

May 22, 2013

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

RE: 1191150002 – Madison County
 Equilon Enterprises LLC d/b/a Shell Oil Products US
 Log No. B-43R-CA-25
 Addendum to Monitoring Well and Vapor Monitoring Point Installation Report – Supplemental Investigation Activities
 Roxana, Illinois

Dear Mr. Nightingale;

URS Corporation (URS), on behalf of Shell Oil Products US (SOPUS), recently conducted additional groundwater monitoring well installation activities in the Village of Roxana, Illinois, supplemental to the work reported in the *Monitoring Well and Vapor Monitoring Point Installation Report* ("Report") dated April 3, 2013. This addendum to the referenced Report presents a discussion of the supplemental investigation activities and results.

#### 1.0 BACKGROUND

Based upon observations in the field during the installation activities for groundwater monitoring well MW-22, located at the approximate mid-point of East 4<sup>th</sup> Street between Chaffer Avenue and Route 111, and upon review of data, a step-out groundwater monitoring well was installed near the western end of East 4<sup>th</sup> Street near Route 111 (**Figure 1**).

1001 Highland Plaza Drive West, Suite 300 St. Louis, MO 63110 Phone: 314.429.0100 Fax: 314.429.0462



The work was performed in accordance with the First Addendum to the access agreement between the Village of Roxana and SOPUS, which was signed by the Village of Roxana on February 21, 2013 and was signed by SOPUS on February 25, 2013.

#### 2.0 INVESTIGATION ACTIVITIES

The supplemental field investigation was performed in accordance with previously approved investigation procedures<sup>1</sup> and the IEPA conditions requiring the work outlined in the Report. The field activities were conducted in March 2013. The following subsections provide a brief description of the data collection activities that were performed. A more detailed explanation of the procedures for each of the activities can be found in Section 2 of the referenced Report.

Figure 1 shows the supplemental investigation location.

#### 2.1 PRE-FIELD ACTIVITIES AND BOREHOLE CLEARANCE

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

Borehole clearance via an air-vacuum system (air-knife) operated by REDI was used to clear the location to a depth of 10 feet with respect to underground utility lines or other obstructions.

Subsurface material observations were made during borehole clearance activities by advancing a hand auger prior to air-knifing to collect grab samples to field-screen and classify the soil. An iterative process was used. A soil sample was collected via hand auger, the air knife advanced the borehole approximately one foot, another soil sample

<sup>&</sup>lt;sup>1</sup> Investigation procedures previously approved by the Illinois Environmental Protection Agency (IEPA) can be found in the *Dissolved Phase Groundwater Investigation and P-60 Free Phase Product Delineation Report* dated February 2012, as well as subsequent correspondence and submittals.



was collected using the hand auger, and so forth. These observations were noted on the soil boring logs.

#### 2.2 DRILLING AND SOIL SAMPLING

Drilling and soil sampling was performed by REDI with a CME-75 drill rig using 4.25inch inside diameter hollow stem augers. Soil sampling was conducted via a split spoon sampler advanced in two-foot increments just below the lead auger. The subsurface stratigraphy was continuously logged by a qualified field scientist in accordance with applicable ASTM standards and the Unified Soil Classification System (USCS). The field scientist noted soil attributes such as color, particle size, consistency, moisture content, structure, plasticity, odor (if obvious), and organic content (if visible). Soil samples were screened in the field using a photoionization detector (PID) and observations were noted on the soil boring logs. The soil boring was advanced to a depth of 50 feet below ground surface (bgs). The soil boring log is included in **Attachment A**.

Three discrete soil samples were collected from the boring for analysis of volatile organic compounds (VOCs) based on field headspace readings and/or visual observations. The soil samples for laboratory analysis were separate from those used for the various field screening tests and were not composited prior to sample collection.

#### 2.3 MONITORING WELL INSTALLATION AND DEVELOPMENT

Upon completion of soil sample collection, a groundwater monitoring well was installed through the augers. The well was constructed using a 2-inch diameter Schedule 40 PVC casing, with a 10-foot section of 0.010-inch slotted PVC well screen. The well screen was set at a similar depth with respect to the groundwater table as other monitoring wells in the project area, such that a portion of the screen extended above the current groundwater surface. The sand pack consisted of a combination of placed and native sand in the annular space, and extended to approximately 2 feet above the top of the well screen. A bentonite seal about 3 feet thick was placed above the sand pack. The borehole annulus was then grouted to the surface with cement-bentonite grout. A surface completion, including a locking expandable cap and flush-mount protector, was added. The groundwater monitoring well completion information for MW-24 is shown on the following page. The well construction diagram is provided in **Attachment A**.



	Top of Casing	Ground Surface	Height above Ground	Total Well	Bottom of Well	Screene	d Interval
Well	Elev.	Elev.	Surface	Depth	Elev.		Elev.
ID	(ft MSL')	(ft MSL)	(ft btoc <sup>2</sup> )	(ft btoc)	(ft MSL)	(ft btoc)	(ft MSL)
MW-24	443.42	443.80	-0.38	49.90	393.52	39.65- 49.65	403.77- 393.77

MSL – Mean Sea Level

<sup>2</sup> btoc - below top of casing

Once the groundwater monitoring well installation was complete, the well was developed in order to remove fines from the screen and sand pack. The well was developed by surging and pumping throughout the screened zone with a high-flow submersible pump. No water was introduced during drilling throughout or above the screened zone. Approximately 30 gallons of water were removed during development, which represents approximately 29 well volumes of water. Development continued until the water being removed was visually sediment-free. The well development field sheet is provided in **Attachment A**.

#### 2.4 SAMPLE HANDLING AND LABORATORY TESTING

Sample handling and laboratory testing were performed according to the procedures outlined in the Report.

Soil samples were collected in laboratory-supplied containers, labeled in the field and information was recorded on the chain of custody (COC) form at the time of collection. The COC can be found with the analytical report in **Attachment B**.

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

A total of 6 soil (3 investigative soil samples, 1 field duplicate soil sample, 1 soil matrix spike and matrix spike duplicate (MS/MSD)), 1 aqueous field equipment blank, and 1 aqueous trip blank set) were prepared and sent to Accutest Laboratories in Marlborough,



Massachusetts. Samples were analyzed for volatile organic compounds (VOCs) by USEPA SW846 Methods 8260B and 8011.

#### 2.5 HEALTH & SAFETY, DECONTAMINATION, & INVESTIGATION DERIVED WASTE

This supplemental work was performed in general accordance with the health and safety practices as described in the Report.

Decontamination was also performed according to the procedures outlined in the Report.

Investigation derived waste (IDW), including soil cuttings, personal protective equipment (PPE) and expendable materials, and decontamination and development water were collected and disposed of properly. Expendable materials (e.g., disposal sampling equipment such as gloves) having a low probability of impact were collected in trash bags and disposed of as municipal waste. Soil cuttings from the boring and one other drilling location performed concurrently in the Village were collected and placed directly in a labeled and covered roll-off and managed by URS on behalf of SOPUS. Decontamination water generated and groundwater from development activities was collected and staged at the Village of Roxana Public Works Yard in 55-gallon steel drums prior to disposal.

Soil cuttings were disposed under an existing profile at the Waste Management, Inc. Milam Recycling and Disposal Facility (Milam) in Fairmont City, Illinois. Decontamination water and groundwater were disposed under an existing profile at the Heritage Environmental Services, LLC facility in Indianapolis, Indiana.

#### 3.0 SOIL SAMPLING RESULTS

The results of the supplemental investigation activities are described in the subsections below.

#### 3.1 DATA QUALITY REVIEW AND DATA MANAGEMENT

URS conducted an independent Level III review of the analytical data following procedures outlined in the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (USEPA, 2008). Qualifiers were assigned to the data when results from the review were outside control limits. These qualifiers are



included in the data table (**Table 1**) and were manually transcribed on the laboratory results pages (included in **Attachment B**).

Based on laboratory control/laboratory control duplicate (LCS/LCSD), matrix spike/matrix spike duplicate (MS/MSD), surrogate, holding time, and field duplicate criteria, the soil results reported were accepted for their intended use.

URS data reviews are included with the analytical data reports in Attachment B.

Field data and documentation collected as part of this supplemental scope of work became part of the project file. URS maintains the project file for the site, including relevant records, logs, field logbooks, subcontractor reports, data reviews, and the database management system.

#### 3.2 SOIL SAMPLING RESULTS

A tabular summary of the analytical detections for the soil samples collected during the supplemental groundwater monitoring well installation activities is presented in **Table 1**. **Attachment B** contains the URS data reviews and laboratory report with chain of custody for the MW-24 related soil data.

#### 4.0 CONCLUSIONS

URS conducted a groundwater monitoring well installation supplemental subsurface investigation on behalf of SOPUS in the Village of Roxana. Well MW-24 will be integrated into the groundwater monitoring program.

If there are any questions on the information contained in this report, please do not hesitate to contact me (314-429-0100) or Kevin Dyer (SOPUS) (618-288-7237).

Sincerely,

URS Corporation, on behalf of Shell Oil Products US

by P-at

Wendy Pennington Staff Engineer

Filet Billin

Robert B. Billman Senior Project Manager



Enclosures: Table 1 Summary of Supplemental Soil Analytical Detections Figure 1 Groundwater Monitoring Well Location Map Attachment A Soil Boring Log, Groundwater Monitoring Well Construction Diagram, Groundwater Monitoring Well Development Form Attachment B Data Review Sheets and Laboratory Analytical Reports

cc: Amy Boley, IEPA Kevin Dyer, SOPUS Shannon Haney, Greensfelder, Hemker & Gale (2 copies) Repositories (Village Hall, Public Library, Website) Project File

#### ILLINOIS EPA RCRA CORRECTIVE ACTION CERTIFICATION

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

1.0	FACILITY IDENTIFICATION	
	Name: WRB Refining LP - Wood River Refinery	County: Madison
	Street Address: 900 South Central Ave.	Site No. (IEPA): <u>1191150002</u>
	City: Roxana, IL 62084	Site No. (USEPA): ILD 080 012 305
2.0	OWNER INFORMATION	3.0 OPERATOR INFORMATION
	Name: Not Applicable	Equilon Enterprises LLC d/b/a Shell Oil Products US
	Mailing Address:	17 Junction Drive, PMB #399
	Contact Name:	
	Contact Title:	Principal Program Manager
	Phone No.:	618-288-7237
4.0	TYPE OF SUBMISSION (check applicable item and provi	de requested information, as applicable)
	RFI Phase II Workplan/Report     CMP Report; Phase     Other (describe):     Addendum to Groundwater Monitoring Well and Vapor Monitoring     Activities	IEPA Permit Log No. <u>B-43R</u> Date of Last IEPA Letter on Project <u>April 8, 2013</u> Log No. of Last IEPA <u>nitoring Point Installation Report – Supplemental Investigation</u> r on Project <u>B-43R-CA-25</u> Does this submittal include groundwater information: X Yes No
5.0	DESCRIPTION OF SUBMITTAL: (briefly describe what	
		g wells supplemental activities
6.0	DOCUMENTS SUBMITTED (identify all documents in su	ubmittal, including cover letter; give dates of all documents)
	RCRA Corrective Action Certification, and Addendum to G Report – Supplemental Investigation Activities	roundwater Monitoring Well and Vapor Monitoring Point Installation
7.0	<u>CERTIFICATION STATEMENT</u> - ( <i>This statement is pa</i> professional and laboratory in Items 7.1, 7.2 and 7.3 below out in accordance with procedures approved by Illinois EPA attachments were prepared under my direction or supervisio personnel properly gather and evaluate the information subn system, or those persons directly responsible for gathering th knowledge and belief, true, accurate, and complete. I am aw information, including the possibility of fine and imprisonm	<i>rt of the overall certification being provided by the owner/operator,</i> <i>b).</i> The activities described in the subject submittals have been carried <i>c.</i> I certify under penalty of law that this document and all <i>n</i> in accordance with a system designed to assure that qualified nitted. Based on my inquiry of the person or persons who manage the he information, the information submitted is, to the best of my vare that there are significant penalties for submitting false ent for knowing violations.

IEPA RCRA Corrective Action Certification

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

Date of Submission: MAY 22, 2013

Page 2

- 7.1 <u>OWNER/OPERATOR CERTIFICATION</u> (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
    - the written authorization is provided with this submittal (a copy of a previously submitted authorization can be used).

Owner Signature:

Title: Operator Signature Title: Principal Program Manager

(Date)

IEPA RCRA Corrective Action Certification

For: Equilon Enterprises LLC d/b/a Shell Oil Products US -

Date of Submission: MAY 22, 2013 Page 3

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.

C Professional's Signature:

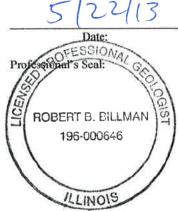
Professional's Name: Robert B. Billman

Professional's Address: URS Corporation

1001 Highlands Plaza Drive West

St. Louis, MO 63110

Professional's Phone No.: 314-429-0100



IEPA RCRA Corrective Action Certification For: Equilon Enterprises LLC d/b/a Shell Oil Products US Date of Submission: MAY 22, 2013 Page 4

**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 4-30-17.3

Name of Laboratory: Accutest Laboratories

4-30-13 Date Signature of Laboratory Responsible Officer Reza Tand / pirectol

Mailing Address of Laboratory 495 Technology Center West

Name and Title of Laboratory Responsible Officer

Marlborough, Massachusetts 01752

# Table 1 Summary of Supplemental Soil Analytical Detections

Location	Sample ID	Depth	Sample Date	Benzene			Ethylbenzene			Toluene		
Location	Sample ID			Result (mg/kg)	Lab Quals	URS Quals	Result (mg/kg)	Lab Quals	URS Quals	Result (mg/kg)	Lab Quals	URS Quals
	MW-24-12	12 ft	3/7/2013	< 0.00059	U		< 0.0024	U		< 0.0059	U	
MW-24	MW-24-25	25 ft	3/7/2013	0.0012			0.0023	J		0.0028	J	
10100-24	MW-24-47	47 ft	3/7/2013	0.0014			0.0021	J		0.0026	J	
	MW-24-47-DUP	47 ft	3/7/2013	0.0012			0.0013	J		0.0018	J	

Location	Location Sample ID	Samula ID Douth		Depth	Sample		Acetone		Ca	rbon disulfi	ide		Chloroform	l	Dichloro	methane (N chloride)	lethylene
Location		Depth	Date	Result (mg/kg)	Lab Quals	URS Quals											
	MW-24-12	12 ft	3/7/2013	0 056		UJ	< 0.0059	U		0.0012	J		0.0031		U		
MW-24	MW-24-25	25 ft	3/7/2013	< 0 006	U	UJ	0.0058	J		< 0.0024	U		0.0037		U		
10100-24	MW-24-47	47 ft	3/7/2013	< 0.0057	U	UJ	< 0.0057	U		< 0.0023	U		< 0.0023	U			
	MW-24-47-DUP	47 ft	3/7/2013	< 0.0057	U	UJ	< 0.0057	U		< 0.0023	U		0.0032		U		

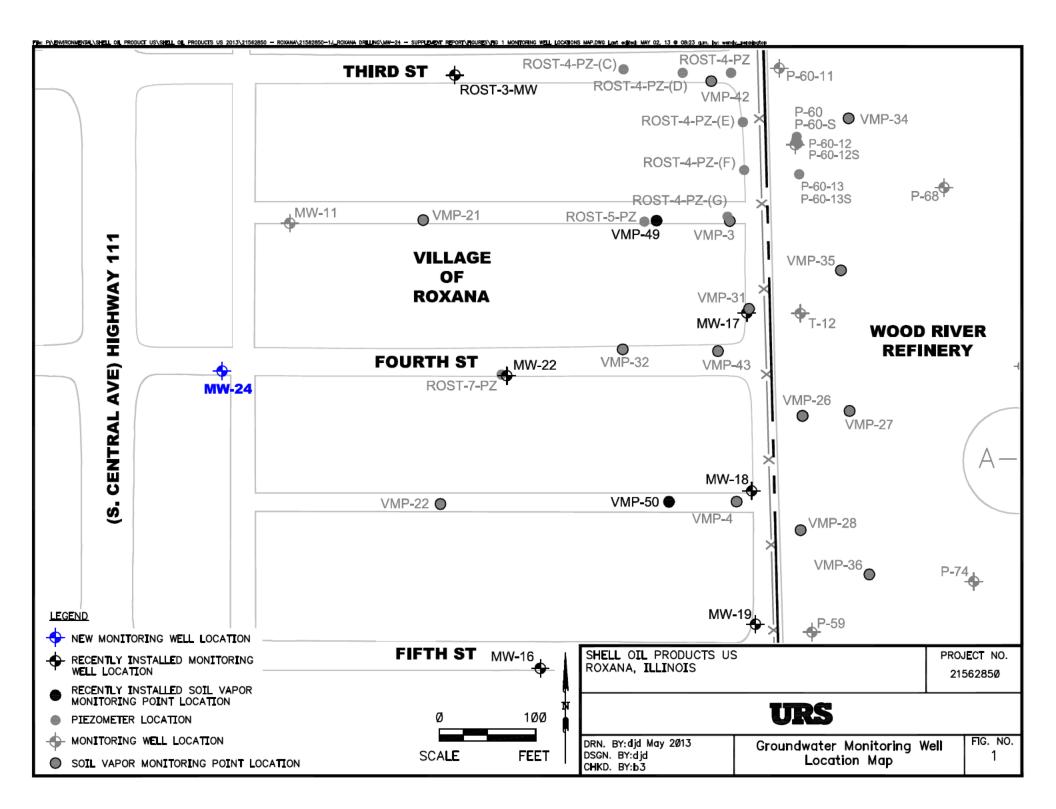
#### NOTES:

#### Lab Qualifiers

J = Estimated value; results between the MDL and RL U = Compound analyzed for but not detected above the RL

#### URS Qualifiers

R = Indicates analyte result was rejected J = Estimated detection UJ = Estimated non-detect U = Non-detect, e.g. blank contamination



