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

Street Address: 900 South Central Ave.

City: Roxana, IL 62084

County: Madison

Site No. (IEPA): 1191150002

Site No. (USEPA): ILD 080 012 305

2.0 OWNER INFORMATION

Name: Not Applicable

Mailing Address:

3.0 OPERATOR INFORMATION

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

17 Junction Drive, PMB #399

Glen Carbon, IL 62034

Contact Name: Kevin Dyer

Contact Title: Principal Program Manager

Phone No.: 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 monitoring well installation plan
Date of Submittal November 28, 2012

IEPA Permit Log No. B-43R
Date of Last IEPA Letter on Project 3/14/12
Log No. of Last IEPA Letter on Project B-43R-CA-25
Does this submittal include groundwater information: ☒ Yes ☐ No

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

Groundwater results from sampling performed on BP property, and proposed well installation plan.

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

RCRA Corrective Action Certification and Groundwater Monitoring Well Installation Plan, dated November 28, 2012.

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: Kevin Exlager 11/26/12 (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: Robert B Billman

11/28/12
Date:

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

Professional's Seal:

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

Mailing Address of Laboratory
495 Technology Center West
Building one
Marlborough, MA 01752

Signature of Laboratory Responsible Officer — Date: 11-27-12

Reza Tand / Director
Name and Title of Laboratory Responsible Officer

URS

Memorandum

Date: November 27, 2012

To: Amy Boley, IEPA Springfield

From: Bob Billman

CC: Gina Search, IEPA Collinsville
Kevin Dyer, SOPUS
Tom Tunnicliff, Atlantic Richfield

Subject: **Shell Oil Products US Roxana, Illinois**
Proposed Groundwater Monitoring Well Installation Plan
Location on BP Property

URS Corporation (URS), on behalf of Shell Oil Products US (SOPUS), is submitting this groundwater monitoring well installation plan for the subject work SOPUS is conducting in Roxana, Illinois. You requested submittal of this plan in a conference call on November 1, 2012.

Background

In 2009 groundwater profiling (sampling) was conducted at several locations throughout the portion of the Village of Roxana, generally east of Highway 111 (Central Avenue) and north of Rand Avenue. The results of this sampling provided groundwater quality delineation in this area, and served as the basis for installation of a monitoring well installation network for ongoing monitoring (referred to as the Interim Groundwater Monitoring Program). The groundwater profiling data and proposed monitoring well installation plan were presented in a September 16, 2009 Memo to the Agency. In a letter dated August 5, 2010, the Agency approved installation of the monitoring wells. Additionally, Condition 6(a)(3) of the August 5th letter indicated that "*If samples at GP-3 and GP-5 have any exceedance of Class I GQSs, the facility must collect a minimum of one (1) additional sample beyond GP-3 and GP-5 to further delineate the plume.*" Locations GP-3 and GP-5 were not sampled until June 2010 when property access was received from the Village of Hartford. The results from this sampling were included in the report "*Addendum to February 2010 Report – Supplemental Investigation Activities"* dated September 20, 2010. The results from location GP-5 exceeded certain GQS'. As a result, SOPUS entered into negotiations with BP for property access in October 2010.

More recently, in the Agency's March 14, 2012 letter, Condition 9 indicated "*The facility must continue to pursue access for additional groundwater investigation beyond well GP-5 to further delineate the dissolved plume, …"*

On August 1, 2012, SOPUS and the Atlantic Richfield Company executed an access agreement to collect groundwater samples at a location on BP's former Wood River Refinery property, and install a monitoring well(s) for longer term monitoring.

Groundwater Profiling

On October 9th and 10th, 2012, groundwater samples were collected using low-flow sampling techniques through a four-foot long, mill-slotted sampler advanced by a Geoprobe unit. The sample location, GWP-28, is shown on **Figure 1.** Groundwater was purged at specific depths and monitored for pH, temperature, conductivity, turbidity, dissolved oxygen (DO), and oxidation-reduction potential (ORP). Once these water quality parameters had stabilized over three consecutive flow-through cell volumes, or a maximum purge time of one hour, groundwater flow was diverted from the flow-through cell and the groundwater was sampled. Groundwater sample collection data sheets are included in **Attachment 1**. Samples were planned to be

collected from depths of 40, 60, 80 and 100 feet below ground surface (bgs). The samples from depths of 40, 60 and 80 feet were successfully collected, however the sample from 100 feet could not be collected due to sediment clogging the drill pipe.

The samples were appropriately packaged and sent via overnight courier under chain of custody procedures to Accutest Laboratories in Marlborough, MA for analysis. Samples from each sample depth were analyzed for volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs), including Polycyclic Aromatic Hydrocarbons (PAHs). Accutest issued the results on November 13, 2012. The data were reviewed according to procedures used on this project and the results were qualified as appropriate. The data review forms and laboratory reports and included in **Attachment 2**. The data were compared to the Illinois Class I groundwater criteria (35 IAC Part 620 Class I Groundwater Quality Standards (GQS)). The results are presented in summary form on **Table 1**.

Methyl tert-butyl ether (MTBE) was the only constituent detected in the groundwater samples, as summarized below:

Sample ID	MTBE concentration (mg/L)
GWP-28-40	0.0061
GWP-28-60	0.0032
GWP-28-60-Dup	0.0032
GWP-28-80	0.0012

These concentrations are below the 0.070 mg/L GQS for MTBE.

Monitoring Well Installation Plan

The objective of the proposed monitoring well network is to encompass groundwater with concentrations of chemicals of concern that exceed GQS'. Per IEPA's November 25, 2008 letter to SOPUS (comment 2(b)), these boundary wells should monitor conditions outside the dissolved groundwater plume.

The proposed monitoring well location is within 10 feet of the GWP-28 location (to be outside the influence of grout from plugging GWP-28). A hollow stem auger or sonic drilling rig, or a geoprobe unit capable of advancing hollow stem augers, will be used to advance the boring. The soil will be logged continuously and field screened with a photoionization detector (PID) at 2 foot intervals. Based on the analytical results from profiling, the well screen interval is proposed to be near the top of the water table. Based on historical groundwater elevations in the area, we propose the screen to cover the interval from elevation 400 to 390 (maximum 10 foot long screen). This corresponds to a depth of approximately 30 to 40 feet bgs. The well will be constructed of flush threaded 2-inch diameter PVC screen and riser. The surface completion will consist of an aboveground well protector or flush mount well vault, depending on input from BP. Locks will be provided. Construction procedures will be consistent with those previously approved for the project.

The monitoring well will be developed to remove fines from the sand pack and screen following procedures previously approved for the project. The well horizontal location and vertical elevation (ground surface and top of casing) will be surveyed upon completion.

We will implement the subject plan upon Agency approval. We will begin sampling this well with the next quarterly sampling event following well installation. This schedule is contingent upon the Agency providing approval for this work in sufficient time before the next groundwater sampling event to allow for construction and development of the well.

Enclosures:

- Table 1 – Summary of Groundwater Profile Analytical Results
- Figure 1 –Groundwater Profile Location and Proposed Monitoring Well Location Map
- Attachment 1 – Groundwater Sample Collection Data Sheets
- Attachment 2 – Laboratory Data Reviews and Laboratory Reports

SEE LAST PAGE OF TABLE FOR NOTES

TABLE 1
SUMMARY OF ANALYTICAL RESULTS:
GWP-28

			VOC												
Location	**Sample ID**	**Sample Date**	**Acetone**	**Acrolein**	**Acrylonitrile**	**Benzene**	**Bromobenzene**	**Bromochloromethane**	**Bromodichloromethane**	**Bromoform**	**Bromomethane**	**2-Butanone**	**n-Butylbenzene**	**sec-Butylbenzene**
Screening Values (mg/L)						**0.005**						**4.2**	**0.35**	
GWP-28	GWP-28-40-ROX-100912	10/9/2012	<0.005 UJ	<0.025	<0.005	<0.0005	<0.005	<0.005	<0.001	<0.001	<0.002	<0.005	<0.005	<0.005
	GWP-28-60-ROX-100912	10/9/2012	<0.005 UJ	<0.025	<0.005	<0.0005	<0.005	<0.005	<0.001	<0.001	<0.002	<0.005	<0.005	<0.005
	GWP-28-60-ROX-100912-DUP	10/9/2012	<0.005 UJ	<0.025	<0.005	<0.0005	<0.005	<0.005	<0.001	<0.001	<0.002	<0.005	<0.005	<0.005
	GWP-28-80-ROX-101012	10/10/2012	<0.005 UJ	<0.025	<0.005	<0.0005	<0.005	<0.005	<0.001	<0.001	<0.002	<0.005	<0.005	<0.005

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TABLE 1
SUMMARY OF ANALYTICAL RESULTS:
GWP-28

			VOC																
Location	**Sample ID**	**Sample Date**	**tert-Butylbenzene**	**Carbon disulfide**	**Carbon tetrachloride**	**Chlorobenzene**	**Chlorodibromomethane**	**Chloroethane**	**2-Chloroethyl vinyl ether**	**Chloroform**	**Chloromethane**	**2-Chlorotoluene**	**4-Chlorotoluene**	**Cymene (p-Isopropyltoluene)**	**1,2-Dibromo-3-chloropropane (DBCP)**	**1,2-Dibromoethane**	**Dibromomethane**	**1,2-Dichlorobenzene**
Screening Values (mg/L)				**0.7**	**0.005**	**0.1**				**0.0002**						**0.00005**		**0.6**
GWP-28	GWP-28-40-ROX-100912	10/9/2012	<0.005	<0.005	<0.001	<0.001	<0.001	<0.002	<0.005	<0.001	<0.002	<0.005	<0.005	<0.005	<0.000015	<0.000015	<0.005	<0.001
	GWP-28-60-ROX-100912	10/9/2012	<0.005	<0.005	<0.001	<0.001	<0.001	<0.002	<0.005	<0.001	<0.002	<0.005	<0.005	<0.005	<0.000014	<0.000014	<0.005	<0.001
	GWP-28-60-ROX-100912-DUP	10/9/2012	<0.005	<0.005	<0.001	<0.001	<0.001	<0.002	<0.005	<0.001	<0.002	<0.005	<0.005	<0.005	<0.000015	<0.000015	<0.005	<0.001
	GWP-28-80-ROX-101012	10/10/2012	<0.005	<0.005	<0.001	<0.001	<0.001	<0.002	<0.005 UJ	<0.001	<0.002	<0.005	<0.005	<0.005	<0.000015	<0.000015	<0.005	<0.001

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TABLE 1
SUMMARY OF ANALYTICAL RESULTS:
GWP-28

			VOC															
Location	**Sample ID**	**Sample Date**	**1,3-Dichlorobenzene**	**1,4-Dichlorobenzene**	**Dichlorodifluoromethane**	**1,1-Dichloroethane**	**1,2-Dichloroethane**	**1,1-Dichloroethene**	**cis-1,2-Dichloroethene**	**trans-1,2-Dichloroethene**	**Dichloromethane (Methylene chloride)**	**1,2-Dichloropropane**	**1,3-Dichloropropane**	**2,2-Dichloropropane**	**1,1-Dichloropropene**	**cis-1,3-Dichloropropene**	**trans-1,3-Dichloropropene**	**1,4-Dioxane**
Screening Values (mg/L)				**0.075**		**0.7**	**0.007**											**0.005**
GWP-28	GWP-28-40-ROX-100912	10/9/2012	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.005	<0.005	<0.005	<0.0005	<0.0005	<0.025
	GWP-28-60-ROX-100912	10/9/2012	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.005	<0.005	<0.005	<0.0005	<0.0005	<0.025
	GWP-28-60-ROX-100912-DUP	10/9/2012	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.005	<0.005	<0.005	<0.0005	<0.0005	<0.025
	GWP-28-80-ROX-101012	10/10/2012	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.005	<0.005	<0.005	<0.0005	<0.0005	<0.025

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TABLE 1
SUMMARY OF ANALYTICAL RESULTS:
GWP-28

			VOC															
Location	**Sample ID**	**Sample Date**	**Ethylbenzene**	**Ethyl methacrylate**	**Hexachlorobutadiene**	**2-Hexanone (Methyl N-Butyl Ketone)**	**Isopropylbenzene (Cumene)**	**4-Methyl-2-pentanone (Methyl Isobutyl Ketone)**	**Methyl tert-Butyl Ether (MTBE)**	**Naphthalene**	**n-Propylbenzene**	**Styrene**	**1,1,1,2-Tetrachloroethane**	**1,1,2,2-Tetrachloroethane**	**Tetrachloroethene**	**Toluene**	**1,2,3-Trichlorobenzene**	**1,2,4-Trichlorobenzene**
Screening Values (mg/L)			**0.7**		**0.007**		**0.7**		**0.07**	**0.14**	**0.7**	**0.1**			**0.005**	**1**	**0.0056**	
GWP-28	GWP-28-40-ROX-100912	10/9/2012	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	0.0061	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.005	<0.005
	GWP-28-60-ROX-100912	10/9/2012	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	0.0032	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.005	<0.005
	GWP-28-60-ROX-100912-DUP	10/9/2012	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	0.0032	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.005	<0.005
	GWP-28-80-ROX-101012	10/10/2012	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	0.0012	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.005	<0.005

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TABLE 1
SUMMARY OF ANALYTICAL RESULTS:
GWP-28

			VOC												SVOC			
Location	**Sample ID**	**Sample Date**	**1,1,1-Trichloroethane (Methyl chloroform)**	**1,1,2-Trichloroethane**	**Trichloroethene**	**Trichlorofluoromethane**	**1,2,3-Trichloropropane**	**1,2,4-Trimethylbenzene**	**1,3,5-Trimethylbenzene**	**Vinyl acetate**	**Vinyl chloride**	**m,p-Xylene**	**o-Xylenes**	**Xylenes (total)**	**Acenaphthene**	**Acenaphthylene**	**Aniline**	**Anthracene**
Screening Values (mg/L)			**0.2**	**210**	**0.005**				**0.07**			**10**	**10**	**10**	**0.42**	**0.21**		**2.1**
GWP-28	GWP-28-40-ROX-100912	10/9/2012	<0.001	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.00011	<0.00011	<0.011 UJ	<0.00011
	GWP-28-60-ROX-100912	10/9/2012	<0.001	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.00011	<0.00011	<0.011 UJ	<0.00011
	GWP-28-60-ROX-100912-DUP	10/9/2012	<0.001	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.00011	<0.00011	<0.011 UJ	<0.00011
	GWP-28-80-ROX-101012	10/10/2012	<0.001	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.00011	<0.00011	<0.011 UJ	<0.00011

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TABLE 1
SUMMARY OF ANALYTICAL RESULTS:
GWP-28

			SVOC															
Location	**Sample ID**	**Sample Date**	**Benzo(a)anthracene**	**Benzo(a)pyrene**	**Benzo(b)fluoranthene**	**Benzo(g,h,i)perylene**	**Benzo(k)fluoranthene**	**Benzoic Acid**	**Benzyl alcohol**	**bis(2-Chloroethoxy)methane**	**bis(2-Chloroethyl)ether**	**Bis(2-chloroisopropyl)ether**	**bis(2-Ethylhexyl)phthalate**	**4-Bromophenyl phenyl ether**	**Butyl benzyl phthalate**	**p-Chloroaniline**	**4-Chloro-3-methylphenol (p-Chloro-m-cresol)**	**2-Chloronaphthalene**
Screening Values (mg/L)			**0.00013**	**0.0002**	**0.00018**	**0.21**	**0.00017**	**28**	**0.7**				**0.006**		**1.4**			
GWP-28	GWP-28-40-ROX-100912	10/9/2012	<0.000053	<0.00011	<0.000053	<0.00011	<0.00011	<0.011	<0.011	<0.0053	<0.0053	<0.0053	<0.0021 UJ	<0.0053	<0.0053	<0.011	<0.011	<0.0053
	GWP-28-60-ROX-100912	10/9/2012	<0.000054	<0.00011	<0.000054	<0.00011	<0.00011	<0.011	<0.011	<0.0054	<0.0054	<0.0054	<0.0022 UJ	<0.0054	<0.0054	<0.011	<0.011	<0.0054
	GWP-28-60-ROX-100912-DUP	10/9/2012	<0.000056	<0.00011	<0.000056	<0.00011	<0.00011	<0.011	<0.011	<0.0056	<0.0056	<0.0056	<0.0022 UJ	<0.0056	<0.0056	<0.011	<0.011	<0.0056
	GWP-28-80-ROX-101012	10/10/2012	<0.000053	<0.00011	<0.000053	<0.00011	<0.00011	<0.011	<0.011	<0.0053	<0.0053	<0.0053	<0.0021	<0.0053	<0.0053	<0.011 UJ	<0.011	<0.0053

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TABLE 1
SUMMARY OF ANALYTICAL RESULTS:
GWP-28

			SVOC															
Location	**Sample ID**	**Sample Date**	**2-Chlorophenol**	**4-Chlorophenyl phenyl ether**	**Chrysene (1,2-Benzphenanthracene)**	**Dibenzo(a,h)anthracene**	**Dibenzofuran**	**3,3'-Dichlorobenzidine**	**2,4-Dichlorophenol**	**Diethyl phthalate**	**2,4-Dimethylphenol**	**Dimethyl phthalate**	**Di-n-butyl phthalate**	**Di-n-octyl phthalate**	**4,6-Dinitro-2-methylphenol (4,6-dinitro-o-cresol)**	**2,4-Dinitrophenol**	**2,4-Dinitrotoluene**	**2,6-Dinitrotoluene**
Screening Values (mg/L)					**0.0015**	**0.0003**	**0.007**			**5.6**	**0.14**		**0.7**	**0.14**		**0.014**		
GWP-28	GWP-28-40-ROX-100912	10/9/2012	<0.0053	<0.0053	<0.00011	<0.00011	<0.0021	<0.0053	<0.011	<0.0053	<0.011	<0.0053	<0.0053	<0.0053	<0.011	<0.021	<0.011	<0.011
	GWP-28-60-ROX-100912	10/9/2012	<0.0054	<0.0054	<0.00011	<0.00011	<0.0022	<0.0054	<0.011	<0.0054	<0.011	<0.0054	<0.0054	<0.0054	<0.011	<0.022	<0.011	<0.011
	GWP-28-60-ROX-100912-DUP	10/9/2012	<0.0056	<0.0056	<0.00011	<0.00011	<0.0022	<0.0056	<0.011	<0.0056	<0.011	<0.0056	<0.0056	<0.0056	<0.011	<0.022	<0.011	<0.011
	GWP-28-80-ROX-101012	10/10/2012	<0.0053	<0.0053	<0.00011	<0.00011	<0.0021	<0.0053 UJ	<0.011	<0.0053	<0.011	<0.0053	<0.0053	<0.0053	<0.011	<0.021	<0.011	<0.011

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TABLE 1
SUMMARY OF ANALYTICAL RESULTS:
GWP-28

			SVOC															
Location	**Sample ID**	**Sample Date**	**1,2-Diphenylhydrazine**	**Fluoranthene**	**Fluorene**	**Hexachlorobenzene**	**Hexachlorocyclopentadiene**	**Hexachloroethane**	**Indeno(1,2,3-cd)pyrene**	**Isophorone (3,5,5-trimethyl-2-cyclohexene-1-one)**	**1-Methylnaphthalene**	**2-Methylnaphthalene**	**2-Methylphenol (o-Cresol)**	**3 & 4-Methylphenol (m & p-Cresol)**	**2-Nitroaniline**	**3-Nitroaniline**	**Nitrobenzene**	**2-Nitrophenol**
Screening Values (mg/L)				**0.28**	**0.28**				**0.00043**		**0.49**	**0.028**	**0.35**	**0.35**				
GWP-28	GWP-28-40-ROX-100912	10/9/2012	<0.0053	<0.00011	<0.00011	<0.0053	<0.011 UJ	<0.0053	<0.00011	<0.0053	<0.00021	<0.00021	<0.011	<0.011	<0.011	<0.011	<0.0053	<0.011
	GWP-28-60-ROX-100912	10/9/2012	<0.0054	<0.00011	<0.00011	<0.0054	<0.011 UJ	<0.0054	<0.00011	<0.0054	<0.00022	<0.00022	<0.011	<0.011	<0.011	<0.011	<0.0054	<0.011
	GWP-28-60-ROX-100912-DUP	10/9/2012	<0.0056	<0.00011	<0.00011	<0.0056	<0.011 UJ	<0.0056	<0.00011	<0.0056	<0.00022	<0.00022	<0.011	<0.011	<0.011	<0.011	<0.0056	<0.011
	GWP-28-80-ROX-101012	10/10/2012	<0.0053	<0.00011	<0.00011	<0.0053	<0.011	<0.0053	<0.00011	<0.0053	<0.00021	<0.00021	<0.011	<0.011	<0.011	<0.011	<0.0053	<0.011

SEE LAST PAGE OF TABLE FOR NOTES

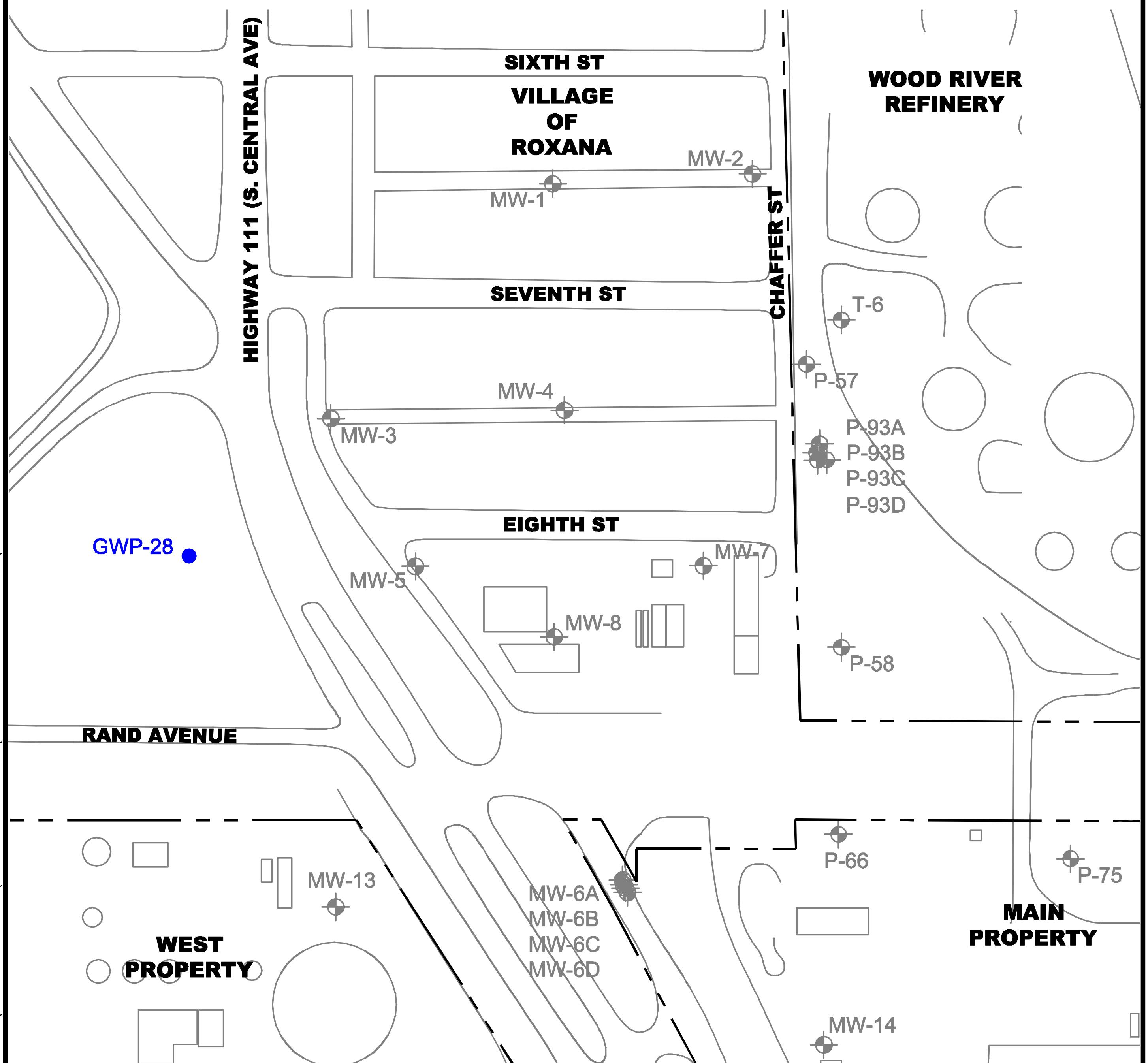
TABLE 1
SUMMARY OF ANALYTICAL RESULTS:
GWP-28

			SVOC											
Location	**Sample ID**	**Sample Date**	**4-Nitrophenol**	**4-Nitrophenylamine**	**N-Nitrosodimethylamine**	**N-Nitrosodi-n-propylamine**	**N-Nitrosodiphenylamine**	**Pentachlorophenol**	**Phenanthrene**	**Phenol**	**Pyrene**	**Pyridine**	**2,4,5-Trichlorophenol**	**2,4,6-Trichlorophenol**
Screening Values (mg/L)									**0.21**	**0.1**	**0.28**	**0.007**		
GWP-28	GWP-28-40-ROX-100912	10/9/2012	<0.021	<0.011	<0.0053	<0.0053	<0.0053	<0.011	<0.000053	<0.0053	<0.00011	<0.011	<0.011	<0.011
	GWP-28-60-ROX-100912	10/9/2012	<0.022	<0.011	<0.0054	<0.0054	<0.0054	<0.011	<0.000054	<0.0054	<0.00011	<0.011	<0.011	<0.011
	GWP-28-60-ROX-100912-DUP	10/9/2012	<0.022	<0.011	<0.0056	<0.0056	<0.0056	<0.011	<0.000056	<0.0056	<0.00011	<0.011	<0.011	<0.011
	GWP-28-80-ROX-101012	10/10/2012	<0.021	<0.011	<0.0053	<0.0053	<0.0053	<0.011	<0.000053	<0.0053 UJ	<0.00011	<0.011 UJ	<0.011	<0.011

Notes:
URS Qualifiers
UJ = estimated non-detect

LEGEND

- INTERIM GROUNDWATER MONITORING WELL SAMPLING LOCATION
- GROUNDWATER PROFILE AND PROPOSED MONITORING WELL LOCATION



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SCALE FEET

N

SHELL OIL PRODUCTS US INTERIM GROUNDWATER MONITORING PROGRAM ROXANA, ILLINOIS	PROJECT NO. 21562735

URS

DRN. BY:djd November 2012 DSGN. BY:bbb CHKD. BY:bbb	Groundwater Profiling and Proposed Groundwater Monitoring Well Location Map	FIG. NO. 1

ATTACHMENT 1

Groundwater Sample Collection Data Sheets

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Roxana GW – Profiling on BP Property PROJECT NUMBER: 21562735.00015 FIELD PERSONNEL: N. McNurlen, W. Pennington

DATE: 10/9/12 WEATHER: Clear, 60°F

MONITORING WELL ID: GWP-28 SAMPLE ID: GWP-28-40-ROX-100912

INITIAL DATA

Well Diameter): 1.5 in
Total Well Depth (btoc): 45 ft
Depth to Water (btoc): ~ ft
Depth to LNAPL/DNAPL (btoc): ~ ft
Depth to Top of Screen (btoc): ~~35~~ 40 ft
Screen Length): 5 ft NM

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): mL
Minimum Purge Volume = (3 x Flow Cell Volume): mL
Ambient PID/FID Reading: 0.2 ppm
Wellbore PID/FID Reading: 0.2 ppm

PURGE DATA

Pump Type: Rotapump (Inertial Lift)

Purge Volume (mL)	Time	Depth to Water (ft)	Color	Odor	pH (±0.2)	Temp (°C) (±0.2 °C)	Sp. Cond. (uS/cm) (±3%)	Turbidity (NTUs) (±10%)	DO (mg/L) (±10% / 0.2 mg/L)	ORP (mV) (±20mV)
0	1351	~	Brn	None	6.96	20.79	1249	553.3	0.03	-572
1200	1354	~	"	"	6.93	20.53	1203	2152	-0.04	-557
2400	1358	~	"	"	6.90	20.27	1172	1793	0.61	-317
3600	1402	~	"	"	6.90	20.33	1179	1932	0.00	-465
4800	1406	~	"	"	6.90	20.30	1182	2160	-0.04	-495
6000	1409	~	"	"	6.91	20.21	1180	2141	-0.05	-501
7200	1413	~	"	"	6.89	20.21	1169	1453	-0.05	-472
8400	1417	~	"	"	6.90	20.11	1165	1028	-0.05	-430
9600	1421	~	"	"	6.89	20.07	1165	847.7	-0.05	-406
10800	NM ~~1425~~ 1424	~	"	"	6.90	20.00	1155	642.8	0.35	-227
12000	1427	~	"	"	6.89	20.12	1156	526.3	0.01	-321
13200	1431	~	"	"	6.89	20.03	1158	503.3	-0.02	-319
14400	1435	~	"	"	6.89	19.98	1159	438.2	-0.03	-312
15600	1439	~	Cloudy	"	6.89	19.87	1152	408.2	-0.03	-310
16800	1442	~	"	"	6.89	19.83	1152	399.4	-0.04	-307

Start Time: 1351 Elapsed Time (min): 51 Water Quality Meter ID: TROLL 9500

Stop Time: 1442 Average Purge Rate (mL/min): 300 Date Calibrated: 10/9/12

SAMPLING DATA

Sample Date: 10/9/12 Sample Time: 1450 Lab Analysis: VOC, SVOC, PAH

Sample Method: Inertial Lift / Low Flow Sample Flow Rate (mL/min): 300 QA/QCSamples: None

VOA Vials, No Headspace ☒ Initials: NM

COMMENTS:

Total Purge Volume: 16800 mL

TD (BTOC) = 65 ft
Top of Screen (BTOC) = 60
Screen Length = 5 ft

Ambient PID = 0.2
Wellbore PID = 0.2

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Roxana GW - Profiling on BP **PROJECT NUMBER:** 21562735.00015 **FIELD PERSONNEL:** N. McNurlen

DATE: 10/9/12 **MONITORING WELL ID:** GWP-28-60

GWP-28-60-ROX-100912

Purge Volume (mL)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. ~~mS/cm~~ µS/cm	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
0	1520	–	Brn	None	6.90	22.22	1305	2650	0.15	-345
12000	1525	–	"	"	6.97	21.57	1314	2713	-0.01	-491
24000	1529	–	"	"	6.97	21.20	1319	2811	-0.04	-506
36000	1533	–	"	"	~~7.67~~ 6.97	21.18	1323	2754	-0.05	-516
48000	1537	–	"	"	6.97	21.19	1317	2747	-0.05	-517
60000	1541	–	"	"	6.97	21.06	1318	1579	-0.05	-533
72000	1546	–	"	"	6.97	21.06	1331	1275	-0.05	-526
84000	1551	–	TAN	"	6.92	20.59	1304	2233	0.31	-275
96000	1555	–	"	"	6.83	20.65	1303	2102	-0.03	-432
108000	1600	–	"	"	6.95	20.73	1303	3015	-0.05	-437
120000	1604	–	"	"	6.95	21.04	1255	1892	-0.05	-435
132000	1609	–	"	"	6.92	21.04	1294	1414	-0.05	-430
144000	1613	–	"	"	6.95	21.07	1304	808.7	-0.05	-428
156000	1617	–	"	"	6.95	20.91	1303	981.7	-0.05	-418
168000	1621	–	"	"	6.96	20.83	1300	1218	-0.05	-418

Start Time = 1520
Stop Time = 1621

Purge Rate = 300 mL/min
Water Quality = Troll 9500

Sample Date = 10/9/12
Method = Rotapump / Low Flow

Sample Rate = 300 mL/min
Analysis = VOC, SVOC, PAH

Total Purge = 16800 mL

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Roxana GW – Profiling on BP Property PROJECT NUMBER: 21562735.00015 FIELD PERSONNEL: N. McNurlen

DATE: 10/10/12 WEATHER: Clear 50°F

MONITORING WELL ID: GWP-28 SAMPLE ID: GWP-28-80-ROX-101012

INITIAL DATA

Well Diameter): 1.5 in
Total Well Depth (btoc): 85 ft
Depth to Water (btoc): – ft
Depth to LNAPL/DNAPL (btoc): – ft
Depth to Top of Screen (btoc): 80 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): 725 mL
Minimum Purge Volume = (3 x Flow Cell Volume): ____ mL
Ambient PID/FID Reading: 0.0 ppm
Wellbore PID/FID Reading: 0.0 ppm

PURGE DATA

Pump Type: Rotapump (Inertial Lift)

Purge Volume (mL)	Time	Depth to Water (ft)	Color	Odor	pH (+0.2)	Temp (°C) (+0.2°C)	Cond. (uS/cm) (+3%)	Turbidity (NTUs) (+10%)	DO (mg/L) (+10%/0.2mg/L)	ORP (mV) (+20mV)
0	1218	–	Bln	None	7.10	20.83	1572	442.8	-0.06	-529
1500	1223	–	"	"	7.13	20.57	1525	222.9	-0.09	-551
3000	1228	–	"	"	7.07	20.26	1528	857.7	-0.10	-549
4500	1234	–	"	"	7.04	20.17	1529	2851	-0.11	-546
6000	1238	–	"	"	7.02	20.23	1526	2654	-0.10	-542
7500	1243	–	"	"	7.03	20.18	1521	3374	-0.10	-544

Start Time: 1218 Elapsed Time (min): 25 Water Quality Meter ID: TROLL 9500

Stop Time: 1243 Average Purge Rate (mL/min): 300 Date Calibrated: 10/10/12

SAMPLING DATA

Sample Date: 10/10/12 Sample Time: 1255 Lab Analysis: VOC, SVOC, PAH

Sample Method: Inertial Lift / Low Flow Sample Flow Rate (mL/min): 300 QA/QCSamples: None

VOA Vials, No Headspace ☒ Initials: NM

COMMENTS:

Total Purge Volume: 7500 mL

ATTACHMENT 2

Laboratory Data Reviews and Laboratory Reports

Roxana Groundwater Profiling Data Review

Laboratory SDG: MC14777

Data Reviewer: Elizabeth Kunkel

Peer Reviewer: Steve Gragert

Date Reviewed: 11/13/2012

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

Sample Identification	Sample Identification
GWP-28-40-ROX-100912	GWP-28-60-ROX-100912
TB-100912-HCL	TB-100912-ST
GWP-28-60-ROX-100912-Dup	

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 and SVOC LCS/LCSD RPDs were outside evaluation criteria. The SVOC surrogate, terphenyl-d_{14}, was outside evaluation criteria in two quality control samples. The initial calibration verification for acetone exceeded 50 percent difference (%D). Although not indicated in the laboratory case narrative, SVOCs were detected in the method blank. These issues are addressed further in the appropriate sections below.

