMSN	Method:	SW846 8260B

	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
	AREA		AREA		AREA		AREA		AREA	
Check Std	327116	9.03	454275	9.90	217694	13.15	250925	15.72	91784	6.58
Upper Limit <sup>a</sup>	654232	9.53	908550	10.40	435388	13.65	501850	16.22	183568	7.08
Lower Limit <sup>b</sup>	163558	8.53	227138	9.40	108847	12.65	125463	15.22	45892	6.08

Lab Sample ID	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
	AREA		AREA		AREA		AREA		AREA	
MSN2190-BS	336427	9.03	454227	9.90	216847	13.16	256875	15.72	86032	6.57
MSN2190-BSD	340733	9.03	469602	9.90	230233	13.15	262199	15.72	94469	6.58
MSN2190-MB	305831	9.03	430382	9.90	197239	13.16	218237	15.72	79467	6.58
ZZZZZZ	264968	9.03	372301	9.90	176353	13.16	184191	15.72	61687	6.58
ZZZZZZ	248195	9.03	350246	9.90	167016	13.16	179209	15.72	66873	6.57
MC6290-5	249951	9.03	348026	9.90	169539	13.16	187622	15.72	58053	6.58
MC6521-1	318639	9.02	442232	9.90	210619	13.16	225504	15.72	90092	6.57
MC6290-5MS	311650	9.03	430423	9.90	213911	13.16	245915	15.72	83299	6.57
MC6290-5MSD	317810	9.03	443891	9.90	211578	13.16	246250	15.72	84199	6.58
ZZZZZZ	310560	9.03	441364	9.90	200720	13.16	223086	15.72	86252	6.58
ZZZZZZ	285290	9.03	402656	9.90	191643	13.16	220822	15.72	76914	6.57

- IS 1 = Pentafluorobenzene
- IS 2 = 1,4-Difluorobenzene
- IS 3 = Chlorobenzene-D5
- IS 4 = 1,4-Dichlorobenzene-d4
- IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

5.4.2  
5

# Volatile Surrogate Recovery Summary

Job Number: MC6521

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Method: SW846 8260B	Matrix: AQ
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Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
MC6521-1	N58576.D	94.0	92.0	97.0
MC6521-2	N58536.D	100.0	91.0	92.0
MC6521-3	N58535.D	100.0	89.0	92.0
MC6287-1MS	N58552.D	91.0	92.0	90.0
MC6287-1MSD	N58553.D	88.0	91.0	89.0
MC6290-5MS	N58577.D	94.0	90.0	88.0
MC6290-5MSD	N58578.D	96.0	90.0	91.0
MSN2189-BS	N58531.D	95.0	91.0	90.0
MSN2189-BSD	N58532.D	95.0	91.0	92.0
MSN2189-MB	N58534.D	98.0	89.0	96.0
MSN2190-BS	N58558.D	92.0	92.0	91.0
MSN2190-BSD	N58559.D	92.0	92.0	90.0
MSN2190-MB	N58561.D	96.0	89.0	91.0

Surrogate Compounds	Recovery Limits
S1 = Dibromofluoromethane	70-130%
S2 = Toluene-D8	70-130%
S3 = 4-Bromofluorobenzene	70-130%

5.5.1



## GC/MS Semi-volatiles

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## QC Data Summaries

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Includes the following where applicable:

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

# Method Blank Summary

Job Number: MC6521  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27269-MB	U4090.D	1	12/20/11	KR	12/17/11	OP27269	MSU249

The QC reported here applies to the following samples:

Method: SW846 8270C

MC6521-1, MC6521-2

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	10	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	ug/l	
51-28-5	2,4-Dinitrophenol	ND	20	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	ug/l	
95-48-7	2-Methylphenol	ND	10	ug/l	
	3&4-Methylphenol	ND	10	ug/l	
88-75-5	2-Nitrophenol	ND	10	ug/l	
100-02-7	4-Nitrophenol	ND	20	ug/l	
87-86-5	Pentachlorophenol	ND	10	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	10	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	ug/l	
62-53-3	Aniline	ND	10	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	ug/l	
85-68-7	Butyl benzyl phthalate	0.54	5.0	ug/l	J
100-51-6	Benzyl Alcohol	ND	10	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	ug/l	
106-47-8	4-Chloroaniline	ND	10	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	10	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.0	ug/l	
132-64-9	Dibenzofuran	ND	5.0	ug/l	
84-74-2	Di-n-butyl phthalate	0.41	5.0	ug/l	J
117-84-0	Di-n-octyl phthalate	ND	5.0	ug/l	
84-66-2	Diethyl phthalate	ND	5.0	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	1.7	2.0	ug/l	J
118-74-1	Hexachlorobenzene	ND	5.0	ug/l	