									LOG OF BORING AND WELL CONST	
									MW-24 Statng Quadrangle	Page Of 2
Depth In feet	We Construct on	5		eq	(F				Date: 3/7/ 3 Sec:34 (Center Comp et on T:5N R:9W	r of NE /4)
th In	stru		en	es over	PID (ppm)	ph c	ß	S	Cos ng E syst on 443 42 UTM (or State Pla	ine) Coord
Dep	So So	5	Inches Dr ven	Inches Recovered	DID	Samp er Graph c	Symbo	nscs	Ground E evat on: 443 80 N: (X):793286 49 E: (Y):232 700 4	9
								ASPHALT	DESCRIPTION Asphalt and gravel	NOTES Air knifed to 10' bgs to
					0.4		****	710117121	Dark brown, sand and clay FILL (FILL)	clear utilities.
					0.1			FILL		
	$\approx$	$\boxtimes$			0.0				Medium stiff, moist, brown, low plastic CLAY (CL)	-
		***			0.0					
					0.2			CL	Becomes light brown	
5					0.1	L				
	×	***			0.2				Becomes sandy	
	<u> </u>				0.1				Loose to medium dense, dry to moist, brown, fine grained SAND (SP)	
					0.1					
	<u> </u>				0.1					
10					0.2					
-			24	6	0.2					
-		$\approx$							Becomes medium dense, dry Trace black banding (1")	Sample MW 24 12 for
			24	24	0.8					VOĈs at 0955
		***								
15		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	24	22	0.5					
5		$\approx$						SP		
			24	20	0.7					
		×								
			24	19	0.5					
20-										
	XXX		24	20	0.7					
-	<u> </u>									
20-	<u>}</u>		24	18	0.8					
4	<u>}</u>		24	18	0.7				Trace black banding (1")	
Comp	letion De	pth:		50.0 Ft l		_	1.1.1.1	<u> </u>	Water Depth: <u>42</u> ft., After	er <u>ATD</u> hrs.
Projec	t No.:			850.150 VRR W		ng			Water Depth: ft., After	erhrs.
Drillin	ng Contra	ctor:	Rol	berts Ei	nvironm	ental D	rilling I	nc.	✓ Water level at time of drilling ✓ Water level after drilling	Geoprobe
Drille	Name:			]	E. Wetze	l			▼ Water level after drilling ATD At time of drilling	Air Knife/Hand Auger Sampler
	ng Metho			C	HSA ME 75				NE None Encountered	Air Rotary
	Rig Type: d by:		W. Pen	nington	<u>, M. Mil</u>	ler			NA Not Applicable	Sonic
Count	y:			Mad	ison					Splitspoon Sampler
Site II	D No.:			11	9115000			— 1	JRS	Hollow Stem Auger Soil samples not collected
Feder	al ID No.:	:		IL	<b>D 080 0</b> 1	12 305			USC based on field visual observations	•

URS (EVIRON) LOG (EPA FORMAT) +1 WELL 21552850.15000 (ROXANA MW 2013).GPJ URSSTLEV.GDT 3/18/13

ſ										LOG OF BORING AND WELL CONST MW-24	RUCTION DETAIL Page 2 Of 2
	Depth In feet	We Construct on		Inches Dr ven	Inches Recovered	PID (ppm)	Samp er Graph c	Symbo	nscs	Sta t ng Date: 3/7/ 3Quadrangle Sec:34 (Center T:5N R:9WComp et on Date: 3/8/ 3T:5N R:9WCas ng E evat on: 443 42 Ground E evat on: 443 80UTM (or State Pla N: (X):793286 49 E: (Y):232 700 4DESCRIPTION	ne) Coord 19 NOTES
			X							Same: Medium dense, dry, brown, fine grained SAND (SP)	Sample MW 24 25 for VOCs at 1115
			\$}}}	24	19	0.7					
	30-		<u>}</u>	24	19	0.7					
			\$}}}	24	19	0.7				Trace black banding (3")	
			<u>}}}}}</u>	24	20	0.4					
	35			24	20	0.6				Trace gravel Gravel grades out	
				24	20	0.5			SP	Trace black banding (3")	
	40			24	20	0.4				Trace black banding (2")	
GDT 3/18/13				24	20	0.4				Ţ	
PJ URSSTLEV			P 11102 1210 1210 1211 1211 1211 1211 12	24	21	0.5				Becomes wet Trace black banding (1")	
A MW 2013).GI	45			24	21	0.8				Becomes fine to medium grained, trace fine gravel Trace black banding (3")	
21562850.15000 (ROXANA MW 2013).GPJ URSSTLEV.GDT				24	21	1.1					Sample MW 24 47 for VOCs at 1215
				24	24	0.5				Bottom of boring at 50 ft bgs	
AT) +1 V	Projec	letion Dep xt No.:		215628		00	-			Water Depth: <u>42</u> ft., Afte Water Depth: ft., Afte	r <u>ATD</u> hrs.
EPA FORM	Drillin Driller	t Name: ng Contrac r Name:	ctor:	Rot	erts Ei	nvironme E. Wetze	ental D el	rilling I	nc	<ul> <li>✓ Water level at time of drilling</li> <li>✓ Water level after drilling</li> <li>✓ ATD At time of drilling</li> </ul>	Geoprobe Air Knife/Hand Auger Sampler
100 (F	Drillin Drill H	ng Method Rig Type:			C	ME 75				NE None Encountered	<ul><li>I Air Rotary</li><li>Sonic</li></ul>
RS (EVIRON) LOG (EPA FORMAT) +1 WELL	Logge Count Site II	ed by: ty: D No.:		W. Peni	nington Mad 11	9115000	2		_ 1	NA Not Applicable	<ul> <li>Splitspoon Sampler</li> <li>Hollow Stem Auger</li> <li>Soil samples not collected</li> </ul>
ЯŇ	Federa	al ID No.:			IL	<b>D 080 0</b> 1	12 305			USC based on field visual observations	



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

Project:	Roxana Monitoring Well Drilling and Insta	allation		Well D:	MW-24
Project Location:	Roxana, Illinois	Date Started:	3/7/2013		
Well Location:	On East 4th St between N-S alley and Route 111	Date Completed:	3/8/2013	Boring ID:	MW-24
Drilling Contractor:	Roberts Environmental Drilling, Inc.	Time Seal Set:	1410	Northing:	793286.49
Driller:	E. Wetzel	Type of Rig:	CME-75	Easting:	2321700.59
Consulting Firm:	URS Corporation	Drilling Method:	HSA (4 25" ID)	Elevation Datum:	443.8
Geologist:	M. Miller	Owner:	Equilon Enterprises LLC d/b/a Shell Oil Products US	Township, Range, Section	T5N, R9W, Section 34 (central portion of NE 1/4)
				Depths (ft bgs)	Elevations (ft)
			Ground Elevation:		443.80
			Depth of Riser Below Ground:	0.38	
			Elevation of Top of Riser Pipe:	0.38	443.42
			D/Type of Surface Casing:	8" Flush Mount	
			Type of Surface Seal:	Concrete	
Boring Dia	meter		Bottom of Surface Seal:	2.00	441.80
9	in 🔽		Groundwater (after completion):	43.38	400.42
			Type of Riser Pipe:	Schedule 40 PVC	:
			Riser Diameter:	2.00	in
			Type of Backfill:	Cement/Bentonite	Grout
				34.27	409.53
			Type of Seal:	Bentonite Chips	
			Top of Filter Pack	37.27	406.53
			Top of Screen	39.27	404.53
			Type of Filter Pack:	ANSI/NSF Quartz	Sand
			Type of Screen:	Schedule 40 PVC	· · · · · · · · · · · · · · · · · · ·
			Screen Diameter	2.00	in
			Screen Slot Size:	0.010	in
			Bottom of Screen:	49.27	394.53
			Bottom of Blank Casing:	49.52	394.28
			Backfill/Seal Below Well:	50.00	393.80
			Type of Backfill/Seal Below Well:		cave in) and placed SF Quartz Sand
	<u> </u>		Bottom of Boring:	50.00	393.80

DIAGRAM IS NOT TO SCALE

O         OASO         H3.38         D. Brewn         Wonc         pr         (*C)         (µmhos/cm)         (NTUs)         (mg/l)           7.5         0.955         43.40         Marky         1				GR	OUNDWATER DE	VELOPMENT/SA	MPLING DATA SH	IEET			
Vell Diameter:	DATE: 3/11/ WEATHER: ( TIELD PERSONN	13 Iondy 370 EL: EA/M	)	Roxang		PROJ	ECT NUMBER: 21	567850.19	5000		
Odd Depth of Weit: <u>44.80</u> tholoc       gallons         Perpeth to Water (20umn:: <u>1.04</u> gallons         Diff gallons/ft for 2 inch weil)       Diff for 5 creen:: <u>37.75</u> ft bloc         VURCE DATA       Yeite Water (10 Mater Column:: <u>37.75</u> ft bloc         Varge Method: <u>PUC Wahar (20umn)</u> Stabilized: <u>4.02</u> <u>4.1%</u> <u>4.1%</u> <u>Aubient PID/FID Reading:</u> <u>0</u> gallons (5x added)         Purge Volume: <u>5.23</u> gallons (5x added) <u>1.04</u> gallons (5x added) <u>Mater (10 Reading:</u> <u>0</u> gallons (5x added) <u>Ppm</u> <u>Ppm</u> VURCE DATA       Stabilized: <u>4.02</u> <u>4.1%</u> <u>4.10%</u> visually sediment free <u>Qals55</u> <u>43.3%</u> <u>D.Brew on Water (10 Color Odor PH (°C) (umhos/cm) (NTUs) (mgl)       D0 (mgl)         <u>7.5</u> <u>0.955</u> <u>43.4%</u> <u>1.04</u> <u>4.4%</u> <u>1.04</u> </u>	NITIAL DATA					- Martin - Colorest - Colorest					
PURGE DATA       Urge Method:       PUC Whallor Runge       Stabilized:       #-0.2       #-1°C       #-1°C       #-10%       visually sediment free         Purge Volume       Depth to       Depth to       Color       Odor       pH       Temp       Cond.       Turbidity       DO         (gals)       Time       Water (ft)       Color       Odor       pH       (°C)       (umhos/cm)       (NTUs)       (mg/l)       img/l)         7.5       0.955       43.490       Marky       f	otal Depth of Well: Depth to Water: <u>43</u> leight of Water Col	49.80 ft 38-6-42 umn: 6.42	ft btoc	Vol. Min.	Of Water Column: Purge Volume:	5.23	gallons (5 volu	allons Water to be umes) Ambient Pll	Removed:	gallons (5x add	ded) ppm
(gals)       Time       Water (t)       Color       Odor       pH       Temp       Cond.       Turbidity       DO         0       0950       43.38       D.Brewn       Nonc       (°C)       (umhos/cm)       (NTUs)       (mg/l)         15       1000       43.43       Marky       1	URGE DATA urge Method:				Stabilized:	+/- 0.2	+/- 1 °C	+/- 10 %	visually sediment free		
7.5       04350       43.58       0.55em       Nonc       0.000       0	(gals)		Water (ft)			pH					ORP
1000       43.93       marky       1005       43.94       Clear       1005       43.94       Clear       1005       43.94       Clear       1005       43.94       Clear       1005       <	~		43.38		None			(pannos/cini)	(1105)	(mg/i)	(mv)
30     1010     43.44     Cloar     Mat Required By SoP       art Time:     0950     Purge Stop Time:     1010       erage Purge Rate (gallons/min):     1.5     Purge Stop Time:     1010       MAPLING DATA     Well Volumes Purged:     28     VIA     Total Volume Purged:     30       Calibrated on:     M/A     Sample Time:     MA     Analysis:     MA	15		43.43	Mulky							
Ampling Data       Minimit (Minimit)       Minimit											
erage Purge Rate (gallons/min):       /.5       Purge stop rime:       //010       Elapsed Time:       20       Total Volume Purged:       30         AMPLING DATA         mpling Method:         mple Date:       ///A       Sample Time:       ///A       Analysis:       ///A						N	ot Requir	ed By Se	0P		
ampling Method: Imple Date: NIA Sample Time: NIA Analysis: NIA			(.5 Pu	Irge Stop Time:/ ell Volumes Purged:					Total Volume P Calibrated on:	urged: <u>30</u> w/M	gallo
OMMENTS:		<b>\</b>									
OMMENTS:	mple Date:	NIA	7	Samn	le Time:	NIA			A /		
$TB = \frac{49.80}{9.90} $ ft btoc prior to development $TB = \frac{49.80}{9.90} $ ft btoc after development	<b>OMMENTS:</b> TB = 49.80 TB = 49.90	ft btoc prior to o ft btoc after dev	development velopment					Analysis:	10174		

Visually Sediment Free

### Roxana Drilling 2013 Data Review

Laboratory SDG: MC18752

Data Reviewer: Melissa Mansker

Peer Reviewer: Elizabeth Kunkel

Date Reviewed: 4/25/2013

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

Sample Identification	Sample Identification
MW-24-12	MW-24-25
MW-24-47	MW-24-47-Dup
MW24-47-EB	TB-030713-01

#### 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?

Although not mentioned in the laboratory case narrative, naphthalene was detected in the equipment blank and trip blank, and methylene chloride was detected in the method blank. The laboratory case narrative indicated VOC LCS/LCSD recoveries were outside evaluation criteria. Method 8011 VOC surrogate recovery for bromofluorobenzene was outside evaluation criteria in investigative and quality control samples. VOC MS/MSD recoveries and MS/MSD RPDs were outside of evaluation criteria in sample MW-24-25. The initial calibration verification recovery for acetone and 2-hexanone exceeded 50 percent difference (%D), and the continuing calibration verification recovery for acetone also exceeded 50 percent difference (%D). Professional judgment was used to qualify the common lab contaminant acetone in sample MW-24-12. These issues are addressed further in the appropriate sections below.

The cooler receipt form did not indicate any problems.

#### 3.0 Holding Times

Were samples extracted/analyzed within applicable limits?

Yes

#### 4.0 Blank Contamination

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

Yes

Blank ID	Parameter	Analyte	Concentration
MW-24-47-EB	VOCs	Naphthalene	0.0018 mg/L
TB-030713-01	VOCs	Naphthalene	0.00067 mg/L
MSM1869-MB1	VOCs	Methylene chloride	0.0041 mg/kg
MSM1871-MB	VOCs	Methylene chloride	0.0041 mg/kg

Blank ID	Parameter	Analyte	Concentration
MSM1869-MB	VOCs	Methylene chloride	0.0038 mg/kg

Qualifications due to blank contamination are included in the table below. Analytical data that were reported non-detect or at concentrations greater than five times (5X) the associated blank concentration (10X for common laboratory contaminants) did not require qualification.

Sample ID	Parameter	Analyte	New Reporting Limit (RL)	Qualification
MW-24-12	VOCs	Methylene chloride	0.0031 mg/kg	U
MW-24-25	VOCs	Methylene chloride	0.0037 mg/kg	U
MW-24-47-Dup	VOCs	Methylene chloride	0.0032 mg/kg	U

#### 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
MSG4957-BS	VOCs	Acetone	152	NA	70-130
MSG4957-BS	VOCs	Acrolein	51	NA	70-130
MSG4957-BS	VOCs	2-Butanone (MEK)	142	NA	70-130
MSG4957-BS	VOCs	2-Chloroethyl vinyl ether	66	NA	70-130
MSG4957-BS	VOCs	2-Hexanone	153	NA	70-130
MSM1869- BS/BSD	VOCs	Dichlorodifluoromethane	135/133	1	70-130/25
MSM1871- BS/BSD	VOCs	Acetone	<b>69</b> /79	14	70-130/25
MSM1871- BS/BSD	VOCs	Vinyl acetate	59/60	2	70-130/25

Analytical data that required qualification based on LCS/LCSD 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 MSD4957-BS is associated with the trip blank and equipment blank quality control samples and are not qualified.

Sample ID	Parameter	Analyte	Qualification
MW-24-47	VOCs	Acetone	UJ
MW-24-47	VOCs	Vinyl acetate	UJ

#### 6.0 Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

No

Sample ID	Parameter	Surrogate	Recovery	Criteria
MW-24-12	VOCs by 8011	Bromofluorobenzene (S)	202	61-167
MW-24-25	VOCs by 8011	Bromofluorobenzene (S)	177	61-167
MW-24-25	VOCs by 8011	Bromofluorobenzene (S)	208	61-167
MW-24-47	VOCs by 8011	Bromofluorobenzene (S)	200	61-167
MW-24-47-Dup	VOCs by 8011	Bromofluorobenzene (S)	218	61-167
OP32247-MB	VOCs by 8011	Bromofluorobenzene (S)	192	61-167
OP32247-BS	VOCs by 8011	Bromofluorobenzene (S)	194	61-167
OP32247-BSD	VOCs by 8011	Bromofluorobenzene (S)	218	61-167
OP32247-MS	VOCs by 8011	Bromofluorobenzene (S)	189	61-167
OP32247-MSD	VOCs by 8011	Bromofluorobenzene (S)	174	61-167

Analytical data reported as non-detect and associated with surrogate recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. OP32247-BS/BSD and –MS/MSD 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?

Yes, sample MW-24-25 was spiked and analyzed for VOCs.

Were MS/MSD recoveries within evaluation criteria?

No

MS/MSD ID	Parameter	Analyte	MS/MSD Recovery	RPD	MS/MSD/ RPD Criteria
MW-24-25	VOCs	Acetone	153/146	1	70-130/30
MW-24-25	VOCs	n-Butylbenzene	100/ <b>61</b>	45	70-130/30
MW-24-25	VOCs	sec-Butylbenzene	99/ <b>66</b>	36	70-130/30
MW-24-25	VOCs	2-Chloroethyl vinyl ether	0/0	NA	70-130/30
MW-24-25	VOCs	1,2-Dichlorobenzene	94/ <b>69</b>	28	70-130/30
MW-24-25	VOCs	1,3-Dichlorobenzene	93/ <b>68</b>	27	70-130/30
MW-24-25	VOCs	Dichlorodifluoromethane	<b>135</b> /118	9	70-130/30
MW-24-25	VOCs	1,4-Dioxane	151/138	5	70-130/30
MW-24-25	VOCs	Hexachlorobutadiene	91/ <b>47</b>	60	70-130/30
MW-24-25	VOCs	2-Hexanone	151/137	6	70-130/30
MW-24-25	VOCs	p-Isopropyltoluene	105/70	36	70-130/30
MW-24-25	VOCs	4-Methyl-2-pentanone (MIBK)	145/131	6	70-130/30
MW-24-25	VOCs	Naphthalene	123/74	47	70-130/30
MW-24-25	VOCs	1,2,3-Trichlorobenzene	97/ <b>52</b>	58	70-130/30
MW-24-25	VOCs	1,2,4-Trichlorobenzene	95/ <b>53</b>	53	70-130/30
MW-24-25	VOCs	1,2,3-Trichloropropane	<b>132</b> /118	7	70-130/30

USEPA National Functional Guidelines for Organic Data Review indicates that organic data does not require qualification based on MS/MSD data alone and LCS recoveries were within evaluation criteria with the exception of compounds listed and qualified as appropriate in Section 5.0 of this data review. No further qualification of the data was required.