No problems were indicated in the cooler receipt form.

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
OP30628-MB	SVOCs	Di-n-butyl phthalate	1.9 µg/L
OP30628-MB	SVOCs	Bis(2-Ethylhexyl)phthalate	34.7 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
MSH1895-BS	VOCs	Acetone	**55**	NA	70-130
MSH1895-BS	VOCs	2-Butanone	**68**	NA	70-130
MSN2594-BS	VOCs	Acrylonitrile	**528**	NA	70-130
OP30628-BS/BSD	SVOCs	2,4-Dimethylphenol	72/94	**26**	30-130/20
OP30628-BS/BSD	SVOCs	Aniline	**37/**43	15	40-140/20
OP30628-BS/BSD	SVOCs	Butyl benzyl phthalate	**141**/99	**35**	40-140/20
OP30628-BS/BSD	SVOCs	4-Chloroaniline	46/78	**51**	40-140/20
OP30628-BS/BSD	SVOCs	Di-n-octyl phthalate	**191**/113	**52**	40-140/20
OP30628-BS/BSD	SVOCs	Bis(2-Ethylhexyl)phthalate	**143**/**36**	**36**	40-140/20
OP30628-BS/BSD	SVOCs	Hexachlorocyclopentadiene	54**/36**	**39**	40-140/20
OP30628-BS/BSD	SVOCs	3-Nitroaniline	55**/**83	**40**	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 MSH1895-BS was associated with trip blank TB-100912-HCL. Trip blanks are quality control samples and are not qualified. LCS samples are not qualified based on RPD alone, therefore, did not require qualification when only the RPD was outside evaluation criteria.

Sample ID	Parameter	Analyte	Qualification
GWP-28-40-ROX-100912	SVOCs	Aniline	**UJ**
GWP-28-40-ROX-100912	SVOCs	Bis(2-Ethylhexyl)phthalate	**UJ**
GWP-28-40-ROX-100912	SVOCs	Hexachlorocyclopentadiene	**UJ**
GWP-28-60-ROX-100912	SVOCs	Aniline	**UJ**
GWP-28-60-ROX-100912	SVOCs	Bis(2-Ethylhexyl)phthalate	**UJ**
GWP-28-60-ROX-100912	SVOCs	Hexachlorocyclopentadiene	**UJ**
GWP-28-60-ROX-100912-Dup	SVOCs	Aniline	**UJ**
GWP-28-60-ROX-100912-Dup	SVOCs	Bis(2-Ethylhexyl)phthalate	**UJ**
GWP-28-60-ROX-100912-Dup	SVOCs	Hexachlorocyclopentadiene	**UJ**

6.0 Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

No

Sample ID	Parameter	Surrogate	Recovery	Criteria
OP30628-MB	SVOCs	Terphenyl-d_{14}	**171**	30-130
OP30628-BS	SVOCs	Terphenyl-d_{14}	**156**	30-130

OP30628-MB and OP30628-BS are quality control samples and are not qualified. 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?

Yes

Field ID	Field Duplicate ID
GWP-28-60-ROX-100912	GWP-28-60-ROX-100912-Dup

Were field duplicate sample RPDs within evaluation criteria?

Yes

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

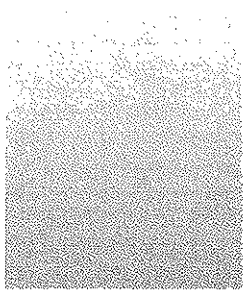
Were additional qualifications applied?

Yes, the initial calibration verification for acetone exceeded 50 percent difference (%D); acetone in associated samples was qualified as summarized in the following table.

Sample ID	Parameter	Analyte	Qualification
GWP-28-40-ROX-100912	VOCs	Acetone	**UJ**
GWP-28-60-ROX-100912	VOCs	Acetone	**UJ**
GWP-28-60-ROX-100912-Dup	VOCs	Acetone	**UJ**

New England ACCUTEST LABORATORIES

11/13/12



Technical Report for

Shell Oil

URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, Il

21562735.00015

Accutest Job Number: MC14777

Sampling Date: 10/09/12

Report to:

URS Corporation

elizabeth.kunkel@URS.com

ATTN: Elizabeth Kunkel

Total number of pages in report: 90

Reviewed
on
11/13/2012

Reza Pand
Lab Director

ACCREDITED IN ACCORDANCE WITH nelac

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.

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) WI (399080220) ISO 17025:2005 (L2235)

Sections: 1 2 3 4 5 6 7 8

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Sample Summary

Shell Oil

Job No: MC14777

URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL
Project No: 21562735.00015

Sample Number	Collected Date	Time By	Received	Matrix Code	Matrix Type	Client Sample ID
MC14777-1	10/09/12	14:45 NM	10/10/12	AQ	Ground Water	GWP-28-40-ROX-100912
MC14777-2	10/09/12	16:25 NM	10/10/12	AQ	Ground Water	GWP-28-60-ROX-100912
MC14777-3	10/09/12	00:00 NM	10/10/12	AQ	Trip Blank Water	TB-100912-HCL
MC14777-4	10/09/12	00:00 NM	10/10/12	AQ	Trip Blank Water	TB-100912-ST
MC14777-5	10/09/12	16:25 NM	10/10/12	AQ	Ground Water	GWP-28-60-ROX-100912-DUP

ACCUTEST LABORATORIES

2

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	Shell Oil	**Job No**	MC14777
Site:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characteriz	**Report Date**	10/25/2012 11:22:38 AM

3 Sample(s). 2 Trip Blank(s) were collected on 10/09/2012 and were received at Accutest on 10/10/2012 properly preserved, at 2.9 Deg. C and intact. These Samples received an Accutest job number of MC14777. 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:** MSH1895

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC14860-5MS, MC14860-5MSD 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 are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for 2-Butanone (MEK), 2-Chloroethyl vinyl ether, Acetone, 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-Butanone (MEK), 2-Chloroethyl vinyl ether, Acetone are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.

Matrix AQ **Batch ID:** MSN2594

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC14934-4MS, MC14934-4MSD were used as the QC samples indicated.
- MS/MSD Recovery(s) for Dichlorodifluoromethane are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- MSN2594-BS for Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.
- MC14934-4MS/MSD for Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.
- Initial calibration verification standard MSN2591-ICV2591 for acetone exceed 50% difference (response bias high).

Extractables by GCMS By Method SW846 8270C

Matrix AQ	Batch ID: OP30628

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC14800-6MS, MC14800-6MSD were used as the QC samples indicated.
- Blank Spike Recovery(s) for Aniline are outside control limits. Blank Spike meets program technical requirements.
- MS/MSD Recovery(s) for Aniline are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Blank Spike Recovery(s) for bis(2-Ethylhexyl)phtbalate, Butyl benzyl phthalate, Di-n-octyl phthalate are outside control limits. Associated samples are non-detect for this compound.
- OP30628-MB, OP30628-BS for Terphenyl-d14: Outside control limits. Associated target analytes are non-detect.
- RPD of OP30628-BSD for 2,4-Dimethylphenol, 4-Chloroaniline, Hexachlorocyclopentadiene, 3-Nitroaniline: Outside control limits. Blank Spike meets program technical requirements.
- RPD of OP30628-BSD for Di-n-octyl phthalate, Di-n-octyl phthalate, bis(2-Ethylhexyl)phthalate: Outside control limits. Associated samples are non-detect for this compound.
- OP30628-MS/MSD for Di-n-octyl phthalate: Outside control limits. Associated samples are non-detect for this compound.
- Calibration standard MSW254-ICC254, MSW254-ICV254, MSW264-CC254, MSW267-CC254 is not associated with this job.
- Blank 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: OP30629

- 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) MC14800-7MS, MC14800-7MSD were used as the QC samples indicated.

Volatiles by GC By Method SW846 8011

Matrix AQ	Batch ID: OP30666

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC14930-4MS, MC14930-4MSD 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(MC14777).

Summary of Hits

Job Number: MC14777
Account: Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL
Collected: 10/09/12

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
MC14777-1	GWP-28-40-ROX-100912					
Methyl Tert Butyl Ether		6.1	1.0	0.41	ug/l	SW846 8260B
MC14777-2	GWP-28-60-ROX-100912					
Methyl Tert Butyl Ether		3.2	1.0	0.41	ug/l	SW846 8260B
MC14777-3	TB-100912-HCL					
No hits reported in this sample.						
MC14777-4	TB-100912-ST					
No hits reported in this sample.						
MC14777-5	GWP-28-60-ROX-100912-DUP					
Methyl Tert Butyl Ether		3.2	1.0	0.41	ng/l	SW846 8260B

New England ACCUTEST LABORATORIES

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Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	GWP-28-40-ROX-100912		
Lab Sample ID:	MC14777-1	Date Sampled:	10/09/12
Matrix:	AQ - Ground Water	Date Received:	10/10/12
Method:	SW846 8260B	Percent Solids:	n/a
Project:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N68973.D	1	10/23/12	JP	n/a	n/a	MSN2594
Run #2							

	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	3.0	ug/l	UJ
107-02-8	Acrolein	ND	25	10	ug/l	
107-13-1	Acrylonitrile	ND	5.0	3.2	ug/l	
71-43-2	Benzene	ND	0.50	0.24	ug/l	
108-86-1	Bromobeuzene	ND	5.0	0.62	ug/l	
74-97-5	Bromochloromethane	ND	5.0	1.2	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.78	ug/l	
74-83-9	Bromomethane	ND	2.0	1.0	ug/l	
78-93-3	2-Butanoue (MEK)	ND	5.0	2.4	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	0.68	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	0.55	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	0.64	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.61	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.87	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.47	ug/l	
75-00-3	Chloroethane	ND	2.0	0.50	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	0.78	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	2.0	0.73	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	0.65	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	0.48	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.53	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.93	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.45	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.64	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.7	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.62	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.63	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.41	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.64	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.95	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:	GWP-28-40-ROX-100912		
Lab Sample ID:	MC14777-1	**Date Sampled:**	10/09/12
Matrix:	AQ - Ground Water	**Date Received:**	10/10/12
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2.0	0.72	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	0.64	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	1.6	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	0.91	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.45	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.20	ug/l	
123-91-1	1,4-Dioxane	ND	25	15	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	0.81	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.51	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	2.1	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	0.50	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	0.57	ug/l	
1634-04-4	Methyl Tert Butyl Ether	6.1	1.0	0.41	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	2.9	ug/l	
74-95-3	Methylene bromide	ND	5.0	1.1	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.83	ug/l	
91-20-3	Naphthalene	ND	5.0	0.44	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	0.58	ug/l	
100-42-5	Styrene	ND	5.0	0.45	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	0.57	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.60	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.42	ug/l	
108-88-3	Toluene	ND	1.0	0.51	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	1.3	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.85	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.50	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.78	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.29	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.85	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.35	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.47	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.63	ug/l	
	m,p-Xylene	ND	1.0	0.73	ug/l	
95-47-6	o-Xylene	ND	1.0	0.58	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.58	ug/l	

ND = Not detected MDL - Method Detection 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:	GWP-28-40-ROX-100912		
Lab Sample ID:	MC14777-1	**Date Sampled:**	10/09/12
Matrix:	AQ - Ground Water	**Date Received:**	10/10/12
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	87%		70-130%
2037-26-5	Toluene-D8	85%		70-130%
460-00-4	4-Bromofluorobenzene	111%		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
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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:	GWP-28-40-ROX-100912		
Lab Sample ID:	MC14777-1	**Date Sampled:**	10/09/12
Matrix:	AQ - Ground Water	**Date Received:**	10/10/12
Method:	SW846 8270C SW846 3510C	**Percent Solids:**	n/a
Project:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W5861.D	1	10/15/12	KR	10/10/12	OP30628	MSW266
Run #2							

	Initial Volume	Final Volume
Run #1	940 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	
95-57-8	2-Chlorophenol	ND	5.3	0.43	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	11	0.40	ug/l	
120-83-2	2,4-Dichlorophenol	ND	11	0.40	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	0.80	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	0.68	ug/l	
108-95-2	Phenol	ND	5.3	0.99	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	11	0.52	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	11	0.38	ug/l	
62-53-3	Aniline	ND	11	2.1	ug/l	J
101-55-3	4-Bromophenyl phenyl ether	ND	5.3	0.35	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	0.95	ug/l	
132-64-9	Dibenzofuran	ND	2.1	0.23	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.3	0.38	ng/l	
117-84-0	Di-n-octyl phthalate	ND	5.3	0.25	ug/l	

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N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GWP-28-40-ROX-100912		
Lab Sample ID:	MC14777-1	Date Sampled:	10/09/12
Matrix:	AQ - Ground Water	Date Received:	10/10/12
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), 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	ND	2.1	0.40	ug/l	UJ
118-74-1	Hexachlorobenzene	ND	5.3	0.26	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	11	5.3	ug/l	UJ
67-72-1	Hexachloroethane	ND	5.3	2.1	ug/l	
78-59-1	Isophorone	ND	5.3	0.34	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	0.26	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.3	0.63	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	51%		15-110%
4165-62-2	Phenol-d5	34%		15-110%
118-79-6	2,4,6-Tribromophenol	90%		15-110%
4165-60-0	Nitrobenzene-d5	89%		30-130%
321-60-8	2-Fluorobiphenyl	69%		30-130%
1718-51-0	Terphenyl-d14	70%		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 componnd

Report of Analysis

Client Sample ID:	GWP-28-40-ROX-100912		
Lab Sample ID:	MC14777-1	**Date Sampled:**	10/09/12
Matrix:	AQ - Ground Water	**Date Received:**	10/10/12
Method:	SW846 8270C BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F58297.D	1	10/12/12	KR	10/10/12	OP30629	MSF2754
Run #2							

	Initial Volume	Final Volume
Run #1	940 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.11	0.014	ug/l	
208-96-8	Acenaphthylene	ND	0.11	0.014	ug/l	
120-12-7	Anthracene	ND	0.11	0.019	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.053	0.032	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.11	0.019	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.053	0.025	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.11	0.040	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.11	0.062	ug/l	
218-01-9	Chrysene	ND	0.11	0.077	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.11	0.044	ug/l	
206-44-0	Fluoranthene	ND	0.11	0.035	ug/l	
86-73-7	Fluorene	ND	0.11	0.049	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.11	0.049	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.21	0.15	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.21	0.055	ug/l	
85-01-8	Phenanthrene	ND	0.053	0.013	ug/l	
129-00-0	Pyrene	ND	0.11	0.038	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	83%		30-130%
321-60-8	2-Fluorobiphenyl	62%		30-130%
1718-51-0	Terphenyl-d14	79%		30-130%

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:	GWP-28-40-ROX-100912		
Lab Sample ID:	MC14777-1	**Date Sampled:**	10/09/12
Matrix:	AQ - Ground Water	**Date Received:**	10/10/12
Method:	SW846 8011 SW846 8011	**Percent Solids:**	n/a
Project:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BK17939.D	1	10/18/12	AP	10/12/12	OP30666	GBK660
Run #2							

	Initial Volume	Final Volume
Run #1	35.8 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	0.013	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.015	0.010	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	74%		36-173%
460-00-4	Bromofluorobenzene (S)	91%		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:	GWP-28-60-ROX-100912		
Lab Sample ID:	MC14777-2	Date Sampled:	10/09/12
Matrix:	AQ - Ground Water	Date Received:	10/10/12
Method:	SW846 8260B	Percent Solids:	n/a
Project:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N68974.D	1	10/23/12	JP	n/a	n/a	MSN2594
Run #2							

	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	3.0	ug/l	UJ
107-02-8	Acrolein	ND	25	10	ug/l	
107-13-1	Acrylonitrile	ND	5.0	3.2	ug/l	
71-43-2	Benzene	ND	0.50	0.24	ug/l	
108-86-1	Bromobenzene	ND	5.0	0.62	ug/l	
74-97-5	Bromochloromethane	ND	5.0	1.2	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.78	ug/l	
74-83-9	Bromomethane	ND	2.0	1.0	ng/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.4	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	0.68	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	0.55	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	0.64	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.61	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.87	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.47	ug/l	
75-00-3	Chloroethane	ND	2.0	0.50	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	0.78	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	2.0	0.73	ug/l	
95-49-8	o-Chlorotolnene	ND	5.0	0.65	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	0.48	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.53	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.93	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.45	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.64	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.7	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.62	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.63	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.41	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.64	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.95	ug/l	

ND = Not detected MDL - Method Detection Limit
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:	GWP-28-60-ROX-100912		
Lab Sample ID:	MC14777-2	**Date Sampled:**	10/09/12
Matrix:	AQ - Ground Water	**Date Received:**	10/10/12
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2.0	0.72	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	0.64	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	1.6	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	0.91	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.45	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.20	ug/l	
123-91-1	1,4-Dioxane	ND	25	15	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	0.81	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.51	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	2.1	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	0.50	ng/l	
99-87-6	p-Isopropyltoluene	ND	5.0	0.57	ug/l	
1634-04-4	Methyl Tert Butyl Ether	3.2	1.0	0.41	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	2.9	ug/l	
74-95-3	Methylene bromide	ND	5.0	1.1	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.83	ug/l	
91-20-3	Naphthalene	ND	5.0	0.44	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	0.58	ug/l	
100-42-5	Styrene	ND	5.0	0.45	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	0.57	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.60	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.42	ug/l	
108-88-3	Toluene	ND	1.0	0.51	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	1.3	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.85	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.50	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.78	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.29	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.85	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.35	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.47	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.63	ug/l	
	m,p-Xylene	ND	1.0	0.73	ug/l	
95-47-6	o-Xylene	ND	1.0	0.58	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.58	ug/l	

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

Report of Analysis

Client Sample ID:	GWP-28-60-ROX-100912		
Lab Sample ID:	MC14777-2	**Date Sampled:**	10/09/12
Matrix:	AQ - Ground Water	**Date Received:**	10/10/12
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	86%		70-130%
2037-26-5	Toluene-D8	86%		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:	GWP-28-60-ROX-100912		
Lab Sample ID:	MC14777-2	**Date Sampled:**	10/09/12
Matrix:	AQ - Ground Water	**Date Received:**	10/10/12
Method:	SW846 8270C SW846 3510C	**Percent Solids:**	n/a
Project:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W5859.D	1	10/15/12	KR	10/10/12	OP30628	MSW266
Run #2							

	Initial Volume	Final Volume
Run #1	920 ml	1.0 ml
Run #2		

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	11	1.3	ug/l	
95-57-8	2-Chlorophenol	ND	5.4	0.44	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	11	0.41	ug/l	
120-83-2	2,4-Dichlorophenol	ND	11	0.41	ug/l	
105-67-9	2,4-Dimethylphenol	ND	11	3.0	ug/l	
51-28-5	2,4-Dinitrophenol	ND	22	1.5	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	11	5.4	ug/l	
95-48-7	2-Methylphenol	ND	11	0.66	ug/l	
	3&4-Methylphenol	ND	11	0.82	ug/l	
88-75-5	2-Nitrophenol	ND	11	0.51	ug/l	
100-02-7	4-Nitrophenol	ND	22	3.0	ug/l	
87-86-5	Pentachlorophenol	ND	11	0.69	ug/l	
108-95-2	Phenol	ND	5.4	1.0	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	11	0.53	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	11	0.38	ug/l	
62-53-3	Aniline	ND	11	2.2	ug/l	J
101-55-3	4-Bromophenyl phenyl ether	ND	5.4	0.36	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.4	0.29	ug/l	
100-51-6	Benzyl Alcohol	ND	11	0.28	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.4	0.19	ug/l	
106-47-8	4-Chloroaniline	ND	11	0.69	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.4	0.24	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.4	0.41	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.4	0.31	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.4	0.32	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.4	0.23	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	11	2.2	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	11	0.23	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.4	0.97	ug/l	
132-64-9	Dibenzofuran	ND	2.2	0.23	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.4	0.39	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.4	0.26	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:	GWP-28-60-ROX-100912		
Lab Sample ID:	MC14777-2	Date Sampled:	10/09/12
Matrix:	AQ - Ground Water	Date Received:	10/10/12
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
84-66-2	Diethyl phthalate	ND	5.4	0.21	ug/l	
131-11-3	Dimethyl phthalate	ND	5.4	5.4	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.2	0.41	ug/l	UJ
118-74-1	Hexachlorobenzene	ND	5.4	0.27	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	11	5.4	ug/l	UJ
67-72-1	Hexachloroethane	ND	5.4	2.2	ug/l	
78-59-1	Isophorone	ND	5.4	0.35	ug/l	
88-74-4	2-Nitroaniline	ND	11	0.25	ug/l	
99-09-2	3-Nitroaniline	ND	11	0.28	ug/l	
100-01-6	4-Nitroaniline	ND	11	2.2	ug/l	
98-95-3	Nitrobenzene	ND	5.4	0.26	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.4	0.64	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.4	0.30	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.4	0.47	ug/l	
110-86-1	Pyridine	ND	11	5.4	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	54%		15-110%
4165-62-2	Phenol-d5	37%		15-110%
118-79-6	2,4,6-Tribromophenol	91%		15-110%
4165-60-0	Nitrobenzene-d5	93%		30-130%
321-60-8	2-Fluorobiphenyl	83%		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	

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:	GWP-28-60-ROX-100912		
Lab Sample ID:	MC14777-2	Date Sampled:	10/09/12
Matrix:	AQ - Ground Water	Date Received:	10/10/12
Method:	SW846 8270C BY SIM SW846 3510C	Percent Solids:	n/a
Project:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F58295.D	1	10/12/12	KR	10/10/12	OP30629	MSF2754
Run #2							

	Initial Volume	Final Volume
Run #1	920 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.11	0.015	ug/l	
208-96-8	Acenaphthylene	ND	0.11	0.014	ug/l	
120-12-7	Anthracene	ND	0.11	0.019	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.054	0.033	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.11	0.019	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.054	0.026	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.11	0.041	ug/l	
207-08-9	Benzo(k)flnoranthene	ND	0.11	0.064	ug/l	
218-01-9	Chrysene	ND	0.11	0.079	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.11	0.045	ug/l	
206-44-0	Fluoranthene	ND	0.11	0.035	ug/l	
86-73-7	Fluorene	ND	0.11	0.050	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.11	0.050	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.22	0.15	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.22	0.056	ug/l	
85-01-8	Phenanthrene	ND	0.054	0.014	ug/l	
129-00-0	Pyrene	ND	0.11	0.039	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	86%		30-130%
321-60-8	2-Fluorobiphenyl	75%		30-130%
1718-51-0	Terphenyl-d14	105%		30-130%

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:	GWP-28-60-ROX-100912		
Lab Sample ID:	MC14777-2	**Date Sampled:**	10/09/12
Matrix:	AQ - Ground Water	**Date Received:**	10/10/12
Method:	SW846 8011 SW846 8011	**Percent Solids:**	n/a
Project:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BK17940.D	1	10/18/12	AP	10/12/12	OP30666	GBK660
Run #2							

	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	0.012	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.014	0.0099	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	120%		36-173%
460-00-4	Bromofluorobenzene (S)	128%		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:	TB-100912-HCL		
Lab Sample ID:	MC14777-3	**Date Sampled:**	10/09/12
Matrix:	AQ - Trip Blank Water	**Date Received:**	10/10/12
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H57783.D	1	10/22/12	JS	n/a	n/a	MSH1895
Run #2							

	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	3.0	ug/l	
107-02-8	Acrolein	ND	25	10	ug/l	
107-13-1	Acrylonitrile	ND	5.0	3.2	ug/l	
71-43-2	Benzene	ND	0.50	0.24	ug/l	
108-86-1	Bromobenzene	ND	5.0	0.62	ug/l	
74-97-5	Bromochloromethane	ND	5.0	1.2	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.78	ug/l	
74-83-9	Bromomethane	ND	2.0	1.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.4	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	0.68	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	0.55	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	0.64	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.61	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.87	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.47	ug/l	
75-00-3	Chloroethane	ND	2.0	0.50	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	0.78	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	2.0	0.73	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	0.65	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	0.48	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.53	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.93	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.45	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.64	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.7	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.62	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.63	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.41	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.64	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.95	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-100912-HCL		
Lab Sample ID:	MC14777-3	**Date Sampled:**	10/09/12
Matrix:	AQ - Trip Blank Water	**Date Received:**	10/10/12
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, 1L		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2.0	0.72	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	0.64	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	1.6	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	0.91	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.45	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.20	ug/l	
123-91-1	1,4-Dioxane	ND	25	15	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	0.81	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.51	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	2.1	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	0.50	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	0.57	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.41	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	2.9	ug/l	
74-95-3	Methylene bromide	ND	5.0	1.1	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.83	ug/l	
91-20-3	Naphthalene	ND	5.0	0.44	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	0.58	ug/l	
100-42-5	Styrene	ND	5.0	0.45	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	0.57	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.60	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.42	ug/l	
108-88-3	Toluene	ND	1.0	0.51	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	1.3	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.85	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.50	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.78	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.29	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.85	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.35	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.47	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.63	ug/l	
	m,p-Xylene	ND	1.0	0.73	ug/l	
95-47-6	o-Xylene	ND	1.0	0.58	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.58	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-100912-HCL		
Lab Sample ID:	MC14777-3	**Date Sampled:**	10/09/12
Matrix:	AQ - Trip Blank Water	**Date Received:**	10/10/12
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		70-130%
2037-26-5	Toluene-D8	102%		70-130%
460-00-4	4-Bromofluorobenzene	102%		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-100912-ST		
Lab Sample ID:	MC14777-4	**Date Sampled:**	10/09/12
Matrix:	AQ - Trip Blank Water	**Date Received:**	10/10/12
Method:	SW846 8011 SW846 8011	**Percent Solids:**	n/a
Project:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BK17941.D	1	10/18/12	AP	10/12/12	OP30666	GBK660
Run #2							

	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	0.012	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.015	0.010	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	83%		36-173%
460-00-4	Bromofluorobenzene (S)	93%		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:	GWP-28-60-ROX-100912-DUP		
Lab Sample ID:	MC14777-5	**Date Sampled:**	10/09/12
Matrix:	AQ - Ground Water	**Date Received:**	10/10/12
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N68975.D	1	10/23/12	JP	n/a	n/a	MSN2594
Run #2							

	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	3.0	ug/l	UJ
107-02-8	Acrolein	ND	25	10	ug/l	
107-13-1	Acrylonitrile	ND	5.0	3.2	ug/l	
71-43-2	Benzene	ND	0.50	0.24	ug/l	
108-86-1	Bromobenzene	ND	5.0	0.62	ug/l	
74-97-5	Bromochloromethane	ND	5.0	1.2	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.78	ug/l	
74-83-9	Bromomethane	ND	2.0	1.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.4	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	0.68	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	0.55	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	0.64	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.61	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.87	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.47	ug/l	
75-00-3	Chloroethane	ND	2.0	0.50	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	0.78	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	2.0	0.73	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	0.65	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	0.48	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.53	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.93	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.45	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.64	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.7	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.62	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.63	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.41	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.64	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.95	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:	GWP-28-60-ROX-100912-DUP		
Lab Sample ID:	MC14777-5	**Date Sampled:**	10/09/12
Matrix:	AQ - Ground Water	**Date Received:**	10/10/12
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2.0	0.72	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	0.64	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	1.6	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	0.91	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.45	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.20	ug/l	
123-91-1	1,4-Dioxane	ND	25	15	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	0.81	ug/l	
100-41-4	Ethylbeuzene	ND	1.0	0.51	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	2.1	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	0.50	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	0.57	ug/l	
1634-04-4	Methyl Tert Butyl Ether	3.2	1.0	0.41	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	2.9	ug/l	
74-95-3	Methylene hromide	ND	5.0	1.1	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.83	ug/l	
91-20-3	Naphthalene	ND	5.0	0.44	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	0.58	ug/l	
100-42-5	Styrene	ND	5.0	0.45	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	0.57	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.60	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.42	ug/l	
108-88-3	Toluene	ND	1.0	0.51	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	1.3	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.85	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.50	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.78	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.29	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.85	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.35	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.47	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.63	ug/l	
	m,p-Xylene	ND	1.0	0.73	ug/l	
95-47-6	o-Xylene	ND	1.0	0.58	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.58	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:	GWP-28-60-ROX-100912-DUP		
Lab Sample ID:	MC14777-5	**Date Sampled:**	10/09/12
Matrix:	AQ - Ground Water	**Date Received:**	10/10/12
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	87%		70-130%
2037-26-5	Toluene-D8	87%		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:	GWP-28-60-ROX-100912-DUP		
Lab Sample ID:	MC14777-5	Date Sampled:	10/09/12
Matrix:	AQ - Ground Water	Date Received:	10/10/12
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W5860.D	1	10/15/12	KR	10/10/12	OP30628	MSW266
Run #2							