6.1.1



# Method Blank Summary

Job Number: MC6521  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27269-MB	U4090.D	1	12/20/11	KR	12/17/11	OP27269	MSU249

The QC reported here applies to the following samples:

Method: SW846 8270C

MC6521-1, MC6521-2

6.1.1  
**6**

CAS No.	Compound	Result	RL	Units	Q
77-47-4	Hexachlorocyclopentadiene	ND	10	ug/l	
67-72-1	Hexachloroethane	ND	5.0	ug/l	
78-59-1	Isophorone	ND	5.0	ug/l	
88-74-4	2-Nitroaniline	ND	10	ug/l	
99-09-2	3-Nitroaniline	ND	10	ug/l	
100-01-6	4-Nitroaniline	ND	10	ug/l	
98-95-3	Nitrobenzene	ND	5.0	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	ug/l	
110-86-1	Pyridine	ND	10	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	53%	15-110%
4165-62-2	Phenol-d5	35%	15-110%
118-79-6	2,4,6-Tribromophenol	88%	15-110%
4165-60-0	Nitrobenzene-d5	86%	30-130%
321-60-8	2-Fluorobiphenyl	89%	30-130%
1718-51-0	Terphenyl-d14	110%	30-130%

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

# Method Blank Summary

Job Number: MC6521  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27270-MB	U4077.D	1	12/19/11	KR	12/17/11	OP27270	MSU250

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC6521-1, MC6521-2

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	0.10	ug/l	
208-96-8	Acenaphthylene	ND	0.10	ug/l	
120-12-7	Anthracene	ND	0.10	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.050	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.050	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	ug/l	
218-01-9	Chrysene	ND	0.10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	ug/l	
206-44-0	Fluoranthene	ND	0.10	ug/l	
86-73-7	Fluorene	ND	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.20	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	0.10	ug/l	
85-01-8	Phenanthrene	ND	0.050	ug/l	
129-00-0	Pyrene	ND	0.10	ug/l	

CAS No.	Surrogate Recoveries		Limits
4165-60-0	Nitrobenzene-d5	91%	30-130%
321-60-8	2-Fluorobiphenyl	93%	30-130%
1718-51-0	Terphenyl-d14	105%	30-130%

6.1.2





# Blank Spike/Blank Spike Duplicate Summary

Job Number: MC6521  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27269-BS	U4091.D	1	12/20/11	KR	12/17/11	OP27269	MSU249
OP27269-BSD	U4092.D	1	12/20/11	KR	12/17/11	OP27269	MSU249

The QC reported here applies to the following samples:

Method: SW846 8270C

MC6521-1, MC6521-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic Acid	100	9.3	9* a	19.4	19* b	70* c	30-130/20
95-57-8	2-Chlorophenol	100	81.0	81	84.6	85	4	30-130/20
59-50-7	4-Chloro-3-methyl phenol	100	81.8	82	86.5	87	6	30-130/20
120-83-2	2,4-Dichlorophenol	100	88.0	88	90.5	91	3	30-130/20
105-67-9	2,4-Dimethylphenol	100	78.9	79	77.9	78	1	30-130/20
51-28-5	2,4-Dinitrophenol	100	78.6	79	79.7	80	1	30-130/20
534-52-1	4,6-Dinitro-o-cresol	100	92.5	93	91.4	91	1	30-130/20
95-48-7	2-Methylphenol	100	73.5	74	83.1	83	12	30-130/20
	3&4-Methylphenol	200	66.6	33	78.7	39	17	30-130/20
88-75-5	2-Nitrophenol	100	90.1	90	89.8	90	0	30-130/20
100-02-7	4-Nitrophenol	100	45.7	46	62.4	62	31* c	30-130/20
87-86-5	Pentachlorophenol	100	92.6	93	94.3	94	2	30-130/20
108-95-2	Phenol	100	38.4	38	53.9	54	34* c	30-130/20
95-95-4	2,4,5-Trichlorophenol	100	97.2	97	95.2	95	2	30-130/20
88-06-2	2,4,6-Trichlorophenol	100	96.1	96	96.3	96	0	30-130/20
62-53-3	Aniline	50	28.9	58	3.5	7* b	157* c	40-140/20
101-55-3	4-Bromophenyl phenyl ether	50	47.9	96	47.7	95	0	40-140/20
85-68-7	Butyl benzyl phthalate	50	47.0	94	46.4	93	1	40-140/20
100-51-6	Benzyl Alcohol	50	40.0	80	38.0	76	5	40-140/20
91-58-7	2-Chloronaphthalene	50	46.7	93	45.8	92	2	40-140/20
106-47-8	4-Chloroaniline	50	25.0	50	18.7	37* a	29* c	40-140/20
111-91-1	bis(2-Chloroethoxy)methane	50	45.1	90	44.3	89	2	40-140/20
111-44-4	bis(2-Chloroethyl)ether	50	43.0	86	39.0	78	10	40-140/20
108-60-1	bis(2-Chloroisopropyl)ether	50	31.3	63	30.3	61	3	40-140/20
7005-72-3	4-Chlorophenyl phenyl ether	50	44.2	88	43.8	88	1	40-140/20
122-66-7	1,2-Diphenylhydrazine	50	38.8	78	38.8	78	0	40-140/20
121-14-2	2,4-Dinitrotoluene	50	46.6	93	45.1	90	3	40-140/20
606-20-2	2,6-Dinitrotoluene	50	45.0	90	44.2	88	2	40-140/20
91-94-1	3,3'-Dichlorobenzidine	50	30.6	61	33.9	68	10	40-140/20
132-64-9	Dibenzofuran	50	44.9	90	44.4	89	1	40-140/20
84-74-2	Di-n-butyl phthalate	50	41.6	83	39.5	79	5	40-140/20
117-84-0	Di-n-octyl phthalate	50	51.0	102	45.9	92	11	40-140/20
84-66-2	Diethyl phthalate	50	44.6	89	43.0	86	4	40-140/20
131-11-3	Dimethyl phthalate	50	45.8	92	44.9	90	2	40-140/20
117-81-7	bis(2-Ethylhexyl)phthalate	50	47.6	95	45.4	91	5	40-140/20
118-74-1	Hexachlorobenzene	50	49.6	99	50.2	100	1	40-140/20

6.2.1

6

# Blank Spike/Blank Spike Duplicate Summary

Job Number: MC6521  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27269-BS	U4091.D	1	12/20/11	KR	12/17/11	OP27269	MSU249
OP27269-BSD	U4092.D	1	12/20/11	KR	12/17/11	OP27269	MSU249

The QC reported here applies to the following samples:

Method: SW846 8270C

MC6521-1, MC6521-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
77-47-4	Hexachlorocyclopentadiene	50	41.3	83	41.8	84	1	40-140/20
67-72-1	Hexachloroethane	50	43.3	87	42.6	85	2	40-140/20
78-59-1	Isophorone	50	42.8	86	43.4	87	1	40-140/20
88-74-4	2-Nitroaniline	50	49.8	100	48.5	97	3	40-140/20
99-09-2	3-Nitroaniline	50	31.5	63	30.5	61	3	40-140/20
100-01-6	4-Nitroaniline	50	41.7	83	39.5	79	5	40-140/20
98-95-3	Nitrobenzene	50	41.8	84	40.5	81	3	40-140/20
62-75-9	n-Nitrosodimethylamine	50	27.6	55	26.9	54	3	40-140/20
621-64-7	N-Nitroso-di-n-propylamine	50	47.8	96	48.0	96	0	40-140/20
86-30-6	N-Nitrosodiphenylamine	50	48.8	98	48.7	97	0	40-140/20
110-86-1	Pyridine	50	24.1	48	ND	0* b	200* c	40-140/20

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
367-12-4	2-Fluorophenol	58%	77%	15-110%
4165-62-2	Phenol-d5	40%	58%	15-110%
118-79-6	2,4,6-Tribromophenol	97%	98%	15-110%
4165-60-0	Nitrobenzene-d5	90%	86%	30-130%
321-60-8	2-Fluorobiphenyl	93%	88%	30-130%
1718-51-0	Terphenyl-d14	113%	112%	30-130%

- (a) Outside control limits. Blank Spike meets program technical requirements.
- (b) Refer to Blank Spike.
- (c) Outside control limits. Associated samples are non-detect for this compound.