#### 8.0 Internal Standard (IS) Recoveries

Were internal standard area recoveries within evaluation criteria? Yes

#### 9.0 Laboratory Duplicate Results

Were laboratory duplicate samples collected as part of this SDG? No

#### 10.0 Field Duplicate Results

Were field duplicate samples collected as part of this SDG?

Yes

Field ID	Field Duplicate ID
MW-24-47	MW-24-47-Dup

Were field duplicates within evaluation criteria?

Yes

#### 11.0 Sample Dilutions

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

Not applicable; samples analyzed did not require dilution.

#### 12.0 Additional Qualifications

Were additional qualifications applied?

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

Field ID	Analyte	New RL	Qualification	Comments
MW-24-12	Acetone	0.0560 mg/kg	U	Professional Judgment

Additionally, samples MW-24-12, MW-24-25, MW-24-47-Dup were associated with the initial calibration verification recovery for acetone and 2-hexanone that exceeded 50 percent difference (%D). Analytes in samples associated with ICV %D greater than 50% were qualified as summarized in the following table.

Sample ID	Parameter	Analyte	Qualification
MW-24-12	VOCs	Acetone	UJ
MW-24-12	VOCs	2-Hexanone	UJ
MW-24-25	VOCs	Acetone	UJ
MW-24-25	VOCs	2-Hexanone	UJ
MW-24-47-Dup	VOCs	Acetone	UJ
MW-24-47-Dup	VOCs	2-Hexanone	UJ

e-Hardcopy 2.0 Automated Report

03/29/13





# **Technical Report for**

Shell Oil

URSMOSTL: Roxana Drilling, Roxana, IL

21562850.15000

Accutest Job Number: MC18752

Sampling Date: 03/07/13

Report to:

URS Corporation

elizabeth.kunkel@URS.com

ATTN: Elizabeth Kunkel

Total number of pages in report: 100



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

Reviewed on 4/25/203

Reza **4** and

Lab Director

Client Service contact: Jeremy Vienneau 508-481-6200

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

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## Sample Summary

#### Shell Oil

Job No: MC18752

URSMOSTL: Roxana Drilling, Roxana, IL Project No: 21562850.15000

Sample Number	Collected Date		Received	Matri Code		Client Sample ID
MC18752-1	03/07/13	09:55 MMM	@3/08/13	SO	Soil	MW-24-12
MC18752-2	03/07/13	11:15 MMM	@3/08/13	SO	Soil	MW-24-25 4
MC18752-2D	03/07/13	11:15 MMM	@3/08/13	SO	Soil Dup/MSD	MW-24-25
MC18752-2S	03/07/13	11:15 MMM	@3/08/13	SO	Soil Matrix Spike	MW-24-25
MC18752-3	03/07/13	12:15 MMM	@3/08/13	SO	Soil	MW-24-47
MC18752-4	03/07/13	12:15 MMM	<b>@</b> 3/08/13	SO	Soil	MW-24-47DUP
MC18752-5	03/07/13	13:15 MMM	@3/08/13	AQ	Equipment Blank	MW-24-47-EB ***
MC18752-6	03/07/13	08:00 MMM	@3/08/13	AQ	Trip Blank Water	TB-030713-01 🗸

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





### SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	Shell Oil	Job No	MC18752
Site:	URSMOSTL: Roxana Drilling, Roxana, IL	Report Date	3/22/2013 2:46:00 PM

5 Sample(s) and 1 Trip Blank(s) were collected on 03/07/2013 and were received at Accutest on 03/08/2013 properly preserved, at 2 Deg. C and intact. These Samples received an Accutest job number of MC18752. 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 was 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:	MSG4957

All samples were analyzed within the recommended method holding time.

- All method blanks for this batch meet method specific criteria.
- Sample(s) MC18723-2MS, MC18723-2MSD were used as the QC samples indicated.
- Blank Spike Recovery(s) for 2-Butanone (MEK), 2-Chloroethyl vinyl ether, 2-Hexanone, Acetone, Acrolein are outside control limits. Blank Spike meets program technical requirements.
- MS/MSD Recovery(s) for 2-Chloroethyl vinyl ether, 4-Methyl-2-pentanone (MIBK), Acrolein are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Continuing calibration check standard MSG4957-CC4948 for acetone exceeds 50% Difference (respose bias high). Associated samples are non-detect for this compound.
- Initial calibration verification MSG4948-ICV4948 for acetone, 2-hexanone exceeds 50% Difference (respose bias high). Associated samples are non-detect for these compounds.

Matrix	so	- · · · · · · · · · · · · · · · · · · ·	K2225

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC18768-6MS, MC18768-6MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Matrix	SO	Batch ID:	MSM1869

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC18752-2MS. MC18752-2MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- MSM1869-BS/BSD for Dichlorodifluoromethane: Outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for 1,2,3-Trichloropropane, 1,4-Dioxane, 2-Chloroethyl vinyl ether, 2-Hexanone, 4-Methyl-2-pentanone (MIBK), Acetone, 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-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dioxane, 2-Chloroethyl vinyl ether, 2-Hexanone, 4-Methyl-2-pentanone (MIBK), Acetone, 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, Hexachlorobutadiene, n-Butylbenzene, sec-Butylbenzene are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- RPD(s) for MSD for 1,2.3-Trichlorobenzene, 1,2,4-Trichlorobenzene, Hexachlorobutadiene, n-Butylbenzene, Naphthalene, p-Isopropyltoluene, see-Butylbenzene are outside control limits for sample MC18752-2MSD. High RPD due to possible matrix interference and/or sample non-homogeneity.
- Initial calibration verification MSM1868-ICV1868 for acetone, 2-hexanone exceeds 50% Difference. Acetone is within criteria in continuing calibration check standard MSM1869-CC1868, MSM1871-CC1868.

Matrix SO Batch ID: MSM1871

Page 1 of 2



#### Volatiles by GCMS By Method SW846 8260B

Matrix	SO	Batch ID:	MSM1871

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC18887-3MS, MC18887-3MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for Acetone, Vinyl Acetate are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, 1,2,4-Trimethylbenzene, 1,2-Dichlorobenzene, 1,3,5-Trimethylbenzene, 1.3-Dichlorobenzene, 1.4-Dichlorobenzene, Hexachlorobutadiene, Isopropylbenzene, n-Butylbenzene, n-Propylbenzene, Naphthalene, p-Isopropyltoluene, sec-Butylbenzene, tert-Butylbenzene are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 1,2,4-Trimethylbenzene, 1,2-Dichlorobenzene, 1,3,5-Trimethylbenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene. Acetone, Acrolein, Bromobenzene, Chlorobenzene, Ethylbenzene, Hexachlorobutadiene, Isopropylbenzene, m,p-Xylene, n-Butylbenzene, n-Propylbenzene, Naphthalene, o-Chlorotoluene, o-Xylene, p-Chlorotoluene, p-Isopropyltoluene, sec-Butylbenzene, Styrene, tert-Butylbenzene, Vinyl Acetate, Xylene (total), 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene are outside control limits. High RPD due to possible matrix interference and/or sample non-homogeneity.
- RPD(s) for MSD for 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene are outside control limits for sample MC18887-3MSD. High RPD due to possible matrix interference and/or sample non-homogeneity.
- BSD Recovery(s) for Vinyl Acetate are outside control limits. Blank Spike meets program technical requirements.

#### Volatiles by GC By Method SW846 8011

Y	olatiles by GC By Meth	00 5 W 840 8011				
	Matrix AQ	Batch ID:	OP32212			
<b>B</b> B	All samples were extracted with	in the recommended method	d holding time.			
154	All samples were analyzed with	in the recommended method	holding time.			

- Sample(s) MC18700-10MS, MC18700-10MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- MS/MSD Recovery(s) for 1,2-Dibromo-3-chloropropane, 1,2-Dibromoethane are outside control limits. Outside control limits. Associated samples are non-detect for target analyte.
- OP32212-MS for Bromofluorobenzene (S): Outside control limits. Associated samples are non-detect for target analyte.
- OP32212-BS for 1,2-Dibromo-3-chloropropane: Outside control limits. Associated samples are non-detect for target analyte.

Matrix SO Batch ID: OP32247	
-----------------------------	--

All samples were extracted within the recommended method holding time.

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC18752-2MS, MC18752-2MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- OP32247-BS/BSD for Bromofluorobenzene (S): Outside control limits. Targets recovery satisfactory.
- B OP32247-MS/MSD for Bromofluorobenzene (S): Outside control limits.Spike recovery satisfactory.
- MC18752-1,2,3,4 for Bromofluorobenzene (S): Outside control limits.Sample nou-detect for target analytes.
- OP32247-MB for Bromofluorobenzene (S): Outside control limit.Samples are non-detect for analyte.

#### Wet Chemistry By Method SM21 2540 B MOD.

Matrix	SO	Batch ID:	GN41959	
in the second seco				

Sample(s) MC18752-2DUP were used as the QC samples for Solids, Percent.

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(MC18752).

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# Summary of Hits

Job Number:	MC18752
Account:	Shell Oil
Project:	URSMOSTL: Roxana Drilling, Roxana, IL
Collected:	03/07/13

Lab Sample ID Analyte	Client Sample I	D Result/ Qual	RL	MDL	Units	Method
MC18752-1	MW-24-12			~1.0		
Acetone		-0:0560 4J	0 0! -0:0059-	0.0015	mg/kg	SW846 8260B
Chloroform		0.0012 J	0.0024	0.00061	mg/kg	SW846 8260B
Methylene chlori	ide	-0:0031-1/	0:0024 D.C	0.0014	mg/kg	SW846 8260B
MC18752-2	MW-24-25		0.2			
Benzene		0.0012	0.00060	0.00035	mg/kg	SW846 8260B
Carbon disulfide		0.0058 J	0.0060	0.00020	mg/kg	SW846 8260B
Ethylbenzene		0.0023 J	0.0024	0.00029	mg/kg	SW846 8260B
Methylene chlori	ide	<b>0.0037</b> v <sub>i</sub>	0.0024	0,0014	mg/kg	SW846 8260B
Toluene		0.0028 J	0.0060	0.0010	mg/kg	SW846 8260B
MC18752-3	MW-24-47					
Benzene		0.0014	0.00057	0.00034	mg/kg	SW846 8260B
Ethylbenzene		0.0021 J	0.0023	0.00028	mg/kg	SW846 8260B
Toluene		0.0026 J	0.0057	0.00097	mg/kg	SW846 8260B
MC18752-4	MW-24-47DUP					
Benzene		0.0012	0.00057	0.00033	mg/kg	SW846 8260B
Ethylbenzene		0.0013 J	0.0023	0.00027	mg/kg	SW846 8260B
Methylene chlori	ide	-0.0032 4	-0:0023:	.0.0013	mg/kg	SW846 8260B
Toluene		0.0018 J	0.0057	0.00096	mg/kg	SW846 8260B
MC18752-5	MW-24-47-EB					
Naphthalene		1.8 J	5.0	0.50	ug/l	SW846 8260B
MC18752-6	TB-030713-01					
Naphthalene		0.67 J	5.0	0.50	ug/l	SW846 8260B





Sample Results

**Report of Analysis** 





		Report of Analysis					Page 1 o
Client Sample ID:MW-24-12Lab Sample ID:MC18752-1Matrix:SO - SoilMethod:SW846 8260BProject:URSMOSTL: Roxa		ana Drilling, Ro	xana, IL		Date		3/07/13 3/08/13 5.9
Run #1 Run #2	File 1D DF M54870.D 1		By Amy	Prep Da n/a	te	Prep Batch n/a	Analytical Batc MSM1869
Run #1 Run #2	Initial Weight Final Vol 4.41 g 5.0 ml	ume					
VOA Spec	cial List						
CAS No.	Compound	Result	RL	MDL	Units	Q	
67-64-1	Acetone	-0:0560- 4	-0-0059	0560 0.0015	mg/kg		
107-02-8	Acrolein		0.030	0.013	mg/kg	محمد ب <sup>ور</sup> مهر)	
107-13-1	Acrylonitrile	ND	0.030	0.0012	mg/kg		
71-43-2	Benzene	ND		0.00035			
108-86-1	Bromobenzene	ND	0.0059	0.00035	~ ~		
74-97-5	Bromochloromethane	ND	0.0059	0.00044			
75-27-4	Bromodichloromethane	ND	0.0024	0.00025	~ ~		
75-25-2	Bromoform	ND	0.0024	0.0023	mg/kg		
74-83-9	Bromomethane	ND	0.0024	0.00061			
78-93-3	2-Butanone (MEK)	ND	0.0059	0.0015	mg/kg		
104-51-8	n-Butylbenzene	ND	0.0059	0.00022			
135-98-8	sec-Butylbenzene	ND	0.0059	0.00027			
98-06-6	tert-Butylbenzene	ND	0.0059	0.0010	mg/kg		
75-15-0	Carbon disulfide	ND	0.0059	0.00019			
56-23-5	Carbon tetrachloride	ND	0.0024	0.00086			
108-90-7	Chlorobenzene	ND	0.0024	0.00033			
75-00-3	Chloroethane	ND	0.0059	0.0015	mg/kg		
110-75-8	2-Chloroethyl vinyl ether	ND	0.0059	0.0024	mg/kg		
67-66-3	Chloroform	0.0012	0.0024	0.00061		J	
74-87-3	Chloromethane	ND	0.0059	0.00055		2	
95-49-8	o-Chlorotoluene	ND	0.0059	0.0013	mg/kg		
106-43-4	p-Chlorotoluene	ND	0.0059	0.00027			
24-48-1	Dibromochloromethane	ND	0.0024	0.00035			
95-50-1	1,2-Dichlorobenzene	ND	0.0024	0.00026			
541-73-1	1,3-Dichlorobenzene	ND	0.0024	0.00027			
106-46-7	1,4-Dichlorobenzene	ND	0.0024	0.00025			
75-71-8	Dichlorodifluoromethane	ND	0.0024	0.0013	mg/kg		
75-34-3	1,1-Dichloroethane	ND	0.0024	0.00032			
107-06-2	1,2-Dichloroethane	ND,	0.0024	0.00034			
75-35-4	1,1-Dichloroethene	ND	0.0024	0.00043			
156 50 2	cis 1.2 Dichlaraothana	ND		0 00036			

0.0024

0.0024

ND

ND

ND = Not detected MDL - Method Detection Limit

cis-1,2-Dichloroethene

trans-1,2-Dichloroethene

RL = Reporting Limit

156-59-2

156-60-5

E = Indicates value exceeds calibration range

J = Indicates an estimated value

0.00036 mg/kg

0.00034 mg/kg

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



Client Samp Lab Sample Matrix: Method: Project:		na Drilling, Roy	kana, IL		Date	Sampled: Received: ent Solids:	03/07/13 03/08/13 95.9	
VOA Specia	al List							
CAS No.	Compound	Result	RL	MDL	Units	Q		
78-87-5	1,2-Dichloropropane	ND	0.0024	0.00044				
142-28-9	1,3-Dichloropropane	ND	0.0059	0.00027	mg/kg			
594-20-7	2,2-Dichloropropane	ND	0.0059	0.0010	ing/kg			
563-58-6	1,1-Dichloropropene	ND	0.0059	0.00031				
10061-01-5	cis-1,3-Dichloropropene	ND	0.0024	0.00020	ing/kg			
10061-02-6	trans-1,3-Dichloropropene	ND	0.0024	0.00059	mg/kg			
123-91-1	1,4-Dioxane	ND	0.030	0.030	mg/kg			
97-63-2	Ethyl methacrylate	ND	0.0059	0.00081	mg/kg			
100-41-4	Ethylbenzene	ND	0.0024	0.00029	mg/kg			
87-68-3	Hexachlorobutadiene	ND	0.0059	0.00055	mg/kg	and the		
591-78-6	2-Hexanone	ND	0.0059	0.0015	mg/kg	$\omega$		
98-82-8	Isopropylbenzene	ND	0.0059	0.00027	mg/kg			
99-87~6	p-lsopropyltoluene	ND	0.0059	0.00021				
1634-04-4	Methyl Tert Butyl Ether	ND	0.0024	0.00034				
108-10-1	4-Methyl-2-pentanone (MIE	3K) ND	0.0059	0.00059				
74-95-3	Methylene bromide	ND	0.0059	0.00058				
75-09-2	Methylene chloride		- <del>0:0</del> 024 <sup>4</sup>		mg/kg	U		
91-20-3	Naphthalene	ND	0.0059	0.0015	mg/kg			
103-65-1	n-Propylbenzene	ND	0.0059	0.0012	mg/kg			
100-42-5	Styrene	ND	0.0059	0.00028	mg/kg			
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.0059	0.00028				
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.0024	0.00050				
127-18-4	Tetrachloroethene	ND	0.0024	0.00027				
108-88-3	Toluene	ND	0.0059	0.0010	mg/kg			
87-61-6	1,2,3-Trichlorobenzene	ND	0.0059	0.00028				
120-82-1	1,2,4-Trichlorobenzene	ND	0.0059	0.00027				
71-55-6	1,1,1-Trichloroethane	ND	0.0024	0.00037				
79-00-5	1,1,2-Trichloroetbane	ND	0.0024	0.00087				
79-01-6	Trichloroethene	ND	0.0024	0.00025				
75-69-4	Trichlorofluoromethane	ND	0.0024	0.00036				
96-18-4	1,2,3-Trichloropropane	ND	0.0059	0.00035				
95-63-6	1,2,4-Trimethylbenzene	ND	0.0059	0.00026				
108-67-8	1,3,5-Trimethylbenzene	ND	0.0059	0.00025				
108-05-4	Vinyl Acetate	ND	0.0059	0.0015	mg/kg			
75-01-4	Vinyl chloride	ND	0.0024	0.00032				
05 48 0	m,p-Xylene	ND	0.0024	0.00093				
95-47-6	o-Xylene	ND	0.0024	0.00028				
1330-20-7	Xylene (total)	ND	0.0024	0.00028	mg/kg			

Report of Analysis

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



Page 2 of 3

E = Indicates value exceeds calibration range

Accutest LabLink@135009 12:43 29-Mar-2013

		Керы	t of Ana	19313	I age 5 01 c
Client Sample ID:MW-24-12Lab Sample ID:MC18752-1Matrix:SO - SoilMethod:SW846 8260BProject:URSMOSTL: Roxana		na Drilling, R	oxana, IL	Date Sampled: Date Received: Percent Solids:	
VOA Speci	al List				
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits	
1868-53-7 2037-26-5 460-00-4	Dibromofluoromethane Toluene-D8 4-Bromofluorobenzene	91% 110% 95%		70-130% 70-130% 70-130%	
CAS No.	Tentatively Identified Con	npounds	R.T.	Est. Cone. Units Q	
	Total TIC, Volatile			0 mg/kg	

ND = Not detected

MDL - Method Detection Limit

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





Accutest LabLink@135009 12:43 29-Mar-2013

			Repor	t of An	alysis			Page 1 of 1
Client Sam Lab Sampl Matrix: Method: Project:	le ID: MC187 SO - So SW846	752-1 oil	6 3550B a Drilling, R	oxana, IL		Date	<b>r</b>	3/07/13 3/08/13 5.9
Run #1 Run #2	File 1D YZ78546.D		Analyzeđ 03/16/13	By CZ	Prep Da 03/13/13		Prep Batch OP32247	Analytical Batch GYZ7047
Run #1 Run #2	Initial Weight 30.2 g	Final Volur 50.0 ml	ne					
VOA Spec	ial List							
CAS No.	Compound		Result	RL	MDL	Units	Q	
96-12-8 106-93-4	1,2-Dibromo- 1,2-Dibromoe		e ND ND	0.0026 0.0026	0.0012 0.0010	mg/kg mg/kg		
CAS No.	Surrogate Re	coveries	Run# 1	Run# 2	Limi	its		
460-00-4 460-00-4	Bromofluorob Bromofluorob		162% 202% <sup>a</sup>	¢.	61-1 61-1			

(a) Outside control limits.Sample non-detect for target analytes.