	Initial Volume	Final Volume
Run #1	900 ml	1.0 ml
Run #2		

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	11	1.3	ug/l	
95-57-8	2-Chlorophenol	ND	5.6	0.45	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	11	0.42	ug/l	
120-83-2	2,4-Dichlorophenol	ND	11	0.42	ug/l	
105-67-9	2,4-Dimethylphenol	ND	11	3.0	ug/l	
51-28-5	2,4-Dinitrophenol	ND	22	1.5	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	11	5.6	ug/l	
95-48-7	2-Methylphenol	ND	11	0.67	ug/l	
	3&4-Methylphenol	ND	11	0.84	ug/l	
88-75-5	2-Nitrophenol	ND	11	0.53	ug/l	
100-02-7	4-Nitrophenol	ND	22	3.1	ug/l	
87-86-5	Pentachlorophenol	ND	11	0.71	ug/l	
108-95-2	Phenol	ND	5.6	1.0	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	11	0.55	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	11	0.39	ug/l	
62-53-3	Aniline	ND	11	2.2	ug/l	UJ
101-55-3	4-Bromophenyl phenyl ether	ND	5.6	0.36	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.6	0.29	ug/l	
100-51-6	Benzyl Alcohol	ND	11	0.29	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.6	0.20	ug/l	
106-47-8	4-Chloroaniline	ND	11	0.70	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.6	0.24	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.6	0.42	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.6	0.32	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.6	0.32	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.6	0.24	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	11	2.2	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	11	0.23	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.6	0.99	ug/l	
132-64-9	Dibenzofuran	ND	2.2	0.24	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.6	0.40	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.6	0.26	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:	GWP-28-60-ROX-100912-DUP		
Lab Sample ID:	MC14777-5	Date Sampled:	10/09/12
Matrix:	AQ - Ground Water	Date Received:	10/10/12
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
84-66-2	Diethyl phthalate	ND	5.6	0.21	ug/l	
131-11-3	Dimethyl phthalate	ND	5.6	5.6	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.2	0.42	ug/l	UJ
118-74-1	Hexachlorobenzene	ND	5.6	0.28	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	11	5.6	ug/l	UJ
67-72-1	Hexachloroethane	ND	5.6	2.2	ug/l	
78-59-1	Isophorone	ND	5.6	0.35	ug/l	
88-74-4	2-Nitroaniline	ND	11	0.25	ug/l	
99-09-2	3-Nitroaniline	ND	11	0.28	ug/l	
100-01-6	4-Nitroaniline	ND	11	2.2	ug/l	
98-95-3	Nitrobenzene	ND	5.6	0.27	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.6	0.66	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.6	0.31	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.6	0.48	ug/l	
110-86-1	Pyridine	ND	11	5.6	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	58%		15-110%
4165-62-2	Phenol-d5	40%		15-110%
118-79-6	2,4,6-Trihromophenol	98%		15-110%
4165-60-0	Nitrobenzene-d5	90%		30-130%
321-60-8	2-Fluorobiphenyl	77%		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	

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:	GWP-28-60-ROX-100912-DUP		
Lab Sample ID:	MC14777-5	**Date Sampled:**	10/09/12
Matrix:	AQ - Ground Water	**Date Received:**	10/10/12
Method:	SW846 8270C BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F58296.D	1	10/12/12	KR	10/10/12	OP30629	MSF2754
Run #2							

	Initial Volume	Final Volume
Run #1	900 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.11	0.015	ug/l	
208-96-8	Acenaphthylene	ND	0.11	0.015	ug/l	
120-12-7	Anthracene	ND	0.11	0.020	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.056	0.033	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.11	0.019	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.056	0.026	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.11	0.042	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.11	0.065	ug/l	
218-01-9	Chrysene	ND	0.11	0.081	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.11	0.046	ug/l	
206-44-0	Fluoranthene	ND	0.11	0.036	ug/l	
86-73-7	Fluorene	ND	0.11	0.051	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.11	0.051	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.22	0.16	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.22	0.058	ug/l	
85-01-8	Phenanthrene	ND	0.056	0.014	ug/l	
129-00-0	Pyrene	ND	0.11	0.039	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	83%		30-130%
321-60-8	2-Fluorobiphenyl	69%		30-130%
1718-51-0	Terphenyl-d14	103%		30-130%

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:	GWP-28-60-ROX-100912-DUP		
Lab Sample ID:	MC14777-5	Date Sampled:	10/09/12
Matrix:	AQ - Ground Water	Date Received:	10/10/12
Method:	SW846 8011 SW846 8011	Percent Solids:	n/a
Project:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BK17942.D	1	10/18/12	AP	10/12/12	OP30666	GBK660
Run #2							

	Initial Volume	Final Volume
Run #1	35.8 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	0.013	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.015	0.010	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	82%		36-173%
460-00-4	Bromofluorobenzene (S)	89%		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

New England ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

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

ACCUTEST. LABORATORIES

CHAIN OF CUSTODY

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

PAGE 1 OF 1

FED EX Tracking #: 8007 7532 1429
Bottle Order Control #:
Accutest Quote #:
Accutest Job #: MC14777

Client / Reporting Information

- Company Name: URS Corporation
- Street Address: 1001 Highlands Plaza D. W
- City / State / Zip: St. Louis MO 63110
- Project Contact: Elizabeth Knukel
- E-mail:
- Phone #: 314-429-0100
- Fax #:
- Sampler(s) Name(s): McNulten
- Phone #:

Project Information

- Project Name: Roxana-Groundwater Profiling (Add'l GW Characterization)
- Street:
- City:
- Project #: 21562735.00015
- Client PO#:
- Project Manager: Bob Mooshegian

Billing Information (If different from Report to)

- Company Name:
- Street Address:
- City / State / Zip:
- Attention:
- PO#:

Requested Analysis (see TEST CODE sheet)

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Date	Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	~~Bisulfate~~ Sod Thio	VOC 8260B (HCL) SL+TICs	VOC 8011 (Sod Thio) SL	SVOC 8270C (None) SL+TICs	PAH 8270 LL (None)	LAB USE ONLY
-1	GWP-28-40-ROX-100912		10/9/12	1445	NM	GW	6	2				2				2	X	X	X	X	
-2	GWP-28-60-ROX-100912		10/9/12	1625	NM	GW	6	2				2				2	X	X	X	X	
-3	TB-100912-HCL		10/9/12	0000	NM	TB	2	2									X				
-4	TB-100912-ST		10/9/12	0000	NM	TB	2									2		X			
-5	GWP-28-60-ROX-100912-DUP		10/9/12	1625	NM	GW	6	2				2				2	X	X	X	X	
																					16AA, 1L1

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

Turnaround Time (Business days)

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

Emergency & Rush T/A data available VIA Lablink

Approved By (Accutest PM) / Date:

Data Deliverable Information

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

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

Comments / Special Instructions

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

Relinquished by Sampler	Date Time	Received By	Relinquished By	Date Time	Received By
1 [signature]	10/9/12 1845	1 Fed EX	2 FX	10-10-12 930	2 [signature]
3		3	4		4

Relinquished by	Date Time	Received By	Custody Seal #	Intact / Not intact	Preserved where applicable	On Ice	Cooler Temp
5		5		☐ Intact ☐ Not intact	☐		2.9

5.1

5

MC14777: Chain of Custody
Page 1 of 2

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC14777 Client: URS Immediate Client Services Action Required: No

Date / Time Received: 10/10/2012 Delivery Method: Client Service Action Required at Login: No

Project: ROXANA GW PROFILING 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.	Infared 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

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MC14777: Chain of Custody
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Internal Sample Tracking Chronicle

Shell Oil

Job No: MC14777

URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL
Project No: 21562735.00015

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
MC14777-1	Collected: 09-OCT-12 14:45 By: NM		Received: 10-OCT-12		By:	
GWP-28-40-ROX-100912						
MC14777-1	SW846 8270C BY SIM	12-OCT-12 16:16	KR	10-OCT-12	MT	B8270SIMPAH
MC14777-1	SW846 8270C	15-OCT-12 18:21	KR	10-OCT-12	AJ	AB8270SL+
MC14777-1	SW846 8011	18-OCT-12 13:19	AP	12-OCT-12	AJ	V8011SL
MC14777-1	SW846 8260B	23-OCT-12 16:05	JP			V8260SL+
MC14777-2	Collected: 09-OCT-12 16:25 By: NM		Received: 10-OCT-12		By:	
GWP-28-60-ROX-100912						
MC14777-2	SW846 8270C BY SIM	12-OCT-12 15:31	KR	10-OCT-12	MT	B8270SIMPAH
MC14777-2	SW846 8270C	15-OCT-12 17:35	KR	10-OCT-12	AJ	AB8270SL+
MC14777-2	SW846 8011	18-OCT-12 13:44	AP	12-OCT-12	AJ	V8011SL
MC14777-2	SW846 8260B	23-OCT-12 16:33	JP			V8260SL+
MC14777-3	Collected: 09-OCT-12 00:00 By: NM		Received: 10-OCT-12		By:	
TB-100912-HCL						
MC14777-3	SW846 8260B	22-OCT-12 11:13	JS			V8260SL+
MC14777-4	Collected: 09-OCT-12 00:00 By: NM		Received: 10-OCT-12		By:	
TB-100912-ST						
MC14777-4	SW846 8011	18-OCT-12 14:09	AP	12-OCT-12	AJ	V8011SL
MC14777-5	Collected: 09-OCT-12 16:25 By: NM		Received: 10-OCT-12		By:	
GWP-28-60-ROX-100912-DUP						
MC14777-5	SW846 8270C BY SIM	12-OCT-12 15:54	KR	10-OCT-12	MT	B8270SIMPAH
MC14777-5	SW846 8270C	15-OCT-12 17:58	KR	10-OCT-12	AJ	AB8270SL+
MC14777-5	SW846 8011	18-OCT-12 14:33	AP	12-OCT-12	AJ	V8011SL
MC14777-5	SW846 8260B	23-OCT-12 17:02	JP			V8260SL+

Accutest Internal Chain of Custody

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL
Received: 10/10/12

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
MC14777-1.1	Walk In Ref #22	Michael Rolo	10/11/12 06:41	Retrieve from Storage
MC14777-1.1	Michael Rolo		10/15/12 21:21	Depleted
MC14777-1.3	VOC Ref #1	Jeremiah Smith	10/22/12 10:12	Retrieve from Storage
MC14777-1.3	Jeremiah Smith	GCMSH	10/22/12 10:12	Load on Instrument
MC14777-1.3	GCMSH	Jeremiah Smith	10/23/12 15:32	Unload from Instrument
MC14777-1.3	Jeremiah Smith	VOC Ref #1	10/23/12 15:32	Return to Storage
MC14777-1.4	VOC Ref #1	Tomasz Torski	10/19/12 11:51	Retrieve from Storage
MC14777-1.4	Tomasz Torski	GCMSP	10/19/12 11:52	Load on Instrument
MC14777-1.4	GCMSP	Tomasz Torski	10/22/12 08:22	Unload from Instrument
MC14777-1.4	Tomasz Torski	VOC Ref #1	10/22/12 08:22	Return to Storage
MC14777-1.5	VOC Ref #1	Nick Krasinski	10/12/12 15:33	Retrieve from Storage
MC14777-1.5	Nick Krasinski		10/15/12 21:21	Depleted
MC14777-1.6	VOC Ref #1	Jugal Patel	10/23/12 12:27	Retrieve from Storage
MC14777-1.6	Jugal Patel	GCMSN	10/23/12 12:27	Load on Instrument
MC14777-1.6	GCMSN	Jugal Patel	10/24/12 11:51	Unload from Instrument
MC14777-1.6	Jugal Patel	VOC Ref #1	10/24/12 11:51	Return to Storage
MC14777-2.2	Walk In Ref #22	Michael Rolo	10/11/12 06:41	Retrieve from Storage
MC14777-2.2	Michael Rolo		10/15/12 21:21	Depleted
MC14777-2.3	VOC Ref #1	Jeremiah Smith	10/22/12 10:12	Retrieve from Storage
MC14777-2.3	Jeremiah Smith	GCMSH	10/22/12 10:12	Load on Instrument
MC14777-2.3	GCMSH	Jeremiah Smith	10/23/12 15:32	Unload from Instrument
MC14777-2.3	Jeremiah Smith	VOC Ref #1	10/23/12 15:32	Return to Storage
MC14777-2.4	VOC Ref #1	Jugal Patel	10/23/12 12:27	Retrieve from Storage
MC14777-2.4	Jugal Patel	GCMSN	10/23/12 12:27	Load on Instrument
MC14777-2.4	GCMSN	Jugal Patel	10/24/12 11:51	Unload from Instrument
MC14777-2.4	Jugal Patel	VOC Ref #1	10/24/12 11:51	Return to Storage
MC14777-2.5	VOC Ref #1	Nick Krasinski	10/12/12 15:33	Retrieve from Storage
MC14777-2.5	Nick Krasinski		10/15/12 21:21	Depleted
MC14777-2.6	VOC Ref #1	Tomasz Torski	10/19/12 11:51	Retrieve from Storage
MC14777-2.6	Tomasz Torski	GCMSP	10/19/12 11:52	Load on Instrument
MC14777-2.6	GCMSP	Tomasz Torski	10/22/12 08:22	Unload from Instrument
MC14777-2.6	Tomasz Torski	VOC Ref #1	10/22/12 08:22	Return to Storage
MC14777-3.1	VOC Ref #1	Jeremiah Smith	10/22/12 10:12	Retrieve from Storage
MC14777-3.1	Jeremiah Smith	GCMSH	10/22/12 10:12	Load on Instrument

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Accutest Internal Chain of Custody

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL
Received: 10/10/12

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
MC14777-3.1	GCMSH	Jeremiah Smith	10/23/12 14:17	Unload from Instrument
MC14777-3.1	Jeremiah Smith	VOC Ref #1	10/23/12 14:18	Return to Storage
MC14777-3.2	VOC Ref #1	Jugal Patel	10/23/12 12:27	Retrieve from Storage
MC14777-3.2	Jugal Patel	GCMSN	10/23/12 12:27	Load on Instrument
MC14777-3.2	GCMSN	Jugal Patel	10/23/12 14:03	Unload from Instrument
MC14777-3.2	Jugal Patel	VOC Ref #1	10/23/12 14:03	Return to Storage
MC14777-4.1	VOC Ref #1	Nick Krasinski	10/12/12 15:33	Retrieve from Storage
MC14777-4.1	Nick Krasinski		10/15/12 21:21	Depleted
MC14777-5.2	Walk In Ref #22	Michael Rolo	10/11/12 06:41	Retrieve from Storage
MC14777-5.2	Michael Rolo		10/15/12 21:21	Depleted
MC14777-5.3	VOC Ref #1	Jugal Patel	10/23/12 14:22	Retrieve from Storage
MC14777-5.3	Jugal Patel	GCMSN	10/23/12 14:23	Load on Instrument
MC14777-5.3	GCMSN	Jugal Patel	10/24/12 11:51	Unload from Instrument
MC14777-5.3	Jugal Patel	VOC Ref #1	10/24/12 11:51	Return to Storage
MC14777-5.4	VOC Ref #1	Jeremiah Smith	10/22/12 10:12	Retrieve from Storage
MC14777-5.4	Jeremiah Smith	GCMSH	10/22/12 10:12	Load on Instrument
MC14777-5.4	GCMSH	Jeremiah Smith	10/23/12 15:32	Unload from Instrument
MC14777-5.4	Jeremiah Smith	VOC Ref #1	10/23/12 15:32	Return to Storage
MC14777-5.5	VOC Ref #1	Nick Krasinski	10/12/12 15:33	Retrieve from Storage
MC14777-5.5	Nick Krasinski		10/15/12 21:21	Depleted
MC14777-5.6	VOC Ref #1	Tomasz Torski	10/19/12 11:51	Retrieve from Storage
MC14777-5.6	Tomasz Torski	GCMSP	10/19/12 11:52	Load on Instrument
MC14777-5.6	GCMSP	Tomasz Torski	10/22/12 08:22	Unload from Instrument
MC14777-5.6	Tomasz Torski	VOC Ref #1	10/22/12 08:22	Return to Storage

5.3

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GC/MS Volatiles

QC Data Summaries

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: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSH1895-MB	H57782.D	1	10/22/12	JS	n/a	n/a	MSHI895

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

MC14777-3

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	3.0	ng/l	
107-02-8	Acrolein	ND	25	10	ug/l	
107-13-1	Acrylonitrile	ND	5.0	3.2	ug/l	
71-43-2	Benzene	ND	0.50	0.24	ug/l	
108-86-1	Bromobenzene	ND	5.0	0.62	ug/l	
74-97-5	Bromochloromethane	ND	5.0	1.2	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.78	ug/l	
74-83-9	Bromomethane	ND	2.0	1.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.4	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	0.68	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	0.55	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	0.64	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.61	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.87	ng/l	
108-90-7	Chlorobenzene	ND	1.0	0.47	ug/l	
75-00-3	Chloroethane	ND	2.0	0.50	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	0.78	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	2.0	0.73	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	0.65	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	0.48	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.53	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.93	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.45	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.64	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.7	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.62	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.63	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.41	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.64	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.95	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	0.72	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	0.64	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	1.6	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	0.91	ug/l	

Method Blank Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSH1895-MB	H57782.D	1	10/22/12	JS	n/a	n/a	MSH1895

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

MC14777-3

CAS No.	Compound	Result	RL	MDL	Units	Q
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.45	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.20	ug/l	
123-91-1	1,4-Dioxane	ND	25	15	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	0.81	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.51	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	2.1	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	0.50	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	0.57	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.41	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	2.9	ug/l	
74-95-3	Methylene bromide	ND	5.0	1.1	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.83	ug/l	
91-20-3	Naphthalene	ND	5.0	0.44	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	0.58	ug/l	
100-42-5	Styrene	ND	5.0	0.45	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	0.57	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.60	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.42	ug/l	
108-88-3	Toluene	ND	1.0	0.51	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	1.3	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.85	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.50	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.78	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.29	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.85	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.35	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.47	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.63	ug/l	
	m,p-Xylene	ND	1.0	0.73	ug/l	
95-47-6	o-Xylene	ND	1.0	0.58	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.58	ug/l	

Method Blank Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSH1895-MB	H57782.D	1	10/22/12	JS	n/a	n/a	MSH1895

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

MC14777-3

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	107%	70-130%
2037-26-5	Toluene-D8	102%	70-130%
460-00-4	4-Bromofluorobenzene	100%	70-130%

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

Method Blank Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2594-MB	N68969.D	1	10/23/12	JP	n/a	n/a	MSN2594

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

MC14777-1, MC14777-2, MC14777-5

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	3.0	ug/l	
107-02-8	Acrolein	ND	25	10	ug/l	
107-13-1	Acrylonitrile	ND	5.0	3.2	ug/l	
71-43-2	Benzene	ND	0.50	0.24	ug/l	
108-86-1	Bromobenzene	ND	5.0	0.62	ug/l	
74-97-5	Bromochloromethane	ND	5.0	1.2	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.78	ug/l	
74-83-9	Bromomethane	ND	2.0	1.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.4	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	0.68	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	0.55	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	0.64	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.61	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.87	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.47	ug/l	
75-00-3	Chloroethane	ND	2.0	0.50	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	0.78	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	2.0	0.73	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	0.65	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	0.48	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.53	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.93	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.45	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.64	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.7	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.62	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.63	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.41	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.64	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.95	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	0.72	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	0.64	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	1.6	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	0.91	ug/l	

Method Blank Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxaua, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2594-MB	N68969.D	1	10/23/12	JP	n/a	n/a	MSN2594

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

MC14777-1, MCI4777-2, MC14777-5

CAS No.	Compouud	Result	RL	MDL	Units	Q
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.45	ug/l	
10061-02-6	traus-1,3-Dichloropropene	ND	0.50	0.20	ug/l	
123-91-1	1,4-Dioxane	ND	25	15	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	0.81	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.51	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	2.1	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	0.50	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	0.57	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.41	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	2.9	ug/l	
74-95-3	Methylene bromide	ND	5.0	1.1	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.83	ug/l	
91-20-3	Naphthalene	ND	5.0	0.44	ug/l	
103-65-1	n-Propylbenzeue	ND	5.0	0.58	ug/l	
100-42-5	Styreue	ND	5.0	0.45	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	0.57	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.60	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.42	ug/l	
108-88-3	Toluene	ND	1.0	0.51	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	1.3	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.85	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.50	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.78	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.29	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.85	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.35	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.47	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.63	ug/l	
	m,p-Xylene	ND	1.0	0.73	ug/l	
95-47-6	o-Xylene	ND	1.0	0.58	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.58	ug/l	

Method Blank Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2594-MB	N68969.D	1	10/23/12	JP	n/a	n/a	MSN2594

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

MC14777-1, MC14777-2, MC14777-5

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	86%	70-130%
2037-26-5	Toluene-D8	86%	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	

6.1.2

Blank Spike Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSH1895-BS	H57779.D	1	10/22/12	JS	n/a	n/a	MSH1895

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

MC14777-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	50	27.5	55* a	70-130
107-02-8	Acrolein	250	290	116	70-130
107-13-1	Acrylonitrile	50	49.4	99	70-130
71-43-2	Benzene	50	50.2	100	70-130
108-86-1	Bromohenzene	50	45.1	90	70-130
74-97-5	Bromochloromethane	50	53.0	106	70-130
75-27-4	Bromodichloromethane	50	58.0	116	70-130
75-25-2	Bromoform	50	62.0	124	70-130
74-83-9	Bromomethane	50	46.6	93	70-130
78-93-3	2-Butanone (MEK)	50	33.9	68* a	70-130
104-51-8	n-Butylbenzene	50	56.3	113	70-130
135-98-8	sec-Butylbenzene	50	47.3	95	70-130
98-06-6	tert-Butylbenzene	50	46.6	93	70-130
75-15-0	Carbon disulfide	50	50.0	100	70-130
56-23-5	Carbon tetrachloride	50	57.4	115	70-130
108-90-7	Chlorobenzene	50	42.9	86	70-130
75-00-3	Chloroethane	50	51.5	103	70-130
110-75-8	2-Chloroethyl vinyl ether	50	57.0	114	70-130
67-66-3	Chloroform	50	57.0	114	70-130
74-87-3	Chloromethane	50	46.1	92	70-130
95-49-8	o-Chlorotoluene	50	45.3	91	70-130
106-43-4	p-Chlorotoluene	50	43.5	87	70-130
124-48-1	Dibromochloromethane	50	50.9	102	70-130
95-50-1	1,2-Dichlorobenzene	50	46.3	93	70-130
541-73-1	1,3-Dichlorobenzene	50	45.4	91	70-130
106-46-7	1,4-Dichlorobenzene	50	48.3	97	70-130
75-71-8	Dichlorodifluoromethane	50	45.7	91	70-130
75-34-3	1,1-Dichloroethane	50	55.1	110	70-130
107-06-2	1,2-Dichloroethane	50	53.1	106	70-130
75-35-4	1,1-Dichloroethene	50	46.5	93	70-130
156-59-2	cis-1,2-Dichloroethene	50	53.7	107	70-130
156-60-5	trans-1,2-Dichloroethene	50	50.2	100	70-130
78-87-5	1,2-Dichloropropane	50	51.9	104	70-130
142-28-9	1,3-Dichloropropane	50	48.6	97	70-130
594-20-7	2,2-Dichloropropane	50	59.5	119	70-130
563-58-6	1,1-Dichloropropene	50	48.9	98	70-130

* = Outside of Control Limits.

6.2.1

Blank Spike Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSH1895-BS	H57779.D	1	10/22/12	JS	n/a	n/a	MSH1895

6.2.1

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

MC14777-3

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	48.6	97	70-130
123-91-1	1,4-Dioxane	250	211	84	70-130
97-63-2	Ethyl methacrylate	50	51.9	104	77-137
100-41-4	Ethylbenzene	50	46.5	93	70-130
87-68-3	Hexachlorobutadiene	50	54.8	110	70-130
591-78-6	2-Hexanone	50	35.4	71	70-130
98-82-8	Isopropylbenzene	50	44.6	89	70-130
99-87-6	p-Isopropyltolnene	50	48.7	97	70-130
1634-04-4	Methyl Tert Butyl Ether	50	52.5	105	70-130
108-10-1	4-Methyl-2-pentanone (MIBK)	50	52.8	106	70-130
74-95-3	Methylene bromide	50	53.7	107	70-130
75-09-2	Methylene chloride	50	52.1	104	70-130
91-20-3	Naphthalene	50	51.5	103	70-130
103-65-1	n-Propylbenzene	50	46.2	92	70-130
100-42-5	Styrene	50	47.7	95	70-130
630-20-6	1,1,1,2-Tetrachloroethane	50	52.3	105	70-130
79-34-5	1,1,2,2-Tetrachloroethane	50	53.3	107	70-130
127-18-4	Tetrachloroethene	50	42.8	86	70-130
108-88-3	Toluene	50	48.2	96	70-130
87-61-6	1,2,3-Trichlorobenzene	50	53.2	106	70-130
120-82-1	1,2,4-Trichlorobenzene	50	51.8	104	70-130
71-55-6	1,1,1-Trichloroethane	50	56.7	113	70-130
79-00-5	1,1,2-Trichloroethane	50	52.4	105	70-130
79-01-6	Trichloroetbene	50	49.4	99	70-130
75-69-4	Trichlorofluorometbane	50	49.9	100	70-130
96-18-4	1,2,3-Trichloropropane	50	52.8	106	70-130
95-63-6	1,2,4-Trimethylbenzene	50	51.2	102	70-130
108-67-8	1,3,5-Trimethylbenzene	50	49.9	100	70-130
108-05-4	Vinyl Acetate	50	60.3	121	70-130
75-01-4	Vinyl chloride	50	53.6	107	70-130
	m,p-Xylene	100	89.6	90	70-130
95-47-6	o-Xylene	50	44.4	89	70-130
1330-20-7	Xylene (total)	150	134	89	70-130

* = Outside of Control Limits.

Blank Spike Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSH1895-BS	H57779.D	1	10/22/12	JS	n/a	n/a	MSH1895

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

MCI4777-3

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	115%	70-130%
2037-26-5	Toluene-D8	103%	70-130%
460-00-4	4-Bromofluorobenzene	95%	70-130%

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

6.2.1

* = Outside of Control Limits.

Blank Spike Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2594-BS	N68967.D	1	10/23/12	JP	n/a	n/a	MSN2594

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

MC14777-1, MC14777-2, MC14777-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	50	47.5	95	70-130
107-02-8	Acrolein	250	179	72	70-130
107-13-1	Acrylonitrile	50	264	528*	70-130
71-43-2	Benzene	50	52.7	105	70-130
108-86-1	Bromobenzene	50	51.4	103	70-130
74-97-5	Bromochloromethane	50	55.3	111	70-130
75-27-4	Bromodichloromethane	50	55.1	110	70-130
75-25-2	Bromoform	50	44.9	90	70-130
74-83-9	Bromomethane	50	62.1	124	70-130
78-93-3	2-Butanone (MEK)	50	52.7	105	70-130
104-51-8	n-Butylbenzene	50	56.2	112	70-130
135-98-8	sec-Butylbenzene	50	56.9	114	70-130
98-06-6	tert-Butylbenzene	50	54.6	109	70-130
75-15-0	Carbon disulfide	50	60.0	120	70-130
56-23-5	Carbon tetrachloride	50	47.3	95	70-130
108-90-7	Chlorobenzene	50	54.8	110	70-130
75-00-3	Chloroethane	50	56.3	113	70-130
110-75-8	2-Chloroethyl vinyl ether	50	54.7	109	70-130
67-66-3	Chloroform	50	55.9	112	70-130
74-87-3	Chloromethane	50	54.1	108	70-130
95-49-8	o-Chlorotoluene	50	55.7	111	70-130
106-43-4	p-Chlorotoluene	50	58.2	116	70-130
124-48-1	Dibromochloromethane	50	48.6	97	70-130
95-50-1	1,2-Dichlorobenzene	50	55.9	112	70-130
541-73-1	1,3-Dichlorobenzene	50	56.3	113	70-130
106-46-7	1,4-Dichlorobenzene	50	53.6	107	70-130
75-71-8	Dichlorodifluoromethane	50	64.5	129	70-130
75-34-3	1,1-Dichloroethane	50	58.8	118	70-130
107-06-2	1,2-Dichloroethane	50	52.4	105	70-130
75-35-4	1,1-Dichloroethene	50	55.7	111	70-130
156-59-2	cis-1,2-Dichloroethene	50	54.0	108	70-130
156-60-5	trans-1,2-Dichloroethene	50	55.5	111	70-130
78-87-5	1,2-Dichloropropane	50	54.7	109	70-130
142-28-9	1,3-Dichloropropane	50	53.2	106	70-130
594-20-7	2,2-Dichloropropane	50	52.8	106	70-130
563-58-6	1,1-Dichloropropene	50	52.8	106	70-130

* = Outside of Control Limits.

6.2.2

Blank Spike Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2594-BS	N68967.D	1	10/23/12	JP	n/a	n/a	MSN2594

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

MC14777-1, MC14777-2, MC14777-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
10061-01-5	cis-1,3-Dichloropropene	50	54.2	108	70-130
10061-02-6	trans-1,3-Dichloropropene	50	50.8	102	70-130
123-91-1	1,4-Dioxane	250	260	104	70-130
97-63-2	Ethyl methacrylate	50	54.2	108	77-137
100-41-4	Ethylbenzene	50	51.8	104	70-130
87-68-3	Hexachlorobutadiene	50	51.6	103	70-130
591-78-6	2-Hexanone	50	46.5	93	70-130
98-82-8	Isopropylbenzene	50	55.7	111	70-130
99-87-6	p-Isopropyltoluene	50	55.1	110	70-130
1634-04-4	Methyl Tert Butyl Ether	50	48.6	97	70-130
108-10-1	4-Methyl-2-pentanone (MIBK)	50	44.5	89	70-130
74-95-3	Methylene bromide	50	54.1	108	70-130
75-09-2	Methylene chloride	50	55.8	112	70-130
91-20-3	Naphthalene	50	51.9	104	70-130
103-65-1	n-Propylbenzene	50	56.9	114	70-130
100-42-5	Styrene	50	53.0	106	70-130
630-20-6	1,1,1,2-Tetrachloroethane	50	52.4	105	70-130
79-34-5	1,1,2,2-Tetrachloroethane	50	53.9	108	70-130
127-18-4	Tetrachloroethene	50	49.3	99	70-130
108-88-3	Toluene	50	53.0	106	70-130
87-61-6	1,2,3-Trichlorobenzene	50	54.0	108	70-130
120-82-1	1,2,4-Trichlorobenzene	50	53.4	107	70-130
71-55-6	1,1,1-Trichloroethane	50	57.0	114	70-130
79-00-5	1,1,2-Trichloroethane	50	53.1	106	70-130
79-01-6	Trichloroethene	50	50.1	100	70-130
75-69-4	Trichlorofluoromethane	50	54.4	109	70-130
96-18-4	1,2,3-Trichloropropane	50	56.3	113	70-130
95-63-6	1,2,4-Trimethylbenzene	50	51.1	102	70-130
108-67-8	1,3,5-Trimethylbenzene	50	50.8	102	70-130
108-05-4	Vinyl Acetate	50	56.8	114	70-130
75-01-4	Vinyl chloride	50	57.1	114	70-130
	m,p-Xylene	100	107	107	70-130
95-47-6	o-Xylene	50	56.0	112	70-130
1330-20-7	Xylene (total)	150	164	109	70-130

* = Outside of Control Limits.