6.2.1

6

# Blank Spike/Blank Spike Duplicate Summary

Job Number: MC6521  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27270-BS	U4078.D	1	12/19/11	KR	12/17/11	OP27270	MSU250
OP27270-BSD	U4079.D	1	12/19/11	KR	12/17/11	OP27270	MSU250

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC6521-1, MC6521-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	50	48.2	96	47.8	96	1	40-140/30
208-96-8	Acenaphthylene	50	42.4	85	42.3	85	0	40-140/30
120-12-7	Anthracene	50	45.6	91	45.0	90	1	40-140/30
56-55-3	Benzo(a)anthracene	50	55.6	111	54.8	110	1	40-140/30
50-32-8	Benzo(a)pyrene	50	41.5	83	41.1	82	1	40-140/30
205-99-2	Benzo(b)fluoranthene	50	47.2	94	48.3	97	2	40-140/30
191-24-2	Benzo(g,h,i)perylene	50	56.6	113	54.1	108	5	40-140/30
207-08-9	Benzo(k)fluoranthene	50	50.6	101	48.9	98	3	40-140/30
218-01-9	Chrysene	50	48.6	97	47.7	95	2	40-140/30
53-70-3	Dibenzo(a,h)anthracene	50	52.2	104	50.1	100	4	40-140/30
206-44-0	Fluoranthene	50	40.8	82	39.6	79	3	40-140/30
86-73-7	Fluorene	50	47.1	94	46.0	92	2	40-140/30
193-39-5	Indeno(1,2,3-cd)pyrene	50	53.7	107	51.5	103	4	40-140/30
90-12-0	1-Methylnaphthalene	50	46.4	93	46.1	92	1	40-140/30
91-57-6	2-Methylnaphthalene	50	45.5	91	45.3	91	0	40-140/30
91-20-3	Naphthalene	50	45.9	92	45.4	91	1	40-140/30
85-01-8	Phenanthrene	50	44.2	88	43.4	87	2	40-140/30
129-00-0	Pyrene	50	55.7	111	55.5	111	0	40-140/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
4165-60-0	Nitrobenzene-d5	96%	93%	30-130%
321-60-8	2-Fluorobiphenyl	101%	98%	30-130%
1718-51-0	Terphenyl-d14	115%	114%	30-130%

6.2.2

6

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC6521  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27269-MS	U4093.D	1	12/20/11	KR	12/17/11	OP27269	MSU249
OP27269-MSD	U4094.D	1	12/20/11	KR	12/17/11	OP27269	MSU249
MC6521-1	U4096.D	1	12/20/11	KR	12/17/11	OP27269	MSU249

The QC reported here applies to the following samples:

Method: SW846 8270C

MC6521-1, MC6521-2

CAS No.	Compound	MC6521-1 ug/l	Spike Q	ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic Acid	ND		217	122	55	123	56	1	30-130/20
95-57-8	2-Chlorophenol	ND		217	174	80	167	77	4	30-130/20
59-50-7	4-Chloro-3-methyl phenol	ND		217	180	83	177	81	2	30-130/20
120-83-2	2,4-Dichlorophenol	ND		217	192	88	184	85	4	30-130/20
105-67-9	2,4-Dimethylphenol	ND		217	159	73	160	74	1	30-130/20
51-28-5	2,4-Dinitrophenol	ND		217	182	84	178	82	2	30-130/20
534-52-1	4,6-Dinitro-o-cresol	ND		217	203	93	195	90	4	30-130/20
95-48-7	2-Methylphenol	ND		217	171	79	160	74	7	30-130/20
	3&4-Methylphenol	ND		435	157	36	150	35	5	30-130/20
88-75-5	2-Nitrophenol	ND		217	195	90	191	88	2	30-130/20
100-02-7	4-Nitrophenol	ND		217	136	63	135	62	1	30-130/20
87-86-5	Pentachlorophenol	ND		217	201	92	195	90	3	30-130/20
108-95-2	Phenol	ND		217	115	53	110	51	4	30-130/20
95-95-4	2,4,5-Trichlorophenol	ND		217	210	97	200	92	5	30-130/20
88-06-2	2,4,6-Trichlorophenol	ND		217	203	93	196	90	4	30-130/20
62-53-3	Aniline	ND		109	57.4	53	62.8	58	9	40-140/20
101-55-3	4-Bromophenyl phenyl ether	ND		109	99.7	92	97.1	89	3	40-140/20
85-68-7	Butyl benzyl phthalate	0.42	B	109	101	93	101	93	0	40-140/20
100-51-6	Benzyl Alcohol	ND		109	93.3	86	90.3	83	3	40-140/20
91-58-7	2-Chloronaphthalene	ND		109	102	94	97.0	89	5	40-140/20
106-47-8	4-Chloroaniline	ND		109	21.8	20* a	31.7	29* a	37* a	40-140/20
111-91-1	bis(2-Chloroethoxy)methane	ND		109	98.5	91	94.4	87	4	40-140/20
111-44-4	bis(2-Chloroethyl)ether	ND		109	80.8	74	77.6	71	4	40-140/20
108-60-1	bis(2-Chloroisopropyl)ether	ND		109	65.2	60	62.0	57	5	40-140/20
7005-72-3	4-Chlorophenyl phenyl ether	ND		109	95.1	87	93.0	86	2	40-140/20
122-66-7	1,2-Diphenylhydrazine	ND		109	84.3	78	73.3	67	14	40-140/20
121-14-2	2,4-Dinitrotoluene	ND		109	101	93	98.9	91	2	40-140/20
606-20-2	2,6-Dinitrotoluene	ND		109	100	92	94.4	87	6	40-140/20
91-94-1	3,3'-Dichlorobenzidine	ND		109	45.3	42	46.8	43	3	40-140/20
132-64-9	Dibenzofuran	ND		109	98.6	91	95.0	87	4	40-140/20
84-74-2	Di-n-butyl phthalate	0.80	B	109	87.8	80	83.8	76	5	40-140/20
117-84-0	Di-n-octyl phthalate	ND		109	105	97	101	93	4	40-140/20
84-66-2	Diethyl phthalate	ND		109	95.1	87	93.7	86	1	40-140/20
131-11-3	Dimethyl phthalate	ND		109	99.5	92	95.4	88	4	40-140/20
117-81-7	bis(2-Ethylhexyl)phthalate	2.8	B	109	100	89	105	94	5	40-140/20
118-74-1	Hexachlorobenzene	ND		109	106	98	104	96	2	40-140/20