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



			Repo	rt of Ana	alysis			Page 1 of
Client Sam Lab Samp Matrix: Method: Project:	le ID: MC187 SO - So SW846	752-2 bil 8260B	ana Drilling, I	Roxana, IL		Date	Received: 0	3/07/13 3/08/13 3.6
Run #1 Run #2	File 1D M54871.D	DF 1	Analyzed 03/20/13	Ву АМҮ	Prep Da n/a	te	Prep Batch n/a	Analytical Batch MSM1869
Run #1 Run #2	1nitial Weight 4.44 g	Final Vol 5.0 ml	ume					
VOA Spec	ial List							
CAS No.	Compound		Result	RL	MDL	Units	Q	
67-64-1	Acetone		ND	0.0060	0.0015	mg/kg	UT	
107-02-8	Acrolein		ND	0.030	0.012	mg/kg		
107-13-1	Acrylonitrile		ND	0.030	0.0015	mg/kg		
71-43-2	Benzene		0.0012		0.00035			
108-86-1	Bromobenzene	<u>;</u>	ND	0.0060	0.00027			
74-97-5	Bromochlorom		ND	0.0060	0.00045			
75-27-4	Bromodichloro		ND	0.0024	0.00025			
75-25-2	Bromoform		ND	0.0024	0.0024	mg/kg		
74-83-9	Bromomethand	2	ND	0.0024	0.00062			
78-93-3	2-Butanone (M		ND	0.0060	0.0015	mg/kg		
104-51-8	n-Butylbenzen		ND	0.0060	0.00022			
135-98-8	sec-Butylhenze		ND	0.0060	0.00028			
98-06-6	tert-Butylbenzo		ND	0.0060	0.0011	mg/kg		
75-15-0	Carbon disulfic		0.0058	0.0060	0.00020		J	
56-23-5	Carbon tetrach	loride	ND	0.0024	0.00087		-	
108-90-7	Chlorobenzene	<u>,</u>	ND	0.0024	0.00033			
75-00-3	Chloroethane		ND	0.0060	0.0015	mg/kg		
110-75-8	2-Chloroethyl	vinyl ether	ND	0.0060	0.0024	mg/kg		
67-66-3	Chloroform	-	ND	0.0024	0.00062	mg/kg		
74-87-3	Chloromethan	e	ND	0.0060	0.00056	mg/kg		
95-49-8	o-Chlorotoluer	ie	ND	0.0060	0.0013	mg/kg		
106-43-4	p-Chlorotoluer		ND	0.0060	0.00027			
124-48-1	Dibromochloro		ND	0.0024	0.00036			
95-50-1	1,2-Dichlorobe		ND	0.0024	0.00026			
541-73-1	1,3-Dichlorobo		ND	0.0024	0.00027			
106-46-7	1,4-Dichlorobo		ND	0.0024	0.00025	~ ~		
75-71-8	Dichlorodifluo		ND	0.0024	0.0014	mg/kg		
75-34-3	1,1-Dichloroet		ND	0.0024	0.00032			
107-06-2	1,2-Dichloroet		ND	0.0024	0.00035			
75-35-4	1,1-Dichloroet		ND	0.0024	0.00044			
156-59-2	cis-1,2-Dichlor		ND	0.0024	0.00036			
156-60-5	trans-1,2-Dich	loroethene	ND	0.0024	0.00034	mg/kg		

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



Client Samp Lab Sample Matrix: Method: Project:		a Drilling, Ro	ing, Roxana, IL			Sampled: Received: ent Solids:	03/07/13 03/08/13 93.6	
VOA Specia	ıl List							
CAS No.	Compound	Result	RL	MDL	Units	Q		
78-87-5	1,2-Dichloropropane	ND	0.0024	0.00045				
142-28-9	1,3-Dichloropropane	ND	0.0060	0.00028	mg/kg			
594-20-7	2,2-Dichloropropane	ND	0.0060	0.0010	mg/kg			
563-58-6	1,1-Dichloropropene	ND	0.0060	0.00032				
10061-01-5	cis-1,3-Dichloropropene	ND	0.0024	0.00021				
10061-02-6	trans-1,3-Dichloropropene	ND	0.0024	0.00060	mg/kg			
123-91-1	1,4-Dioxane	ND	0.030	0.030	mg/kg			
97-63-2	Ethyl methacrylate	ND	0.0060	0.00082				
100-41-4	Ethylbenzene	0.0023	0.0024	0.00029		J		
87-68-3	Hexachlorobutadiene	ND	0.0060	0.00056				
591-78-6	2-Hexanone	ND	0.0060	0.0015	mg/kg	$\tilde{\omega}$		
98-82-8	Isopropylbenzene	ND	0.0060	0.00027				
99~87-6	p-Isopropyltoluene	ND	0.0060	0.00021				
1634-04-4	Methyl Tert Butyl Ether	ND	0.0024	0.00035				
108-10-1	4-Methyl-2-pentanone (MIBI		0.0060	0.00060				
74~95-3	Methylene bromide	ND	0.0060	0.00059				
75-09-2	Methylene chloride	0:0037 (A	-0.0024	0.0014	mg/kg	Л		
91-20-3	Naphthalene	ND	0.0060	0.0015	mg/kg			
103-65-1	n-Propylbenzene	ND	0.0060	0.0012	mg/kg			
100-42-5	Styrene	ND	0.0060	0.00028				
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.0060	0.00029				
79-34-5	I,1,2,2-Tetrachloroethane	ND	0.0024	0.00051				
127-18-4	Tetrachloroethene	ND	0.0024	0.00028		_		
108-88-3	Toluene	0.0028	0.0060	0.0010	mg/kg	J		
87-61-6	1,2,3-Trichlorobenzene	ND	0.0060	0.00029				
120-82-1	1,2,4-Trichlorobenzene	ND	0.0060	0.00028				
71-55-6	1,1,1-Trichloroethane	ND	0.0024	0.00038				
79-00-5	1,1,2-Trichloroethane	ND	0.0024	0.00088				
79-01-6	Trichloroethene	ND	0.0024	0.00025				
75-69-4	Trichlorofluoromethane	ND	0.0024	0.00037	mg/kg			
96-18-4	1,2,3-Trichloropropane	ND	0.0060	0.00035				
95-63-6	1,2,4-Trimethylbenzene	ND	0.0060	0.00027				
108-67-8	1,3,5-Trimethylbenzene	ND	0.0060	0.00026				
108-05-4	Vinyl Acetate	ND	0.0060	0.0015	mg/kg			
75-01-4	Vinyl chloride	ND	0.0024	0.00033				
05 47 0	m,p-Xylene	ND	0.0024	0.00095				
95-47-6	o-Xylene	ND	0.0024	0.00029				
1330-20-7	Xylene (total)	ND	0.0024	0.00029	mg/kg			

Report of Analysis

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound





E = Indicates value exceeds calibration range

Accutest LabLink@135009 12:43 29-Mar-2013

		Керог	Report of Analysis					
Client Sam Lab Sampl Matrix: Method: Project:	e ID: MC18752-2 SO - Soil SW846 8260B	MC18752-2 Date Sampled SO - Soil Date Received						
VOA Speci	al List							
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits				
1868-53-7 2037-26-5 460-00-4	Dibromofluoromethane87%Toluene-D8111%4-Bromofluorobenzene89%			70-130% 70-130% 70-130%				
CAS No.	Tentatively Identified Cor	mpounds	R.T.	Est. Conc. Units Q				
	Total TIC, Volatile			0 mg/kg				

Report of Analysis

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

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



Page 3 of 3

4.2

Accutest LabLink@135009 12:43 29-Mar-2013

	Report of Analysis Page 1 of							Page 1 of 1	
Client Sample ID:MW-24-25Lab Sample ID:MC18752-2Matrix:SO - SoilMethod:SW846 8011Project:URSMOSTL: Roxana Drilling, Roxana, IL					Date Sampled: 03/07/13 Date Received: 03/08/13 Percent Solids: 93.6				
Run #1 Run #2	File ID YZ78547.D		•	By CZ	Prep Da 03/13/13		Prep Batch OP32247	Analytical Batch GYZ7047	
Run #1 Run #2	Initial Weight 30.3 g	Final Volum 50.0 ml	ie						
VOA Special List									
CAS No.	Compound		Result	RL	MDL	Units	Q		
96-12-8 106-93-4	1,2-Dibromo-3 1,2-Dibromoet	3-chloropropane hane	ND ND	0.0026 0.0026	0.0012 0.0010	ıng/kg mg/kg			
CAS No.	Surrogate Rec	coveries	Run# 1	Run# 2	2 Limits				
460-00-4 460-00-4	Bromofluorobe Bromofluorobe		177% a 208% a	9	61-167% 61-167%				

(a) Outside control limits.Sample uon-detect for target analytes.

ND = Not detected MDL - Method Detection Limit RL = Reporting Limit

- J = Indicates an estimated value
- B = 1ndicates analyte found in associated method blank
- N = Indicates presumptive evidence of a compound