Blank Spike Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSN2594-BS	N68967.D	1	10/23/12	JP	n/a	n/a	MSN2594

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

MC14777-1, MC14777-2, MC14777-5

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	89%	70-130%
2037-26-5	Toluene-D8	85%	70-130%
460-00-4	4-Bromofluorobenzene	86%	70-130%

(a) Outside control limits. Associated samples are non-detect for this compound.

6.2.2

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC14860-5MS	H57799.D	1	10/22/12	JS	n/a	n/a	MSH1895
MC14860-5MSD	H57800.D	1	10/22/12	JS	n/a	n/a	MSH1895
MC14860-5	H57789.D	1	10/22/12	JS	n/a	n/a	MSH1895

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

MC14777-3

CAS No.	Compound	MC14860-5 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND		50	30.4	61* [a]	28.5	57* [a]	6	70-130/30
107-02-8	Acrolein	ND		250	286	114	276	110	4	70-130/30
107-13-1	Acrylonitrile	ND		50	56.5	113	54.4	109	4	70-130/30
71-43-2	Benzene	ND		50	51.6	103	49.2	98	5	70-130/30
108-86-1	Bromobenzene	ND		50	44.8	90	44.2	88	1	70-130/30
74-97-5	Bromochloromethane	ND		50	54.4	109	51.7	103	5	70-130/30
75-27-4	Bromodichloromethane	ND		50	61.8	124	59.3	119	4	70-130/30
75-25-2	Bromoform	ND		50	56.9	114	55.2	110	3	70-130/30
74-83-9	Bromomethane	ND		50	47.4	95	45.5	91	4	70-130/30
78-93-3	2-Butanone (MEK)	ND		50	33.2	66* [a]	33.5	67* [a]	1	70-130/30
104-51-8	n-Butylbenzene	ND		50	57.2	114	55.6	111	3	70-130/30
135-98-8	sec-Butylbenzene	ND		50	47.9	96	46.6	93	3	70-130/30
98-06-6	tert-Butylbenzene	ND		50	49.3	99	48.0	96	3	70-130/30
75-15-0	Carbon disulfide	ND		50	46.4	93	41.7	83	11	70-130/30
56-23-5	Carbon tetrachloride	ND		50	59.8	120	57.9	116	3	70-130/30
108-90-7	Chlorobenzene	ND		50	41.6	83	40.2	80	3	70-130/30
75-00-3	Chloroethane	ND		50	53.7	107	50.2	100	7	70-130/30
110-75-8	2-Chloroethyl vinyl ether	ND		50	8.6	17* [a]	7.8	16* [a]	10	70-130/30
67-66-3	Chloroform	ND		50	62.8	126	59.1	118	6	70-130/30
74-87-3	Chloromethane	ND		50	52.4	105	50.9	102	3	70-130/30
95-49-8	o-Chlorotoluene	ND		50	46.3	93	45.1	90	3	70-130/30
106-43-4	p-Chlorotoluene	ND		50	45.5	91	44.6	89	2	70-130/30
124-48-1	Dibromochloromethane	ND		50	49.1	98	48.1	96	2	70-130/30
95-50-1	1,2-Dichlorobenzene	ND		50	46.1	92	45.9	92	0	70-130/30
541-73-1	1,3-Dichlorobenzene	ND		50	45.2	90	44.5	89	2	70-130/30
106-46-7	1,4-Dichlorobenzene	ND		50	48.2	96	47.6	95	1	70-130/30
75-71-8	Dichlorodifluoromethane	ND		50	52.1	104	50.4	101	3	70-130/30
75-34-3	1,1-Dichloroethane	ND		50	58.9	118	56.1	112	5	70-130/30
107-06-2	1,2-Dichloroethane	ND		50	59.0	118	56.1	112	5	70-130/30
75-35-4	1,1-Dichloroethene	ND		50	46.7	93	44.8	90	4	70-130/30
156-59-2	cis-1,2-Dichloroethene	ND		50	56.1	112	53.1	106	5	70-130/30
156-60-5	trans-1,2-Dichloroethene	ND		50	50.5	101	48.9	98	3	70-130/30
78-87-5	1,2-Dichloropropane	ND		50	55.0	110	53.3	107	3	70-130/30
142-28-9	1,3-Dichloropropane	ND		50	49.7	99	48.8	98	2	70-130/30
594-20-7	2,2-Dichloropropane	ND		50	59.8	120	57.3	115	4	70-130/30
563-58-6	1,1-Dichloropropene	ND		50	51.1	102	49.8	100	3	70-130/30

* = Outside of Control Limits.

6.3.1

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC14860-5MS	H57799.D	1	10/22/12	JS	n/a	n/a	MSH1895
MC14860-5MSD	H57800.D	1	10/22/12	JS	n/a	n/a	MSH1895
MC14860-5	H57789.D	1	10/22/12	JS	n/a	n/a	MSH1895

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

MC14777-3

CAS No.	Compound	MC14860-5 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
10061-01-5	cis-1,3-Dichloropropene	ND		50	51.5	103	49.6	99	4	70-130/30
10061-02-6	trans-1,3-Dichloropropene	ND		50	47.2	94	46.2	92	2	70-130/30
123-91-1	1,4-Dioxane	ND		250	174	70	192	77	10	70-130/30
97-63-2	Ethyl methacrylate	ND		50	51.1	102	51.3	103	0	72-139/30
100-41-4	Ethylbenzene	ND		50	46.0	92	44.3	89	4	70-130/30
87-68-3	Hexachlorobutadiene	ND		50	52.0	104	51.3	103	1	70-130/30
591-78-6	2-Hexanone	ND		50	35.6	71	35.2	70	1	70-130/30
98-82-8	Isopropylbenzene	ND		50	44.5	89	43.9	88	1	70-130/30
99-87-6	p-Isopropyltoluene	ND		50	47.8	96	47.2	94	1	70-130/30
1634-04-4	Methyl Tert Butyl Ether	ND		50	55.6	111	54.5	109	2	70-130/30
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		50	57.4	115	55.7	111	3	70-130/30
74-95-3	Methylene bromide	ND		50	56.5	113	55.2	110	2	70-130/30
75-09-2	Methylene chloride	ND		50	53.9	108	51.9	104	4	70-130/30
91-20-3	Naphthalene	ND		50	50.6	101	51.4	103	2	70-130/30
103-65-1	n-Propylbenzene	ND		50	46.4	93	45.7	91	2	70-130/30
100-42-5	Styrene	ND		50	36.9	74	36.5	73	1	70-130/30
630-20-6	1,1,1,2-Tetrachloroethane	ND		50	50.8	102	49.9	100	2	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	ND		50	56.8	114	56.9	114	0	70-130/30
127-18-4	Tetrachloroethene	ND		50	40.6	81	39.5	79	3	70-130/30
108-88-3	Toluene	ND		50	48.2	96	46.3	93	4	70-130/30
87-61-6	1,2,3-Trichlorobenzene	ND		50	50.3	101	51.3	103	2	70-130/30
120-82-1	1,2,4-Trichlorobenzene	ND		50	49.2	98	48.7	97	1	70-130/30
71-55-6	1,1,1-Trichloroethane	ND		50	62.7	125	59.3	119	6	70-130/30
79-00-5	1,1,2-Trichloroethane	ND		50	53.7	107	52.6	105	2	70-130/30
79-01-6	Trichloroethene	ND		50	52.0	104	49.2	98	6	70-130/30
75-69-4	Trichlorofluoromethane	ND		50	56.6	113	53.1	106	6	70-130/30
96-18-4	1,2,3-Trichloropropane	ND		50	53.9	108	53.5	107	1	70-130/30
95-63-6	1,2,4-Trimethylbenzene	ND		50	46.5	93	46.6	93	0	70-130/30
108-67-8	1,3,5-Trimethylbenzene	ND		50	45.9	92	46.3	93	1	70-130/30
108-05-4	Vinyl Acetate	ND		50	58.0	116	56.2	112	3	70-130/30
75-01-4	Vinyl chloride	ND		50	65.4	131* [a]	59.8	120	9	70-130/30
	m,p-Xylene	ND		100	84.1	84	80.3	80	5	70-130/30
95-47-6	o-Xylene	ND		50	42.1	84	40.5	81	4	70-130/30
1330-20-7	Xylene (total)	ND		150	126	84	121	81	4	70-130/30

* = Outside of Control Limits.

6.3.1

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC14860-5MS	H57799.D	1	10/22/12	JS	n/a	n/a	MSH1895
MC14860-5MSD	H57800.D	1	10/22/12	JS	n/a	n/a	MSH1895
MC14860-5	H57789.D	1	10/22/12	JS	n/a	n/a	MSH1895

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

MC14777-3

CAS No.	Surrogate Recoveries	MS	MSD	MC14860-5	Limits
1868-53-7	Dibromoflnoromethane	121%	118%	117%	70-130%
2037-26-5	Toluene-D8	102%	101%	103%	70-130%
460-00-4	4-Bromofluorobenzene	96%	99%	105%	70-130%

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

6.3.1

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC14934-4MS	N68977.D	5	10/23/12	JP	n/a	n/a	MSN2594
MC14934-4MSD	N68978.D	5	10/23/12	JP	n/a	n/a	MSN2594
MC14934-4	N68971.D	1	10/23/12	JP	n/a	n/a	MSN2594

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

MC14777-1, MC14777-2, MC14777-5

CAS No.	Compound	MC14934-4 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND		250	246	98	252	101	2	70-130/30
107-02-8	Acrolein	ND		1250	908	73	918	73	1	70-130/30
107-13-1	Acrylonitrile	ND		250	1410	564* [a]	1430	572* [a]	1	70-130/30
71-43-2	Benzene	ND		250	271	108	276	110	2	70-130/30
108-86-1	Bromobenzene	ND		250	253	101	264	106	4	70-130/30
74-97-5	Bromochloromethane	ND		250	275	110	280	112	2	70-130/30
75-27-4	Bromodichloromethane	ND		250	276	110	283	113	3	70-130/30
75-25-2	Bromoform	ND		250	216	86	224	90	4	70-130/30
74-83-9	Bromomethane	ND		250	233	93	292	117	22	70-130/30
78-93-3	2-Bntanone (MEK)	ND		250	255	102	260	104	2	70-130/30
104-51-8	n-Butylbenzene	ND		250	287	115	295	118	3	70-130/30
135-98-8	sec-Butylbenzene	ND		250	294	118	301	120	2	70-130/30
98-06-6	tert-Butylbenzene	ND		250	278	111	287	115	3	70-130/30
75-15-0	Carbon disulfide	ND		250	306	122	317	127	4	70-130/30
56-23-5	Carbon tetrachloride	ND		250	242	97	246	98	2	70-130/30
108-90-7	Chlorobenzene	ND		250	271	108	279	112	3	70-130/30
75-00-3	Chloroethane	ND		250	297	119	300	120	1	70-130/30
110-75-8	2-Chloroethyl vinyl ether	ND		250	279	112	288	115	3	70-130/30
67-66-3	Chloroform	ND		250	281	112	290	116	3	70-130/30
74-87-3	Chloromethane	ND		250	265	106	281	112	6	70-130/30
95-49-8	o-Chlorotoluene	ND		250	278	111	285	114	2	70-130/30
106-43-4	p-Chlorotoluene	ND		250	291	116	301	120	3	70-130/30
124-48-1	Dibromochloromethane	ND		250	238	95	245	98	3	70-130/30
95-50-1	1,2-Dichlorohenzene	ND		250	274	110	288	115	5	70-130/30
541-73-1	1,3-Dichlorobenzene	ND		250	277	111	286	114	3	70-130/30
106-46-7	1,4-Dichlorobenzene	ND		250	261	104	272	109	4	70-130/30
75-71-8	Dichlorodifluoromethane	ND		250	338	135* [b]	343	137* [b]	1	70-130/30
75-34-3	1,1-Dichloroethane	ND		250	300	120	303	121	1	70-130/30
107-06-2	1,2-Dichloroethane	ND		250	261	104	268	107	3	70-130/30
75-35-4	1,1-Dichloroethene	ND		250	288	115	290	116	1	70-130/30
156-59-2	cis-1,2-Dichloroethene	ND		250	274	110	285	114	4	70-130/30
156-60-5	trans-1,2-Dichloroethene	ND		250	278	111	284	114	2	70-130/30
78-87-5	1,2-Dichloropropane	ND		250	279	112	288	115	3	70-130/30
142-28-9	1,3-Dichloropropane	ND		250	263	105	270	108	3	70-130/30
594-20-7	2,2-Dichloropropane	ND		250	275	110	271	108	1	70-130/30
563-58-6	1,1-Dichloropropene	ND		250	286	114	282	113	1	70-130/30

* = Outside of Control Limits.

6.3.2

6

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC14934-4MS	N68977.D	5	10/23/12	JP	n/a	n/a	MSN2594
MC14934-4MSD	N68978.D	5	10/23/12	JP	n/a	n/a	MSN2594
MC14934-4	N68971.D	1	10/23/12	JP	n/a	n/a	MSN2594

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

MC14777-1, MC14777-2, MC14777-5

CAS No.	Compound	MC14934-4 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
10061-01-5	cis-1,3-Dichloropropene	ND		250	272	109	281	112	3	70-130/30
10061-02-6	trans-1,3-Dichloropropene	ND		250	251	100	261	104	4	70-130/30
123-91-1	1,4-Dioxane	ND		1250	1260	101	1340	107	6	70-130/30
97-63-2	Ethyl methacrylate	ND		250	265	106	275	110	4	72-139/30
100-41-4	Ethylbenzene	ND		250	263	105	265	106	1	70-130/30
87-68-3	Hexachlorobutadiene	ND		250	261	104	275	110	5	70-130/30
591-78-6	2-Hexanone	ND		250	232	93	236	94	2	70-130/30
98-82-8	Isopropylbenzene	ND		250	283	113	290	116	2	70-130/30
99-87-6	p-Isopropyltoluene	ND		250	281	112	286	114	2	70-130/30
1634-04-4	Methyl Tert Butyl Ether	ND		250	242	97	250	100	3	70-130/30
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		250	223	89	228	91	2	70-130/30
74-95-3	Methylene bromide	ND		250	275	110	278	111	1	70-130/30
75-09-2	Methylene chloride	ND		250	284	114	295	118	4	70-130/30
91-20-3	Naphthalene	ND		250	246	98	261	104	6	70-130/30
103-65-1	n-Propylbenzene	ND		250	288	115	298	119	3	70-130/30
100-42-5	Styrene	ND		250	258	103	265	106	3	70-130/30
630-20-6	1,1,1,2-Tetrachloroethane	ND		250	262	105	268	107	2	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	ND		250	265	106	277	111	4	70-130/30
127-18-4	Tetrachloroethene	ND		250	257	103	257	103	0	70-130/30
108-88-3	Toluene	ND		250	274	110	279	112	2	70-130/30
87-61-6	1,2,3-Trichlorobenzene	ND		250	258	103	275	110	6	70-130/30
120-82-1	1,2,4-Trichlorobenzene	ND		250	258	103	275	110	6	70-130/30
71-55-6	1,1,1-Trichloroethane	ND		250	292	117	298	119	2	70-130/30
79-00-5	1,1,2-Trichloroethane	ND		250	268	107	274	110	2	70-130/30
79-01-6	Trichloroethene	ND		250	259	104	265	106	2	70-130/30
75-69-4	Trichlorofluoromethane	ND		250	285	114	288	115	1	70-130/30
96-18-4	1,2,3-Tricbloropropane	ND		250	277	111	288	115	4	70-130/30
95-63-6	1,2,4-Trimethylbenzene	ND		250	255	102	262	105	3	70-130/30
108-67-8	1,3,5-Trimethylbenzene	ND		250	254	102	262	105	3	70-130/30
108-05-4	Vinyl Acetate	ND		250	283	113	295	118	4	70-130/30
75-01-4	Vinyl chloride	ND		250	294	118	300	120	2	70-130/30
	m,p-Xylene	ND		500	540	108	546	109	1	70-130/30
95-47-6	o-Xylene	ND		250	280	112	287	115	2	70-130/30
1330-20-7	Xylene (total)	ND		750	819	109	833	111	2	70-130/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC14934-4MS	N68977.D	5	10/23/12	JP	n/a	n/a	MSN2594
MC14934-4MSD	N68978.D	5	10/23/12	JP	n/a	n/a	MSN2594
MC14934-4	N68971.D	1	10/23/12	JP	n/a	n/a	MSN2594

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

MC14777-1, MC14777-2, MC14777-5

CAS No.	Surrogate Recoveries	MS	MSD	MC14934-4	Limits
1868-53-7	Dibromofluoromethane	88%	88%	87%	70-130%
2037-26-5	Toluene-D8	87%	86%	86%	70-130%
460-00-4	4-Bromofluorobenzene	84%	84%	91%	70-130%

(a) Outside control limits. Associated samples are non-detect for this compound.
(b) Outside control limits due to possible matrix interference. Refer to Blank Spike.

* = Outside of Control Limits.

Volatile Internal Standard Area Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	MSH1895-CC1872	Injection Date:	10/22/12
Lab File ID:	H57778.D	Injection Time:	08:49
Instrument ID:	GCMSH	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	178671	8.72	269037	9.59	131239	12.84	156496	15.41	33702	6.29
Upper Limit [a]	357342	9.22	538074	10.09	262478	13.34	312992	15.91	67404	6.79
Lower Limit [b]	89336	8.22	134519	9.09	65620	12.34	78248	14.91	16851	5.79

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
MSH1895-BS	193415	8.72	285120	9.59	137833	12.84	161665	15.41	36813	6.29
MSH1895-MB	173593	8.72	249656	9.59	114042	12.84	123369	15.41	34452	6.30
MC14777-3	162307	8.72	235725	9.59	106250	12.85	114240	15.41	28602	6.30
ZZZZZZ	156334	8.72	225214	9.59	102960	12.85	110226	15.41	29807	6.30
ZZZZZZ	149714	8.72	220197	9.59	101085	12.84	106660	15.41	30327	6.30
ZZZZZZ	139422	8.72	206167	9.59	95173	12.84	99794	15.41	28089	6.30
ZZZZZZ	143788	8.72	211735	9.59	97295	12.85	102969	15.41	29761	6.30
ZZZZZZ	139806	8.72	208351	9.59	97412	12.84	100525	15.41	30869	6.30
MC14860-5	136452	8.72	204844	9.59	96518	12.85	98249	15.41	30595	6.30
MC14920-2	139092	8.72	208237	9.59	95487	12.84	98801	15.41	31262	6.30
ZZZZZZ	134136	8.72	202663	9.59	92314	12.84	95105	15.41	30551	6.30
ZZZZZZ	133112	8.72	198314	9.59	91812	12.84	95391	15.41	30826	6.30
ZZZZZZ	135928	8.72	202574	9.59	94029	12.84	95915	15.41	31321	6.30
ZZZZZZ	123632	8.72	184279	9.59	85378	12.85	87323	15.41	26135	6.30
ZZZZZZ	128863	8.72	192196	9.59	89453	12.85	90291	15.41	27415	6.29
ZZZZZZ	131400	8.72	194081	9.59	90085	12.85	92668	15.41	29333	6.29
ZZZZZZ	127796	8.72	191499	9.59	90037	12.85	92081	15.41	28347	6.30
ZZZZZZ	128838	8.72	I88806	9.59	89257	12.85	106978	15.41	29426	6.29
MC14860-5MS	147767	8.72	225156	9.59	112100	12.84	129110	15.41	29876	6.29
MC14860-5MSD	154041	8.72	232155	9.59	115133	12.84	129541	15.41	31432	6.29
MC14920-2MS	156080	8.72	235887	9.59	115954	12.84	130987	15.41	32447	6.29
MC14920-2MSD	163047	8.72	245135	9.59	119940	12.84	138048	15.41	33826	6.29

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobeuzene
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.

6.4.1

Volatile Internal Standard Area Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	MSN2594-CC2591	Injection Date:	10/23/12
Lab File ID:	N68967.D	Injection Time:	13:16
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	258709	9.01	351720	9.88	159678	13.14	177370	15.70	87025	6.56
Upper Limit [a]	517418	9.51	703440	10.38	319356	13.64	354740	16.20	174050	7.06
Lower Limit [b]	129355	8.51	175860	9.38	79839	12.64	88685	15.20	43513	6.06

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
MSN2594-BS	258709	9.01	351720	9.88	159678	13.14	177370	15.70	87025	6.56
MSN2594-MB	271469	9.01	355939	9.88	159918	13.14	160208	15.70	89681	6.57
ZZZZZZ	266161	9.01	354620	9.88	160605	13.14	164036	15.70	88451	6.57
MC14934-4	267512	9.01	359486	9.88	160607	13.14	160549	15.70	87248	6.56
ZZZZZZ	264124	9.01	353860	9.88	161513	13.14	162409	15.70	91425	6.56
MC14777-1	263718	9.01	353543	9.88	159954	13.14	163888	15.70	93872	6.56
MC14777-2	267442	9.01	352622	9.88	157246	13.14	157678	15.70	88226	6.56
MC14777-5	256784	9.01	339728	9.88	155858	13.14	153661	15.70	85905	6.56
ZZZZZZ	264139	9.01	352168	9.88	161123	13.14	170435	15.70	91379	6.56
MC14934-4MS	271256	9.01	364042	9.88	168316	13.14	187737	15.70	84862	6.56
MC14934-4MSD	258526	9.01	349321	9.88	162056	13.14	178400	15.70	77494	6.56
ZZZZZZ	270350	9.01	359830	9.88	163283	13.14	162452	15.70	77118	6.56
ZZZZZZ	269691	9.01	357565	9.88	162027	13.14	159342	15.70	77063	6.56
ZZZZZZ	254287	9.01	338719	9.88	153140	13.14	149550	15.70	76753	6.56
ZZZZZZ	266743	9.01	354275	9.88	160950	13.14	158473	15.70	71428	6.56
ZZZZZZ	265898	9.01	358199	9.88	162701	13.14	169865	15.70	76697	6.56
ZZZZZZ	272817	9.01	375330	9.88	174867	13.14	192602	15.70	89273	6.56
ZZZZZZ	275878	9.01	366121	9.88	165147	13.14	172569	15.70	78255	6.56
ZZZZZZ	278579	9.01	369422	9.88	168086	13.14	166744	15.70	76704	6.57
ZZZZZZ	275350	9.01	367213	9.88	167735	13.14	169269	15.70	86336	6.56
ZZZZZZ	273175	9.01	359917	9.88	163771	13.14	162953	15.70	71075	6.56
ZZZZZZ	261947	9.02	348931	9.88	155936	13.14	154919	15.70	76706	6.56

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.

6.4.2

Volatile Surrogate Recovery Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), 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
MC14777-1	N68973.D	87.0	85.0	111.0
MC14777-2	N68974.D	86.0	86.0	91.0
MC14777-3	H57783.D	108.0	102.0	102.0
MC14777-5	N68975.D	87.0	87.0	91.0
MC14860-5MS	H57799.D	121.0	102.0	96.0
MC14860-5MSD	H57800.D	118.0	101.0	99.0
MC14934-4MS	N68977.D	88.0	87.0	84.0
MC14934-4MSD	N68978.D	88.0	86.0	84.0
MSH1895-BS	H57779.D	115.0	103.0	95.0
MSH1895-MB	H57782.D	107.0	102.0	100.0
MSN2594-BS	N68967.D	89.0	85.0	86.0
MSN2594-MB	N68969.D	86.0	86.0	92.0

Surrogate Compounds	Recovery Limits
S1 = Dibromofluoromethane	70-130%
S2 = Toluene-D8	70-130%
S3 = 4-Bromofluorobenzene	70-130%

6.5.1

New England ACCUTEST LABORATORIES

GC/MS Semi-volatiles

QC Data Summaries

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: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30628-MB	W5759.D	1	10/11/12	KR	10/10/12	OP30628	MSW263

The QC reported here applies to the following samples: Method: SW846 8270C

MC14777-1, MC14777-2, MC14777-5

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	10	1.2	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	0.40	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	0.38	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	0.37	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	2.7	ug/l	
51-28-5	2,4-Dinitrophenol	ND	20	1.4	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	5.0	ug/l	
95-48-7	2-Methylphenol	ND	10	0.60	ug/l	
	3&4-Methylphenol	ND	10	0.75	ug/l	
88-75-5	2-Nitrophenol	ND	10	0.47	ug/l	
100-02-7	4-Nitrophenol	ND	20	2.8	ug/l	
87-86-5	Pentachlorophenol	ND	10	0.64	ug/l	
108-95-2	Phenol	ND	5.0	0.93	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	10	0.49	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	0.35	ug/l	
62-53-3	Aniline	ND	10	2.0	ng/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	0.33	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	0.27	ug/l	
100-51-6	Benzyl Alcohol	ND	10	0.26	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	0.18	ug/l	
106-47-8	4-Chloroaniline	ND	10	0.63	ng/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	0.22	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	0.38	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	0.28	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	0.29	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.0	0.21	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	5.0	0.89	ug/l	
132-64-9	Dibenzofuran	ND	2.0	0.21	ug/l	
84-74-2	Di-n-butyl phthalate	1.9	5.0	0.36	ng/l	J
117-84-0	Di-n-octyl phthalate	ND	5.0	0.24	ug/l	
84-66-2	Diethyl phthalate	ND	5.0	0.19	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	5.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	34.7	2.0	0.38	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	0.25	ug/l	

Method Blank Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30628-MB	W5759.D	1	10/11/12	KR	10/10/12	OP30628	MSW263

The QC reported here applies to the following samples: Method: SW846 8270C

MC14777-1, MC14777-2, MC14777-5

CAS No.	Compound	Result	RL	MDL	Units	Q
77-47-4	Hexachlorocyclopentadiene	ND	10	5.0	ug/l	
67-72-1	Hexachloroethane	ND	5.0	2.0	ug/l	
78-59-1	Isophorone	ND	5.0	0.32	ug/l	
88-74-4	2-Nitroaniline	ND	10	0.23	ug/l	
99-09-2	3-Nitroaniline	ND	10	0.25	ug/l	
100-01-6	4-Nitroaniline	ND	10	2.0	ug/l	
98-95-3	Nitrobenzene	ND	5.0	0.24	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.0	0.59	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	0.28	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	0.44	ug/l	
110-86-1	Pyridine	ND	10	5.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	56%	15-110%
4165-62-2	Phenol-d5	38%	15-110%
118-79-6	2,4,6-Tribromophenol	103%	15-110%
4165-60-0	Nitrobenzene-d5	93%	30-130%
321-60-8	2-Fluorobiphenyl	85%	30-130%
1718-51-0	Terphenyl-d14	171%* [a]	30-130%

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

(a) Outside control limits. Associated target analytes are non-detect.

Method Blank Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30629-MB	F58281.D	1	10/12/12	KR	10/10/12	OP30629	MSF2754

The QC reported here applies to the following samples: Method: SW846 8270C BY SIM

MC14777-1, MC14777-2, MC14777-5

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.10	0.014	ug/l	
208-96-8	Acenaphthylene	ND	0.10	0.013	ug/l	
120-12-7	Anthracene	ND	0.10	0.018	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.050	0.030	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	0.017	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.050	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	0.038	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	0.059	ug/l	
218-01-9	Chrysene	ND	0.10	0.073	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	0.042	ug/l	
206-44-0	Fluoranthene	ND	0.10	0.033	ug/l	
86-73-7	Fluorene	ND	0.10	0.046	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	0.046	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.20	0.14	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.20	0.052	ug/l	
85-01-8	Phenanthrene	ND	0.050	0.013	ug/l	
129-00-0	Pyrene	ND	0.10	0.036	ug/l	

CAS No.	Surrogate Recoveries		Limits
4165-60-0	Nitrobenzene-d5	86%	30-130%
321-60-8	2-Fluorobiphenyl	77%	30-130%
1718-51-0	Terphenyl-d14	124%	30-130%

Blank Spike Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Gronndwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30629-BS	F58282.D	1	10/12/12	KR	10/10/12	OP30629	MSF2754

The QC reported here applies to the following samples: Method: SW846 8270C BY SIM

MC14777-1, MC14777-2, MC14777-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
83-32-9	Acenaphthene	50	42.8	86	40-140
208-96-8	Acenaphthylene	50	36.4	73	40-140
120-12-7	Anthracene	50	41.8	84	40-140
56-55-3	Benzo(a)anthracene	50	47.0	94	40-140
50-32-8	Benzo(a)pyrene	50	41.3	83	40-140
205-99-2	Benzo(b)fluoranthene	50	44.8	90	40-140
191-24-2	Benzo(g,h,i)perylene	50	43.1	86	40-140
207-08-9	Benzo(k)fluoranthene	50	46.3	93	40-140
218-01-9	Chrysene	50	42.7	85	40-140
53-70-3	Dibenzo(a,h)anthracene	50	46.4	93	40-140
206-44-0	Fluoranthene	50	44.5	89	40-140
86-73-7	Fluorene	50	38.4	77	40-140
193-39-5	Indeno(1,2,3-cd)pyrene	50	44.6	89	40-140
90-12-0	1-Methylnaphthalene	50	40.6	81	40-140
91-57-6	2-Methylnaphthalene	50	36.7	73	40-140
85-01-8	Phenanthrene	50	42.5	85	40-140
129-00-0	Pyrene	50	41.2	82	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	113%	30-130%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30628-BS	W5760.D	1	10/11/12	KR	10/10/12	OP30628	MSW263
OP30628-BSD	W5821.D	1	10/12/12	KR	10/10/12	OP30628	MSW265

The QC reported here applies to the following samples: Method: SW846 8270C

MC14777-1, MC14777-2, MC14777-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic Acid	100	45.5	46	39.5	40	14	30-130/20
95-57-8	2-Chlorophenol	100	89.2	89	90.6	91	2	30-130/20
59-50-7	4-Chloro-3-methyl phenol	100	97.1	97	96.3	96	1	30-130/20
120-83-2	2,4-Dichlorophenol	100	93.0	93	95.2	95	2	30-130/20
105-67-9	2,4-Dimethylphenol	100	72.2	72	93.5	94	26* a	30-130/20
51-28-5	2,4-Dinitrophenol	100	74.5	75	65.8	66	12	30-130/20
534-52-1	4,6-Dinitro-o-cresol	100	104	104	89.1	89	15	30-130/20
95-48-7	2-Methylphenol	100	80.8	81	83.5	84	3	30-130/20
	3&4-Methylphenol	200	161	81	160	80	1	30-130/20
88-75-5	2-Nitrophenol	100	94.7	95	98.7	99	4	30-130/20
100-02-7	4-Nitrophenol	100	68.3	68	59.8	60	13	30-130/20
87-86-5	Pentachlorophenol	100	107	107	111	111	4	30-130/20
108-95-2	Phenol	100	44.8	45	43.3	43	3	30-130/20
95-95-4	2,4,5-Trichlorophenol	100	97.4	97	102	102	5	30-130/20
88-06-2	2,4,6-Trichlorophenol	100	101	101	105	105	4	30-130/20
62-53-3	Aniline	50	18.7	37* a	21.7	43	15	40-140/20
101-55-3	4-Bromophenyl phenyl ether	50	47.9	96	49.1	98	2	40-140/20
85-68-7	Butyl benzyl phthalate	50	70.7	141* b	49.6	99	35* b	40-140/20
100-51-6	Benzyl Alcohol	50	38.8	78	40.4	81	4	40-140/20
91-58-7	2-Chloronaphthalene	50	47.2	94	51.7	103	9	40-140/20
106-47-8	4-Chloroaniline	50	23.2	46	39.1	78	51* a	40-140/20
111-91-1	bis(2-Chloroethoxy)methane	50	41.5	83	44.0	88	6	40-140/20
111-44-4	bis(2-Chloroethyl)ether	50	47.7	95	51.7	103	8	40-140/20
108-60-1	bis(2-Chloroisopropyl)ether	50	54.8	110	58.7	117	7	40-140/20
7005-72-3	4-Chlorophenyl phenyl ether	50	49.9	100	52.7	105	5	40-140/20
122-66-7	1,2-Diphenylhydrazine	50	52.3	105	55.1	110	5	40-140/20
121-14-2	2,4-Dinitrotoluene	50	50.4	101	51.6	103	2	40-140/20
606-20-2	2,6-Dinitrotoluene	50	49.0	98	51.2	102	4	40-140/20
91-94-1	3,3'-Dichlorobenzidine	50	44.7	89	47.2	94	5	40-140/20
132-64-9	Dibenzofuran	50	44.2	88	46.7	93	6	40-140/20
84-74-2	Di-n-bntyl phthalate	50	52.1	104	52.7	105	1	40-140/20
117-84-0	Di-n-octyl phthalate	50	95.5	191* b	56.3	113	52* b	40-140/20
84-66-2	Diethyl phthalate	50	51.0	102	52.2	104	2	40-140/20
131-11-3	Dimethyl phthalate	50	49.1	98	51.0	102	4	40-140/20
117-81-7	bis(2-Ethylhexyl)phthalate	50	71.7	143* b	50.0	100	36* b	40-140/20
118-74-1	Hexachlorobenzene	50	48.9	98	50.8	102	4	40-140/20

* = Outside of Control Limits.