6.3.1  


# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC6521  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27269-MS	U4093.D	1	12/20/11	KR	12/17/11	OP27269	MSU249
OP27269-MSD	U4094.D	1	12/20/11	KR	12/17/11	OP27269	MSU249
MC6521-1	U4096.D	1	12/20/11	KR	12/17/11	OP27269	MSU249

The QC reported here applies to the following samples:

Method: SW846 8270C

MC6521-1, MC6521-2

CAS No.	Compound	MC6521-1 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
77-47-4	Hexachlorocyclopentadiene	ND	109	91.1	84	87.7	81	4	40-140/20
67-72-1	Hexachloroethane	ND	109	94.6	87	92.1	85	3	40-140/20
78-59-1	Isophorone	ND	109	95.0	87	90.8	84	5	40-140/20
88-74-4	2-Nitroaniline	ND	109	107	98	104	96	3	40-140/20
99-09-2	3-Nitroaniline	ND	109	32.7	30* b	42.7	39* b	27* c	40-140/20
100-01-6	4-Nitroaniline	ND	109	79.0	73	83.2	77	5	40-140/20
98-95-3	Nitrobenzene	ND	109	89.5	82	83.6	77	7	40-140/20
62-75-9	n-Nitrosodimethylamine	ND	109	74.3	68	72.1	66	3	40-140/20
621-64-7	N-Nitroso-di-n-propylamine	ND	109	98.7	91	98.4	91	0	40-140/20
86-30-6	N-Nitrosodiphenylamine	ND	109	105	97	101	93	4	40-140/20
110-86-1	Pyridine	ND	109	66.8	61	65.2	60	2	40-140/20

CAS No.	Surrogate Recoveries	MS	MSD	MC6521-1	Limits
367-12-4	2-Fluorophenol	70%	66%	47%	15-110%
4165-62-2	Phenol-d5	56%	54%	35%	15-110%
118-79-6	2,4,6-Tribromophenol	101%	92%	89%	15-110%
4165-60-0	Nitrobenzene-d5	88%	83%	82%	30-130%
321-60-8	2-Fluorobiphenyl	91%	88%	86%	30-130%
1718-51-0	Terphenyl-d14	106%	105%	97%	30-130%

- (a) Outside control limits. Blank Spike meets program technical requirements.
- (b) Outside control limits due to possible matrix interference. Refer to Blank Spike.
- (c) High RPD due to possible matrix interference and/or sample non-homogeneity.