4.2

E = Indicates value exceeds calibration range

Method:         SW846 8260B         Percent Solids:         81.3           Project:         URSMOSTL: Roxana Drilling, Roxana, IL         Prep Date         Prep Batch         Analytical Batch           Run #L         M64904.D         1         03/12/13         GK         n/a         n/a         M/s         MSK2225           Initial Weight         Final Volume         Methanol Aliquot         n/a         n/a         MSK2225           Initial Weight         Final Volume         Methanol Aliquot         n/a         MSK2225           Kon #1         5.37 g         5.0 ml         100 ul         WSK2255         MSK2225           VOA Special List         CAS No.         Compound         Result         RL         MDL         Units         Q           67-64-1         Acctone         ND         0.029         0.011         mg/kg         MCT           107-02-8         Acrolein         ND         0.029         0.0014         mg/kg         MCT           108-86-1         Bromochloromethane         ND         0.0027         0.00024         mg/kg           72-72-4         Bromochloromethane         ND         0.0023         0.0023         mg/kg           75-25-2         Bromochloromethane <td< th=""><th></th><th></th><th></th><th>Rep</th><th>ort of Ana</th><th>alysis</th><th></th><th></th><th>Page 1 of 3</th></td<>				Rep	ort of Ana	alysis			Page 1 of 3
Run #1         M54904.D         1         03/21/13         Ály $n/a$ $n/a$ MSM1871 m/a           Run #2         K67892.D         1         03/12/13         GK $n/a$ $n/a$ MSM1871 m/a           Run #1         5.37 g         5.0 ml         Methanol Aliquot             Run #2         4.15 g         10.0 ml         100 ul              VOA Special List         CAS No.         Compound         Result         RL         MDL         Units         Q           67-64-1         Acctone         ND         0.0057         0.0014         mg/kg         UT           107-02-8         Acctolein         ND         0.029         0.0114         mg/kg         UT           71-43-2         Benzene         0.0014         0.00057         0.00034         mg/kg            75-27-4         Bromochichoromethane         ND         0.0023         0.00024         mg/kg           75-27-4         Bromochichloromethane         ND         0.0057         0.00014         mg/kg           75-15-0         Carbon disuffde         ND         0.0057         0.00014         mg/kg           <		le ID: MC187 SO - So SW846	52-3 il 8260B	na Drilling,	Roxana, IL		Date	Received:	03/08/13
Run #2         K67892.D         1         03/12/13         GK         n/a         MSK2225           Initial Weight Run #2         Final Volume 4.15 g         Final Volume 5.0 ml         Methanol Aliquot         Image: Composition of the compositis and the composition of the compositen and the compositicon of t			DF		Ву	Prep Da	te	Prep Batch	-
Initial Weight Run #1         Final Volume 5.37 g         Methanol Aliquot 5.0 ml           Run #2         4.15 g         10.0 ml         100 ul           VOA Special List              CAS No.         Compound         Result         RL         MDL         Units         Q           67-64-1         Acetone         ND         0.0057         0.0014         mg/kg $\mathcal{U}$ 107-02-8         Acrolein         ND         0.029         0.011         mg/kg $\mathcal{U}$ 107-13-1         Acrylonitrile         ND         0.0057         0.00024         mg/kg           108-86-1         Bromobenzene         ND         0.0057         0.00024         mg/kg           71-43-2         Benzene         0.0014         0.00057         0.00044         mg/kg           75-27-4         Bromodichloromethane         ND         0.0023         0.00023         mg/kg           75-25-2         Bromomethane         ND         0.0057         0.0014         mg/kg           75-75-4         Bromomethane         ND         0.0057         0.0014         mg/kg           75-75-5         Conton tsuffide         ND         0.0057         0.0014	Run #1								
Run #1       5.37 g       5.0 ml         Run #2       4.15 g       10.0 ml       100 ul         VOA Special List         CAS No.       Compound       Result       RL       MDL       Units       Q         67-64-1       Acetone       ND       0.0057       0.0014       mg/kg       MT         107-02-8       Acrolein       ND       0.029       0.011       mg/kg       MT         107-13-1       Acrylonitrile       ND       0.0057       0.00034       mg/kg       MT         107-13-1       Acrylonitrile       ND       0.0057       0.00024       mg/kg       MK         108-86-1       Bromochloromethane       ND       0.0023       0.00024       mg/kg       MK         75-27-4       Bromodichloromethane       ND       0.0023       0.00024       mg/kg       MK         74-83-9       Bromomethane       ND       0.0023       0.00024       mg/kg       MK         88-96-6       terl-Butylbenzene       ND       0.0057       0.0014       mg/kg       MK         98-06-6       terl-Butylbenzene       ND       0.0057       0.0019       mg/kg       MK       MK       MK       MK       MK	Run #2	K67892.D	1	03/12/13	GK	n/a		n/a	MSK2225
VOA Special List           CAS No.         Compound         Result         RL         MDL         Units         Q           67-64-1         Acetone         ND         0.0057         0.0014         mg/kg         MJ           107-02-8         Acrolein         ND         0.029         0.011         mg/kg         MJ           107-13-1         Acrylonitrile         ND         0.0057         0.00034         mg/kg           107-13-2         Benzene         0.0014         0.00057         0.00026         mg/kg           108-86-1         Bromobenzene         ND         0.0057         0.00026         mg/kg           75-27-4         Bromodichloromethane         ND         0.0023         0.0023         mg/kg           75-25-2         Bromomethane         ND         0.0023         0.0023         mg/kg           75-25-2         Bromomethane         ND         0.0057         0.00021         mg/kg           104-51-8         n-Butylbenzene         ND         0.0057         0.00021         mg/kg           104-51-8         sec-Bntylbenzene         ND         0.0057         0.0001         mg/kg           56-15-0         Carbon disuffide         ND         0.0023 <td>Run #1 Run #2</td> <td>5.37 g</td> <td>5.0 ml</td> <td></td> <td>-</td> <td>t</td> <td></td> <td></td> <td></td>	Run #1 Run #2	5.37 g	5.0 ml		-	t			
CAS No.         Compound         Result         RL         MDL         Units         Q $67-64-1$ Acetone         ND         0.0057         0.0014         mg/kg $MJ$ $107-02-8$ Acroloin         ND         0.029         0.011         mg/kg $MJ$ $17-13-1$ Acrylonitrile         ND         0.029         0.0014         mg/kg $17-43-2$ Benzene         0.0014         0.0057         0.00024         mg/kg $17-43-2$ Bromobenzene         ND         0.0057         0.00024         mg/kg $75-27.4$ Bromoochloromethane         ND         0.0023         0.00024         mg/kg $75-27.2$ Bromoonchane         ND         0.0023         0.00024         mg/kg $75-27.4$ Bromoonchane         ND         0.0023         0.00024         mg/kg $75-27.4$ Bromoonchane         ND         0.0057         0.00014         mg/kg $75-85$ Bromoonchane         ND         0.0057         0.00014         mg/kg $104-51-8$ n-Butylbenzene         ND         0.0023         0.00014         m									
67-64-1       Acetone       ND $0.0057$ $0.0014$ $mg/kg$ $UUT$ 107-02-8       Acrolein       ND $0.029$ $0.011$ $mg/kg$ 107-13-1       Acrylonitrile       ND $0.029$ $0.0014$ $mg/kg$ 107-13-1       Acrylonitrile       ND $0.0057$ $0.00034$ $mg/kg$ 17-43-2       Benzene $0.0014$ $0.0057$ $0.00024$ $mg/kg$ 74-97-5       Bromochloromethane       ND $0.0023$ $0.0024$ $mg/kg$ 75-27-4       Bromorethane       ND $0.0023$ $0.00024$ $mg/kg$ 75-25-2       Bromorethane       ND $0.0023$ $0.00024$ $mg/kg$ 74-83-9       Bromorethane       ND $0.0023$ $0.00024$ $mg/kg$ 74-83-9       Bromorethane       ND $0.0057$ $0.00014$ $mg/kg$ 104-51-8       n-Butylbenzene       ND $0.0057$ $0.00021$ $mg/kg$ 104-51-8       Schylbenzene       ND $0.0023$ $0.00019$ $mg/kg$ 56-23-5       Carbon disulfide       ND	CAS No.			Result	RL	MDL	Units	Q	
107-02-8       Acrolein       ND $0.029$ $0.011$ $mg/kg$ 107-13-1       Acrylonitrile       ND $0.029$ $0.0014$ $mg/kg$ 71-43-2       Benzene $0.0014$ $0.0057$ $0.00026$ $mg/kg$ 108-86-1       Bromobenzene       ND $0.0057$ $0.00024$ $mg/kg$ 74-97-5       Bromochloromethane       ND $0.0023$ $0.0024$ $mg/kg$ 75-25-2       Bromofrm       ND $0.0023$ $0.0024$ $mg/kg$ 74-83-9       Bromomethane       ND $0.0023$ $0.00059$ $mg/kg$ 78-93-3       2-Butanone (MEK)       ND $0.0057$ $0.00021$ $mg/kg$ 104-51-8       n-Butylbenzene       ND $0.0057$ $0.00021$ $mg/kg$ 98-06-6       tert-Butylbenzene       ND $0.0057$ $0.00019$ $mg/kg$ 56-23-5       Carbon disulfide       ND $0.0023$ $0.00032$ $mg/kg$ 108-90-7       Chlorobenzene       ND $0.0023$ $0.00032$ $mg/kg$ 101-075-8       2-Chlorotehyl vinyl ether       ND		-		ND			maller		
107-13-1       Acrylonitrile       ND $0.029$ $0.014$ $mg/kg$ 71-43-2       Benzene $0.0014$ $0.0057$ $0.0026$ $mg/kg$ 108-86-1       Bromobenzene       ND $0.0057$ $0.00024$ $mg/kg$ 74-97-5       Bromochoromethane       ND $0.0023$ $0.0024$ $mg/kg$ 75-27-4       Bromorethane       ND $0.0023$ $0.0023$ $mg/kg$ 75-25-2       Bromorethane       ND $0.0023$ $0.0029$ $mg/kg$ 74-83-9       Bromorethane       ND $0.0057$ $0.0014$ $mg/kg$ 104-51-8       n-Butylbenzene       ND $0.0057$ $0.0012$ $mg/kg$ 135-98-8       sec-Bntylbenzene       ND $0.0057$ $0.00026$ $mg/kg$ 75-15-0       Carbon disulfide       ND $0.0057$ $0.00019$ $mg/kg$ 56-23-5       Carbon tetrachloride       ND $0.0023$ $0.00031$ $mg/kg$ 75-00-3       Chlorobenzene       ND $0.0027$ $0.0014$ $mg/kg$ 67-66-3       Chlorotoluene       ND $0.0$								15	
71-43-2       Benzene $0.0014$ $0.00057$ $0.00034$ mg/kg         108-86-1       Bromobenzene       ND $0.0057$ $0.00026$ mg/kg         74-97-5       Bromodihoromethane       ND $0.0023$ $0.00024$ mg/kg         75-27-4       Bromodichloromethane       ND $0.0023$ $0.00024$ mg/kg         75-25-2       Bromomethane       ND $0.0023$ $0.00059$ mg/kg         74-87-3       Bromomethane       ND $0.0023$ $0.00059$ mg/kg         74-83-9       Bromomethane       ND $0.0057$ $0.0014$ mg/kg         74-5-8       n-Butylbenzene       ND $0.0057$ $0.00014$ mg/kg         104-51-8       n-Butylbenzene       ND $0.0057$ $0.00014$ mg/kg         135-98-8       sec-Butylbenzene       ND $0.0057$ $0.00014$ mg/kg         98-06-6       tert-Butylbenzene       ND $0.0023$ $0.00032$ mg/kg         75-0-5       Carbon disulfide       ND $0.0023$ $0.00032$ mg/kg         108-90-7       Chlorobenzene       ND $0.0057$									
108-86-1       Bromobenzene       ND $0.0057$ $0.00026$ $mg/kg$ 74-97-5       Bromodichloromethane       ND $0.0023$ $0.0024$ $mg/kg$ 75-27-4       Bromodichloromethane       ND $0.0023$ $0.0024$ $mg/kg$ 75-25-2       Bromomethane       ND $0.0023$ $0.0023$ $mg/kg$ 74-83-9       Bromomethane       ND $0.0025$ $0.00059$ $mg/kg$ 78-93-3       2-Butanone (MEK)       ND $0.0057$ $0.00026$ $mg/kg$ 104-51-8       n-Butylbenzene       ND $0.0057$ $0.00026$ $mg/kg$ 98-06-6       tert-Butylbenzene       ND $0.0057$ $0.0019$ $mg/kg$ 56-23-5       Carbon disulfide       ND $0.0023$ $0.00023$ $mg/kg$ 108-90-7       Chlorobenzene       ND $0.0057$ $0.0014$ $mg/kg$ 75-06-3       Chlorothyl vinyl ether       ND $0.0023$ $0.00059$ $mg/kg$ 74-87-3       Chlorotothuene       ND $0.0027$ $0.0014$ $mg/kg$ 95-49-8       o-Chlorotoluene <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>									
74-97-5BromochloromethaneND $0.0057$ $0.00043$ $mg/kg$ 75-27-4BromodichloromethaneND $0.0023$ $0.0023$ $mg/kg$ 75-25-2BromofermND $0.0023$ $0.0023$ $mg/kg$ 74-83-9BromomethaneND $0.0023$ $0.00059$ $mg/kg$ 89-3-32-Butanone (MEK)ND $0.0057$ $0.0014$ $mg/kg$ 104-51-8n-ButylbenzeneND $0.0057$ $0.00026$ $mg/kg$ 135-98-8sec-BntylbenzeneND $0.0057$ $0.00010$ $mg/kg$ 98-06-6terl-ButylbenzeneND $0.0057$ $0.00010$ $mg/kg$ 66-23-5Carbon disulfideND $0.0023$ $0.00032$ $mg/kg$ 108-90-7ChlorobenzeneND $0.0023$ $0.00032$ $mg/kg$ 75-03ChloroethaneND $0.0057$ $0.0014$ $mg/kg$ 74-87-3ChloroethaneND $0.0023$ $0.00059$ $mg/kg$ 95-49-8o-ChlorotolueneND $0.0057$ $0.0013$ $mg/kg$ 95-50-11,2-DichlorobenzeneND $0.0023$ $0.00024$ $mg/kg$ 95-50-11,2-DichlorobenzeneND $0.0023$ $0.00024$ $mg/kg$ 95-50-11,2-DichlorobenzeneND $0.0023$ $0.00024$ $mg/kg$ 95-50-11,2-DichlorobenzeneND $0.0023$ $0.00024$ $mg/kg$ 106-43-4p-ChloroblenzeneND $0.0023$ $0.00024$ $mg/kg$ 116-43-71,4-Di									
75-27-4       Bromodichloromethane       ND       0.0023       0.0024       mg/kg         75-25-2       Bromomethane       ND       0.0023       0.00059       mg/kg         74-83-9       Bromomethane       ND       0.0027       0.0014       mg/kg         78-93-3       2-Butanone (MEK)       ND       0.0057       0.0014       mg/kg         104-51-8       n-Butylbenzene       ND       0.0057       0.0012       mg/kg         98-06-6       tert-Butylbenzene       ND       0.0057       0.0010       mg/kg         98-06-6       tert-Butylbenzene       ND       0.0057       0.0019       mg/kg         56-23-5       Carbon disulfide       ND       0.0023       0.00032       mg/kg         75-00-3       Chlorobenzene       ND       0.0023       0.00032       mg/kg         67-66-3       Chloroform       ND       0.0057       0.0014       mg/kg         10-75-8       2-Chloroethyl vinyl ether       ND       0.0023       0.00059       mg/kg         57-64-3       Chloroform       ND       0.0057       0.0013       mg/kg         10-43-4       p-Chlorotoluene       ND       0.0057       0.00013       mg/kg <td></td> <td></td> <td>othona</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>			othona						
75-25-2       Bromoform       ND $0.0023$ $0.0023$ $mg/kg$ 74-83-9       Bromomethane       ND $0.0023$ $0.00059$ $mg/kg$ 78-93-3       2-Butanone (MEK)       ND $0.0057$ $0.0014$ $mg/kg$ 104-51-8       n-Butylbenzene       ND $0.0057$ $0.00021$ $mg/kg$ 135-98-8       sec-Bntylbenzene       ND $0.0057$ $0.00010$ $mg/kg$ 89-06-6       tert-Butylbenzene       ND $0.0057$ $0.0019$ $mg/kg$ 75-15-0       Carbon disulfide       ND $0.0023$ $0.00033$ $mg/kg$ 108-90-7       Chlorobenzene       ND $0.0023$ $0.00033$ $mg/kg$ 110-75-8       2-Chlorothyl vinyl ether       ND $0.0023$ $0.00014$ $mg/kg$ 110-75-8       2-Chlorothyl vinyl ether       ND $0.0023$ $0.00035$ $mg/kg$ 110-75-8       2-Chlorothyl vinyl ether       ND $0.0023$ $0.00057$ $0.0014$ $mg/kg$ 124-48-1       Dibromothane       ND $0.0023$ $0.00053$ $mg/kg$ 124-48-1							~ ~		
74-83-9BromomethaneND $0.0023$ $0.00059$ $mg/kg$ 78-93-32-Butanone (MEK)ND $0.0057$ $0.00014$ $mg/kg$ 104-51-8n-ButylbenzeneND $0.0057$ $0.00026$ $mg/kg$ 135-98-8sec-BntylbenzeneND $0.0057$ $0.00019$ $mg/kg$ 98-06-6tert-ButylbenzeneND $0.0057$ $0.00019$ $mg/kg$ 56-23-5Carbon disulfideND $0.0023$ $0.00083$ $mg/kg$ 108-90-7ChlorobenzeneND $0.0023$ $0.00032$ $mg/kg$ 108-90-7ChloroethaneND $0.0023$ $0.00032$ $mg/kg$ 110-75-82-Chloroethyl vinyl etherND $0.0023$ $0.00059$ $mg/kg$ 57-66-3ChloroformND $0.0057$ $0.0014$ $mg/kg$ 110-75-82-ChloroethaneND $0.0057$ $0.00059$ $mg/kg$ 95-49-8o-ChlorotolueneND $0.0057$ $0.00026$ $mg/kg$ 106-43-4p-ChlorotolueneND $0.0023$ $0.00026$ $mg/kg$ 95-50-11,2-DichlorobenzeneND $0.0023$ $0.00026$ $mg/kg$ 541-73-11,3-DichlorobenzeneND $0.0023$ $0.00024$ $mg/kg$ 541-73-11,2-DichlorobenzeneND $0.0023$ $0.00031$ $mg/kg$ 55-50-11,2-DichlorootheneeND $0.0023$ $0.00024$ $mg/kg$ 57-71-8DichlorodifluoromethaneND $0.0023$ $0.00031$ $mg/kg$ <td< td=""><td></td><td></td><td>metnane</td><td></td><td></td><td></td><td></td><td></td><td></td></td<>			metnane						
78-93-3       2-Butanone (MEK)       ND       0.0057       0.0014       mg/kg         104-51-8       n-Butylbenzene       ND       0.0057       0.00021       mg/kg         135-98-8       sec-Bntylbenzene       ND       0.0057       0.00026       mg/kg         98-06-6       tert-Butylbenzene       ND       0.0057       0.0010       mg/kg         75-15-0       Carbon disulfide       ND       0.0023       0.00083       mg/kg         56-23-5       Carbon tetrachloride       ND       0.0023       0.00032       mg/kg         108-90-7       Chlorobenzene       ND       0.0023       0.00032       mg/kg         75-00-3       Chloroethane       ND       0.0023       0.00059       mg/kg         107-5-8       2-Chloroethyl vinyl ether       ND       0.800       0.32       mg/kg         57-66-3       Chloroform       ND       0.0057       0.0013       mg/kg         95-49-8       o-Chlorotoluene       ND       0.0057       0.0013       mg/kg         106-43-4       p-Chlorotoluene       ND       0.0023       0.00024       mg/kg         95-50-1       1,2-Dichlorobenzene       ND       0.0023       0.00024       mg/kg									
104-51-8n-ButylbenzeneND $0.0057$ $0.0021$ $mg/kg$ 135-98-8sec-BntylbenzeneND $0.0057$ $0.0026$ $mg/kg$ 98-06-6tert-ButylbenzeneND $0.0057$ $0.0010$ $mg/kg$ 75-15-0Carbon disulfideND $0.0057$ $0.0019$ $mg/kg$ 56-23-5Carbon tetrachlorideND $0.0023$ $0.00083$ $mg/kg$ 108-90-7ChlorobenzeneND $0.0023$ $0.00032$ $mg/kg$ 75-00-3ChloroethaneND $0.0023$ $0.00032$ $mg/kg$ 110-75-82-Chloroethyl vinyl etherND $0.0023$ $0.00059$ $mg/kg$ 57-66-3ChloromethaneND $0.0023$ $0.00059$ $mg/kg$ 74-87-3ChloromethaneND $0.0057$ $0.0013$ $mg/kg$ 95-49-8o-ChlorotolueneND $0.0057$ $0.0013$ $mg/kg$ 106-43-4p-ChlorotolueneND $0.0023$ $0.00024$ $mg/kg$ 95-50-11,2-DichlorobenzeneND $0.0023$ $0.00026$ $mg/kg$ 541-73-11,3-DichlorobenzeneND $0.0023$ $0.00024$ $mg/kg$ 541-73-8DichlorodifluorometbaneND $0.0023$ $0.00031$ $mg/kg$ 75-71-8DichlorodifluorometbaneND $0.0023$ $0.00031$ $mg/kg$ 75-33-41,1-DichloroethaneND $0.0023$ $0.00031$ $mg/kg$ 75-35-2cis-1,2-DichloroetheneND $0.0023$ $0.00034$ $mg/kg$									
135-98-8sec-BntylbenzeneND $0.0057$ $0.00026$ $mg/kg$ 98-06-6tert-ButylbenzeneND $0.0057$ $0.0010$ $mg/kg$ 75-15-0Carbon disulfideND $0.0057$ $0.00019$ $mg/kg$ 56-23-5Carbon tetrachlorideND $0.0023$ $0.00032$ $mg/kg$ 108-90-7ChlorobenzeneND $0.0023$ $0.00032$ $mg/kg$ 110-75-82-ChloroethaneND $0.0057$ $0.0014$ $mg/kg$ 110-75-82-Chloroethyl vinyl etherND $0.0023$ $0.00059$ $mg/kg$ 67-66-3ChloroformND $0.0057$ $0.0013$ $mg/kg$ 95-49-8o-ChlorotohueneND $0.0057$ $0.0013$ $mg/kg$ 95-49-8o-ChlorotohueneND $0.0023$ $0.00026$ $mg/kg$ 95-50-11,2-DichlorobenzeneND $0.0023$ $0.00024$ $mg/kg$ 95-50-11,2-DichlorobenzeneND $0.0023$ $0.00024$ $mg/kg$ 95-50-11,2-DichlorobenzeneND $0.0023$ $0.00024$ $mg/kg$ 95-50-11,2-DichlorobenzeneND $0.0023$ $0.00024$ $mg/kg$ 95-51-11,3-DichlorobenzeneND $0.0023$ $0.00024$ $mg/kg$ 95-52-11,2-DichlorobenzeneND $0.0023$ $0.00031$ $mg/kg$ 95-53-41,1-DichloroethaneND $0.0023$ $0.00033$ $mg/kg$ 95-54-31,1-DichloroethaneND $0.0023$ $0.00033$ $mg/kg$ <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>									
98-06-6tert-ButylbenzeneND $0.0057$ $0.0010$ $mg/kg$ 75-15-0Carbon disulfideND $0.0057$ $0.00019$ $mg/kg$ 56-23-5Carbon tetrachlorideND $0.0023$ $0.00032$ $mg/kg$ 108-90-7ChlorobenzeneND $0.0023$ $0.00032$ $mg/kg$ 75-00-3ChloroethaneND $0.0057$ $0.0014$ $mg/kg$ 110-75-82-Chloroethyl vinyl etherND $0.0023$ $0.00059$ $mg/kg$ 67-66-3ChloroformND $0.0057$ $0.0013$ $mg/kg$ 74-87-3ChloroothueneND $0.0057$ $0.0013$ $mg/kg$ 95-49-8o-ChlorotohueneND $0.0057$ $0.0013$ $mg/kg$ 1124-48-1DibromochloromethaneND $0.0023$ $0.00026$ $mg/kg$ 95-50-11,2-DichlorobenzeneND $0.0023$ $0.00026$ $mg/kg$ 106-46-71,4-DichlorobenzeneND $0.0023$ $0.00026$ $mg/kg$ 106-46-71,4-DichlorobenzeneND $0.0023$ $0.00026$ $mg/kg$ 106-46-71,4-DichlorobenzeneND $0.0023$ $0.00024$ $mg/kg$ 107-06-21,2-DichloroethaneND $0.0023$ $0.00031$ $mg/kg$ 107-06-21,2-DichloroethaneND $0.0023$ $0.00033$ $mg/kg$ 107-06-21,2-DichloroethaneND $0.0023$ $0.00033$ $mg/kg$ 156-59-2cis-1,2-DichloroetheneND $0.0023$ $0.00034$ $mg/kg$									
75-15-0       Carbon disulfide       ND       0.0057       0.00019       mg/kg         56-23-5       Carbon tetrachloride       ND       0.0023       0.00083       mg/kg         108-90-7       Chlorobenzene       ND       0.0023       0.00032       mg/kg         75-00-3       Chloroethane       ND       0.0057       0.0014       mg/kg         110-75-8       2-Chloroethyl vinyl ether       ND       0.0023       0.00059       mg/kg         67-66-3       Chloromethane       ND       0.0057       0.0013       mg/kg         74-87-3       Chloromethane       ND       0.0057       0.0013       mg/kg         95-49-8       o-Chlorotohuene       ND       0.0057       0.0026       mg/kg         106-43-4       p-Chlorotohuene       ND       0.0023       0.00026       mg/kg         124-48-1       Dibromochloromethane       ND       0.0023       0.00024       mg/kg         541-73-1       1,3-Dichlorobenzene       ND       0.0023       0.00026       mg/kg         541-73-1       1,3-Dichlorobenzene       ND       0.0023       0.00024       mg/kg         541-73-1       1,3-Dichloromethane       ND       0.0023       0.00013 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>									
56-23-5       Carbon tetrachloride       ND       0.0023       0.00083       mg/kg         108-90-7       Chlorobenzene       ND       0.0023       0.00032       mg/kg         75-00-3       Chloroethane       ND       0.0057       0.0014       mg/kg         110-75-8       2-Chloroethyl vinyl ether       ND       0.0023       0.00059       mg/kg         67-66-3       Chloroform       ND       0.0057       0.0013       mg/kg         95-49-8       o-Chlorotoluene       ND       0.0057       0.0013       mg/kg         106-43-4       p-Chlorotoluene       ND       0.0023       0.00026       mg/kg         124-48-1       Dibromochloromethane       ND       0.0023       0.00025       mg/kg         95-50-1       1,2-Dichlorobenzene       ND       0.0023       0.00025       mg/kg         106-46-7       1,4-Dichlorobenzene       ND       0.0023       0.0024       mg/kg         106-46-7       1,4-Dichlorobenzene       ND       0.0023       0.0013       mg/kg         107-06-2       1,2-Dichloroethane       ND       0.0023       0.00031       mg/kg         107-06-2       1,2-Dichloroethane       ND       0.0023       0.0003									^
108-90-7       Chlorobenzene       ND       0.0023       0.00032       mg/kg         75-00-3       Chloroethane       ND       0.0057       0.0014       mg/kg         110-75-8       2-Chloroethyl vinyl ether       ND       0.80       0.32       mg/kg         67-66-3       Chloroform       ND       0.0023       0.00059       mg/kg         67-67-3       Chloromethane       ND       0.0057       0.0013       mg/kg         95-49-8       o-Chlorotohuene       ND       0.0057       0.0026       mg/kg         106-43-4       p-Chlorotohuene       ND       0.0023       0.00024       mg/kg         95-50-1       1,2-Dichlorobenzene       ND       0.0023       0.00025       mg/kg         95-50-1       1,2-Dichlorobenzene       ND       0.0023       0.00025       mg/kg         95-50-1       1,2-Dichlorobenzene       ND       0.0023       0.00026       mg/kg         106-46-7       1,4-Dichlorobenzene       ND       0.0023       0.00024       mg/kg         75-71-8       Dichlorodifluorometbane       ND       0.0023       0.0013       mg/kg         107-06-2       1,2-Dichloroethane       ND       0.0023       0.00033									
75-00-3       Chloroethane       ND       0.0057       0.0014       mg/kg         110-75-8       2-Chloroethyl vinyl ether       ND       0.80       0.32       mg/kg         67-66-3       Chloroform       ND       0.0023       0.00059       mg/kg         74-87-3       Chloromethane       ND       0.0057       0.0013       mg/kg         95-49-8       o-Chlorotohuene       ND       0.0057       0.0026       mg/kg         106-43-4       p-Chlorotohuene       ND       0.0023       0.00034       mg/kg         95-50-1       1,2-Dichlorobenzene       ND       0.0023       0.00026       mg/kg         95-50-1       1,2-Dichlorobenzene       ND       0.0023       0.00026       mg/kg         106-46-7       1,4-Dichlorobenzene       ND       0.0023       0.00026       mg/kg         75-71-8       Dichlorodifluoromethane       ND       0.0023       0.00024       mg/kg         107-06-2       1,2-Dichloroethane       ND       0.0023       0.00031       mg/kg         107-06-2       1,2-Dichloroethane       ND       0.0023       0.00033       mg/kg         156-59-2       cis-1,2-Dichloroethene       ND       0.0023       0.0003									
110-75-8       2-Chloroethyl vinyl ether       ND       0.80       0.32       mg/kg         67-66-3       Chloroform       ND       0.0023       0.00059       mg/kg         74-87-3       Chloromethane       ND       0.0057       0.00053       mg/kg         95-49-8       o-Chlorotohuene       ND       0.0057       0.0013       mg/kg         106-43-4       p-Chlorotohuene       ND       0.0023       0.00024       mg/kg         124-48-1       Dibromochloromethane       ND       0.0023       0.00025       mg/kg         95-50-1       1,2-Dichlorobenzene       ND       0.0023       0.00026       mg/kg         541-73-1       1,3-Dichlorobenzene       ND       0.0023       0.00026       mg/kg         541-73-1       1,3-Dichlorobenzene       ND       0.0023       0.00026       mg/kg         75-71-8       Dichlorodifluorometbane       ND       0.0023       0.0013       mg/kg         107-06-2       1,2-Dichloroethane       ND       0.0023       0.00031       mg/kg         107-06-2       1,2-Dichloroethane       ND       0.0023       0.00033       mg/kg         156-59-2       cis-1,2-Dichloroethene       ND       0.0023									
67-66-3       Chloroform       ND       0.0023       0.00059       mg/kg         74-87-3       Chloromethane       ND       0.0057       0.00053       mg/kg         95-49-8       o-Chlorotohuene       ND       0.0057       0.0013       mg/kg         106-43-4       p-Chlorotohuene       ND       0.0023       0.00026       mg/kg         124-48-1       Dibromochloromethane       ND       0.0023       0.00024       mg/kg         95-50-1       1,2-Dichlorobenzene       ND       0.0023       0.00026       mg/kg         541-73-1       1,3-Dichlorobenzene       ND       0.0023       0.00026       mg/kg         106-46-7       1,4-Dichlorobenzene       ND       0.0023       0.00024       mg/kg         106-46-7       1,4-Dichlorobenzene       ND       0.0023       0.00013       mg/kg         107-06-2       1,2-Dichloroethane       ND       0.0023       0.00031       mg/kg         107-06-2       1,2-Dichloroethane       ND       0.0023       0.00033       mg/kg         156-59-2       cis-1,2-Dichloroethene       ND       0.0023       0.00034       mg/kg			vinvl ether						
74-87-3       Chloromethane       ND       0.0057       0.00053       mg/kg         95-49-8       o-Chlorotohuene       ND       0.0057       0.0013       mg/kg         106-43-4       p-Chlorotohuene       ND       0.0057       0.00026       mg/kg         124-48-1       Dibromochloromethane       ND       0.0023       0.00034       mg/kg         95-50-1       1,2-Dichlorobenzene       ND       0.0023       0.00025       mg/kg         541-73-1       1,3-Dichlorobenzene       ND       0.0023       0.00026       mg/kg         106-46-7       1,4-Dichlorobenzene       ND       0.0023       0.00024       mg/kg         75-71-8       Dichlorodifluorometbane       ND       0.0023       0.0013       mg/kg         107-06-2       1,2-Dichloroethane       ND       0.0023       0.00031       mg/kg         107-06-2       1,2-Dichloroethane       ND       0.0023       0.00033       mg/kg         156-59-2       cis-1,2-Dichloroethene       ND       0.0023       0.00034       mg/kg		~	villy) culei						
95-49-8       o-Chlorotohuene       ND       0.0057       0.0013       mg/kg         106-43-4       p-Chlorotohuene       ND       0.0057       0.00026       mg/kg         124-48-1       Dibromochloromethane       ND       0.0023       0.00034       mg/kg         95-50-1       1,2-Dichlorobenzene       ND       0.0023       0.00026       mg/kg         541-73-1       1,3-Dichlorobenzene       ND       0.0023       0.00026       mg/kg         106-46-7       1,4-Dichlorobenzene       ND       0.0023       0.00024       mg/kg         75-71-8       Dichlorodifluorometbane       ND       0.0023       0.00031       mg/kg         75-34-3       1,1-Dichloroethane       ND       0.0023       0.00031       mg/kg         107-06-2       1,2-Dichloroethane       ND       0.0023       0.00033       mg/kg         156-59-2       cis-1,2-Dichloroethene       ND       0.0023       0.00042       mg/kg									
106-43-4       p-Chlorotoluene       ND       0.0057       0.00026       mg/kg         124-48-1       Dibromochloromethane       ND       0.0023       0.00034       mg/kg         95-50-1       1,2-Dichlorobenzene       ND       0.0023       0.00026       mg/kg         541-73-1       1,3-Dichlorobenzene       ND       0.0023       0.00026       mg/kg         106-46-7       1,4-Dichlorobenzene       ND       0.0023       0.00024       mg/kg         75-71-8       Dichlorodifluorometbane       ND       0.0023       0.0013       mg/kg         75-34-3       1,1-Dichloroethane       ND       0.0023       0.00031       mg/kg         107-06-2       1,2-Dichloroethane       ND       0.0023       0.00033       mg/kg         107-06-2       1,2-Dichloroethane       ND       0.0023       0.00033       mg/kg         156-59-2       cis-1,2-Dichloroethene       ND       0.0023       0.00042       mg/kg									
124-48-1       Dibromochloromethane       ND       0.0023       0.00034       mg/kg         95-50-1       1,2-Dichlorobenzene       ND       0.0023       0.00025       mg/kg         541-73-1       1,3-Dichlorobenzene       ND       0.0023       0.00026       mg/kg         106-46-7       1,4-Dichlorobenzene       ND       0.0023       0.00024       mg/kg         75-71-8       Dichlorodifluorometbane       ND       0.0023       0.00031       mg/kg         75-34-3       1,1-Dichloroethane       ND       0.0023       0.00031       mg/kg         107-06-2       1,2-Dichloroethane       ND       0.0023       0.00033       mg/kg         75-35-4       1,1-Dichloroethene       ND       0.0023       0.00042       mg/kg         156-59-2       cis-1,2-Dichloroethene       ND       0.0023       0.00034       mg/kg							mg/kg		
95-50-1       1,2-Dichlorobenzene       ND       0.0023       0.00025       mg/kg         541-73-1       1,3-Dichlorobenzene       ND       0.0023       0.00026       mg/kg         106-46-7       1,4-Dichlorobenzene       ND       0.0023       0.00024       mg/kg         75-71-8       Dichlorodifluorometbane       ND       0.0023       0.00031       mg/kg         75-34-3       1,1-Dichloroethane       ND       0.0023       0.00031       mg/kg         107-06-2       1,2-Dichloroethane       ND       0.0023       0.00033       mg/kg         75-35-4       1,1-Dichloroethene       ND       0.0023       0.00042       mg/kg         156-59-2       cis-1,2-Dichloroethene       ND       0.0023       0.00034       mg/kg									
541-73-1       1,3-Dichlorobenzene       ND       0.0023       0.00026 mg/kg         106-46-7       1,4-Dichlorobenzene       ND       0.0023       0.00024 mg/kg         75-71-8       Dichlorodifluorometbane       ND       0.0023       0.0013 mg/kg         75-34-3       1,1-Dichloroethane       ND       0.0023       0.00031 mg/kg         107-06-2       1,2-Dichloroethane       ND       0.0023       0.00033 mg/kg         75-35-4       1,1-Dichloroethene       ND       0.0023       0.00042 mg/kg         156-59-2       cis-1,2-Dichloroethene       ND       0.0023       0.00034 mg/kg									
106-46-7       1,4-Dichlorobenzene       ND       0.0023       0.00024 mg/kg         75-71-8       Dichlorodifluorometbane       ND       0.0023       0.0013 mg/kg         75-34-3       1,1-Dichloroethane       ND       0.0023       0.00031 mg/kg         107-06-2       1,2-Dichloroethane       ND       0.0023       0.00033 mg/kg         75-35-4       1,1-Dichloroethene       ND       0.0023       0.00042 mg/kg         156-59-2       cis-1,2-Dichloroethene       ND       0.0023       0.00034 mg/kg	541-73-1								
75-71-8         Dichlorodifluorometbane         ND         0.0023         0.0013         mg/kg           75-34-3         1,1-Dichloroethane         ND         0.0023         0.00031         mg/kg           107-06-2         1,2-Dichloroethane         ND         0.0023         0.00033         mg/kg           75-35-4         1,1-Dichloroethene         ND         0.0023         0.00042         mg/kg           156-59-2         cis-1,2-Dichloroethene         ND         0.0023         0.00034         mg/kg	106-46-7	,							
75-34-3       1,1-Dichloroethane       ND       0.0023       0.00031       mg/kg         107-06-2       1,2-Dichloroethane       ND       0.0023       0.00033       mg/kg         75-35-4       1,1-Dichloroethene       ND       0.0023       0.00042       mg/kg         156-59-2       cis-1,2-Dichloroethene       ND       0.0023       0.00034       mg/kg	75-71-8								
107-06-2         1,2-Dichloroethane         ND         0.0023         0.00033         mg/kg           75-35-4         1,1-Dichloroethene         ND         0.0023         0.00042         mg/kg           156-59-2         cis-1,2-Dichloroethene         ND         0.0023         0.00034         mg/kg	75-34-3				0.0023	0.00031			
75-35-4 1,1-Dichloroethene ND 0.0023 0.00042 mg/kg 156-59-2 cis-1,2-Dichloroethene ND 0.0023 0.00034 mg/kg	107-06-2	1,2-Dichloroet	hane			0.00033	mg/kg		
	75-35-4	1,1-Dichloroet	hene	ND					
156-60-5 trans-1,2-Dichloroethene ND 0.0023 0.00033 mg/kg	156-59-2								
	156-60-5	trans-1,2-Dichl	oroethene	ND	0.0023	0.00033	mg/kg		