7.3.1

7

Blank Spike/Blank Spike Duplicate Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30628-BS	W5760.D	1	10/11/12	KR	10/10/12	OP30628	MSW263
OP30628-BSD	W5821.D	1	10/12/12	KR	10/10/12	OP30628	MSW265

The QC reported here applies to the following samples: Method: SW846 8270C

MC14777-1, MC14777-2, MC14777-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
77-47-4	Hexachlorocyclopentadiene	50	26.8	54	18.0	36* a	39* a	40-140/20
67-72-1	Hexachloroethane	50	36.6	73	44.7	89	20	40-140/20
78-59-1	Isophorone	50	49.8	100	51.7	103	4	40-140/20
88-74-4	2-Nitroaniline	50	47.1	94	48.9	98	4	40-140/20
99-09-2	3-Nitroaniline	50	27.7	55	41.5	83	40* a	40-140/20
100-01-6	4-Nitroaniline	50	38.0	76	40.2	80	6	40-140/20
98-95-3	Nitrobenzene	50	47.9	96	51.1	102	6	40-140/20
62-75-9	n-Nitrosodimethylamine	50	31.5	63	32.7	65	4	40-140/20
621-64-7	N-Nitroso-di-n-propylamine	50	52.6	105	58.1	116	10	40-140/20
86-30-6	N-Nitrosodiphenylamine	50	49.9	100	53.0	106	6	40-140/20
110-86-1	Pyridine	50	25.5	51	27.3	55	7	40-140/20

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
367-12-4	2-Flnorophenol	64%	62%	15-110%
4165-62-2	Phenol-d5	46%	44%	15-110%
118-79-6	2,4,6-Tribromophenol	107%	107%	15-110%
4165-60-0	Nitrobenzene-d5	97%	103%	30-130%
321-60-8	2-Fluorobiphenyl	93%	93%	30-130%
1718-51-0	Terphenyl-d14	156%* c	106%	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. Associated target analytes are non-detect.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30628-MS	W5804.D	1	10/12/12	KR	10/10/12	OP30628	MSW265
OP30628-MSD	W5805.D	1	10/12/12	KR	10/10/12	OP30628	MSW265
MC14800-6	W5806.D	1	10/12/12	KR	10/11/12	OP30628	MSW265

The QC reported here applies to the following samples: Method: SW846 8270C

MC14777-1, MC14777-2, MC14777-5

CAS No.	Compound	MC14800-6 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic Acid	ND		100	42.4	42	42.8	43	1	30-130/20
95-57-8	2-Chlorophenol	ND		100	79.3	79	78.3	78	1	30-130/20
59-50-7	4-Chloro-3-methyl phenol	ND		100	89.4	89	89.5	90	0	30-130/20
120-83-2	2,4-Dichlorophenol	ND		100	81.8	82	82.8	83	1	30-130/20
105-67-9	2,4-Dimethylphenol	ND		100	60.3	60	69.9	70	15	30-130/20
51-28-5	2,4-Dinitrophenol	ND		100	80.3	80	84.5	85	5	30-130/20
534-52-1	4,6-Dinitro-o-cresol	ND		100	102	102	107	107	5	30-130/20
95-48-7	2-Methylphenol	ND		100	71.6	72	72.5	73	1	30-130/20
	3&4-Methylphenol	ND		200	143	72	142	71	1	30-130/20
88-75-5	2-Nitrophenol	ND		100	83.9	84	83.6	84	0	30-130/20
100-02-7	4-Nitrophenol	ND		100	59.1	59	62.6	63	6	30-130/20
87-86-5	Pentachlorophenol	ND		100	93.0	93	104	104	11	30-130/20
108-95-2	Phenol	ND		100	39.3	39	38.3	38	3	30-130/20
95-95-4	2,4,5-Trichlorophenol	ND		100	87.7	88	91.8	92	5	30-130/20
88-06-2	2,4,6-Trichlorophenol	ND		100	88.3	88	93.0	93	5	30-130/20
62-53-3	Aniline	ND		50	18.0	36* [a]	16.3	33* [a]	10	40-140/20
101-55-3	4-Bromophenyl phenyl ether	ND		50	41.6	83	42.6	85	2	40-140/20
85-68-7	Butyl benzyl phthalate	ND		50	63.1	126	61.3	123	3	40-140/20
100-51-6	Benzyl Alcohol	ND		50	34.9	70	34.6	69	1	40-140/20
91-58-7	2-Chloronaphthalene	ND		50	40.7	81	40.2	80	1	40-140/20
106-47-8	4-Chloroaniline	ND		50	29.6	59	27.8	56	6	40-140/20
111-91-1	bis(2-Chloroethoxy)methane	ND		50	37.6	75	37.6	75	0	40-140/20
111-44-4	bis(2-Chloroethyl)ether	ND		50	43.5	87	43.3	87	0	40-140/20
108-60-1	bis(2-Chloroisopropyl)ether	ND		50	50.4	101	50.5	101	0	40-140/20
7005-72-3	4-Chlorophenyl phenyl ether	ND		50	41.7	83	42.8	86	3	40-140/20
122-66-7	1,2-Diphenylhydrazine	ND		50	48.7	97	49.2	98	1	40-140/20
121-14-2	2,4-Dinitrotoluene	ND		50	46.0	92	47.8	96	4	40-140/20
606-20-2	2,6-Dinitrotoluene	ND		50	44.2	88	45.8	92	4	40-140/20
91-94-1	3,3'-Dichlorobenzidine	ND		50	40.8	82	34.1	68	18	40-140/20
132-64-9	Dibenzofuran	ND		50	39.2	78	38.9	78	1	40-140/20
84-74-2	Di-n-butyl phthalate	ND		50	50.0	100	51.3	103	3	40-140/20
117-84-0	Di-n-octyl phthalate	ND		50	96.8	194* [b]	94.3	189* [b]	3	40-140/20
84-66-2	Diethyl phthalate	ND		50	47.2	94	48.3	97	2	40-140/20
131-11-3	Dimethyl phthalate	ND		50	45.5	91	46.2	92	2	40-140/20
117-81-7	bis(2-Ethylhexyl)phthalate	ND		50	61.4	123	60.2	120	2	40-140/20
118-74-1	Hexachlorobenzene	ND		50	43.0	86	44.4	89	3	40-140/20

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30628-MS	W5804.D	1	10/12/12	KR	10/10/12	OP30628	MSW265
OP30628-MSD	W5805.D	1	10/12/12	KR	10/10/12	OP30628	MSW265
MC14800-6	W5806.D	1	10/12/12	KR	10/11/12	OP30628	MSW265

The QC reported here applies to the following samples: Method: SW846 8270C

MC14777-1, MC14777-2, MC14777-5

CAS No.	Compound	MC14800-6 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
77-47-4	Hexachlorocyclopentadiene	ND		50	21.8	44	23.3	47	7	40-140/20
67-72-1	Hexachloroethane	ND		50	33.6	67	32.5	65	3	40-140/20
78-59-1	Isophorone	ND		50	45.5	91	45.5	91	0	40-140/20
88-74-4	2-Nitroaniline	ND		50	43.8	88	44.5	89	2	40-140/20
99-09-2	3-Nitroaniline	ND		50	35.5	71	35.7	71	1	40-140/20
100-01-6	4-Nitroaniline	ND		50	35.5	71	37.6	75	6	40-140/20
98-95-3	Nitrobenzene	ND		50	43.5	87	43.2	86	1	40-140/20
62-75-9	n-Nitrosodimethylamine	ND		50	25.3	51	25.2	50	0	40-140/20
621-64-7	N-Nitroso-di-n-propylamine	ND		50	43.2	86	44.3	89	3	40-140/20
86-30-6	N-Nitrosodiphenylamine	ND		50	45.4	91	46.9	94	3	40-140/20
110-86-1	Pyridine	ND		50	20.8	42	19.9	40	4	40-140/20

CAS No.	Surrogate Recoveries	MS	MSD	MC14800-6	Limits
367-12-4	2-Fluorophenol	56%	55%	50%	15-110%
4165-62-2	Phenol-d5	40%	38%	34%	15-110%
118-79-6	2,4,6-Tribromophenol	94%	98%	88%	15-110%
4165-60-0	Nitrobenzene-d5	87%	87%	86%	30-130%
321-60-8	2-Fluorobiphenyl	79%	77%	76%	30-130%
1718-51-0	Terphenyl-d14	130%	125%	126%	30-130%

(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.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30629-MS	F58290.D	1	10/12/12	KR	10/10/12	OP30629	MSF2754
OP30629-MSD	F58291.D	1	10/12/12	KR	10/10/12	OP30629	MSF2754
MC14800-7	F58292.D	1	10/12/12	KR	10/11/12	OP30629	MSF2754

The QC reported here applies to the following samples: Method: SW846 8270C BY SIM

MC14777-1, MC14777-2, MC14777-5

CAS No.	Compound	MC14800-7 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	0.018		50	36.8	74	36.7	73	0	40-140/20
208-96-8	Acenaphthylene	ND		50	31.5	63	31.8	64	1	40-140/20
120-12-7	Anthracene	ND		50	39.4	79	40.1	80	2	40-140/20
56-55-3	Benzo(a)anthracene	ND		50	47.6	95	49.3	99	4	40-140/20
50-32-8	Benzo(a)pyrene	ND		50	43.7	87	45.7	91	4	40-140/20
205-99-2	Benzo(b)fluoranthene	ND		50	46.8	94	50.3	101	7	40-140/20
191-24-2	Benzo(g,h,i)perylene	ND		50	48.8	98	50.5	101	3	40-140/20
207-08-9	Benzo(k)fluoranthene	ND		50	49.0	98	52.8	106	7	40-140/20
218-01-9	Chrysene	ND		50	44.0	88	45.8	92	4	40-140/20
53-70-3	Dibenzo(a,h)anthracene	ND		50	50.7	101	53.8	108	6	40-140/20
206-44-0	Fluoranthene	ND		50	44.3	89	45.4	91	2	40-140/20
86-73-7	Fluorene	ND		50	34.4	69	34.7	69	1	40-140/20
193-39-5	Indeno(1,2,3-cd)pyrene	ND		50	49.3	99	52.3	105	6	40-140/20
90-12-0	1-Methylnaphthalene	ND		50	32.6	65	33.6	67	3	40-140/20
91-57-6	2-Methylnaphthalene	ND		50	32.3	65	32.0	64	1	40-140/20
85-01-8	Phenanthrene	0.028		50	39.5	79	41.0	82	4	40-140/20
129-00-0	Pyrene	ND		50	40.8	82	41.8	84	2	40-140/20

CAS No.	Surrogate Recoveries	MS	MSD	MC14800-7	Limits
4165-60-0	Nitrobenzene-d5	81%	82%	81%	30-130%
321-60-8	2-Fluorobiphenyl	71%	70%	73%	30-130%
1718-51-0	Terphenyl-d14	108%	112%	107%	30-130%

* = Outside of Control Limits.

Semivolatile Internal Standard Area Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	MSF2754-CC2731	Injection Date:	10/12/12
Lab File ID:	F58280.D	Injection Time:	09:54
Instrument ID:	GCMSF	Method:	SW846 8270C

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
Check Std	102169	3.59	315619	4.57	189110	5.99	364049	7.28	345801	10.06	540420	11.48
Upper Limit [a]	204338	4.09	631238	5.07	378220	6.49	728098	7.78	691602	10.56	1080840	11.98
Lower Limit [b]	51085	3.09	157810	4.07	94555	5.49	182025	6.78	172901	9.56	270210	10.98

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
OP30629-MB	105143	3.60	324783	4.57	191090	5.99	362905	7.28	262397	10.06	358572	11.48
OP30629-BS	130057	3.60	388121	4.57	223057	5.99	420109	7.28	287218	10.06	357348	11.48
ZZZZZZ	98204	3.60	306602	4.57	182007	5.99	342783	7.28	287768	10.06	339872	11.48
ZZZZZZ	89943	3.60	278770	4.57	165246	5.99	310753	7.28	264397	10.06	307516	11.48
ZZZZZZ	93139	3.60	284757	4.57	170855	5.99	325380	7.28	274505	10.06	328203	11.48
ZZZZZZ	99634	3.60	311121	4.57	183200	5.99	348391	7.28	266391	10.06	297541	11.48
ZZZZZZ	112375	3.60	342096	4.57	205510	5.99	382254	7.28	290362	10.06	394084	11.48
ZZZZZZ	106648	3.59	327204	4.57	191662	5.99	368181	7.28	260767	10.06	343219	11.48
ZZZZZZ	408878*	3.59	1487043*	4.57	957268*	5.98	1858276*	7.28	1360861*	10.06	1072793[c]	11.48
OP30629-MS	88888	3.60	277065	4.57	168435	5.99	320978	7.28	249768	10.06	282271	11.48
OP30629-MSD	103205	3.60	314828	4.57	188152	5.99	362379	7.28	298026	10.06	348315	11.48
MC14800-7	99036	3.59	313793	4.57	186584	5.99	351645	7.28	287472	10.06	344732	11.48
ZZZZZZ	110213	3.60	342601	4.57	200422	5.99	384893	7.28	408175	10.06	604688	11.49
ZZZZZZ	105965	3.60	329615	4.57	195821	5.99	374254	7.28	401286	10.06	630062	11.48
MC14777-2	104164	3.59	320428	4.57	189896	5.99	356935	7.28	389644	10.06	601361	11.48
MC14777-5	108326	3.60	342427	4.57	204281	5.99	387570	7.28	415807	10.06	667450	11.49
MC14777-1	96858	3.60	302287	4.57	180741	5.99	344815	7.28	363407	10.06	557262	11.49

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.

7.5.1

7

Semivolatile Internal Standard Area Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	MSW263-CC246	Injection Date:	10/11/12
Lab File ID:	W5758.D	Injection Time:	08:21
Instrument ID:	GCMSW	Method:	SW846 8270C

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
Check Std	104697	3.72	421216	4.71	255647	6.13	459172	7.45	552347	10.32	530736	11.90
Upper Limit [a]	209394	4.22	842432	5.21	511294	6.63	918344	7.95	1104694	10.82	1061472	12.40
Lower Limit [b]	52349	3.22	210608	4.21	127824	5.63	229586	6.95	276174	9.82	265368	11.40
Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
OP30628-MB	116118	3.72	449999	4.71	265539	6.13	471627	7.44	412339	10.32	330413	11.89
OP30628-BS	125312	3.73	491305	4.71	290591	6.13	508944	7.45	461089	10.32	328895	11.90
ZZZZZZ	122933	3.72	476608	4.71	283800	6.13	496644	7.44	442859	10.32	354803	11.89
ZZZZZZ	120961	3.72	472118	4.71	280332	6.13	499393	7.45	459315	10.32	374688	11.89
ZZZZZZ	109590	3.72	432403	4.71	257592	6.13	448128	7.45	424875	10.32	382909	11.90
ZZZZZZ	105353	3.73	442495	4.71	285103	6.14	497914	7.46	544203	10.32	477778	11.90
ZZZZZZ	133106	3.72	526463	4.71	312448	6.13	553206	7.45	491588	10.32	371838	11.90
ZZZZZZ	117999	3.72	474190	4.71	288789	6.13	508209	7.45	483479	10.32	363785	11.89
ZZZZZZ	118977	3.72	463365	4.71	270941	6.13	475604	7.45	422488	10.32	310355	11.89
ZZZZZZ	112867	3.72	434312	4.71	256888	6.13	454835	7.45	411563	10.32	307139	11.89
ZZZZZZ	118353	3.72	468924	4.71	286338	6.13	505201	7.45	501419	10.32	428202	11.90
ZZZZZZ	100322	3.72	397236	4.71	235572	6.13	417041	7.45	409600	10.32	332029	11.90
ZZZZZZ	122704	3.73	484006	4.71	290462	6.13	513076	7.45	520102	10.32	450938	11.90
ZZZZZZ	112941	3.72	449348	4.71	276188	6.13	512531	7.45	505451	10.32	413864	11.90
ZZZZZZ	108393	3.72	425457	4.71	253821	6.13	448695	7.45	486977	10.32	478866	11.90
ZZZZZZ	100862	3.72	389979	4.71	227833	6.13	406259	7.45	434121	10.32	382440	11.90
ZZZZZZ	116054	3.72	478251	4.71	325797	6.14	574813	7.46	579116	10.32	486629	11.90
ZZZZZZ	114890	3.73	473341	4.72	306129	6.16	610814	7.48	568621	10.32	498732	11.90
ZZZZZZ	127145	3.72	492122	4.71	301723	6.13	526541	7.45	556570	10.32	454220	11.89
ZZZZZZ	110003	3.72	436295	4.71	282627	6.14	486928	7.45	490408	10.32	407986	11.90
ZZZZZZ	108389	3.72	433382	4.71	277797	6.14	488344	7.45	476832	10.32	400748	11.90
ZZZZZZ	106327	3.72	420538	4.71	246841	6.13	444197	7.44	551102	10.32	410684	11.90
ZZZZZZ	108827	3.72	434698	4.71	261002	6.13	468615	7.45	600445	10.32	610793	11.90
ZZZZZZ	99796	3.72	408153	4.71	271100	6.14	481724	7.45	518697	10.32	483812	11.90
ZZZZZZ	99829	3.72	395521	4.71	234566	6.13	417811	7.44	429423	10.32	295793	11.89
ZZZZZZ	101389	3.72	398677	4.71	234791	6.13	420283	7.45	439944	10.32	311167	11.89
ZZZZZZ	100074	3.72	395572	4.71	232847	6.13	414381	7.44	440803	10.32	307328	11.89
ZZZZZZ	97133	3.72	383630	4.71	228169	6.13	403395	7.45	449486	10.32	339035	11.90
ZZZZZZ	95763	3.72	375044	4.71	224508	6.13	401248	7.45	454667	10.32	344911	11.90
ZZZZZZ	101689	3.72	400703	4.71	238532	6.13	425304	7.45	491304	10.32	376408	11.90

IS 1 = 1,4-Dichlorobenzene-d4
IS 2 = Naphthalene-d8
IS 3 = Acenaphthene-D10
IS 4 = Phenanthrene-d10

Semivolatile Internal Standard Area Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	MSW263-CC246	Injection Date:	10/11/12
Lab File ID:	W5758.D	Injection Time:	08:21
Instrument ID:	GCMSW	Metbod:	SW846 8270C

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

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.

7.5.2

7

Semivolatile Internal Standard Area Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	MSW267-CC254	Injection Date:	10/11/12
Lab File ID:	W5758A.D	Injection Time:	08:21
Instrument ID:	GCMSW	Method:	SW846 8270C

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
Check Std	104697	3.72	421216	4.71	255647	6.13	459172	7.45	552347	10.32	530736	11.90
Upper Limit [a]	209394	4.22	842432	5.21	511294	6.63	918344	7.95	1104694	10.82	1061472	12.40
Lower Limit [b]	52349	3.22	210608	4.21	127824	5.63	229586	6.95	276174	9.82	265368	11.40
Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
OP30628-MB	116118	3.72	449999	4.71	265539	6.13	471627	7.44	412339	10.32	330413	11.89
OP30628-BS	125312	3.73	491305	4.71	290591	6.13	508944	7.45	461089	10.32	328895	11.90
ZZZZZZ	122933	3.72	476608	4.71	283800	6.13	496644	7.44	442859	10.32	354803	11.89
ZZZZZZ	120961	3.72	472118	4.71	280332	6.13	499393	7.45	459315	10.32	374688	11.89
ZZZZZZ	109590	3.72	432403	4.71	257592	6.13	448128	7.45	424875	10.32	382909	11.90
ZZZZZZ	105353	3.73	442495	4.71	285103	6.14	497914	7.46	544203	10.32	477778	11.90
ZZZZZZ	133106	3.72	526463	4.71	312448	6.13	553206	7.45	491588	10.32	371838	11.90
ZZZZZZ	117999	3.72	474190	4.71	288789	6.13	508209	7.45	483479	10.32	363785	11.89
ZZZZZZ	118977	3.72	463365	4.71	270941	6.13	475604	7.45	422488	10.32	310355	11.89
ZZZZZZ	112867	3.72	434312	4.71	256888	6.13	454835	7.45	411563	10.32	307139	11.89
ZZZZZZ	118353	3.72	468924	4.71	286338	6.13	505201	7.45	501419	10.32	428202	11.90
ZZZZZZ	100322	3.72	397236	4.71	235572	6.13	417041	7.45	409600	10.32	332029	11.90
ZZZZZZ	122704	3.73	484006	4.71	290462	6.13	513076	7.45	520102	10.32	450938	11.90
ZZZZZZ	112941	3.72	449348	4.71	276188	6.13	512531	7.45	505451	10.32	413864	11.90
ZZZZZZ	108393	3.72	425457	4.71	253821	6.13	448695	7.45	486977	10.32	478866	11.90
ZZZZZZ	100862	3.72	389979	4.71	227833	6.13	406259	7.45	434121	10.32	382440	11.90
ZZZZZZ	116054	3.72	478251	4.71	325797	6.14	574813	7.46	579116	10.32	486629	11.90
ZZZZZZ	114890	3.73	473341	4.72	306129	6.16	610814	7.48	568621	10.32	498732	11.90
ZZZZZZ	127145	3.72	492122	4.71	301723	6.13	526541	7.45	556570	10.32	454220	11.89
ZZZZZZ	110003	3.72	436295	4.71	282627	6.14	486928	7.45	490408	10.32	407986	11.90
ZZZZZZ	108389	3.72	433382	4.71	277797	6.14	488344	7.45	476832	10.32	400748	11.90
ZZZZZZ	106327	3.72	420538	4.71	246841	6.13	444197	7.44	551102	10.32	410684	11.90
ZZZZZZ	108827	3.72	434698	4.71	261002	6.13	468615	7.45	600445	10.32	610793	11.90
ZZZZZZ	99796	3.72	408153	4.71	271100	6.14	481724	7.45	518697	10.32	483812	11.90
ZZZZZZ	99829	3.72	395521	4.71	234566	6.13	417811	7.44	429423	10.32	295793	11.89
ZZZZZZ	101389	3.72	398677	4.71	234791	6.13	420283	7.45	439944	10.32	311167	11.89
ZZZZZZ	100074	3.72	395572	4.71	232847	6.13	414381	7.44	440803	10.32	307328	11.89
ZZZZZZ	97133	3.72	383630	4.71	228169	6.13	403395	7.45	449486	10.32	339035	11.90
ZZZZZZ	95763	3.72	375044	4.71	224508	6.13	401248	7.45	454667	10.32	344911	11.90
ZZZZZZ	101689	3.72	400703	4.71	238532	6.13	425304	7.45	491304	10.32	376408	11.90

IS 1 = 1,4-Dichlorobenzene-d4
IS 2 = Naphthalene-d8
IS 3 = Acenaphthene-D10
IS 4 = Phenanthrene-d10

Semivolatile Internal Standard Area Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	MSW267-CC254	Injection Date:	10/11/12
Lab File ID:	W5758A.D	Injection Time:	08:21
Instrument ID:	GCMSW	Method:	SW846 8270C

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

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.

Semivolatile Internal Standard Area Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	MSW265-CC246	Injection Date:	10/12/12
Lab File ID:	W5801.D	Injection Time:	08:42
Instrument ID:	GCMSW	Method:	SW846 8270C

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
Check Std	121465	3.71	482803	4.70	290035	6.12	534991	7.44	649389	10.32	614682	11.89
Upper Limit [a]	242930	4.21	965606	5.20	580070	6.62	1069982	7.94	1298778	10.82	1229364	12.39
Lower Limit [b]	60733	3.21	241402	4.20	145018	5.62	267496	6.94	324695	9.82	307341	11.39

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
OP30630-MB	113638	3.71	442573	4.70	261649	6.12	460499	7.43	572589	10.31	457741	11.88
OP30630-BS	114924	3.71	450155	4.70	265583	6.12	459859	7.43	617313	10.31	460012	11.88
OP30628-MS	95299	3.71	376053	4.70	221884	6.12	386940	7.43	380946	10.31	235270[c]	11.88
OP30628-MSD	109727	3.71	430866	4.70	251232	6.12	439229	7.43	458298	10.31	285614[c]	11.88
MC14800-6	114685	3.71	455162	4.70	270314	6.12	474863	7.43	471768	10.31	322423	11.88
OP30630-MS	106446	3.71	428112	4.70	256406	6.12	444683	7.43	579796	10.31	478947	11.88
OP30630-MSD	109544	3.71	433903	4.70	258715	6.12	452645	7.43	585807	10.31	494489	11.88
MC14726-2	105687	3.71	421463	4.70	252458	6.12	448512	7.43	574420	10.31	486921	11.88
OP30643-MB	122762	3.71	477994	4.70	278077	6.12	484414	7.43	603313	10.31	526566	11.88
OP30643-BS	122114	3.71	480424	4.70	284237	6.12	490467	7.43	625157	10.32	541251	11.89
ZZZZZZ	127901	3.71	498091	4.70	292913	6.12	505518	7.43	618083	10.31	561810	11.89
ZZZZZZ	121855	3.71	484772	4.70	291669	6.12	520821	7.43	693255	10.32	612349	11.89
OP30643-MS	123892	3.72	480764	4.70	284154	6.12	488502	7.44	619951	10.32	536559	11.89
OP30643-MSD	126545	3.72	496204	4.70	290060	6.12	507177	7.44	646385	10.32	537198	11.89
MC14755-2	133200	3.72	518736	4.70	303714	6.12	526891	7.44	623312	10.31	554601	11.89
OP30628-BSD	120958	3.72	479240	4.70	281986	6.12	495493	7.44	643998	10.32	551385	11.89
ZZZZZZ	119171	3.71	490109	4.70	308618	6.12	544636	7.44	637680	10.31	502050	11.89
ZZZZZZ	115798	3.71	453963	4.70	268128	6.12	469056	7.43	579305	10.31	461709	11.89
ZZZZZZ	124566	3.71	490764	4.70	286933	6.12	508567	7.43	634996	10.31	507478	11.89
ZZZZZZ	115419	3.71	454466	4.70	265677	6.12	466413	7.43	573535	10.31	463753	11.89
ZZZZZZ	116864	3.71	460320	4.70	271926	6.12	480236	7.43	601521	10.31	474815	11.89
ZZZZZZ	125177	3.71	491401	4.70	291463	6.12	515220	7.43	643921	10.31	522708	11.89
ZZZZZZ	122444	3.71	489059	4.70	320267	6.13	559791	7.44	643859	10.31	517686	11.89
ZZZZZZ	111871	3.71	437293	4.70	259405	6.12	452584	7.43	585971	10.31	486425	11.89
ZZZZZZ	112726	3.71	441223	4.70	263280	6.12	459884	7.43	583549	10.31	501059	11.89
ZZZZZZ	109955	3.71	432827	4.70	256907	6.12	456810	7.43	595503	10.31	522069	11.89

IS 1 = 1,4-Dichlorohenzene-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.

Semivolatile Internal Standard Area Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	MSW265-CC246	Injection Date:	10/12/12
Lab File ID:	W5801.D	Injection Time:	08:42
Instrument ID:	GCMSW	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

(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.