6.3.1

6

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC6521  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27270-MS	U4080.D	1	12/19/11	KR	12/17/11	OP27270	MSU250
OP27270-MSD	U4081.D	1	12/19/11	KR	12/17/11	OP27270	MSU250
MC6521-1	U4083.D	1	12/19/11	KR	12/17/11	OP27270	MSU250

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

MC6521-1, MC6521-2

CAS No.	Compound	MC6521-1 ug/l	Spike Q	ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND	109	103	95	101	93	2	40-140/20	
208-96-8	Acenaphthylene	0.11	109	87.7	81	85.4	78	3	40-140/20	
120-12-7	Anthracene	0.033	109	96.8	89	95.8	88	1	40-140/20	
56-55-3	Benzo(a)anthracene	ND	109	118	109	116	107	2	40-140/20	
50-32-8	Benzo(a)pyrene	0.12	109	87.4	80	84.7	78	3	40-140/20	
205-99-2	Benzo(b)fluoranthene	0.087	109	103	95	98.7	91	4	40-140/20	
191-24-2	Benzo(g,h,i)perylene	0.63	109	127	116	126	115	1	40-140/20	
207-08-9	Benzo(k)fluoranthene	0.083	109	103	95	99.5	91	3	40-140/20	
218-01-9	Chrysene	ND	109	103	95	101	93	2	40-140/20	
53-70-3	Dibenzo(a,h)anthracene	0.35	109	114	105	114	105	0	40-140/20	
206-44-0	Fluoranthene	ND	109	87.3	80	85.4	79	2	40-140/20	
86-73-7	Fluorene	ND	109	100	92	97.9	90	2	40-140/20	
193-39-5	Indeno(1,2,3-cd)pyrene	0.43	109	118	108	116	106	2	40-140/20	
90-12-0	1-Methylnaphthalene	0.28	109	101	93	97.8	90	3	40-140/20	
91-57-6	2-Methylnaphthalene	0.26	109	99.5	91	97.6	90	2	40-140/20	
91-20-3	Naphthalene	0.23	109	99.5	91	96.5	89	3	40-140/20	
85-01-8	Phenanthrene	ND	109	93.9	86	91.7	84	2	40-140/20	
129-00-0	Pyrene	ND	109	119	109	115	106	3	40-140/20	

CAS No.	Surrogate Recoveries	MS	MSD	MC6521-1	Limits
4165-60-0	Nitrobenzene-d5	93%	91%	91%	30-130%
321-60-8	2-Fluorobiphenyl	98%	96%	91%	30-130%
1718-51-0	Terphenyl-d14	107%	104%	97%	30-130%

6.3.2

6

# Semivolatile Internal Standard Area Summary

Job Number: MC6521  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	MSU250-CC226	Injection Date:	12/19/11
Lab File ID:	U4075.D	Injection Time:	16:53
Instrument ID:	GCMSU	Method:	SW846 8270C

	IS 1	IS 2	IS 3	IS 4	IS 5	IS 6
	AREA	RT	AREA	RT	AREA	RT
Check Std	174654	5.42	535022	6.72	284022	9.17
Upper Limit <sup>a</sup>	349308	5.92	1070044	7.22	568044	9.67
Lower Limit <sup>b</sup>	87327	4.92	267511	6.22	142011	8.67

Lab Sample ID	IS 1	IS 2	IS 3	IS 4	IS 5	IS 6
	AREA	RT	AREA	RT	AREA	RT
OP27270-MB	161224	5.42	508524	6.71	267542	9.17
OP27270-BS	172619	5.42	537742	6.72	274404	9.17
OP27270-BSD	193239	5.42	597968	6.72	308062	9.17
OP27270-MS	171423	5.42	534337	6.72	278152	9.17
OP27270-MSD	175961	5.42	553304	6.72	289407	9.17
MC6521-2	150587	5.42	480490	6.72	256899	9.17
MC6521-1	169396	5.42	526395	6.71	283292	9.17
OP27009-MS	190869	5.42	584145	6.72	297822	9.17
OP27009-MSD	210446	5.42	645104	6.72	344793	9.17
MC5713-2	218790	5.42	669315	6.71	354495	9.17
ZZZZZZ	165760	5.42	503632	6.71	264050	9.17
D30079-1	139921	5.42	437352	6.71	226784	9.17
ZZZZZZ	142603	5.42	437944	6.71	225206	9.17
OP27269-MB	94638	5.42	337814	6.72	182179	9.16
OP27269-BS	101591	5.42	368583	6.72	196193	9.16
OP27269-BSD	105659	5.42	372578	6.72	200959	9.16
OP27269-MS	102353	5.42	354189	6.72	188389	9.16
OP27269-MSD	105875	5.42	368142	6.72	197778	9.16
MC6521-2	84441*	5.42	293846	6.72	154050	9.16
MC6521-1	96783	5.42	334493	6.72	180507	9.16
ZZZZZZ	125137	5.42	388447	6.71	202347	9.17