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



Client Samp Lab Sample Matrix: Method: Project:		MW-24-47 MC18752-3 SO - Soil SW846 8260B URSMOSTL: Roxana I	Drilling,	Rox	ana, IL		Date	Sampled: Received: ent Solids:	03/07/13 03/08/13 81.3
VOA Specia	l List								
CAS No.	Comp	ound	Result		RL	MDL	Units	Q	
78-87-5	1,2-Di	chloropropane	ND		0.0023	0.00043	mg/kg		
142-28-9		chloropropane	ND		0.0057	0.00026			
594-20-7	2,2-Di	chloropropane	ND		0.0057	0.00099	mg/kg		
563-58-6		chloropropene	ND		0.0057	0.00030			
10061-01-5		B-Dichloropropene	ND		0.0023	0.00020			
10061-02-6		,3-Dichloropropene	ND		0.0023	0.00057			
123-91-1	1,4-Di		ND		0.029	0.029	mg/kg		
97-63-2		methacrylate	ND		0.0057	0.00078			
100-41-4		enzene	0.0021		0.0023	0.00028		ł	
87-68-3		hlorobutadiene	ND		0.0057	0.00053			
591-78-6	2-Hexa		ND		0.0057	0.0014	mg/kg		
98-82-8 99-87-6		pylhenzene ropyltoluene	ND ND		0.0057 0.0057	0.00026			
1634-04-4		l Tert Butyl Ether	ND		0.0023	0.00020			
108-10-1		hyl-2-pentanone (MIBK)			0.0025	0.00057			
74-95-3		lene bromide	ND		0.0057	0.00057			
75-09-2		lene chloride	ND		0.0023	0.0013	mg/kg		
91-20-3	Napht		ND		0.0057	0.0014	mg/kg		
103-65-1		ylbenzene	ND		0.0057	0.0012	mg/kg		
100-42-5	Styren	-	ND		0.0057	0.00027			
630-20-6	1,1,1,1	2-Tetrachloroethane	ND		0.0057	0.00027			
79-34-5	1,1,2,2	2-Tetrachloroethane	ND		0.0023	0.00049	mg/kg		
127-18-4	Tetrac	hloroethene	ND		0.0023	0.00026			
108-88-3	Toluer		0.0026		0.0057	0.00097		ł	
87-61-6		Frichlorobenzene	ND		0.0057	0.00027	0 0		
120-82-1		Frichlorohenzene	ND		0.0057	0.00026	~ ~		
71-55-6		Frichloroethane	ND		0.0023	0.00036			
79-00-5		Frichloroethane	ND		0.0023	0.00084			
79-01-6		proethene	ND		0.0023	0.00024			
75-69-4		profluoromethane	ND		0.0023	0.00035			
96-18-4		Trichloropropane	ND		0.0057	0.00033			
95-63-6		Frimethylbenzene	ND		0.0057	0.00026			
108-67-8 108-05-4		Frimethylbenzene Acetate	ND ND		0.0057	0.00024 0.0014			
75-01-4		chloride	ND		0.0057 0.0023	0.0014	mg/kg	$\mathcal{O}$	
15-01-4	m,p-X		ND		0.0023	0.00031			
95-47-6	o-Xyle	5	ND		0.0023	0.00030			
1330 20 7	•	(total)	ND		0.0023		0.0		

ND

Report of Analysis

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

1330-20-7

Xylene (total)

J = Indicates an estimated value

0.0023 0.00027 mg/kg

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



Page 2 of 3

E = Indicates value exceeds calibration range

		Repor	t of Ana	lysis		Page 3 of 3
Client Sam Lab Sampl Matrix: Method: Project:	-	na Drilling, R	oxana, IL	Date Sampled: Date Received Percent Solids	03/08/13	
VOA Speci	al List					
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
1868-53-7 2037-26-5 460-00-4	Dibromofluoromethane Toluene-D8 4-Bromofluorobenzene	88% 112% 89%	115% 110% 104%	70-130% 70-130% 70-130%		
CAS No.	Tentatively Identified Con	apounds	R.T.	Est. Conc. Units Q		
	Total TIC, Volatile			0 mg/kg		

(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



			Repor	t of An	alysis			Page 1 of 1
Client Sam Lab Sampl Matrix: Method: Project:	le ID: MC18 SO - S SW840	752-3 oil		boxana, IL		Date		/07/13 /08/13 .3
Run #1 Run #2	File ID YZ78548.D		3/16/13	By CZ	Prep Da 03/13/13		Prep Bateh OP32247	Analytical Batch GYZ7047
Run #1 Run #2	Initial Weight 30.2 g	Final Volum 50.0 ml	ie					
VOA Spec	ial List							
CAS No.	Compound		Result	RL	MDL	Units	Q	
96-12-8 106-93-4	1,2-Dibromo- 1,2-Dibromoe	3-chloropropane ethane	2 ND ND	0.0031 0.0031	0.0014 0.0012	mg/kg mg/kg		
CAS No.	Surrogate Re	coveries	Run# 1	Run# 2	Limi	its		
460-00-4 460-00-4	Bromofluorob Bromofluorob		158% 200% a	>	61-1 61-1			

(a) Outside control limits.Sample non-detect for target analytes.