Semivolatile Internal Standard Area Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	MSW264-CC254	Injection Date:	10/12/12
Lab File ID:	W5801A.D	Injection Time:	08:42
Instrument ID:	GCMSW	Method:	SW846 8270C

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
Check Std	121465	3.71	482803	4.70	290035	6.12	534991	7.44	649389	10.32	614682	11.89
Upper Limit [a]	242930	4.21	965606	5.20	580070	6.62	1069982	7.94	1298778	10.82	1229364	12.39
Lower Limit [b]	60733	3.21	241402	4.20	145018	5.62	267496	6.94	324695	9.82	307341	11.39
Lab Sample ID	**IS 1 AREA**	**RT**	**IS 2 AREA**	**RT**	**IS 3 AREA**	**RT**	**IS 4 AREA**	**RT**	**IS 5 AREA**	**RT**	**IS 6 AREA**	**RT**
OP30630-MB	113638	3.71	442573	4.70	261649	6.12	460499	7.43	572589	10.31	457741	11.88
OP30630-BS	114924	3.71	450155	4.70	265583	6.12	459859	7.43	617313	10.31	460012	11.88
OP30628-MS	95299	3.71	376053	4.70	221884	6.12	386940	7.43	380946	10.31	235270[c]	11.88
OP30628-MSD	109727	3.71	430866	4.70	251232	6.12	439229	7.43	458298	10.31	285614[c]	11.88
MC14800-6	114685	3.71	455162	4.70	270314	6.12	474863	7.43	471768	10.31	322423	11.88
OP30630-MS	106446	3.71	428112	4.70	256406	6.12	444683	7.43	579796	10.31	478947	11.88
OP30630-MSD	109544	3.71	433903	4.70	258715	6.12	452645	7.43	585807	10.31	494489	11.88
MC14726-2	105687	3.71	421463	4.70	252458	6.12	448512	7.43	574420	10.31	486921	11.88
OP30643-MB	122762	3.71	477994	4.70	278077	6.12	484414	7.43	603313	10.31	526566	11.88
OP30643-BS	122114	3.71	480424	4.70	284237	6.12	490467	7.43	625157	10.32	541251	11.89
ZZZZZZ	127901	3.71	498091	4.70	292913	6.12	505518	7.43	618083	10.31	561810	11.89
ZZZZZZ	121855	3.71	484772	4.70	291669	6.12	520821	7.43	693255	10.32	612349	11.89
OP30643-MS	123892	3.72	480764	4.70	284154	6.12	488502	7.44	619951	10.32	536559	11.89
OP30643-MSD	126545	3.72	496204	4.70	290060	6.12	507177	7.44	646385	10.32	537198	11.89
MC14755-2	133200	3.72	518736	4.70	303714	6.12	526891	7.44	623312	10.31	554601	11.89
OP30628-BSD	120958	3.72	479240	4.70	281986	6.12	495493	7.44	643998	10.32	551385	11.89
ZZZZZZ	119171	3.71	490109	4.70	308618	6.12	544636	7.44	637680	10.31	502050	11.89
ZZZZZZ	115798	3.71	453963	4.70	268128	6.12	469056	7.43	579305	10.31	461709	11.89
ZZZZZZ	124566	3.71	490764	4.70	286933	6.12	508567	7.43	634996	10.31	507478	11.89
ZZZZZZ	115419	3.71	454466	4.70	265677	6.12	466413	7.43	573535	10.31	463753	11.89
ZZZZZZ	116864	3.71	460320	4.70	271926	6.12	480236	7.43	601521	10.31	474815	11.89
ZZZZZZ	125177	3.71	491401	4.70	291463	6.12	515220	7.43	643921	10.31	522708	11.89
ZZZZZZ	122444	3.71	489059	4.70	320267	6.13	559791	7.44	643859	10.31	517686	11.89
ZZZZZZ	111871	3.71	437293	4.70	259405	6.12	452584	7.43	585971	10.31	486425	11.89
ZZZZZZ	112726	3.71	441223	4.70	263280	6.12	459884	7.43	583549	10.31	501059	11.89
ZZZZZZ	109955	3.71	432827	4.70	256907	6.12	456810	7.43	595503	10.31	522069	11.89

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.

7.5.5

Semivolatile Internal Standard Area Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	MSW264-CC254	Injection Date:	10/12/12
Lab File ID:	W5801A.D	Injection Time:	08:42
Instrument ID:	GCMSW	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

(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.

Semivolatile Internal Standard Area Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Gronndwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	MSW266-CC246	Injection Date:	10/15/12
Lab File ID:	W5834.D	Injection Time:	08:08
Instrument ID:	GCMSW	Method:	SW846 8270C

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
Check Std	124207	3.71	483043	4.70	287606	6.11	519914	7.43	631785	10.31	591290	11.88
Upper Limit [a]	248414	4.21	966086	5.20	575212	6.61	1039828	7.93	1263570	10.81	1182580	12.38
Lower Limit [b]	62104	3.21	241522	4.20	143803	5.61	259957	6.93	315893	9.81	295645	11.38
Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
OP30665-MB	141469	3.71	540545	4.69	315147	6.11	546484	7.42	596047	10.30	577497	11.88
OP30665-BS	132273	3.71	511392	4.70	297391	6.11	509557	7.43	576188	10.31	512841	11.88
OP30665-MS	133415	3.71	509316	4.69	159898	6.11	436132	7.43	164556[c]	10.30	3811[c]	11.87
ZZZZZZ	121924	3.71	474495	4.69	281286	6.11	498575	7.43	386341	10.30	269618[d]	11.87
ZZZZZZ	123287	3.71	477234	4.69	280687	6.11	497365	7.43	372355	10.30	258092[d]	11.87
ZZZZZZ	134736	3.71	522783	4.69	305512	6.11	542261	7.42	413417	10.30	289564[d]	11.87
ZZZZZZ	128411	3.71	537406	4.70	321971	6.12	556910	7.43	458011	10.31	326293	11.88
OP30664-MB	115927	3.71	449832	4.69	265746	6.11	466100	7.42	509370	10.30	489171	11.88
OP30664-BS	131626	3.71	500709	4.69	296623	6.11	516105	7.43	576770	10.30	512809	11.88
OP30664-MS	131100	3.71	503469	4.69	294423	6.11	510485	7.43	584116	10.30	517490	11.88
OP30664-MSD	137524	3.71	529989	4.69	311649	6.11	549721	7.43	611644	10.31	542659	11.88
MC14849-1	129541	3.71	501222	4.69	292694	6.11	518555	7.43	575251	10.30	538006	11.88
ZZZZZZ	127309	3.71	496444	4.69	293228	6.11	518143	7.42	568794	10.30	528967	11.88
ZZZZZZ	123219	3.71	472295	4.69	279971	6.11	485015	7.43	520029	10.30	495338	11.88
ZZZZZZ	115046	3.71	443862	4.69	256198	6.11	455488	7.43	489716	10.30	467478	11.87
ZZZZZZ	134757	3.71	523360	4.69	306957	6.11	536308	7.42	590778	10.30	547980	11.87
ZZZZZZ	123303	3.71	475303	4.69	279225	6.11	487052	7.42	523260	10.30	487485	11.87
ZZZZZZ	111162	3.71	434564	4.69	252876	6.11	442141	7.42	471987	10.30	448318	11.88
OP30665-MSD	123303	3.71	445143	4.70	76898[c]	6.11	256664[c]	7.43	43803[c]	10.30	411[c]	11.88
MC14810-2	118273	3.71	459460	4.69	270397	6.11	482585	7.43	542541	10.30	500679	11.87
ZZZZZZ	119401	3.71	467269	4.69	273065	6.11	477209	7.42	525139	10.30	497563	11.87
ZZZZZZ	115672	3.71	452349	4.69	270135	6.11	476611	7.42	542379	10.30	510616	11.88
ZZZZZZ	176119	3.71	695956	4.69	411697	6.11	730560	7.43	928386	10.30	674565	11.88
ZZZZZZ	141825	3.71	549819	4.69	324758	6.11	564119	7.42	708487	10.30	600584	11.88
MC14777-2	148581	3.71	584696	4.69	351145	6.11	622576	7.43	815592	10.30	571150	11.88
MC14777-5	149176	3.71	591146	4.69	350503	6.11	637859	7.42	824349	10.30	725018	11.88
MC14777-1	145183	3.71	563348	4.69	337592	6.11	609590	7.43	803615	10.31	592770	11.88
ZZZZZZ	128515	3.71	498399	4.69	295145	6.11	513381	7.42	562100	10.30	537579	11.88
ZZZZZZ	101033	3.71	390494	4.69	232660	6.11	403101	7.42	455212	10.30	437426	11.87

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

Semivolatile Internal Standard Area Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	MSW266-CC246	Injection Date:	10/15/12
Lab File ID:	W5834.D	Injection Time:	08:08
Instrument ID:	GCMSW	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 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.
(d) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

Semivolatile Surrogate Recovery Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), 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
MC14777-1	W5861.D	51.0	34.0	90.0	89.0	69.0	70.0
MC14777-2	W5859.D	54.0	37.0	91.0	93.0	83.0	94.0
MC14777-5	W5860.D	58.0	40.0	98.0	90.0	77.0	94.0
OP30628-BS	W5760.D	64.0	46.0	107.0	97.0	93.0	156.0* [a]
OP30628-BSD	W5821.D	62.0	44.0	107.0	103.0	93.0	106.0
OP30628-MB	W5759.D	56.0	38.0	103.0	93.0	85.0	171.0* [a]
OP30628-MS	W5804.D	56.0	40.0	94.0	87.0	79.0	130.0
OP30628-MSD	W5805.D	55.0	38.0	98.0	87.0	77.0	125.0

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%

(a) Outside control limits. Associated target analytes are non-detect.

Semivolatile Surrogate Recovery Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), 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
MC14777-1	F58297.D	83.0	62.0	79.0
MC14777-2	F58295.D	86.0	75.0	105.0
MC14777-5	F58296.D	83.0	69.0	103.0
OP30629-BS	F58282.D	91.0	84.0	113.0
OP30629-MB	F58281.D	86.0	77.0	124.0
OP30629-MS	F58290.D	81.0	71.0	108.0
OP30629-MSD	F58291.D	82.0	70.0	112.0

Surrogate Compounds	Recovery Limits
S1 = Nitrobenzene-d5	30-130%
S2 = 2-Fluorobiphenyl	30-130%
S3 = Terphenyl-d14	30-130%

New England ACCUTEST LABORATORIES

GC Volatiles

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 Snmmaries

Method Blank Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30666-MB	BK17933.D	1	10/18/12	AP	10/12/12	OP30666	GBK660

The QC reported here applies to the following samples: Method: SW846 8011

MC14777-1, MC14777-2, MC14777-4, MC14777-5

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

CAS No.	Surrogate Recoveries		Limits
460-00-4	Bromofluorobenzene (S)	88%	36-173%
460-00-4	Bromofluorobenzene (S)	93%	36-173%

Blank Spike Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30666-BS	BK17934.D	1	10/18/12	AP	10/12/12	OP30666	GBK660

The QC reported here applies to the following samples: Method: SW846 8011

MC14777-1, MC14777-2, MC14777-4, MC14777-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
96-12-8	1,2-Dibromo-3-chloropropane	0.071	0.054	76	60-140
106-93-4	1,2-Dibromoethane	0.071	0.060	85	60-140

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	Bromofluorobenzene (S)	84%	36-173%
460-00-4	Bromofluorobenzene (S)	91%	36-173%

8.2.1

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* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30666-MS	BK17936.D	1	10/18/12	AP	10/12/12	OP30666	GBK660
OP30666-MSD	BK17937.D	1	10/18/12	AP	10/12/12	OP30666	GBK660
MC14930-4	BK17938.D	1	10/18/12	AP	10/12/12	OP30666	GBK660

The QC reported here applies to the following samples: Method: SW846 8011

MC14777-1, MC14777-2, MC14777-4, MC14777-5

CAS No.	Compound	MC14930-4 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	0.058	82	0.054	76	7	64-141/29
106-93-4	1,2-Dibromoethane	ND		0.071	0.069	97	0.067	94	3	63-163/27

CAS No.	Surrogate Recoveries	MS	MSD	MC14930-4	Limits
460-00-4	Bromofluorobenzene (S)	87%	78%	84%	36-173%
460-00-4	Bromofluorobenzene (S)	96%	90%	94%	36-173%

* = Ontside of Control Limits.

Volatile Surrogate Recovery Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Method: SW846 8011 Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 [a]	S1 [b]
MC14777-1	BK17939.D	74.0	91.0
MC14777-2	BK17940.D	120.0	128.0
MC14777-4	BK17941.D	83.0	93.0
MC14777-5	BK17942.D	82.0	89.0
OP30666-BS	BK17934.D	84.0	91.0
OP30666-MB	BK17933.D	88.0	93.0
OP30666-MS	BK17936.D	87.0	96.0
OP30666-MSD	BK17937.D	78.0	90.0

Surrogate Compounds	Recovery Limits
S1 = Bromofluorobenzene (S)	36-173%

(a) Recovery from GC signal #1
(b) Recovery from GC signal #2

GC Surrogate Retention Time Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	GBK660-CC660	Injection Date:	10/18/12
Lab File ID:	BK17924.D	Injection Time:	06:57
Instrument ID:	GCBK	Method:	SW846 8011

	S1 [a] RT	S1 [b] RT
Check Std	4.91	4.70

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 [a] RT	S1 [b] RT
MC14800-5	BK17925.D	10/18/12	07:21	4.91	4.70
ZZZZZZ	BK17926.D	10/18/12	07:45	4.91	4.70
ZZZZZZ	BK17927.D	10/18/12	08:10	4.91	4.70
ZZZZZZ	BK17928.D	10/18/12	08:34	4.91	4.70
ZZZZZZ	BK17929.D	10/18/12	08:58	4.91	4.70
ZZZZZZ	BK17930.D	10/18/12	09:36	4.91	4.70
ZZZZZZ	BK17931.D	10/18/12	10:01	4.91	4.70
ZZZZZZ	BK17932.D	10/18/12	10:25	4.91	4.70
OP30666-MB	BK17933.D	10/18/12	10:50	4.91	4.70
OP30667-MB	BK17933A.D	10/18/12	10:50	4.91	4.70
OP30666-BS	BK17934.D	10/18/12	11:14	4.91	4.70
OP30667-BS	BK17934A.D	10/18/12	11:14	4.91	4.70

Surrogate Compounds

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #1
(b) Retention time from GC signal #2

GC Surrogate Retention Time Summary

Job Number: MC14777
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	GBK660-CC660	Injection Date:	10/18/12
Lab File ID:	BK17935.D	Injection Time:	11:39
Instrument ID:	GCBK	Method:	SW846 8011

	S1 [a] RT	S1 [b] RT
Check Std	4.91	4.70

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 [a] RT	S1 [b] RT
OP30666-MS	BK17936.D	10/18/12	12:04	4.91	4.70
OP30667-MS	BK17936A.D	10/18/12	12:04	4.91	4.70
OP30666-MSD	BK17937.D	10/18/12	12:29	4.91	4.70
OP30667-MSD	BK17937A.D	10/18/12	12:29	4.91	4.70
MC14930-4	BK17938.D	10/18/12	12:54	4.91	4.70
MC14930-3	BK17938A.D	10/18/12	12:54	4.91	4.70
MC14777-1	BK17939.D	10/18/12	13:19	4.91	4.70
MC14777-2	BK17940.D	10/18/12	13:44	4.91	4.70
MC14777-4	BK17941.D	10/18/12	14:09	4.91	4.70
MC14777-5	BK17942.D	10/18/12	14:33	4.91	4.70
ZZZZZZ	BK17943.D	10/18/12	14:57	4.91	4.70
ZZZZZZ	BK17944.D	10/18/12	15:22	4.91	4.70
ZZZZZZ	BK17945.D	10/18/12	15:47	4.91	4.70

Surrogate Compounds

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #1
(b) Retention time from GC signal #2

Roxana Groundwater Profiling Data Review

Laboratory SDG: MC14814

Data Reviewer: Elizabeth Kunkel

Peer Reviewer: Steve Gragert

Date Reviewed: 11/14/2012

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

Sample Identification	Sample Identification
GWP-28-80-ROX-101012	TB-101012-HCL
TB-101012-ST	

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, and one VOC LCS/LCSD RPD, were outside evaluation criteria. The initial calibration verification for acetone exceeded 50 percent difference (%D). The continuing calibration verification recovery for 2-chloroethyl vinyl ether was outside evaluation criteria; in-house laboratory control limits were applied to the LCS recovery for the evaluation of this compound. 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 0.6ºC, which is outside the 4ºC ± 2ºC 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
MSP2150-BS	VOCs	Naphthalene	**135**	NA	70-130

LCS/ LCSD ID	Parameter	Analyte	LCS/LCSD Recovery	RPD	LCS/LCSD /RPD Criteria
MSV520-BS/BSD	VOCs	2-Chloroethyl vinyl ether	**30/23**	**27**	70-130/25
OP30651-BS	SVOCs	Phenol	**26**	NA	30-130
OP30651-BS	SVOCs	Aniline	**10**	NA	40-140
OP30651-BS	SVOCs	4-Chloroaniline	**26**	NA	40-140
OP30651-BS	SVOCs	3,3”-Dichlorobenzidine	**14**	NA	40-140
OP30651-BS	SVOCs	Pyridine	**24**	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
GWP-28-80-ROX-101012	VOCs	2-Chloroethyl vinyl ether	**UJ**
GWP-28-80-ROX-101012	SVOCs	Phenol	**UJ**
GWP-28-80-ROX-101012	SVOCs	Aniline	**UJ**
GWP-28-80-ROX-101012	SVOCs	4-Chloroaniline	**UJ**
GWP-28-80-ROX-101012	SVOCs	3,3”-Dichlorobenzidine	**UJ**
GWP-28-80-ROX-101012	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; samples analyzed did not require dilution.

12.0 Additional Qualifications

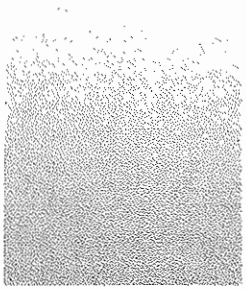
Were additional qualifications applied?

Yes, the initial calibration verification for acetone exceeded 50 percent difference (%D); acetone in the associated sample was qualified as summarized in the following table.

Sample ID	Parameter	Analyte	Qualification
GWP-28-80-ROX-101012	VOCs	Acetone	**UJ**

New England ACCUTEST LABORATORIES

11/13/12



Technical Report for

Shell Oil

URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, Il

21562735.00015

Accutest Job Number: MC14814

Sampling Date: 10/10/12

Report to:

URS Corporation

elizabeth.kunkel@URS.com

ATTN: Elizabeth Kunkel

Total number of pages in report: 61

Reviewed
on
11/14/2012

Reza Pand
Lab Director

ACCREDITED IN ACCORDANCE WITH nelac

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.

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) WI (399080220) ISO 17025:2005 (L2235)

Test results relate only to samples analyzed.

Sections: 1 2 3 4 5 6 7 8

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Sample Summary

Shell Oil

Job No: MC14814

URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL
Project No: 21562735.00015

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
MC14814-1	10/10/12	12:55	NM	10/11/12	AQ	Ground Water	GWP-28-80-ROX-101012
MC14814-2	10/10/12	00:00	NM	10/11/12	AQ	Trip Blank Water	TB-101012-HCL
MC14814-3	10/10/12	00:00	NM	10/11/12	AQ	Trip Blank Water	TB-101012-ST

ACCUTEST LABORATORIES

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SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	Shell Oil	**Job No**	MC14814
Site:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characteriz	**Report Date**	10/29/2012 10:54:26 AM

1 Sample(s), 2 Trip Blank(s) were collected on 10/10/2012 and were received at Accutest on 10/11/2012 properly preserved, at 0.6 Deg. C and intact. These Samples received an Accutest job number of MC14814. 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:** MSP2150

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC15048-3MS, MC15048-3MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for Naphtbalene are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for Chloroethane, Dichlorodifluoromethane are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 1,2,3-Trichloropropane, 2,2-Dichloropropane, Acrylonitrile, Carbon disulfide, Chloroethane, Dichlorodifluoromethane, Naphthalene are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Initial calibration verification standard MSP2106-ICV2106 for acetone exceed 50% Difference (response bias high). Associated samples are non-detect for this compound.

Matrix AQ **Batch ID:** MSV520

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC14908-11MS, MC14908-11MSD 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 are outside control limits. Blank Spike meets program technical requirements.
- MS/MSD Recovery(s) for 2-Chloroethyl vinyl ether are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- The Continuing Calibration run in instrument batch MSV520-CC436 for 2-chloroethyl vinyl ether met SW846 minimum method requirements for evaluation of the continuing calibration standards. Due to the difficult nature and unstable behavior of this compound, sample analysis was performed. Evaluation of this compound was performed using Blank Spike recovery against inhouse
control limits.
- RPD of MSV520-BSD for 2-Chloroethyl vinyl ether: Outside control limits. Blank Spike meets program technical requirements.

Extractables by GCMS By Method SW846 8270C

Matrix AQ	Batch ID: OP30651

- 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) MC15000-7MS, MC15000-7MSD were used as the QC samples indicated.
- Blank Spike Recovery(s) for 3,3'-Dichlorobenzidine, 4-Chloroaniline, Aniline, Phenol, Pyridine are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for Aniline, Benzoic Acid, Pyridine 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, 3-Nitroaniline, 4-Chloroaniline, 4-Nitroaniline, Aniline, Pyridine are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- RPD(s) for MSD for 3,3'-Dichlorobenzidine, 3-Nitroaniline, 4-Chloroaniline, 4-Nitroaniline, Aniline, Benzoic Acid, Pyridine are outside control limits for sample OP30651-MSD. High RPD due to possible matrix interferenee and/or sample non-homogeneity.

Extractables by GCMS By Method SW846 8270C BY SIM

Matrix AQ	Batch ID: OP30652

- 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) MC14797-5MS, MC14797-5MSD were used as the QC samples indicated.

Volatiles by GC By Method SW846 8011

Matrix AQ	Batch ID: OP30666

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC14930-4MS, MC14930-4MSD 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(MC14814).

Summary of Hits

Job Number: MC14814
Account: Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL
Collected: 10/10/12

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
MC14814-1	GWP-28-80-ROX-101012					
Methyl Tert Butyl Ether		1.2	1.0	0.41	ug/l	SW846 8260B
MC14814-2	TB-101012-HCL					
No hits reported in this sample.						
MC14814-3	TB-101012-ST					
No hits reported in this sample.						

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Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	GWP-28-80-ROX-101012		
Lab Sample ID:	MC14814-1	Date Sampled:	10/10/12
Matrix:	AQ - Ground Water	Date Received:	10/11/12
Method:	SW846 8260B	Percent Solids:	n/a
Project:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P65723.D	1	10/23/12	TT	n/a	n/a	MSP2150
Run #2	V12681.D	1	10/24/12	AMY	n/a	n/a	MSV520

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

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	3.0	ug/l	UJ
107-02-8	Acrolein	ND	25	10	ug/l	
107-13-1	Acrylonitrile	ND	5.0	3.2	ug/l	
71-43-2	Benzene	ND	0.50	0.24	ug/l	
108-86-1	Bromobenzene	ND	5.0	0.62	ug/l	
74-97-5	Bromochloromethane	ND	5.0	1.2	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.78	ug/l	
74-83-9	Bromomethane	ND	2.0	1.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.4	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	0.68	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	0.55	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	0.64	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.61	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.87	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.47	ug/l	
75-00-3	Chloroethane	ND	2.0	0.50	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND [a]	5.0	0.78	ug/l	UJ
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	2.0	0.73	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	0.65	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	0.48	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.53	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.93	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.45	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.64	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.7	ug/l	
75-34-3	1,1-Dichloroetbane	ND	1.0	0.62	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.63	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.41	ng/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.64	ng/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.95	ng/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:	GWP-28-80-ROX-101012		
Lab Sample ID:	MC14814-1	**Date Sampled:**	10/10/12
Matrix:	AQ - Ground Water	**Date Received:**	10/11/12
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2.0	0.72	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	0.64	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	1.6	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	0.91	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.45	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.20	ug/l	
123-91-1	1,4-Dioxane	ND	25	15	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	0.81	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.51	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	2.1	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	0.50	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	0.57	ug/l	
1634-04-4	Methyl Tert Butyl Ether	1.2	1.0	0.41	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	2.9	ug/l	
74-95-3	Methylene bromide	ND	5.0	1.1	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.83	ug/l	
91-20-3	Naphthalene	ND	5.0	0.44	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	0.58	ug/l	
100-42-5	Styrene	ND	5.0	0.45	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	0.57	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.60	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.42	ug/l	
108-88-3	Toluene	ND	1.0	0.51	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	1.3	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.85	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.50	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.78	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.29	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.85	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.35	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.47	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.63	ug/l	
	m,p-Xylene	ND	1.0	0.73	ug/l	
95-47-6	o-Xylene	ND	1.0	0.58	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.58	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:	GWP-28-80-ROX-101012		
Lab Sample ID:	MC14814-1	**Date Sampled:**	10/10/12
Matrix:	AQ - Ground Water	**Date Received:**	10/11/12
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%	91%	70-130%
2037-26-5	Toluene-D8	86%	101%	70-130%
460-00-4	4-Bromofluorobenzene	113%	94%	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 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:	GWP-28-80-ROX-101012		
Lab Sample ID:	MC14814-1	**Date Sampled:**	10/10/12
Matrix:	AQ - Ground Water	**Date Received:**	10/11/12
Method:	SW846 8270C SW846 3510C	**Percent Solids:**	n/a
Project:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F58313.D	1	10/15/12	KR	10/12/12	OP30651	MSF2755
Run #2							

	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	
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	UJ
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	UJ
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	UJ
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	ng/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.3	0.94	ug/l	UJ
132-64-9	Dibenzofuran	ND	2.1	0.23	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.3	0.38	ug/l	
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

Client Sample ID:	GWP-28-80-ROX-101012		
Lab Sample ID:	MC14814-1	Date Sampled:	10/10/12
Matrix:	AQ - Ground Water	Date Received:	10/11/12
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), 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	ND	2.1	0.39	ug/l	
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-Nitroauiline	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	UJ

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	42%		15-110%
4165-62-2	Phenol-d5	38%		15-110%
118-79-6	2,4,6-Tribromophenol	95%		15-110%
4165-60-0	Nitrobenzene-d5	80%		30-130%
321-60-8	2-Fluorobiphenyl	76%		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

Client Sample ID:	GWP-28-80-ROX-101012		
Lab Sample ID:	MC14814-1	Date Sampled:	10/10/12
Matrix:	AQ - Ground Water	Date Received:	10/11/12
Method:	SW846 8270C BY SIM SW846 3510C	Percent Solids:	n/a
Project:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U10098.D	1	10/15/12	NS	10/12/12	OP30652	MSU545
Run #2							

	Initial Volume	Final Volume
Run #1	950 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.11	0.014	ug/l	
208-96-8	Acenaphthylene	ND	0.11	0.014	ug/l	
120-12-7	Anthracene	ND	0.11	0.019	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.053	0.032	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.11	0.018	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.053	0.025	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.11	0.040	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.11	0.062	ug/l	
218-01-9	Chrysene	ND	0.11	0.077	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.11	0.044	ug/l	
206-44-0	Fluoranthene	ND	0.11	0.034	ug/l	
86-73-7	Fluorene	ND	0.11	0.049	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.11	0.048	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.21	0.15	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.21	0.055	ug/l	
85-01-8	Phenanthrene	ND	0.053	0.013	ug/l	
129-00-0	Pyrene	ND	0.11	0.037	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	78%		30-130%
321-60-8	2-Fluorobiphenyl	78%		30-130%
1718-51-0	Terphenyl-d14	76%		30-130%

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:	GWP-28-80-ROX-101012		
Lab Sample ID:	MC14814-1	Date Sampled:	10/10/12
Matrix:	AQ - Ground Water	Date Received:	10/11/12
Method:	SW846 8011 SW846 8011	Percent Solids:	n/a
Project:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BK17943.D	1	10/18/12	AP	10/12/12	OP30666	GBK660
Run #2							

	Initial Volume	Final Volume
Run #1	36.1 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	0.013	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.015	0.010	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	70%		36-173%
460-00-4	Bromofluorobenzene (S)	87%		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:	TB-101012-HCL		
Lab Sample ID:	MC14814-2	Date Sampled:	10/10/12
Matrix:	AQ - Trip Blank Water	Date Received:	10/11/12
Method:	SW846 8260B	Percent Solids:	n/a
Project:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, 1L		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P65709.D	1	10/23/12	TT	n/a	n/a	MSP2150
Run #2	V12682.D	1	10/24/12	AMY	n/a	n/a	MSV520

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

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	3.0	ug/l	
107-02-8	Acrolein	ND	25	10	ug/l	
107-13-1	Acrylonitrile	ND	5.0	3.2	ug/l	
71-43-2	Benzene	ND	0.50	0.24	ug/l	
108-86-1	Bromobenzene	ND	5.0	0.62	ug/l	
74-97-5	Bromochloromethane	ND	5.0	1.2	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.78	ug/l	
74-83-9	Bromomethane	ND	2.0	1.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.4	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	0.68	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	0.55	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	0.64	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.61	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.87	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.47	ug/l	
75-00-3	Chloroethane	ND	2.0	0.50	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND [a]	5.0	0.78	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	2.0	0.73	ng/l	
95-49-8	o-Chlorotoluene	ND	5.0	0.65	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	0.48	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.53	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.93	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.45	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.64	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.7	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.62	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.63	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.41	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.64	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.95	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-101012-HCL		
Lab Sample ID:	MC14814-2	Date Sampled:	10/10/12
Matrix:	AQ - Trip Blank Water	Date Received:	10/11/12
Method:	SW846 8260B	Percent Solids:	n/a
Project:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2.0	0.72	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	0.64	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	1.6	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	0.91	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.45	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.20	ug/l	
123-91-1	1,4-Dioxane	ND	25	15	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	0.81	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.51	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	2.1	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	0.50	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	0.57	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.41	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	2.9	ug/l	
74-95-3	Methylene bromide	ND	5.0	1.1	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.83	ug/l	
91-20-3	Naphthalene	ND	5.0	0.44	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	0.58	ug/l	
100-42-5	Styrene	ND	5.0	0.45	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	0.57	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.60	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.42	ug/l	
108-88-3	Toluene	ND	1.0	0.51	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	1.3	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.85	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.50	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.78	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.29	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.85	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.35	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.47	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.63	ug/l	
	m,p-Xylene	ND	1.0	0.73	ug/l	
95-47-6	o-Xylene	ND	1.0	0.58	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.58	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-101012-HCL		
Lab Sample ID:	MC14814-2	**Date Sampled:**	10/10/12
Matrix:	AQ - Trip Blank Water	**Date Received:**	10/11/12
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%	93%	70-130%
2037-26-5	Toluene-D8	85%	102%	70-130%
460-00-4	4-Bromofluorobenzene	107%	94%	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 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 presnmptive evidence of a componnd

Report of Analysis

Client Sample ID:	TB-101012-ST		
Lab Sample ID:	MC14814-3	**Date Sampled:**	10/10/12
Matrix:	AQ - Trip Blank Water	**Date Received:**	10/11/12
Method:	SW846 8011 SW846 8011	**Percent Solids:**	n/a
Project:	URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BK17944.D	1	10/18/12	AP	10/12/12	OP30666	GBK660
Run #2							

	Initial Volume	Final Volume
Run #1	36.8 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	0.012	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.014	0.0099	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	85%		36-173%
460-00-4	Bromoflnorobenzene (S)	96%		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

New England ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

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

ACCUTEST LABORATORIES

CHAIN OF CUSTODY

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

FED-EX Tracking #: 8007 7532 1430
Accutest Job #: MC14814

Client / Reporting Information

Company Name: URS Corporation
Street Address: 1001 Highlands Plaza Dr W
City: St Louis State: MO Zip: 63110
Project Contact: Elizabeth Kunkel
Phone #: 314-429-0100
Sampler(s) Name(s): McNurlen Phone #: 314-429-0100

Project Information

Project Name: Roxana-Groundwater Profiling (Add'l GW Characterization)
Project #: 21562735.00015
Project Manager: Bob Mooshegian

Billing Information (If different from Report to): Company Name, Street Address, City, State, Zip, Attention, PO#

Requested Analysis (see TEST CODE sheet): VOC 8260B SL + TICs (HCL); VOC 8011 SL (Sod Thio); SVOC 8270C SL + TICS (None); PAH 8270 LL (None)

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

Accutest Sample #	Field ID / Point of Collection	Date	Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Sod Thio	VOC 8260B	VOC 8011	SVOC 8270C	PAH 8270 LL	LAB USE ONLY
-1	GWP-28-80-ROX-101012	10/10/12	1255	NM	GW	6	2				2				2	X	X	X	X	
-2	TB-101012-HCL	10/10/12	0000	NM	TB	2	2									X				
-3	TB-101012-ST	10/10/12	0000	NM	TB	2									2		X			

10AA, im3

Turnaround Time (Business days)

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

Emergency & Rush T/A data available VIA Lablink

Approved By (Accutest PM) / Date:

Data Deliverable Information

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

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

Comments / Special Instructions

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

Relinquished by Sampler	Date Time	Received By	Relinquished By	Date Time	Received By
1 [signature]	10/10/12 1845	1 Fed Ex	2 FED X	10-11-12 930	2 [signature]
3		3	4		4
5		5	Custody Seal #: ☐ Intact ☐ Not intact	Preserved where applicable ☐	On Ice ☑ Cooler Temp. 0.6