- IS 1 = 1,4-Dichlorobenzene-d4
- IS 2 = Naphthalene-d8
- IS 3 = Acenaphthene-D10
- IS 4 = Phenanthrene-d10
- IS 5 = Chrysene-d12
- IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.  
 (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.4.1



# Semivolatile Surrogate Recovery Summary

Job Number: MC6521  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Method: SW846 8270C	Matrix: AQ
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Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4	S5	S6
MC6521-1	U4096.D	47.0	35.0	89.0	82.0	86.0	97.0
MC6521-2	U4095.D	74.0	55.0	92.0	90.0	92.0	105.0
OP27269-BS	U4091.D	58.0	40.0	97.0	90.0	93.0	113.0
OP27269-BSD	U4092.D	77.0	58.0	98.0	86.0	88.0	112.0
OP27269-MB	U4090.D	53.0	35.0	88.0	86.0	89.0	110.0
OP27269-MS	U4093.D	70.0	56.0	101.0	88.0	91.0	106.0
OP27269-MSD	U4094.D	66.0	54.0	92.0	83.0	88.0	105.0

Surrogate Compounds	Recovery Limits
S1 = 2-Fluorophenol	15-110%
S2 = Phenol-d5	15-110%
S3 = 2,4,6-Tribromophenol	15-110%
S4 = Nitrobenzene-d5	30-130%
S5 = 2-Fluorobiphenyl	30-130%
S6 = Terphenyl-d14	30-130%

6.5.1  




# Semivolatile Surrogate Recovery Summary

Job Number: MC6521

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Method: SW846 8270C BY SIM

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
MC6521-1	U4083.D	91.0	91.0	97.0
MC6521-2	U4082.D	95.0	94.0	108.0
OP27270-BS	U4078.D	96.0	101.0	115.0
OP27270-BSD	U4079.D	93.0	98.0	114.0
OP27270-MB	U4077.D	91.0	93.0	105.0
OP27270-MS	U4080.D	93.0	98.0	107.0
OP27270-MSD	U4081.D	91.0	96.0	104.0

<b>Surrogate Compounds</b>	<b>Recovery Limits</b>
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S1 = Nitrobenzene-d5	30-130%
S2 = 2-Fluorobiphenyl	30-130%
S3 = Terphenyl-d14	30-130%

6.5.2

6

## GC Volatiles

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## QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

## Method Blank Summary

Page 1 of 1

Job Number: MC6521

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27266-MB	BB39957A.D1		12/15/11	CZ	12/15/11	OP27266	GBB2472

The QC reported here applies to the following samples:

Method: SW846 8011

MC6521-1, MC6521-2, MC6521-4

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

CAS No.	Surrogate Recoveries		Limits
460-00-4	Bromofluorobenzene (S)	111%	36-173%
460-00-4	Bromofluorobenzene (S)	105%	36-173%

7.1.1

7

# Blank Spike/Blank Spike Duplicate Summary

Job Number: MC6521

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27266-BS	BB39958A.D1		12/15/11	CZ	12/15/11	OP27266	GBB2472
OP27266-BSD	BB39959A.D1		12/15/11	CZ	12/15/11	OP27266	GBB2472

The QC reported here applies to the following samples:

Method: SW846 8011

MC6521-1, MC6521-2, MC6521-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
96-12-8	1,2-Dibromo-3-chloropropane	0.071	0.069	97	0.072	101	4	60-140/30
106-93-4	1,2-Dibromoethane	0.071	0.072	101	0.076	107	5	60-140/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
460-00-4	Bromofluorobenzene (S)	103%	102%	36-173%
460-00-4	Bromofluorobenzene (S)	98%	98%	36-173%

7.2.1

7

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC6521  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27266-MS	BB39961A.D1		12/15/11	CZ	12/15/11	OP27266	GBB2472
OP27266-MSD	BB39962A.D1		12/15/11	CZ	12/15/11	OP27266	GBB2472
MC6502-3	BB39963A.D1		12/15/11	CZ	12/15/11	OP27266	GBB2472

The QC reported here applies to the following samples:

Method: SW846 8011

MC6521-1, MC6521-2, MC6521-4

CAS No.	Compound	MC6502-3 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.0737	0.073	99	0.077	106	5	64-141/29
106-93-4	1,2-Dibromoethane	ND	0.0737	0.077	104	0.079	109	3	63-163/27

CAS No.	Surrogate Recoveries	MS	MSD	MC6502-3	Limits
460-00-4	Bromofluorobenzene (S)	105%	103%	105%	36-173%
460-00-4	Bromofluorobenzene (S)	105%	103%	106%	36-173%

7.3.1

7

# Volatile Surrogate Recovery Summary

Job Number: MC6521

Account: SHELLWIC Shell Oil

Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Method: SW846 8011

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 <sup>a</sup>	S1 <sup>b</sup>
MC6521-1	BB39976.D	82.0	75.0
MC6521-2	BB39977.D	98.0	76.0
MC6521-4	BB39978.D	125.0	106.0
OP27266-BS	BB39958A.D	103.0	98.0
OP27266-BSD	BB39959A.D	102.0	98.0
OP27266-MB	BB39957A.D	111.0	105.0
OP27266-MS	BB39961A.D	105.0	105.0
OP27266-MSD	BB39962A.D	103.0	103.0

Surrogate Compounds                      Recovery Limits

S1 = Bromofluorobenzene (S)              36-173%

(a) Recovery from GC signal #1

(b) Recovery from GC signal #2

7.4.1

7

# GC Surrogate Retention Time Summary

Job Number: MC6521  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	GBB2472-ICC2472	Injection Date:	12/15/11
Lab File ID:	BB39952.D	Injection Time:	15:28
Instrument ID:	GCBB	Method:	SW846 8011

	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
Check Std	3.85	3.81

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
OP27247-MB	BB39957.D	12/15/11	17:33	3.85	3.81
OP27266-MB	BB39957A.D	12/15/11	17:33	3.85	3.81
OP27247-BS	BB39958.D	12/15/11	17:58	3.85	3.81
OP27266-BS	BB39958A.D	12/15/11	17:58	3.85	3.81
OP27247-BSD	BB39959.D	12/15/11	18:23	3.85	3.81
OP27266-BSD	BB39959A.D	12/15/11	18:23	3.85	3.81
ZZZZZZ	BB39960.D	12/15/11	18:48	3.85	3.81
OP27247-MS	BB39961.D	12/15/11	19:12	3.85	3.81
OP27266-MS	BB39961A.D	12/15/11	19:12	3.85	3.81
OP27247-MSD	BB39962.D	12/15/11	19:37	3.85	3.81
OP27266-MSD	BB39962A.D	12/15/11	19:37	3.85	3.81
MC6241-4	BB39963.D	12/15/11	20:02	3.85	3.81
MC6502-3	BB39963A.D	12/15/11	20:02	3.85	3.81
ZZZZZZ	BB39964.D	12/15/11	20:28	3.85	3.81
ZZZZZZ	BB39965.D	12/15/11	20:53	3.85	3.81
ZZZZZZ	BB39966.D	12/15/11	21:18	3.85	3.81

Surrogate Compounds

S1 = Bromofluorobenzene (S)

- (a) Retention time from GC signal #1
- (b) Retention time from GC signal #2

7.5.1  
7

# GC Surrogate Retention Time Summary

Job Number: MC6521  
 Account: SHELLWIC Shell Oil  
 Project: URSMOSTL:Roxana 4Q11 GW/ 21562593.00006 900 South Central Avenue, Roxana, IL

Check Std:	GBB2475-CC2472	Injection Date:	12/17/11
Lab File ID:	BB39973.D	Injection Time:	10:02
Instrument ID:	GCB	Method:	SW846 8011

	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
Check Std	3.85	3.81

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
ZZZZZ	BB39974.D	12/17/11	10:30	3.85	3.81
ZZZZZ	BB39975.D	12/17/11	10:54	3.85	3.81
MC6521-1	BB39976.D	12/17/11	11:19	3.85	3.81
MC6521-2	BB39977.D	12/17/11	11:44	3.85	3.81
MC6521-4	BB39978.D	12/17/11	12:09	3.85	3.81
GBB2475-ECC247	BB39979.D	12/17/11	12:33	3.85	3.81

**Surrogate  
Compounds**

S1 = Bromofluorobenzene (S)

- (a) Retention time from GC signal #1
- (b) Retention time from GC signal #2

7.5.2  
7