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

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



			Repo	rt of Ana	lysis			Page 1 of 3
Client Sam Lab Samp Matrix: Method: Project:	le ID: MC187 SO - So SW846	52-4 il 8260B	na Drilling, F	Roxana, IL		Date	Received: 03	3/07/13 3/08/13 1.8
Run #1 Run #2	File 1D M54872.D	DF 1	Analyzed 03/20/13	By AMY	Prep Da n/a	tc	Prep Batch n/a	Analytical Batch MSM1869
Run #1 Run #2	1nitial Weight 5.40 g	Final Vol 5.0 ml	ume					
VOA Spec	ial List							
CAS No.	Compound		Result	RL	MDL	Units	Q	
107-02-8 107-13-1 71-43-2 108-86-1 74-97-5 75-27-4 75-25-2 74-83-9 78-93-3 104-51-8 135-98-8 98-06-6 75-15-0 56-23-5 108-90-7 75-00-3 110-75-8 67-66-3 74-87-3 95-49-8 106-43-4	Acrolein Acrylonitrile Benzene Bromobenzene Bromochlorom Bromodichloro Bromoform Bromomethane 2-Butanone (M n-Butylbenzene Carbon disulfic Carbon tetrach Chlorobenzene Chloroethane 2-Chloroethyl v Chloroform Chloromethane o-Chlorotoluen p-Chlorotoluen	methane EK) ne ne loride loride vinyl ether	ND ND 0.0012 ND ND ND ND ND ND ND ND ND ND ND ND ND	0.028 0.028 0.0057 0.0057 0.0057 0.0023 0.0023 0.0023 0.0057 0.0057 0.0057 0.0057 0.0023 0.0023 0.0023 0.0057 0.0057 0.0057 0.0057 0.0057 0.0057	0.00025 0.00042 0.0023 0.00059 0.0014 0.00021 0.00026 0.0010 0.00019 0.00082 0.00031 0.0014 0.0023 0.00058 0.00058 0.00053 0.0012 0.00026	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg		
124-48-1 95-50-1 541-73-1 106-46-7 75-71-8 75-34-3 107-06-2 75-35-4 156-59-2 156-60-5	Dibromochloro 1,2-Dichlorobe 1,3-Dichlorobe 1,4-Dichlorobe Dichlorodifluo 1,1-Dichloroet 1,2-Dichloroet 1,1-Dichloroet cis-1,2-Dichlor trans-1,2-Dichlor	emethane enzene enzene romethane hane hane hene roethene	ND ND ND ND ND ND ND ND	0.0023 0.0023 0.0023 0.0023 0.0023 0.0023 0.0023 0.0023 0.0023 0.0023 0.0023	0.00033 0.00024 0.00026 0.00024 0.0013 0.00031 0.00033 0.00042 0.00034 0.00032	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg		

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = 1ndicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = 1ndicates presumptive evidence of a compound



Method: Project:	SW846 8260B URSMOSTL: Roxana I	Drilling, Ro	xana, IL		Рего	ent Solids:	81.8
VOA Specia	l List						
CAS No.	Compound	Result	RL	MDL	Units	Q	
78-87-5	1,2-Dichloropropane	ND	0.0023	0.00042			
142-28-9	1,3-Dichloropropane	ND	0.0057	0.00026			
594-20-7	2,2-Dichloropropane	ND	0.0057	0.00098			
563-58-6	I,1-Dichloropropene	ND	0.0057	0.00030	~ ~		
10061-01-5	cis-1,3-Dichloropropene	ND	0.0023	0.00019			
10061-02-6	trans-1,3-Dichloropropene	ND	0.0023	0.00056			
123-91-1	1,4-Dioxane	ND	0.028	0.028	mg/kg		
97-63-2	Ethyl methacrylate	ND	0.0057	0.00077		_	
100-41-4	Ethylbenzene	0.0013	0.0023	0.00027		J	
87-68-3	Hexachlorobutadiene	ND	0.0057	0.00053		. Are	
591-78-6	2-Hexanone	ND	0.0057	0.0014	mg/kg	u	
98-82-8	Isopropylbenzene	ND	0.0057	0.00026			
99-87-6	p-Isopropyltolnene	ND	0.0057	0.00020			
1634-04-4	Methyl Tert Butyl Ether	ND	0.0023	0.00033			
108-10-1	4-Methyl-2-pentanone (MIBK)		0.0057	0.00057			
74-95-3	Methylene hromide	ND	0.0057 	0,00056	~ ~	,	
75-09-2	5	-0.0032 :A			mg/kg	<i>V</i> 1	
91-20-3	Naphthalene	ND	0.0057	0.0014	mg/kg		
103-65-1	n-Propylbenzene	ND	0.0057	0.0011	mg/kg		
100-42-5	Styrene	ND	0.0057	0.00026			
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.0057	0.00027 0.00048			
79-34-5	1,1,2,2-Tetrachloroethane	ND ND	0.0023				
127-18-4	Tetrachloroethene Toluene		0.0023	0.00026		T	
108-88-3	1,2,3-Trichlorobenzene	0.0018	0.0057	0.00096	~ ~	J	
87-61-6		ND ND	0.0057	0.00027			
120-82-1	1,2,4-Trichlorobenzene 1,1,1-Trichloroethane	ND	0.0057 0.0023	0.00026	~ ~		
71-55-6	1,1,2-Trichloroethane	ND	0.0023	0.00038			
79-00-5 79-01-6	Trichloroethene	ND	0.0023	0.00083			
75-69-4	Trichlorofluoromethane	ND	0.0023	0.00024			
96-18-4	1,2,3-Trichloropropane	ND	0.0023	0.00033			
95-63-6	1,2,4-Trimethylbenzene	ND	0.0057	0.00025			
108-67-8	1,3,5-Trimethylbenzene	ND	0.0057	0.00023			
108-07-0	Vinyl Acetate	ND	0.0057	0.00024	mg/kg		
75-01-4	Vinyl chloride	ND	0.0037	0.00031			
10 01 7	in,p-Xylene	ND	0.0023	0.00089			
95-47-6	o-Xylene	ND	0.0023	0.00027			
1330-20-7	Xylene (total)	ND	0.0023	0.00027			

Report of Analysis

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 hlank

N = Indicates presumptive evidence of a compound



		-		-	-
Client Sam					
Lab Sample	e ID: MC18752-4			Date Sampled:	03/07/13
Matrix:	SO - Soil			Date Received:	03/08/13
Method:	SW846 8260B			Percent Solids:	81.8
Project:	URSMOSTL: Roxa	na Drilling, Ro	oxana, IL		
VOA Speci	al List				
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits	
1868-53-7	Dibromofluoromethane	87%		70-130%	
2037-26-5	Toluene-D8	112%		70-130%	
460-00-4	4-Bromofluorobenzene	89%		70-130%	
CAS No.	Tentatively Identified Con	npounds	R.T.	Est. Conc. Units Q	
	Total TIC, Volatile			0 mg/kg	

Report of Analysis

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



			Repor	t of An	alysis			Page 1 of 1
Client Sam Lab Samp Matrix: Method: Project:	le 1D: MC187 SO - So SW846	oil	5 3550B a Drilling, R	oxana, 1L		Date		/07/13 /08/13 .8
Run #1 Run #2	File 1 <b>D</b> YZ78549.D		Analyzed 03/16/13	By CZ	Prep Da 03/13/13		Prep Batch OP32247	Analytical Batch GYZ7047
Run #1 Run #2	Initial Weight 30.2 g	Final Volur 50.0 ml	ne					
VOA Spec	ial List							
CAS No.	Compound		Result	RL	MDL	Units	Q	
96-12-8 106-93-4	1,2-Dibromo-3 1,2-Dibromoe	3-chloropropan thane	e ND ND	0.0030 0.0030	0.0014 0.0012	mg/kg mg/kg		
CAS No.	Surrogate Re	coveries	Run# 1	Run# 2	Limi	its		
460-00-4 460-00-4	Bromofluorob Bromofluorob	• /	158% 218% <sup>a</sup>	>	61-1 61-1			

(a) Outside control limits.Sample non-detect for target analytes.

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



		Repo	ort of Ar	alysis			Page 1 of 3
Client San Lab Samp Matrix: Method: Project:	-		Roxana, IL		Date	•	3/07/13 3/08/13 a
Run #1 Run #2	File ID         DF           G125263.D         1	Analyzed 03/13/13	Ву JM	Prep D n/a	ate	Prep Batch n/a	Analytical Batch MSG4957
Run #1 Run #2	Purge Volume 5.0 ml						
VOA Spec	ial List						
CAS No.	Compound	Result	RL	MDL	Units	Q	
67-64-1 107-02-8	Acetone Acrolein	ND ND	5.0 25	3.0 10	ug/l ug/l		
107-13-1 71-43-2	Acrylonitrile Benzene Bromobenzene	ND ND	5.0 0.50	3.2 0.24	ug/l ug/l		
108-86-1 74-97-5 75-27-4	Bromobelizene Bromochloromethane Bromodichloromethane	ND . ND ND	5.0 5.0 1.0	0.62 1.3 0.58	ug/l ug/l ug/l		
75-25-2 74-83-9	Bromoform Bromomethane	ND ND	1.0 2.0	0.78 1.0	ug/l ug/l		
78-93-3 104-51-8	2-Butanone (MEK) n-Butylbenzene	ND ND	5.0 5.0	2.4 0.61	ug/l ug/l		
135-98-8 98-06-6	sec-Butylbenzene tert-Butylbenzene	ND ND	5.0 5.0	0.55 0.64	ug/l ug/l		
75-15-0 56-23-5 108-90-7	Carbon disulfide Carbon tetrachloride Chlorobenzene	ND ND ND	5.0 1.0 1.0	0.61 0.87 0.47	ug/l ug/l ug/l		
75-00-3 110-75-8	Chloroethane 2-Chloroethyl vinyl ether	ND ND	2.0 5.0	0.50	ug/l ug/l		
67-66-3 74-87-3	Chloroform Cbloromethane	ND ND	1.0 2.0	0.50 0.73	ug/l ug/l		
95-49-8 106-43-4	o-Chlorotolueue p-Chlorotoluene	ND ND	5.0 5.0	0.65 0.48	ug/l ug/l		
124-48-1 95-50-1	Dibromochloromethane 1,2-Dicblorobenzene	ND ND	1.0 1.0	0.53 0.93	ug/l ug/l		
541-73-1 106-46-7 75-71-8	1,3-Dichlorobenzene 1,4-Dichlorobenzene Dichlorodifluoromethane	ND ND ND	1.0 1.0 2.0	0.45 0.64 1.7	ug/l ug/l ug/l		
75-34-3 107-06-2	1,1-Dichloroethane 1,2-Dichloroethane	ND ND	1.0 1.0	0.62 0.63	ug/l ug/l		
75-35-4 156-59-2 156-60-5	1,1-Dichloroethene cis-1,2-Dichloroethene (rans-1,2-Dichloroethene	ND ND ND	1.0 1.0 1.0	0.41 0.64 0.95	ug/l ug/l ug/l		

ND = Not detected MDL - Method Detection Limit

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**E** = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



Client Sample Lab Sample Matrix: Method: Project:			oxana, IL		Date	Sampled: Received: ent Solids:	03/07/13 03/08/13 n/a
VOA Specia	al List						
CAS No.	CAS No. Compound		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/I		
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 (MIB	K) 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	(1.8)	5.0	0.50	ug/l	J	
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	1.3	og/l		
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	1.3	ug/I		
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.85	ug/I		
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 ND	5.0	0.35	ug/l		
108-67-8	5		5.0	0.47	ug/l		
108-05-4	2		5.0	1.3	ug/l		
79-01-4	5-01-4 Vinyl chloride		1.0	0.63	ug/1		
05 47 6	m,p-Xylene		1.0	0.73	ug/l		
	95-47-6 o-Xylene		1.0	0.58	ug/l		
1330-20-7	Xylene (total)	ND	1.0	0.58	ug/I		

Report of Analysis

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





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Client Sam	ple ID: MW-24-47-EB				
Lab Sampl	•			Date Sampleo	l: 03/07/13
Matrix:	AQ - Equipment Bla	ank		Date Receive	1: 03/08/13
Method:	SW846 8260B			Percent Solid	s: п/а
Project:	URSMOSTL: Roxa	na Drilling, Ro	oxana, IL		
VOA Speci	al List				
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits	
1868-53-7	Dibromofluoromethane	77%		70-130%	
2037-26-5	Toluene-D8	76%		70-130%	
460-00-4	4-Bromofinorobenzene	77%		70-130%	
CAS No.	Tentatively Identified Cor	npounds	R.T.	Est. Conc. Units Q	
	Total TIC, Volatile			0 ug/l	

Report of Analysis

ND = Not detectedMDL - Method Detection LimitRL = Reporting LimitE = Indicates value exceeds calibration range

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Bromofluorobenzene (S)

Bromofluorobenzene (S)

460-00-4

460-00-4

			Repo	rt of Ana	alysis			Page 1 of 1
Client Sam Lab Sampl Matrix: Method: Project:	e 1D: MC1875 AQ - Ec SW846		5 <b>8011</b>	Roxana, IL		Date	F	/07/13 /08/13 a
Run #1 Run #2	File ID BB46162.D		Analyzed 03/11/13	By CZ	Ргер D 03/11/1		Prep Batch OP32212	Analytical Batch GBB2782
Run #1 Run #2	Initial Volume 35.9 ml	Final Volur 2.0 ml	ne					
VOA Speci	ial List							
CAS No.	Compound		Result	RL	MDL	Units	Q	
96-12-8 106-93-4	1,2-Dibromo-3 1,2-Dibromoetl		e ND ND	0.015 0.015	0.013 0.010	ng/l ug/l		
CAS No.	Surrogate Rec	overies	Run# 1	Run# 2	Lim	its		

36-173%

36-173%

83%

149%

ND = Not detectedMDL - Method Detection Limit RL = Reporting Limit E = 1ndicates value exceeds calibration range

- J = Indicates an estimated value
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		Repo	rt of An	alysis			Page 1 of 3
Client San Lab Samp Matrix: Method: Project:			Roxana, IL		Date	Received:	03/07/13 03/08/13 п/а
Run #1 Run #2	File ID DF G125264.D 1	Analyzed 03/13/13	By JM	Prep D n/a	ate	Prep Batch n/a	Analytical Batch MSG4957
Run #1 Run #2	Purge Volume 5.0 ml		_				
VOA Spec	cial List						
CAS No.	Compound	Result	RL	MDL	Units	Q	
67-64-1 107-02-8	Acetone Acrolein	ND ND	5.0 25	3.0 10	ug/l ug/l		
107-13-1 71-43-2 108-86-1	Acrylonitrile Benzene Bromobeuzene	ND ND ND	5.0 0.50 5.0	3.2 0.24 0.62	ug/l ng/l ug/l		
74-97-5 75-27-4	Bromobelizene Bromochloromethane Bromodichloromethane	ND ND	5.0 1.0	1.3 0.58	ug/l ug/l		
75-25-2 74-83-9	Bromoform Bromomethane	ND ND	1.0 2.0	0.78 1 <i>.</i> 0	ug/l ug/l		
78-93-3 104-51-8 135-98-8	2-Butanone (MEK) n-Butylbenzene sec-Butylbenzene	ND ND ND	5.0 5.0 5.0	2.4 0.61 0.55	ug/l ug/l ug/l		
98-06-6 75-15-0	tert-Butylbenzene Carbon disulfide	ND ND	5.0 5.0 5.0	0.64 0.61	ug/l ug/l		
56-23-5 108-90-7	Carbon tetrachloride Chlorobenzene	ND ND	1.0 1.0	0.87 0.47	ug/l ug/l		
75-00-3 110-75-8	Chloroethane 2-Chloroethyl vinyl ether Chloroform	ND ND ND	2.0 5.0 1.0	0.50 1.3 0.50	ug/l ug/l		
67-66-3 74-87-3 95-49-8	Chloromethane o-Chlorotoluene	ND ND ND	2.0 5.0	0.50 0.73 0.65	ug/l ug/l ug/l		
106-43-4 124-48-1	p-Chlorotoluene Dibromochloromethane	ND ND	5.0 1.0	0.48 0.53	ug/l ug/l		
95-50-1 541-73-1	1,2-Dichlorobenzene 1,3-Dichlorobenzene	ND ND	1.0 1.0	0.93 0.45	ug/l ug/l		
106-46-7 75-71-8 75-34-3	1,4-Dichlorobenzene Dichlorodifluoromethane 1,1-Dichloroethane	ND ND ND	1.0 2.0 1.0	0.64 1.7 0.62	ug/l ng/l ug/l		
107-06-2 75-35-4	1,2-Dichloroethane 1,1-Dichloroethene	ND ND	1.0 1.0	$\begin{array}{c} 0.63 \\ 0.41 \end{array}$	ug/l ug/l		
156-59-2 156-60-5	cis-1,2-Dichloroethene (rans-1,2-Dichloroethene	ND ND	$\begin{array}{c} 1.0\\ 1.0\end{array}$	0.64 0.95	ug/l ng/l		

ND = Not detected MDL - Method Detection Limit

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N = Indicates presumptive evidence of a compound



La M M	lient Samp ab Sample atrix: ethod: oject:		TB-030713-01 MC18752-6 AQ - Trip Blank Wat SW846 8260B URSMOSTL: Roxana		oxana, IL		Date	Sampled: Received: ent Solids:	03/07/13 03/08/13 n/a
v	OA Specia	l List							
C	AS No.	Comp	ound	Result	RL	MDL	Units	Q	
14	8-87-5 2-28-9	1,3-Di	chloropropane chloropropane	ND ND	2.0 5.0	0.72 0.64	ug/l ug/l		
	)4-20-7 53-58-6		chloropropane chloropropene	ND ND	$5.0 \\ 5.0$	1.6 0.91	ug/l ug/l		
	)061-01-5 )061-02-6		-Dichloropropene ,3-Dichloropropene	ND ND	$0.50 \\ 0.50$	$\begin{array}{c} 0.45 \\ 0.20 \end{array}$	ug/l ug/l		
12	23-91-1	1,4-Di	oxane	ND	25	15	ug/l		
	′-63-2 )0-41-4		methacrylate enzene	ND ND	5.0 1.0	$\begin{array}{c} 0.81 \\ 0.51 \end{array}$	ug/l ug/l		
	-68-3		hlorohutadiene	ND	5.0	2.1	ug/l		
	01-78-6	2-Hex	-	ND	5.0	2.0	ug/l		
	8-82-8		pylbenzene	ND	5.0	0.50	ug/l		
	0-87-6		ropyltoluene	ND	5.0	0.57	ug/l		
	634-04-4		I Tert Butyl Ether	ND	1.0	0.41	ug/l		
	8-10-1		hyl-2-pentanone (MIB)		5.0	2.9	ug/l		
	1-95-3		lene bromide	ND	5.0	1.1	ug/l		
	5-09-2		lene chloride	ND	2.0	0.83	ug/l		
	-20-3	Napht		(0.67)	5.0	0.50	ug/l	J	
	3-65-1		ylbenzene	ND	5.0	0.58	ug/l		
	0-42-5	Styren		ND	5.0	0.45	ug/I		
	30-20-6		2-Tetrachloroethane	ND	5.0	0.57	ug/l		
	0-34-5		2-Tetrachloroethane	ND	1.0	0.60	ug/l		
	27-18-4		hloroethene	ND	1.0	0.42	ug/l		
	8-88-3	Toluer		ND	1.0	0.51	ug/l		
	7-61-6		Trichlorobenzene	ND	5.0	1.3	ug/l		
	20-82-1		Trichlorobenzene	ND	5.0	1.3	ug/l		
	-55-6		Trichloroethaue	ND	1.0	0.85	ug/l		
	0-00-5		Trichloroethane	ND	1.0	0.50	ug/l		
	)-01-6		oroethene	ND	1.0	$0.78 \\ 0.29$	ug/1		
	5-69-4		orofluoromethane	ND	1.0	0.29	ug/l		
	S-18-4		Trichloropropane	ND	5.0		ug/1		
	5-63-6		Trimethylbenzene	ND	5.0	0.35	ug/l		
	8-67-8		Trimethylbenzene	ND	5.0	0.47	ug/l		
	)8-05-4		Acetate	ND ND	5.0	$\begin{array}{c} 1.3 \\ 0.63 \end{array}$	ug/l		
70	5-01-4		chloride Work		1.0	0.63	ug/l		
0E	i-47-6	m,p-X		ND ND	1.0	0.73	ug/l		
	30-20-7	o-Xyle Xylen	ene e (total)	ND	1.0 1.0	0.58	ug/l ug/l		
10	100-20-1	луюн	e (iotal)		1.0	0.00	ug/1		