MC14814: Chain of Custody
Page 1 of 2

ACCUTEST LABORATORIES

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC14814 **Client:** URS **Immediate Client Services Action Required:** No

Date / Time Received: 10/11/2012 **Delivery Method:** **Client Service Action Required at Login:** No

Project: ROXANA GW PROFILING **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.	Infared 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

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5.1

MC14814: Chain of Custody
Page 2 of 2

Internal Sample Tracking Chronicle

Shell Oil

Job No: MC14814

URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL
Project No: 21562735.00015

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
MC14814-1 Collected: 10-OCT-12 12:55 By: NM			Received: 11-OCT-12 By:			
GWP-28-80-ROX-101012						
MC14814-1	SW846 8270C	15-OCT-12 10:38	KR	12-OCT-12	PA	AB8270SL+
MC14814-1	SW846 8270C BY SIM	15-OCT-12 21:00	NS	12-OCT-12	PA	B8270SIMPAH
MC14814-1	SW846 8011	18-OCT-12 14:57	AP	12-OCT-12	AJ	V8011SL
MC14814-1	SW846 8260B	23-OCT-12 20:16	TT			V8260SL+
MC14814-1	SW846 8260B	24-OCT-12 15:53	AMY			V8260SL+
MC14814-2 Collected: 10-OCT-12 00:00 By: NM			Received: 11-OCT-12 By:			
TB-101012-HCL						
MC14814-2	SW846 8260B	23-OCT-12 13:16	TT			V8260SL+
MC14814-2	SW846 8260B	24-OCT-12 16:22	AMY			V8260SL+
MC14814-3 Collected: 10-OCT-12 00:00 By: NM			Received: 11-OCT-12 By:			
TB-101012-ST						
MC14814-3	SW846 8011	18-OCT-12 15:22	AP	12-OCT-12	AJ	V8011SL

Accutest Internal Chain of Custody

Job Number: MC14814
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL
Received: 10/11/12

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
MC14814-1.1	Walk In Ref #22	Michael Rolo	10/12/12 07:34	Retrieve from Storage
MC14814-1.1	Michael Rolo		10/15/12 21:21	Depleted
MC14814-1.3	VOC Ref #1	Tomasz Torski	10/23/12 11:16	Retrieve from Storage
MC14814-1.3	Tomasz Torski	GCMSP	10/23/12 11:16	Load on Instrument
MC14814-1.3	GCMSP	Tomasz Torski	10/24/12 09:25	Unload from Instrument
MC14814-1.3	Tomasz Torski	VOC Ref #1	10/24/12 09:26	Return to Storage
MC14814-1.4	VOC Ref #1	Amy Min Yang	10/24/12 08:22	Retrieve from Storage
MC14814-1.4	Amy Min Yang	GCMSV	10/24/12 08:22	Load on Instrument
MC14814-1.4	GCMSV	Amy Min Yang	10/24/12 12:15	Unload from Instrument
MC14814-1.4	Amy Min Yang	VOC Ref #1	10/24/12 12:20	Return to Storage
MC14814-1.6	VOC Ref #1	Nick Krasinski	10/12/12 15:33	Retrieve from Storage
MC14814-1.6	Nick Krasinski		10/15/12 21:21	Depleted
MC14814-2.1	VOC Ref #1	Amy Min Yang	10/24/12 08:22	Retrieve from Storage
MC14814-2.1	Amy Min Yang	GCMSV	10/24/12 08:22	Load on Instrument
MC14814-2.1	GCMSV	Amy Min Yang	10/24/12 12:15	Unload from Instrument
MC14814-2.1	Amy Min Yang	VOC Ref #1	10/24/12 12:20	Return to Storage
MC14814-2.2	VOC Ref #1	Tomasz Torski	10/23/12 11:16	Retrieve from Storage
MC14814-2.2	Tomasz Torski	GCMSP	10/23/12 11:16	Load on Instrument
MC14814-2.2	GCMSP	Tomasz Torski	10/24/12 09:25	Uuload from Instrument
MC14814-2.2	Tomasz Torski	VOC Ref #1	10/24/12 09:26	Return to Storage
MC14814-3.1	VOC Ref #1	Nick Krasinski	10/12/12 15:33	Retrieve from Storage
MC14814-3.1	Nick Krasinski		10/15/12 21:21	Depleted

New England ACCUTEST LABORATORIES

GC/MS Volatiles

QC Data Summaries

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: MC14814
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSP2150-MB	P65707.D	1	10/23/12	TT	n/a	n/a	MSP2150

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

MC14814-1, MC14814-2

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	3.0	ug/l	
107-02-8	Acrolein	ND	25	10	ug/l	
107-13-1	Acrylonitrile	ND	5.0	3.2	ug/l	
71-43-2	Benzene	ND	0.50	0.24	ug/l	
108-86-1	Bromobenzene	ND	5.0	0.62	ug/l	
74-97-5	Bromochloromethane	ND	5.0	1.2	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.78	ug/l	
74-83-9	Bromomethane	ND	2.0	1.0	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.4	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	0.68	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	0.55	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	0.64	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.61	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.87	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.47	ug/l	
75-00-3	Chloroethane	ND	2.0	0.50	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	2.0	0.73	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	0.65	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	0.48	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.53	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.93	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.45	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.64	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.7	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.62	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.63	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.41	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.64	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.95	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	0.72	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	0.64	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	1.6	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	0.91	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.45	ug/l	

Method Blank Summary

Job Number: MC14814
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSP2150-MB	P65707.D	1	10/23/12	TT	n/a	n/a	MSP2150

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

MC14814-1, MC14814-2

CAS No.	Compound	Result	RL	MDL	Units	Q
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.20	ug/l	
123-91-1	1,4-Dioxane	ND	25	15	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	0.81	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.51	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	2.1	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	0.50	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	0.57	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.41	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	2.9	ug/l	
74-95-3	Methylene bromide	ND	5.0	1.1	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.83	ug/l	
91-20-3	Naphthalene	ND	5.0	0.44	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	0.58	ug/l	
100-42-5	Styrene	ND	5.0	0.45	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	0.57	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.60	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.42	ug/l	
108-88-3	Toluene	ND	1.0	0.51	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	1.3	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.85	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.50	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.78	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.29	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.85	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.35	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.47	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.63	ug/l	
	m,p-Xylene	ND	1.0	0.73	ug/l	
95-47-6	o-Xylene	ND	1.0	0.58	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.58	ug/l	

Method Blank Summary

Job Number: MC14814
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSP2150-MB	P65707.D	1	10/23/12	TT	n/a	n/a	MSP2150

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

MC14814-1, MC14814-2

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	98%	70-130%
2037-26-5	Toluene-D8	88%	70-130%
460-00-4	4-Bromofluorobenzene	112%	70-130%

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

6.1.1

Method Blank Summary

Job Number: MC14814
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSV520-MB	V12667.D	1	10/24/12	AMY	n/a	n/a	MSV520

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

MC14814-1, MC14814-2

CAS No.	Compound	Result	RL	MDL	Units	Q
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	0.78	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	88%	70-130%
2037-26-5	Toluene-D8	94%	70-130%
460-00-4	4-Bromofluorobenzene	90%	70-130%

Blank Spike Summary

Job Number: MC14814
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSP2150-BS	P65705.D	1	10/23/12	TT	n/a	n/a	MSP2150

6.2.1

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

MC14814-1, MC14814-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	50	45.0	90	70-130
107-02-8	Acrolein	250	174	70	70-130
107-13-1	Acrylonitrile	50	63.8	128	70-130
71-43-2	Benzene	50	49.2	98	70-130
108-86-1	Bromobenzene	50	50.9	102	70-130
74-97-5	Bromochloromethane	50	53.6	107	70-130
75-27-4	Bromodichloromethane	50	53.7	107	70-130
75-25-2	Bromoform	50	38.2	76	70-130
74-83-9	Bromomethane	50	46.6	93	70-130
78-93-3	2-Butanone (MEK)	50	52.8	106	70-130
104-51-8	n-Butylbenzene	50	59.2	118	70-130
135-98-8	sec-Butylbenzene	50	58.6	117	70-130
98-06-6	tert-Butylbenzene	50	56.9	114	70-130
75-15-0	Carbon disulfide	50	57.5	115	70-130
56-23-5	Carbon tetrachloride	50	47.3	95	70-130
108-90-7	Chlorobenzene	50	51.4	103	70-130
75-00-3	Chloroethane	50	61.8	124	70-130
67-66-3	Chloroform	50	55.0	110	70-130
74-87-3	Chloromethane	50	48.3	97	70-130
95-49-8	o-Chlorotoluene	50	58.2	116	70-130
106-43-4	p-Chlorotoluene	50	63.2	126	70-130
124-48-1	Dibromochloromethane	50	44.5	89	70-130
95-50-1	1,2-Dichlorobenzene	50	55.6	111	70-130
541-73-1	1,3-Dichlorobenzene	50	55.7	111	70-130
106-46-7	1,4-Dichlorobenzene	50	53.8	108	70-130
75-71-8	Dichlorodifluoromethane	50	38.5	77	70-130
75-34-3	1,1-Dichloroethane	50	55.5	111	70-130
107-06-2	1,2-Dichloroethane	50	50.2	100	70-130
75-35-4	1,1-Dichloroethene	50	54.7	109	70-130
156-59-2	cis-1,2-Dichloroethene	50	51.1	102	70-130
156-60-5	trans-1,2-Dichloroethene	50	46.8	94	70-130
78-87-5	1,2-Dichloropropane	50	57.3	115	70-130
142-28-9	1,3-Dichloropropane	50	44.5	89	70-130
594-20-7	2,2-Dichloropropane	50	51.4	103	70-130
563-58-6	1,1-Dichloropropene	50	49.9	100	70-130
10061-01-5	cis-1,3-Dichloropropene	50	49.8	100	70-130

* = Outside of Control Limits.

Blank Spike Summary

Job Number: MC14814
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSP2150-BS	P65705.D	1	10/23/12	TT	n/a	n/a	MSP2150

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

MC14814-1, MC14814-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
10061-02-6	trans-1,3-Dichloropropene	50	50.0	100	70-130
123-91-1	1,4-Dioxane	250	208	83	70-130
97-63-2	Ethyl methacrylate	50	41.7	83	77-137
100-41-4	Ethylbenzene	50	47.7	95	70-130
87-68-3	Hexachlorobutadiene	50	59.9	120	70-130
591-78-6	2-Hexanone	50	55.8	112	70-130
98-82-8	Isopropylbenzene	50	56.1	112	70-130
99-87-6	p-Isopropyltoluene	50	54.9	110	70-130
1634-04-4	Methyl Tert Butyl Ether	50	44.8	90	70-130
108-10-1	4-Methyl-2-pentanone (MIBK)	50	54.8	110	70-130
74-95-3	Methylene bromide	50	52.0	104	70-130
75-09-2	Methylene chloride	50	53.7	107	70-130
91-20-3	Naphthalene	50	67.7	135* [a]	70-130
103-65-1	n-Propylbenzene	50	57.9	116	70-130
100-42-5	Styrene	50	45.1	90	70-130
630-20-6	1,1,1,2-Tetrachloroethane	50	46.5	93	70-130
79-34-5	1,1,2,2-Tetrachloroethane	50	62.6	125	70-130
127-18-4	Tetrachloroethene	50	42.8	86	70-130
108-88-3	Toluene	50	49.6	99	70-130
87-61-6	1,2,3-Trichlorobenzene	50	60.4	121	70-130
120-82-1	1,2,4-Trichlorobenzene	50	57.2	114	70-130
71-55-6	1,1,1-Trichloroethane	50	48.9	98	70-130
79-00-5	1,1,2-Trichloroethane	50	46.8	94	70-130
79-01-6	Trichloroethene	50	48.5	97	70-130
75-69-4	Trichlorofluoromethane	50	49.0	98	70-130
96-18-4	1,2,3-Trichloropropane	50	63.6	127	70-130
95-63-6	1,2,4-Trimethylbenzene	50	51.3	103	70-130
108-67-8	1,3,5-Trimethylbenzene	50	51.3	103	70-130
108-05-4	Vinyl Acetate	50	49.4	99	70-130
75-01-4	Vinyl chloride	50	43.2	86	70-130
	m,p-Xylene	100	99.6	100	70-130
95-47-6	o-Xylene	50	53.3	107	70-130
1330-20-7	Xylene (total)	150	153	102	70-130

* = Outside of Control Limits.

6.2.1

Blank Spike Summary

Job Number: MC14814
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSP2150-BS	P65705.D	1	10/23/12	TT	n/a	n/a	MSP2150

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

MC14814-1, MC14814-2

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	100%	70-130%
2037-26-5	Toluene-D8	92%	70-130%
460-00-4	4-Bromofluorobenzene	112%	70-130%

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

6.2.1 a

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: MC14814
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSV520-BS	V12664.D	1	10/24/12	AMY	n/a	n/a	MSV520
MSV520-BSD	V12665.D	1	10/24/12	AMY	n/a	n/a	MSV520

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

MC14814-1, MC14814-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
110-75-8	2-Chloroethyl vinyl ether	50	14.9	30* a	11.4	23* a	27* a	70-130/25

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	94%	93%	70-130%
2037-26-5	Toluene-D8	105%	98%	70-130%
460-00-4	4-Bromofluorobenzene	90%	87%	70-130%

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

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC14814
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC15048-3MS	P65714.D	5	10/23/12	TT	n/a	n/a	MSP2150
MC15048-3MSD	P65715.D	5	10/23/12	TT	n/a	n/a	MSP2150
MC15048-3	P65708.D	1	10/23/12	TT	n/a	n/a	MSP2150

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

MC14814-1, MC14814-2

CAS No.	Compound	MC15048-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	4.4		250	231	91	227	89	2	70-130/30
107-02-8	Acrolein	ND		1250	1060	85	1080	86	2	70-130/30
107-13-1	Acrylonitrile	ND		250	302	121	347	139* [a]	14	70-130/30
71-43-2	Benzene	ND		250	247	99	251	100	2	70-130/30
108-86-1	Bromobenzene	ND		250	237	95	252	101	6	70-130/30
74-97-5	Bromochloromethane	ND		250	268	107	263	105	2	70-130/30
75-27-4	Bromodichloromethane	ND		250	270	108	271	108	0	70-130/30
75-25-2	Bromoform	ND		250	193	77	194	78	1	70-130/30
74-83-9	Bromomethane	ND		250	265	106	282	113	6	70-130/30
78-93-3	2-Butanone (MEK)	ND		250	286	114	290	116	1	70-130/30
104-51-8	n-Butylbenzene	ND		250	280	112	300	120	7	70-130/30
135-98-8	sec-Butylbenzene	ND		250	273	109	290	116	6	70-130/30
98-06-6	tert-Butylbenzene	ND		250	263	105	280	112	6	70-130/30
75-15-0	Carbon disulfide	ND		250	318	127	329	132* [a]	3	70-130/30
56-23-5	Carbon tetrachloride	ND		250	248	99	253	101	2	70-130/30
108-90-7	Chlorobenzene	ND		250	245	98	253	101	3	70-130/30
75-00-3	Chloroethane	ND		250	359	144* [a]	357	143* [a]	1	70-130/30
67-66-3	Chloroform	ND		250	280	112	282	113	1	70-130/30
74-87-3	Chloromethane	ND		250	259	104	288	115	11	70-130/30
95-49-8	o-Chlorotoluene	ND		250	271	108	285	114	5	70-130/30
106-43-4	p-Chlorotoluene	ND		250	293	117	311	124	6	70-130/30
124-48-1	Dibromochloromethane	ND		250	216	86	221	88	2	70-130/30
95-50-1	1,2-Dichlorobenzene	ND		250	261	104	273	109	4	70-130/30
541-73-1	1,3-Dichlorobenzene	ND		250	260	104	276	110	6	70-130/30
106-46-7	1,4-Dichlorobenzene	ND		250	256	102	265	106	3	70-130/30
75-71-8	Dichlorodifluoromethane	ND		250	434	174* [a]	447	179* [a]	3	70-130/30
75-34-3	1,1-Dichloroethane	ND		250	285	114	289	116	1	70-130/30
107-06-2	1,2-Dichloroethane	ND		250	259	104	259	104	0	70-130/30
75-35-4	1,1-Dichloroethene	ND		250	295	118	301	120	2	70-130/30
156-59-2	cis-1,2-Dichloroethene	ND		250	252	101	254	102	1	70-130/30
156-60-5	trans-1,2-Dichloroethene	ND		250	236	94	246	98	4	70-130/30
78-87-5	1,2-Dichloropropane	ND		250	283	113	286	114	1	70-130/30
142-28-9	1,3-Dichloropropane	ND		250	223	89	224	90	0	70-130/30
594-20-7	2,2-Dichloropropane	ND		250	324	130	334	134* [a]	3	70-130/30
563-58-6	1,1-Dichloropropene	ND		250	257	103	267	107	4	70-130/30
10061-01-5	cis-1,3-Dichloropropene	ND		250	255	102	262	105	3	70-130/30

* = Outside of Control Limits.

6.4.1

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC14814
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC15048-3MS	P65714.D	5	10/23/12	TT	n/a	n/a	MSP2150
MC15048-3MSD	P65715.D	5	10/23/12	TT	n/a	n/a	MSP2150
MC15048-3	P65708.D	1	10/23/12	TT	n/a	n/a	MSP2150

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

MC14814-1, MC14814-2

CAS No.	Compound	MC15048-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
10061-02-6	trans-1,3-Dichloropropene	ND		250	255	102	265	106	4	70-130/30
123-91-1	1,4-Dioxane	ND		1250	1060	85	1340	107	23	70-130/30
97-63-2	Ethyl methacrylate	ND		250	204	82	211	84	3	72-139/30
100-41-4	Ethylbenzene	ND		250	226	90	235	94	4	70-130/30
87-68-3	Hexachlorobutadiene	ND		250	288	115	299	120	4	70-130/30
591-78-6	2-Hexanone	ND		250	270	108	294	118	9	70-130/30
98-82-8	Isopropylbenzene	ND		250	259	104	275	110	6	70-130/30
99-87-6	p-Isopropyltoluene	ND		250	260	104	276	110	6	70-130/30
1634-04-4	Methyl Tert Butyl Ether	ND		250	215	86	223	89	4	70-130/30
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		250	283	113	296	118	4	70-130/30
74-95-3	Methylene bromide	ND		250	271	108	274	110	1	70-130/30
75-09-2	Methylene chloride	ND		250	277	111	278	111	0	70-130/30
91-20-3	Naphthalene	ND		250	302	121	340	136* [a]	12	70-130/30
103-65-1	n-Propylbenzene	ND		250	271	108	287	115	6	70-130/30
100-42-5	Styrene	ND		250	213	85	220	88	3	70-130/30
630-20-6	1,1,1,2-Tetrachloroethane	ND		250	227	91	230	92	1	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	ND		250	308	123	321	128	4	70-130/30
127-18-4	Tetrachloroethene	4.6		250	217	85	226	89	4	70-130/30
108-88-3	Toluene	ND		250	243	97	250	100	3	70-130/30
87-61-6	1,2,3-Trichlorobenzene	ND		250	271	108	299	120	10	70-130/30
120-82-1	1,2,4-Trichlorobenzene	ND		250	255	102	285	114	11	70-130/30
71-55-6	1,1,1-Trichloroethane	ND		250	252	101	256	102	2	70-130/30
79-00-5	1,1,2-Trichloroethane	ND		250	235	94	239	96	2	70-130/30
79-01-6	Trichloroethene	ND		250	244	98	248	99	2	70-130/30
75-69-4	Trichlorofluoromethane	ND		250	292	117	294	118	1	70-130/30
96-18-4	1,2,3-Trichloropropane	ND		250	314	126	329	132* [a]	5	70-130/30
95-63-6	1,2,4-Trimethylbenzene	ND		250	239	96	254	102	6	70-130/30
108-67-8	1,3,5-Trimethylbenzene	ND		250	241	96	253	101	5	70-130/30
108-05-4	Vinyl Acetate	ND		250	286	114	294	118	3	70-130/30
75-01-4	Vinyl chloride	ND		250	275	110	277	111	1	70-130/30
	m,p-Xylene	ND		500	475	95	493	99	4	70-130/30
95-47-6	o-Xylene	ND		250	258	103	265	106	3	70-130/30
1330-20-7	Xylene (total)	ND		750	733	98	758	101	3	70-130/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC14814
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC15048-3MS	P65714.D	5	10/23/12	TT	n/a	n/a	MSP2150
MC15048-3MSD	P65715.D	5	10/23/12	TT	n/a	n/a	MSP2150
MC15048-3	P65708.D	1	10/23/12	TT	n/a	n/a	MSP2150

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

MC14814-1, MC14814-2

CAS No.	Surrogate Recoveries	MS	MSD	MC15048-3	Limits
1868-53-7	Dibromofluoromethane	98%	98%	97%	70-130%
2037-26-5	Toluene-D8	88%	89%	87%	70-130%
460-00-4	4-Bromofluorobenzene	104%	108%	110%	70-130%

(a) Outside control limits dne to possible matrix interference. Refer to Blank Spike.

6.4.1

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC14814
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC14908-11MS	V12679.D	1	10/24/12	AMY	n/a	n/a	MSV520
MC14908-11MSD	V12680.D	1	10/24/12	AMY	n/a	n/a	MSV520
MC14908-11	V12678.D	1	10/24/12	AMY	n/a	n/a	MSV520

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

MC14814-1, MC14814-2

6.4.2

CAS No.	Compound	MC14908-11 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
110-75-8	2-Chloroethyl vinyl ether	ND		50	ND	0* [a]	ND	0* [a]	nc	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	MC14908-11	Limits
1868-53-7	Dibromofluoromethane	96%	96%	93%	70-130%
2037-26-5	Toluene-D8	102%	101%	106%	70-130%
460-00-4	4-Bromofluorobenzene	93%	95%	98%	70-130%

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

* = Outside of Control Limits.

Volatile Internal Standard Area Summary

Job Number: MC14814
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	MSP2150-CC2106	Injection Date:	10/23/12
Lab File ID:	P65705.D	Injection Time:	11:22
Instrument ID:	GCMSP	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	412626	8.51	735004	9.37	398008	12.60	323209	15.16	139705	6.13
Upper Limit [a]	825252	9.01	1470008	9.87	796016	13.10	646418	15.66	279410	6.63
Lower Limit [b]	206313	8.01	367502	8.87	199004	12.10	161605	14.66	69853	5.63

Lab Sample ID	1S 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
MSP2150-BS	412626	8.51	735004	9.37	398008	12.60	323209	15.16	139705	6.13
MSP2150-MB	390655	8.51	693950	9.37	350994	12.61	266801	15.17	136360	6.13
MC15048-3	387285	8.51	690555	9.37	350902	12.61	264682	15.17	145025	6.13
MC14814-2	377792	8.51	674887	9.37	339173	12.61	259148	15.17	130382	6.13
ZZZZZZ	375239	8.51	672689	9.37	341752	12.61	258463	15.17	130088	6.14
ZZZZZZ	364462	8.51	656582	9.37	332401	12.61	253091	15.17	130283	6.13
ZZZZZZ	356216	8.51	636786	9.37	324833	12.61	248519	15.17	127866	6.13
ZZZZZZ	354353	8.51	638303	9.37	324652	12.61	248173	15.17	135759	6.13
MC15048-3MS	372675	8.51	664747	9.37	366881	12.60	307572	15.16	139437	6.13
MC15048-3MSD	392141	8.51	695190	9.37	381673	12.60	311967	15.16	152980	6.13
ZZZZZZ	355299	8.51	637229	9.37	324322	12.61	246703	15.17	132164	6.13
ZZZZZZ	339421	8.51	610716	9.37	309522	12.61	232723	15.17	128773	6.13
ZZZZZZ	351357	8.51	628253	9.37	317873	12.61	239495	15.17	114876	6.13
ZZZZZZ	351682	8.51	622904	9.37	317531	12.61	239122	15.17	97348	6.12
ZZZZZZ	333215	8.51	603246	9.37	307943	12.61	231232	15.17	102433	6.13
ZZZZZZ	318209	8.51	571249	9.37	291160	12.61	219363	15.17	85205	6.13
ZZZZZZ	337370	8.51	605892	9.37	309443	12.61	230578	15.17	88979	6.13
MC14814-1	325108	8.51	584046	9.37	298893	12.61	222499	15.17	84962	6.13
ZZZZZZ	318097	8.51	576869	9.37	293712	12.61	219390	15.17	83426	6.13
ZZZZZZ	333227	8.51	602115	9.37	304006	12.61	225646	15.17	93376	6.13
ZZZZZZ	368577	8.51	652739	9.37	345137	12.61	295139	15.16	118906	6.13
ZZZZZZ	425151	8.51	752831	9.37	390785	12.61	314695	15.16	110872	6.12
ZZZZZZ	451076	8.51	793203	9.37	399063	12.61	309670	15.16	127811	6.12

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
1S 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.

6.5.1

Volatile Internal Standard Area Summary

Job Number: MC14814
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Gronndwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	MSV520-CC436	Injection Date:	10/24/12
Lab File ID:	V12664.D	Injection Time:	07:34
Instrument ID:	GCMSV	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	515417	6.51	803405	7.70	471796	11.06	438254	13.30	119258	3.47
Upper Limit [a]	1030834	7.01	1606810	8.20	943592	11.56	876508	13.80	238516	3.97
Lower Limit [b]	257709	6.01	401703	7.20	235898	10.56	219127	12.80	59629	2.97
Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
MSV520-BS	515417	6.51	803405	7.70	471796	11.06	438254	13.30	119258	3.47
MSV520-BSD	512167	6.51	858439	7.70	482676	11.06	443287	13.30	123442	3.47
MSV520-MB	587470	6.51	888012	7.70	489344	11.06	441026	13.30	131001	3.47
ZZZZZZ	578101	6.51	949886	7.70	477016	11.06	444699	13.30	129182	3.47
ZZZZZZ	587464	6.51	954905	7.70	527531	11.06	469316	13.30	124673	3.46
ZZZZZZ	518630	6.51	863423	7.70	473552	11.06	441686	13.30	118319	3.47
ZZZZZZ	532904	6.51	855207	7.70	525838	11.06	431315	13.30	130581	3.47
ZZZZZZ	536468	6.51	872103	7.70	484871	11.06	451900	13.30	127173	3.46
ZZZZZZ	526662	6.51	845019	7.70	462623	11.06	416981	13.30	129235	3.47
ZZZZZZ	556229	6.51	915035	7.70	488780	11.06	435555	13.30	124285	3.47
ZZZZZZ	554890	6.52	928179	7.71	509495	11.07	456813	13.30	188174	3.49
ZZZZZZ	565089	6.52	927273	7.71	511170	11.07	453875	13.30	126962	3.48
MC14908-11	556311	6.52	927236	7.71	520987	11.07	446046	13.30	128870	3.48
MC14908-11MS	562979	6.52	936153	7.71	513840	11.07	462203	13.30	123249	3.48
MC14908-11MSD	563231	6.52	944088	7.71	517575	11.07	463510	13.30	132480	3.48
MC14814-1	569483	6.51	954520	7.70	537807	11.07	468979	13.30	129262	3.47
MC14814-2	572668	6.51	956556	7.70	523971	11.07	464371	13.30	130302	3.47
ZZZZZZ	562592	6.51	938643	7.70	519705	11.06	451715	13.30	128118	3.47
ZZZZZZ	563061	6.51	952884	7.71	517234	11.06	454485	13.30	133502	3.47
ZZZZZZ	565964	6.51	975239	7.71	526812	11.07	459301	13.30	190104	3.50
ZZZZZZ	562396	6.51	952367	7.71	518400	11.06	452403	13.30	133646	3.50

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.

Volatile Surrogate Recovery Summary

Job Number: MC14814
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), 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
MC14814-1	V12681.D	91.0	101.0	94.0
MC14814-1	P65723.D	101.0	86.0	113.0
MC14814-2	V12682.D	93.0	102.0	94.0
MC14814-2	P65709.D	96.0	85.0	107.0
MC14908-11MS	V12679.D	96.0	102.0	93.0
MC14908-11MSD	V12680.D	96.0	101.0	95.0
MC15048-3MS	P65714.D	98.0	88.0	104.0
MC15048-3MSD	P65715.D	98.0	89.0	108.0
MSP2150-BS	P65705.D	100.0	92.0	112.0
MSP2150-MB	P65707.D	98.0	88.0	112.0
MSV520-BS	V12664.D	94.0	105.0	90.0
MSV520-BSD	V12665.D	93.0	98.0	87.0
MSV520-MB	V12667.D	88.0	94.0	90.0

Surrogate Compounds	Recovery Limits
S1 = Dibromofluoromethane	70-130%
S2 = Toluene-D8	70-130%
S3 = 4-Bromofluorobenzene	70-130%

New England ACCUTEST LABORATORIES

GC/MS Semi-volatiles

QC Data Summaries

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: MC14814
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30651-MB	F58308.D	1	10/15/12	KR	10/12/12	OP30651	MSF2755

The QC reported here applies to the following samples: Method: SW846 8270C

MC14814-1

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	10	1.2	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	0.40	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	0.38	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	0.37	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	2.7	ug/l	
51-28-5	2,4-Dinitrophenol	ND	20	1.4	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	5.0	ug/l	
95-48-7	2-Methylphenol	ND	10	0.60	ug/l	
	3&4-Methylphenol	ND	10	0.75	ug/l	
88-75-5	2-Nitrophenol	ND	10	0.47	ug/l	
100-02-7	4-Nitrophenol	ND	20	2.8	ug/l	
87-86-5	Pentachlorophenol	ND	10	0.64	ug/l	
108-95-2	Phenol	ND	5.0	0.93	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	10	0.49	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	0.35	ug/l	
62-53-3	Auiline	ND	10	2.0	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	0.33	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	0.27	ug/l	
100-51-6	Benzyl Alcohol	ND	10	0.26	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	0.18	ug/l	
106-47-8	4-Chloroaniline	ND	10	0.63	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	0.22	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	0.38	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	0.28	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	0.29	ug/l	
122-66-7	1,2-Diphenylhydraziue	ND	5.0	0.21	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	2.0	ug/l	
606-20-2	2,6-Dinitrotolueue	ND	10	0.21	ug/l	
91-94-1	3,3'-Dichlorohenzidine	ND	5.0	0.89	ug/l	
132-64-9	Dihenzofurau	ND	2.0	0.21	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.0	0.36	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	0.24	ug/l	
84-66-2	Diethyl phthalate	ND	5.0	0.19	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	5.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	0.38	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	0.25	ug/l	

Method Blank Summary

Job Number: MC14814
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30651-MB	F58308.D	1	10/15/12	KR	10/12/12	OP30651	MSF2755

The QC reported here applies to the following samples: Method: SW846 8270C

MC14814-1

CAS No.	Compound	Result	RL	MDL	Units	Q
77-47-4	Hexachlorocyclopentadiene	ND	10	5.0	ug/l	
67-72-1	Hexachloroethane	ND	5.0	2.0	ug/l	
78-59-1	Isophorone	ND	5.0	0.32	ug/l	
88-74-4	2-Nitroaniline	ND	10	0.23	ug/l	
99-09-2	3-Nitroaniline	ND	10	0.25	ug/l	
100-01-6	4-Nitroaniline	ND	10	2.0	ug/l	
98-95-3	Nitrobenzene	ND	5.0	0.24	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.0	0.59	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	0.28	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	0.44	ug/l	
110-86-1	Pyridine	ND	10	5.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	38%	15-110%
4165-62-2	Phenol-d5	28%	15-110%
118-79-6	2,4,6-Tribromophenol	85%	15-110%
4165-60-0	Nitrobenzene-d5	75%	30-130%
321-60-8	2-Fluorobiphenyl	68%	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	

Method Blank Summary

Job Number: MC14814
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30652-MB	U10093.D	1	10/15/12	NS	10/12/12	OP30652	MSU545

The QC reported here applies to the following samples: Method: SW846 8270C BY SIM

MC14814-1

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.10	0.014	ug/l	
208-96-8	Acenaphthylene	ND	0.10	0.013	ug/l	
120-12-7	Anthracene	ND	0.10	0.018	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.050	0.030	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	0.017	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.050	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	0.038	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	0.059	ug/l	
218-01-9	Chrysene	ND	0.10	0.073	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	0.042	ug/l	
206-44-0	Fluoranthene	ND	0.10	0.033	ug/l	
86-73-7	Fluorene	ND	0.10	0.046	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	0.046	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.20	0.14	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.20	0.052	ug/l	
85-01-8	Phenanthrene	ND	0.050	0.013	ug/l	
129-00-0	Pyrene	ND	0.10	0.036	ug/l	

CAS No.	Surrogate Recoveries		Limits
4165-60-0	Nitrobenzene-d5	76%	30-130%
321-60-8	2-Fluorobiphenyl	71%	30-130%
1718-51-0	Terphenyl-d14	105%	30-130%

Blank Spike Summary

Job Number: MC14814
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Gronndwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30651-BS	F58309.D	1	10/15/12	KR	10/12/12	OP30651	MSF2755

The QC reported here applies to the following samples: Method: SW846 8270C

MC14814-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
65-85-0	Benzoic Acid	100	34.5	35	30-130
95-57-8	2-Chlorophenol	100	57.1	57	30-130
59-50-7	4-Chloro-3-methyl phenol	100	75.7	76	30-130
120-83-2	2,4-Dichlorophenol	100	68.9	69	30-130
105-67-9	2,4-Dimethylphenol	100	68.2	68	30-130
51-28-5	2,4-Dinitrophenol	100	83.7	84	30-130
534-52-1	4,6-Dinitro-o-cresol	100	97.0	97	30-130
95-48-7	2-Methylphenol	100	54.0	54	30-130
	3&4-Methylphenol	200	107	54	30-130
88-75-5	2-Nitrophenol	100	69.0	69	30-130
100-02-7	4-Nitrophenol	100	37.3	37	30-130
87-86-5	Pentachlorophenol	100	102	102	30-130
108-95-2	Phenol	100	25.6	26* [a]	30-130
95-95-4	2,4,5-Trichlorophenol	100	76.3	76	30-130
88-06-2	2,4,6-Trichlorophenol	100	75.9	76	30-130
62-53-3	Aniline	50	5.1	10* [a]	40-140
101-55-3	4-Bromophenyl phenyl ether	50	43.5	87	40-140
85-68-7	Butyl benzyl phthalate	50	44.3	89	40-140
100-51-6	Benzyl Alcohol	50	27.0	54	40-140
91-58-7	2-Chloronaphthalene	50	33.6	67	40-140
106-47-8	4-Chloroaniline	50	13.1	26* [a]	40-140
111-91-1	bis(2-Chloroethoxy)methane	50	29.8	60	40-140
111-44-4	bis(2-Chloroethyl)ether	50	30.4	61	40-140
108-60-1	bis(2-Chloroisopropyl)ether	50	34.4	69	40-140
7005-72-3	4-Chlorophenyl phenyl ether	50	38.7	77	40-140
122-66-7	1,2-Diphenylhydrazine	50	42.1	84	40-140
121-14-2	2,4-Dinitrotoluene	50	41.9	84	40-140
606-20-2	2,6-Dinitrotoluene	50	39.3	79	40-140
91-94-1	3,3'-Dichlorobenzidine	50	7.0	14* [a]	40-140
132-64-9	Dibenzofuran	50	35.2	70	40-140
84-74-2	Di-n-butyl phthalate	50	43.2	86	40-140
117-84-0	Di-n-octyl phthalate	50	44.3	89	40-140
84-66-2	Diethyl phthalate	50	38.9	78	40-140
131-11-3	Dimethyl phthalate	50	39.6	79	40-140
117-81-7	bis(2-Ethylhexyl)phthalate	50	46.3	93	40-140
118-74-1	Hexachlorobenzene	50	45.7	91	40-140

* = Outside of Control Limits.

Blank Spike Summary

Job Number: MC14814
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30651-BS	F58309.D	1	10/15/12	KR	10/12/12	OP30651	MSF2755

The QC reported here applies to the following samples: Method: SW846 8270C

MC14814-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
77-47-4	Hexachlorocyclopentadiene	50	25.9	52	40-140
67-72-1	Hexachloroethane	50	24.4	49	40-140
78-59-1	Isophorone	50	36.9	74	40-140
88-74-4	2-Nitroaniline	50	38.0	76	40-140
99-09-2	3-Nitroaniline	50	24.2	48	40-140
100-01-6	4-Nitroaniline	50	34.6	69	40-140
98-95-3	Nitrobenzene	50	34.3	69	40-140
62-75-9	n-Nitrosodimethylamine	50	20.7	41	40-140
621-64-7	N-Nitroso-di-n-propylamine	50	37.8	76	40-140
86-30-6	N-Nitrosodiphenylamine	50	42.4	85	40-140
110-86-1	Pyridine	50	11.8	24* [a]	40-140

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	36%	15-110%
4165-62-2	Phenol-d5	27%	15-110%
118-79-6	2,4,6-Tribromophenol	94%	15-110%
4165-60-0	Nitrobenzene-d5	69%	30-130%
321-60-8	2-Fluorobiphenyl	65%	30-130%
1718-51-0	Terphenyl-d14	101%	30-130%

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

* = Outside of Control Limits.

7.2.1

7

Blank Spike Summary

Job Number: MC14814
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30652-BS	U10094.D	1	10/15/12	NS	10/12/12	OP30652	MSU545

The QC reported here applies to the following samples: Method: SW846 8270C BY SIM

MC14814-1

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	32.3	65	40-140
120-12-7	Anthracene	50	42.3	85	40-140
56-55-3	Benzo(a)anthracene	50	49.6	99	40-140
50-32-8	Benzo(a)pyrene	50	42.1	84	40-140
205-99-2	Benzo(b)fluoranthene	50	46.6	93	40-140
191-24-2	Benzo(g,h,i)perylene	50	45.3	91	40-140
207-08-9	Benzo(k)fluoranthene	50	48.9	98	40-140
218-01-9	Chrysene	50	45.4	91	40-140
53-70-3	Dibenzo(a,h)anthracene	50	47.3	95	40-140
206-44-0	Fluoranthene	50	46.1	92	40-140
86-73-7	Fluorene	50	42.6	85	40-140
193-39-5	Indeno(1,2,3-cd)pyrene	50	46.6	93	40-140
90-12-0	1-Methylnaphthalene	50	34.4	69	40-140
91-57-6	2-Methylnaphthalene	50	30.0	60	40-140
85-01-8	Phenanthrene	50	44.1	88	40-140
129-00-0	Pyrene	50	44.5	89	40-140

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	68%	30-130%
321-60-8	2-Fluorobiphenyl	68%	30-130%
1718-51-0	Terphenyl-d14	103%	30-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC14814
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30651-MS	F58310.D	1	10/15/12	KR	10/12/12	OP30651	MSF2755
OP30651-MSD	F58311.D	1	10/15/12	KR	10/12/12	OP30651	MSF2755
MC15000-7	F58312.D	1	10/15/12	KR	10/12/12	OP30651	MSF2755

The QC reported here applies to the following samples: Method: SW846 8270C

MC14814-1

CAS No.	Compound	MC15000-7 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic Acid	ND		100	29.4	29* [a]	38.0	38	26* [b]	30-130/20
95-57-8	2-Chlorophenol	ND		100	62.8	63	58.7	59	7	30-130/20
59-50-7	4-Chloro-3-methyl phenol	ND		100	79.7	80	82.3	82	3	30-130/20
120-83-2	2,4-Dichlorophenol	ND		100	74.1	74	69.8	70	6	30-130/20
105-67-9	2,4-Dimethylphenol	ND		100	72.5	73	68.5	69	6	30-130/20
51-28-5	2,4-Dinitrophenol	ND		100	81.0	81	89.9	90	10	30-130/20
534-52-1	4,6-Dinitro-o-cresol	ND		100	95.9	96	100	100	4	30-130/20
95-48-7	2-Methylphenol	ND		100	66.1	66	62.2	62	6	30-130/20
	3&4-Methylphenol	ND		200	134	67	131	66	2	30-130/20
88-75-5	2-Nitrophenol	ND		100	72.7	73	67.0	67	8	30-130/20
100-02-7	4-Nitrophenol	ND		100	44.7	45	49.9	50	11	30-130/20
87-86-5	Pentachlorophenol	ND		100	109	109	112	112	3	30-130/20
108-95-2	Phenol	ND		100	36.9	37	38.2	38	3	30-130/20
95-95-4	2,4,5-Trichlorophenol	ND		100	77.7	78	78.7	79	1	30-130/20
88-06-2	2,4,6-Trichlorophenol	ND		100	80.3	80	79.0	79	2	30-130/20
62-53-3	Aniline	ND		50	10.5	21* [a]	4.8	10* [a]	75* [b]	40-140/20
101-55-3	4-Bromophenyl phenyl ether	ND		50	43.2	86	43.1	86	0	40-140/20
85-68-7	Butyl benzyl phthalate	ND		50	43.1	86	44.3	89	3	40-140/20
100-51-6	Benzyl Alcohol	ND		50	28.5	57	27.0	54	5	40-140/20
91-58-7	2-Chloronaphthalene	ND		50	36.5	73	34.5	69	6	40-140/20
106-47-8	4-Chloroaniline	ND		50	30.7	61	5.3	11* [a]	141* [b]	40-140/20
111-91-1	bis(2-Chloroethoxy)methane	ND		50	32.1	64	28.6	57	12	40-140/20
111-44-4	bis(2-Chloroethyl)ether	ND		50	33.6	67	29.4	59	13	40-140/20
108-60-1	bis(2-Chloroisopropyl)ether	ND		50	36.9	74	32.9	66	11	40-140/20
7005-72-3	4-Chlorophenyl phenyl ether	ND		50	38.9	78	39.3	79	1	40-140/20
122-66-7	1,2-Diphenylhydrazine	ND		50	42.1	84	40.5	81	4	40-140/20
121-14-2	2,4-Dinitrotoluene	ND		50	41.5	83	42.7	85	3	40-140/20
606-20-2	2,6-Dinitrotoluene	ND		50	39.0	78	39.4	79	1	40-140/20
91-94-1	3,3'-Dichlorobenzidine	ND		50	28.1	56	ND	0* [a]	200* [b]	40-140/20
132-64-9	Dibenzofuran	0.41		50	36.7	73	36.9	73	1	40-140/20
84-74-2	Di-n-butyl phthalate	ND		50	41.1	82	42.4	85	3	40-140/20
117-84-0	Di-n-octyl phthalate	ND		50	39.9	80	45.1	90	12	40-140/20
84-66-2	Diethyl phthalate	ND		50	39.3	79	40.4	81	3	40-140/20
131-11-3	Dimethyl phthalate	ND		50	39.5	79	39.7	79	1	40-140/20
117-81-7	bis(2-Ethylhexyl)phthalate	ND		50	43.5	87	45.4	91	4	40-140/20
118-74-1	Hexachlorobenzene	ND		50	44.8	90	44.6	89	0	40-140/20

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC14814
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30651-MS	F58310.D	1	10/15/12	KR	10/12/12	OP30651	MSF2755
OP30651-MSD	F58311.D	1	10/15/12	KR	10/12/12	OP30651	MSF2755
MC15000-7	F58312.D	1	10/15/12	KR	10/12/12	OP30651	MSF2755

The QC reported here applies to the following samples: Method: SW846 8270C

MC14814-1

CAS No.	Compound	MC15000-7 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
77-47-4	Hexachlorocyclopentadiene	ND		50	30.1	60	28.9	58	4	40-140/20
67-72-1	Hexachloroethane	ND		50	28.2	56	26.2	52	7	40-140/20
78-59-1	Isophorone	ND		50	38.4	77	35.3	71	8	40-140/20
88-74-4	2-Nitroaniline	ND		50	37.9	76	39.6	79	4	40-140/20
99-09-2	3-Nitroaniline	ND		50	31.9	64	3.7	7* [a]	158* [b]	40-140/20
100-01-6	4-Nitroaniline	ND		50	35.8	72	18.3	37* [a]	65* [b]	40-140/20
98-95-3	Nitrobenzene	ND		50	35.5	71	32.0	64	10	40-140/20
62-75-9	n-Nitrosodimethylamine	ND		50	23.2	46	20.4	41	13	40-140/20
621-64-7	N-Nitroso-di-n-propylamine	ND		50	40.0	80	37.3	75	7	40-140/20
86-30-6	N-Nitrosodiphenylamine	ND		50	45.0	90	40.7	81	10	40-140/20
110-86-1	Pyridine	ND		50	19.1	38* [a]	ND	0* [a]	200* [b]	40-140/20

CAS No.	Surrogate Recoveries	MS	MSD	MC15000-7	Limits
367-12-4	2-Fluorophenol	40%	39%	43%	15-110%
4165-62-2	Phenol-d5	38%	41%	32%	15-110%
118-79-6	2,4,6-Tribromophenol	94%	94%	100%	15-110%
4165-60-0	Nitrobenzene-d5	73%	65%	76%	30-130%
321-60-8	2-Fluorobiphenyl	71%	65%	72%	30-130%
1718-51-0	Terphenyl-d14	63%	73%	72%	30-130%

(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.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC14814
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30652-MS	U10095.D	1	10/15/12	NS	10/12/12	OP30652	MSU545
OP30652-MSD	U10096.D	1	10/15/12	NS	10/12/12	OP30652	MSU545
MC14797-5	U10097.D	1	10/15/12	NS	10/12/12	OP30652	MSU545

The QC reported here applies to the following samples: Method: SW846 8270C BY SIM

MC14814-1

CAS No.	Compound	MC14797-5 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	0.33		54.9	43.4	78	40.9	74	6	40-140/20
208-96-8	Acenaphthylene	ND		54.9	36.4	66	34.7	63	5	40-140/20
120-12-7	Anthracene	ND		54.9	45.8	83	46.1	84	1	40-140/20
56-55-3	Benzo(a)anthracene	ND		54.9	53.5	97	55.8	102	4	40-140/20
50-32-8	Benzo(a)pyrene	ND		54.9	44.7	81	45.3	82	1	40-140/20
205-99-2	Benzo(b)fluoranthene	ND		54.9	49.1	89	50.4	92	3	40-140/20
191-24-2	Benzo(g,h,i)perylene	ND		54.9	47.3	86	48.1	88	2	40-140/20
207-08-9	Benzo(k)fluoranthene	ND		54.9	50.6	92	53.5	97	6	40-140/20
218-01-9	Chrysene	ND		54.9	47.7	87	50.3	92	5	40-140/20
53-70-3	Dibenzo(a,h)anthracene	ND		54.9	49.1	89	51.1	93	4	40-140/20
206-44-0	Fluoranthene	ND		54.9	49.5	90	51.2	93	3	40-140/20
86-73-7	Fluorene	1.3		54.9	48.6	86	47.5	84	2	40-140/20
193-39-5	Indeno(1,2,3-cd)pyrene	ND		54.9	48.6	88	49.9	91	3	40-140/20
90-12-0	1-Methylnaphthalene	ND		54.9	44.1	80	41.4	75	6	40-140/20
91-57-6	2-Methylnaphthalene	ND		54.9	35.0	64	33.2	60	5	40-140/20
85-01-8	Phenanthrene	ND		54.9	47.8	87	48.6	88	2	40-140/20
129-00-0	Pyrene	ND		54.9	47.5	86	49.7	90	5	40-140/20

CAS No.	Surrogate Recoveries	MS	MSD	MC14797-5	Limits
4165-60-0	Nitrobenzene-d5	71%	64%	75%	30-130%
321-60-8	2-Fluorobiphenyl	73%	67%	76%	30-130%
1718-51-0	Terphenyl-d14	68%	78%	77%	30-130%

* = Outside of Control Limits.

Semivolatile Internal Standard Area Summary

Job Number: MC14814
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	MSF2755-CC2737	Injection Date:	10/15/12
Lab File ID:	F58307.D	Injection Time:	08:24
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	459439	3.58	1696151	4.56	1071737	5.98	2294908	7.27	2619128	10.06	2404644	11.48
Upper Limit [a]	918878	4.08	3392302	5.06	2143474	6.48	4589816	7.77	5238256	10.56	4809288	11.98
Lower Limit [b]	229720	3.08	848076	4.06	535869	5.48	1147454	6.77	1309564	9.56	1202322	10.98

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
OP30651-MB	391684	3.59	1393872	4.56	893215	5.98	1736413	7.27	1969159	10.05	2034369	11.47
OP30651-BS	389638	3.58	1396384	4.56	920783	5.98	1750754	7.27	2008946	10.05	1984144	11.48
OP30651-MS	390103	3.59	1388703	4.57	900318	5.98	1719234	7.27	1956529	10.05	2036243	11.48
OP30651-MSD	374782	3.59	1345938	4.57	872095	5.98	1711043	7.27	1946550	10.05	1843361	11.48
MC15000-7	386893	3.58	1397074	4.56	902351	5.98	1694053	7.27	2001136	10.05	2107696	11.47
MC14814-1	396202	3.58	1424840	4.56	930703	5.98	1780028	7.27	2064714	10.05	2095263	11.47
OP30661-MB	396828	3.58	1419239	4.56	945627	5.98	1840034	7.27	2098936	10.05	2137934	11.47
OP30661-BS	415441	3.59	1465176	4.57	935334	5.98	1796813	7.27	1986028	10.05	2054690	11.47
OP30661-MS	425016	3.59	1485416	4.56	955113	5.98	1753909	7.27	1990542	10.05	2097153	11.48
OP30661-MSD	401018	3.59	1447308	4.56	919316	5.98	1742324	7.27	1965856	10.05	2122205	11.48
MC14826-2	428178	3.59	1534378	4.56	1003681	5.98	1846409	7.27	2092120	10.05	2178194	11.48
ZZZZZZ	393483	3.59	1446441	4.57	956348	5.98	1784108	7.27	2017214	10.05	2107297	11.47
ZZZZZZ	412916	3.58	1510520	4.56	1022145	5.98	1863645	7.27	2105439	10.05	2210416	11.48
ZZZZZZ	429294	3.59	1561407	4.56	1028801	5.98	1966191	7.27	2232649	10.05	2295561	11.48
ZZZZZZ	425412	3.59	1549570	4.56	1016351	5.98	1900337	7.27	1412471	10.05	1117043[c]	11.48
ZZZZZZ	382014	3.59	1398176	4.57	924752	5.98	1759978	7.27	2025859	10.05	2148115	11.47
ZZZZZZ	388907	3.59	1412885	4.56	911235	5.98	1712261	7.27	1963070	10.05	2127308	11.47
ZZZZZZ	397436	3.58	1414010	4.56	896455	5.98	1690364	7.27	1986914	10.05	2141765	11.48
ZZZZZZ	412870	3.58	1450050	4.56	923446	5.98	1674245	7.27	2022463	10.05	2277122	11.48
ZZZZZZ	398298	3.59	1437955	4.56	932570	5.98	1682655	7.27	2030178	10.05	2233611	11.47
ZZZZZZ	377605	3.59	1340847	4.56	855191	5.98	1572488	7.27	1933035	10.05	2115139	11.47
ZZZZZZ	400717	3.59	1490493	4.56	959111	5.98	1765968	7.27	2153207	10.05	2371669	11.47
ZZZZZZ	369236	3.59	1308210	4.57	842179	5.98	1551530	7.27	1814310	10.05	2051473	11.48
ZZZZZZ	389393	3.59	1384377	4.56	912751	5.98	1710505	7.27	2022585	10.05	2199187	11.47
ZZZZZZ	385587	3.59	1412408	4.56	924501	5.98	1790093	7.27	2087161	10.05	2240685	11.47
ZZZZZZ	382746	3.59	1376736	4.56	894853	5.98	1700631	7.27	2026113	10.05	2183619	11.47
ZZZZZZ	373527	3.58	1350485	4.56	881038	5.98	1668688	7.27	1997469	10.05	2170904	11.47
ZZZZZZ	390374	3.59	1386039	4.56	902994	5.98	1749305	7.27	2070646	10.05	2251856	11.48
ZZZZZZ	385944	3.59	1354698	4.56	880355	5.98	1680967	7.27	1979909	10.05	2166178	11.47
ZZZZZZ	405365	3.58	1444991	4.57	926678	5.98	1766916	7.27	2176783	10.07	2127012	11.52
ZZZZZZ	452404	3.59	1652525	4.57	1090114	5.98	2056333	7.27	1552834	10.05	1273834	11.47
ZZZZZZ	423447	3.58	1537669	4.57	983515	5.98	1789877	7.27	1413434	10.05	1202116[c]	11.47

IS 1 = 1,4-Dichlorobenzene-d4
IS 2 = Naphthalene-d8

7.4.1

Semivolatile Internal Standard Area Summary

Job Number: MC14814
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	MSF2755-CC2737	Injection Date:	10/15/12
Lab File ID:	F58307.D	Injection Time:	08:24
Instrument ID:	GCMSF	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 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.

Semivolatile Internal Standard Area Summary

Job Number: MC14814
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	MSU545-ICC545	Injection Date:	10/15/12
Lab File ID:	U10083.D	Injection Time:	15:02
Instrument ID:	GCMSU	Method:	SW846 8270C BY SIM

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
Check Std	149758	3.86	473867	4.84	247760	6.26	417287	7.60	275067	10.38	422447	11.83
Upper Limit [a]	299516	4.36	947734	5.34	495520	6.76	834574	8.10	550134	10.88	844894	12.33
Lower Limit [b]	74879	3.36	236934	4.34	123880	5.76	208644	7.10	137534	9.88	211224	11.33
Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
OP30652-MB	147063	3.86	462167	4.84	244763	6.26	415210	7.60	290955	10.38	452330	11.83
OP30652-BS	149265	3.86	462771	4.84	244690	6.26	422317	7.60	278521	10.38	419999	11.83
OP30652-MS	144327	3.86	453715	4.84	234091	6.26	402449	7.60	277351	10.38	430251	11.83
OP30652-MSD	144293	3.86	458117	4.84	242137	6.26	419293	7.60	291373	10.38	418461	11.83
MC14797-5	147693	3.86	468385	4.84	241349	6.26	410611	7.60	297798	10.38	450471	11.83
MC14814-1	148151	3.86	475444	4.84	250069	6.26	424740	7.60	298407	10.38	459584	11.83
ZZZZZZ	136555	3.86	433877	4.84	229735	6.26	393985	7.59	278483	10.37	420872	11.83
ZZZZZZ	151749	3.86	476641	4.84	251321	6.26	423639	7.60	307442	10.38	466269	11.83
ZZZZZZ	140700	3.86	443090	4.84	235300	6.26	398278	7.60	278061	10.38	424447	11.83
ZZZZZZ	154183	3.86	487941	4.84	262749	6.26	447321	7.59	317733	10.38	476839	11.83
ZZZZZZ	146226	3.86	463921	4.84	247707	6.26	419619	7.60	296874	10.38	452102	11.83
ZZZZZZ	147917	3.86	464896	4.84	245672	6.26	425800	7.60	301142	10.38	455943	11.83
ZZZZZZ	142307	3.86	443743	4.84	234854	6.26	399719	7.60	282947	10.38	434151	11.83
ZZZZZZ	143277	3.86	446178	4.84	235463	6.26	400204	7.60	280332	10.38	420271	11.83
ZZZZZZ	148540	3.86	469790	4.84	248208	6.26	419433	7.60	296812	10.38	452582	11.83
ZZZZZZ	155480	3.86	480990	4.84	258658	6.26	443638	7.60	306582	10.38	465549	11.83
ZZZZZZ	148704	3.86	458495	4.84	246421	6.26	420184	7.60	292212	10.38	445676	11.83
ZZZZZZ	154785	3.86	482535	4.84	259773	6.26	436174	7.60	309002	10.38	465861	11.83
ZZZZZZ	155078	3.86	489000	4.84	258295	6.26	434410	7.60	313657	10.38	476085	11.83

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.

Semivolatile Surrogate Recovery Summary

Job Number: MC14814
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), 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
MC14814-1	F58313.D	42.0	38.0	95.0	80.0	76.0	71.0
OP30651-BS	F58309.D	36.0	27.0	94.0	69.0	65.0	101.0
OP30651-MB	F58308.D	38.0	28.0	85.0	75.0	68.0	103.0
OP30651-MS	F58310.D	40.0	38.0	94.0	73.0	71.0	63.0
OP30651-MSD	F58311.D	39.0	41.0	94.0	65.0	65.0	73.0

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%

Semivolatile Surrogate Recovery Summary

Job Number: MC14814
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), 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
MC14814-1	U10098.D	78.0	78.0	76.0
OP30652-BS	U10094.D	68.0	68.0	103.0
OP30652-MB	U10093.D	76.0	71.0	105.0
OP30652-MS	U10095.D	71.0	73.0	68.0
OP30652-MSD	U10096.D	64.0	67.0	78.0

Surrogate Compounds	Recovery Limits
S1 = Nitrobenzene-d5	30-130%
S2 = 2-Fluorobiphenyl	30-130%
S3 = Terphenyl-d14	30-130%

New England ACCUTEST LABORATORIES

GC Volatiles

QC Data Summaries

8

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: MC14814
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30666-MB	BK17933.D	1	10/18/12	AP	10/12/12	OP30666	GBK660

The QC reported here applies to the following samples: **Method:** SW846 8011

MC14814-1, MC14814-3

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

CAS No.	Surrogate Recoveries		Limits
460-00-4	Bromofluorobenzene (S)	88%	36-173%
460-00-4	Bromofluorobenzene (S)	93%	36-173%

Blank Spike Summary

Job Number: MC14814
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30666-BS	BK17934.D	1	10/18/12	AP	10/12/12	OP30666	GBK660

The QC reported here applies to the following samples: Method: SW846 8011

MC14814-1, MC14814-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
96-12-8	1,2-Dibromo-3-chloropropane	0.071	0.054	76	60-140
106-93-4	1,2-Dibromoethane	0.071	0.060	85	60-140

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	Bromofluorobenzene (S)	84%	36-173%
460-00-4	Bromofluorobenzene (S)	91%	36-173%

8.2.1

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC14814
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP30666-MS	BK17936.D	1	10/18/12	AP	10/12/12	OP30666	GBK660
OP30666-MSD	BK17937.D	1	10/18/12	AP	10/12/12	OP30666	GBK660
MC14930-4	BK17938.D	1	10/18/12	AP	10/12/12	OP30666	GBK660

The QC reported here applies to the following samples: Method: SW846 8011

MC14814-1, MC14814-3

CAS No.	Compound	MC14930-4 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	0.058	82	0.054	76	7	64-141/29
106-93-4	1,2-Dibromoethane	ND		0.071	0.069	97	0.067	94	3	63-163/27

CAS No.	Surrogate Recoveries	MS	MSD	MC14930-4	Limits
460-00-4	Bromofluorobenzene (S)	87%	78%	84%	36-173%
460-00-4	Bromofluorobenzene (S)	96%	90%	94%	36-173%

* = Outside of Control Limits.

8.3.1

Volatile Surrogate Recovery Summary

Job Number: MC14814
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Gronndwater Profiling (Add'l GW Characterization), Roxana, IL

Method: SW846 8011 Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 [a]	S1 [b]
MC14814-1	BK17943.D	70.0	87.0
MC14814-3	BK17944.D	85.0	96.0
OP30666-BS	BK17934.D	84.0	91.0
OP30666-MB	BK17933.D	88.0	93.0
OP30666-MS	BK17936.D	87.0	96.0
OP30666-MSD	BK17937.D	78.0	90.0

Surrogate Compounds	Recovery Limits
S1 = Bromofluorobenzene (S)	36-173%

(a) Recovery from GC signal #1
(b) Recovery from GC signal #2

8.4.1

GC Surrogate Retention Time Summary

Job Number: MC14814
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	GBK660-CC660	Injection Date:	10/18/12
Lab File ID:	BK17924.D	Injection Time:	06:57
Instrument ID:	GCBK	Method:	SW846 8011

	S1 [a] RT	S1 [b] RT
Check Std	4.91	4.70

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 [a] RT	S1 [b] RT
MC14800-5	BK17925.D	10/18/12	07:21	4.91	4.70
ZZZZZZ	BK17926.D	10/18/12	07:45	4.91	4.70
ZZZZZZ	BK17927.D	10/18/12	08:10	4.91	4.70
ZZZZZZ	BK17928.D	10/18/12	08:34	4.91	4.70
ZZZZZZ	BK17929.D	10/18/12	08:58	4.91	4.70
ZZZZZZ	BK17930.D	10/18/12	09:36	4.91	4.70
ZZZZZZ	BK17931.D	10/18/12	10:01	4.91	4.70
ZZZZZZ	BK17932.D	10/18/12	10:25	4.91	4.70
OP30666-MB	BK17933.D	10/18/12	10:50	4.91	4.70
OP30667-MB	BK17933A.D	10/18/12	10:50	4.91	4.70
OP30666-BS	BK17934.D	10/18/12	11:14	4.91	4.70
OP30667-BS	BK17934A.D	10/18/12	11:14	4.91	4.70

Surrogate Compounds

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #1
(b) Retention time from GC signal #2

GC Surrogate Retention Time Summary

Job Number: MC14814
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana - Groundwater Profiling (Add'l GW Characterization), Roxana, IL

Check Std:	GBK660-CC660	Injection Date:	10/18/12
Lab File ID:	BK17935.D	Injection Time:	11:39
Instrument ID:	GCBK	Method:	SW846 8011

	S1 [a] RT	S1 [b] RT
Check Std	4.91	4.70

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 [a] RT	S1 [b] RT
OP30666-MS	BK17936.D	10/18/12	12:04	4.91	4.70
OP30667-MS	BK17936A.D	10/18/12	12:04	4.91	4.70
OP30666-MSD	BK17937.D	10/18/12	12:29	4.91	4.70
OP30667-MSD	BK17937A.D	10/18/12	12:29	4.91	4.70
MC14930-4	BK17938.D	10/18/12	12:54	4.91	4.70
MC14930-3	BK17938A.D	10/18/12	12:54	4.91	4.70
ZZZZZZ	BK17939.D	10/18/12	13:19	4.91	4.70
ZZZZZZ	BK17940.D	10/18/12	13:44	4.91	4.70
ZZZZZZ	BK17941.D	10/18/12	14:09	4.91	4.70
ZZZZZZ	BK17942.D	10/18/12	14:33	4.91	4.70
MC14814-1	BK17943.D	10/18/12	14:57	4.91	4.70
MC14814-3	BK17944.D	10/18/12	15:22	4.91	4.70
ZZZZZZ	BK17945.D	10/18/12	15:47	4.91	4.70

Surrogate Compounds

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #1
(b) Retention time from GC signal #2

8.5.2