Report of Analysis

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

- E = 1ndicates value exceeds calibration range
- J = Indicates an estimated value

B = Indicates analyte found in associated ruethod blank

N = Indicates presumptive evidence of a compound





Client Sam	-				
Lab Sampl				Date Sample	ed: 03/07/13
Matrix:	AQ - Trip Blank Wa	ater		Date Receiv	ed: 03/08/13
Method:	SW846 8260B			Percent Soli	ds: n/a
Project:	URSMOSTL: Roxa	na Drilling, Ro	oxana, 1L		
VOA Speci	al List				
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits	
1868-53-7	Dibromofluoromethane	76%		70-130%	
2037-26-5	Toluene-D8	76%		70-130%	
460-00-4	4-Bromofluorobenzene	78%		70-130%	
CAS No.	Tentatively Identified Cor	npounds	R.T.	Est. Conc. Units	2
	Total T1C, Volatile			0 ug/1	

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

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



Bromofluorobenzene (S)

Bromofluorobenzene (S)

460-00-4

460-00-4

			Repo	rt of Ana	alysis			Page 1 of 1
Client San Lab Samp Matrix: Method: Project:	le ID: MC18 AQ - SW84	80713-01 8752-6 Trip Blank Wat 6 8011 SW84 40STL: Roxan:	5 <b>8011</b>	Roxana, IL		Date		3/07/13 3/08/13 a
Run #1 Run #2	File ID BB46163.D		Analyzed 03/12/13	By CZ	Prep Da 03/11/13		Prep Batch OP32212	Analytical Batch GBB2782
Run #1 Run #2	Initial Volum 37.2 ml	e Final Volur 2.0 ml	ne					
VOA Spec	cial List							
CAS No.	Compound		Result	RL	MDL	Units	Q	
96-12-8 106-93-4	1,2-Dibromo 1,2-Dibromo	-3-chloropropar ethane	ie ND ND	0.014 0.014	0.012 0.0098	ug/l ug/l		
CAS No.	Surrogate R	ecoveries	Run# 1	Run# 2	Limi	its		

36-173% 36-173%

61%

75%

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

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**Custody Documents and Other Forms** 

Includes the following where applicable:

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



	LAB (LOCATION)					ST.	3		Shell	0	il P	ò <b>r</b> o	du	cts (	Ch	ain	Of	Cus	toc	iy F	Rec	or	d				URS
🗋 xe			P	lease Cho	ck A	pprop	riste B	lox;		191	int B	SIII T	o Co	ntact I	Name				1	NCID	ENT	# (E)	NV S	ERVI	ICES)	0	RECK IF HO PRODENT # APPL
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MC18752: Chain of Custody Page 1 of 2





#### Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC1	8752		_ c	lient: URS			Immediate Client Servi	ces Actio	n Red	quired:	No
Date / Time Received: 3/8/2	013			Delive	гу Ме	thod:	Client Service Actio	n Require	ed at	Login:	No
Project: 900 SO CENTRAL A	VE			No. Co	olers	F	1 Airblll #'s;		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		
Cooler Security Y	or N	L			<u> </u>	or N	Sample integrity - Documentation	<u> </u>	or	<u>N</u>	
1. Custody Seals Present: 🛛 😡	C			COC Present.	$\mathbf{N}$		1. Sample labels present on bottles:	•			
2. Custody Seals Intact	C	]	4. Smj	pl Dates/Time OK	$\mathbf{N}$		2. Container labeling complete:	1			
ooler Temperature	Y	or	N				3. Sample container label / COC agree:				
1. Temp crileria achieved:							Sample Integrity - Condition	<u>    Y    </u>	or	<u>N</u>	
2. Cooler temp verification:			d gun				1. Sample recvd within HT:				
3. Cooler media:	I	lce (b	ag)				2. All containers accounted for:	•			
Quality Control Preservatio	Y	or	N	N/A			3. Condition of sample:		Intac	t	
1. Trip Blank present / cooler:	<b>V</b>			Ð			Sample Integrity - Instructions	Y	٥r	N	N/A
2. Trip Blank listed on COC:	Ð						1. Analysis requested is clear:				
3. Samples preserved properly:							2. Bottles recoived for unspecified tests	Ð		$\mathbf{Z}$	
4. VOCs headspace free:	~						3. Sufficient volume recvd for analysis:	2		Ð	
							4. Compositing instructions clear:				V
							5. Filtering instructions clear:				2

Accutest Laboratories V 508 481 6200 495 Technology Center West, Bidg One F 508 461.7753 Maritxcrough, MA www.accules1.com 5.1 5

MC18752: Chain of Custody Page 2 of 2



#### Internal Sample Tracking Chronicle

Shell Oil Job No: MC18752 URSMOSTL: Roxana Drilling, Roxana, IL Project No: 21562850.15000 Sample Number Method Analyzed Prepped By By Test Codes MC18752-1 Collected: 07-MAR-13 09:55 By: MMMC Received: 08-MAR-13 By: MW-24-12 MC18752-1 SM21 2540 B MOD. 12-MAR-13 BF %SOL MC18752-1 SW846 8011 16-MAR-13 02:46 CZ 13-MAR-13 CC V8011SL MC18752-1 SW846 8260B 20-MAR-13 11:01 AMY V8260SL+ MC18752-2 Collected: 07-MAR-13 11:15 By: MMMC Received: 08-MAR-13 By: MW-24-25 - Section 200 MC18752-2 SM21 2540 B MOD. 12-MAR-13 BF %SOL MC18752-2 SW846 8011 16-MAR-13 03:14 CZ 13-MAR-13 CC V8011SL MC18752-2 SW846 8260B 20-MAR-13 11:31 AMY V8260SL+ MC18752-3 Collected: 07-MAR-13 12:15 By: MMMC Received: 08-MAR-13 By: MW-24-47 MC18752-3 SM21 2540 B MOD. 12-MAR-13 BF %SOL MC18752-3 SW846 8260B 12-MAR-13 12:18 GK V8260SL+ MC18752-3 SW846 8011 16-MAR-13 03:42 CZ 13-MAR-13 CC V8011SL 21-MAR-13 13:07 AMY MC18752-3 SW846 8260B V8260SL+ MC18752-4 Collected: 07-MAR-13 12:15 By: MMMC Received: 08-MAR-13 By: MW-24-47DUP MC18752-4 SM21 2540 B MOD. 12-MAR-13 BF %SOL MC18752-4 SW846 8011 16-MAR-13 04:10 CZ 13-MAR-13 CC V8011SL MC18752-4 SW846 8260B 20-MAR-13 12:01 AMY V8260SL+ MC18752-5 Collected: 07-MAR-13 13:15 By: MMMC Received: 08-MAR-13 By: MW-24-47-EB MC18752-5 SW846 8011 11-MAR-13 23:38 CZ 11-MAR-13 BI V8011SL MC18752-5 SW846 8260B 13-MAR-13 14:29 JM V8260SL+ MC18752-6 Collected: 07-MAR-13 08:00 By: MMMC Received: 08-MAR-13 By: TB-030713-01 MC18752-6 SW846 8011 12-MAR-13 00:05 CZ 11-MAR-13 BJ V8011SL MC18752-6 SW846 8260B 13-MAR-13 14:57 JM V8260SL+



35 of 100 ACCUTEST

MC18752



## Accutest Internal Chain of Custody

Job Number:	MC18752
Account:	SHELLWIC Shell Oil
Project:	URSMOSTL: Roxana Drilling, Roxana, IL
Received:	03/08/13
	<b>8</b>

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
MC18752-1.1	Walk In Ref #5	Bijan Firowznin		Retrieve from Storage
MC18752-1.1	Bijan Firowznin	Walk In Ref #5		Return to Storage
MC18752-1.1	Walk In Ref #5	Chris Cataldo		Retrieve from Storage
MC18752-1.1	Chris Cataldo	Walk In Ref #5	03/13/13 21:09	Return to Storage
MC18752-1.2	VOC Ref #10	Amy Min Yang		Retrieve from Storage
MC18752-1.2	Amy Min Yang	GCMSM	03/19/13 10:48	Load on Instrument
MC18752-1.3	VOC Ref #10	Amy Min Yang	03/20/13 09:53	Retrieve from Storage
MC18752-1.3	Amy Min Yang	GCMSM		Load on Instrument
MC18752-1.4	VOC Ref #10	Gary Krasinski	03/11/13 14:31	Retrieve from Storage
MC18752-1.4	Gary Krasinski	VOČ Ref #10		Return to Storage
MC18752-2.1	Walk In Ref #5	Bijan Firowznin	03/12/13 08:33	Retrieve from Storage
MC18752-2.1	Bijan Firowznin	Walk In Ref #5		Return to Storage
MC18752-2.1	Walk In Ref #5	Chris Cataldo		Retrieve from Storage
MC18752-2.1	Chris Cataldo	Walk In Ref #5		Return to Storage
MC18752-2.2	VOC Ref #10	Amy Min Yang	03/20/13 09:53	Retrieve from Storage
MC18752-2.2	Amy Min Yang	GCMSM		Load on Instrument
MC18752-2.3	VOC Ref #10	Amy Min Yang	03/19/13 10:47	Retrieve from Storage
MC18752-2.3	Amy Min Yang	GCMSM		Load on Instrument
MC18752-2.6	VOC Ref #10	Amy Min Yang	03/19/13 10:47	Retrieve from Storage
MC18752-2.6	Amy Min Yang	GCMSM		Load on Iustrument
MC18752-2.7	VOC Ref #10	Amy Min Yang	03/20/13 09:53	Retrieve from Storage
MC18752-2.7	Anıy Min Yang	GCMSM		Load on Instrument
MC18752-2.10	VOC Ref #10	Amy Min Yang	03/19/13 10:47	Retrieve from Storage
MC18752-2.10	Amy Min Yang	GCMSM		Load on Instrument
MC18752-2.11	VOC Ref #10	Amy Min Yang	03/20/13 09:53	Retrieve from Storage
MC18752-2.11	Amy Min Yang	GCMSM		Load on Instrument
MC18752-2.12	VOC Ref #10	Gary Krasinski	03/11/13 14:31	Retrieve from Storage
MC18752-2.12	Gary Krasinski	VOC Ref #10		Return to Storage
MC18752-3.1	Walk In Ref #5	Bijan Firowznin	03/12/13 08:33	Retrieve from Storage
MC18752-3.1	Bijan Firowznin	Walk In Ref #5		Return to Storage
MC18752-3.1	Walk In Ref #5	Chris Cataldo		Retrieve from Storage
MC18752-3.1	Chris Cataldo	Walk In Ref #5		Return to Storage





# Accutest Internal Chain of Custody

IL

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Timc	Reason
MC18752-3.3	VOC Ref #10	Amy Min Yang	03/21/13 12:18	Retrieve from Storage
MC18752-3.3	Amy Min Yang	GCMSM	03/21/13 12:18	Load on Instrument
MC18752-3.4	VOC Ref #10	Gary Krasinski	03/11/13 14:31	Retrieve from Storage
MC18752-3.4	Gary Krasinski	VOC Ref #10		Return to Storage
MC18752-3.4	VOC Ref #10	Gary Krasinski		Retrieve from Storage
MC18752-3.4	Gary Krasinski	VOC Ref #10	03/13/13 07:53	Return to Storage
MC18752-4.1	Walk In Ref #5	Bijan Firowznin	03/12/13 08:33	Retrieve from Storage
MC18752-4.1	Bijan Firowzniu	Walk In Ref #5	03/12/13 09:48	Return to Storage
MC18752-4.1	Walk In Ref #5	Chris Cataldo		Retrieve from Storage
MC18752-4.1	Chris Cataldo	Walk In Ref #5	03/13/13 21:09	Return to Storage
MC18752-4.2	VOC Ref #10	Amy Min Yang	03/19/13 10:47	Retrieve from Storage
MC18752-4.2	Amy Min Yang	GCMSM		Load on Instrument
MC18752-4.3	VOC Ref #10	Amy Min Yang	03/20/13 09:53	Retrieve from Storage
MC18752-4.3	Amy Min Yang	GCMSM		Load on Instrument
MC18752-4.4	VOC Ref #10	Gary Krasinski	03/11/13 14:31	Retrieve from Storage
MC18752-4.4	Gary Krasinski	VOC Ref #10		Return to Storage
MC18752-5.2	VOC Ref #1	Jaime Maslowski	03/13/13 11:24	Retrieve from Storage
MC18752-5.2	Jaime Maslowski	GCMSG		Load on Instrument
MC18752-5.2	GCMSG	Jaime Maslowski	03/14/13 14:28	Unload from Instrument
MC18752-5.2	Jaime Maslowski	VOC Ref #1	03/14/13 14:29	Return to Storage
MC18752-5.4	VOC Ref #1	Bijan Jafari	03/11/13 13:01	Retrieve from Storage
MC18752-5.4	Bijan Jafari	<b>J</b>	03/11/13 14:33	
MC18752-6.1	VOC Ref #1	Jaime Maslowski	03/13/13 11:24	Retrieve from Storage
MC18752-6.1	Jaime Maslowski	GCMSG		Load on Instrument
MC18752-6.1	GCMSG	Jaime Maslowski	03/14/13 14:28	Unload from Instrument
MC18752-6.1	Jaime Maslowski	VOC Ref #1	03/14/13 14:29	Return to Storage
MC18752-6.4	VOC Ref #1	Bijan Jafari	03/11/13 13:01	Retrieve from Storage
MC18752-6.4	Bijan Jafari	5 6	03/11/13 14:33	







#### **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



Job Number Account: Project:	r: MC18752 SHELLWIC Shell Oil URSMOSTL: Roxana D	rilling, Roxan	a, IL					
Sample MSK2225-N	File ID DF 1B K67889.D 1	Analyzed 03/12/13	By GK	Pre n/a	p Date	Prep I n/a	Batch	Analytical Batch MSK2225
The QC rep MC18752-3	ported here applies to the fo	llowing sampl	es:			Method:	SW846	5 8260B
CAS No. 110-75-8	Compound 2-Chloroethyl vinyl ether	<b>Result</b> ND	RL 250	MDL 100	Units ug/kg	Q		
CAS No.	Surrogate Recoveries		Limit		"O" "O			
1868-53-7 2037-26-5 460-00-4	Dibromofluoromethane Toluene-D8 4-Bromofluorobenzene	113% 107% 100%	70-130 70-130 70-13	0%				
CAS No.	Tentatively Identified Con Total TIC, Volatile	npounds	R.T.	Est 0	. Conc.	Units Q ug/kg		



6.1.1



Job Number: Account: Project:	MC18752 SHELLWIC Sh URSMOSTL: F		Drilling, Roxana	, IL			U
Sample	File ID	DF	Analyzed	By	Prep Date	Ргер Batch	Analytical Batch
MSG4957-MB	G125256.D	1	03/13/13	JM	n/a	n/a	MSG4957

The QC reported here applies to the following samples:

Method: SW846 8260B

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4C18752-6

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	1.3	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	0.61	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/1
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	1.3	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	Dihromochloromethane	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/I
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/i
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

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Job Number: Account: Project:	MC18752 SHELLWIC Sh URSMOSTL: F		Drilling, Roxana,	, IL			
Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSG4957-MB	G125256.D	1	03/13/13	JM	n/a	n/a	MSG4957

The QC reported here applies to the following samples:

Method: SW846 8260B

MC18752-5, MC18752-6

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/I
123-91-1	1,4-Dioxane	ND	25	15	ug/ì
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	1sopropylbenzene	ND	5.0	0.50	ug/l
99-87-6	p-Isopropyltoluene	ND	5.0	0.57	ug/i
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/I
91-20-3	Naphthalene	ND	5.0	0.50	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	1.3	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/I
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	1.3	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



6.1.2

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Job Numbe Account: Project:	r: MC18752 SHELLWIC Shell C URSMOSTL: Roxa		a, IL			
Sample MSG4957-N	File ID DF MB G125256.D 1	Analyzed 03/13/13	By JM	Prep Date n/a	Prep Batch n/a	Analytical Batch MSG4957
	ported here applies to th	e following sample	es:		Method: SW84	46 8260B
MC18752-5	5, MC18752-6					
CAS No.	Surrogate Recoveries		Limits			
1868-53-7	Dibromofluoromethane	78%	70-130%			
2037-26-5	Toluene-D8	<b>76%</b>	70-130%			
460-00-4	4-Bromofluorobenzene	78%	70-130%			
			рт	Est. Conc.	Unite O	
CAS No.	Tentatively Identified	Compounds	R.T.	Est. Conc.	Units Q	



Job Number: Account: Project:	MC18752 SHELLWIC SI URSMOSTL: I		Drilling, Roxana	, IL			Ŭ
Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1869-MB1	M54869.D	1	03/20/13	AMY	n/a	n/a	MSM1869

The QC reported here applies to the following samples:

Method: SW846 8260B

MC18752-1, MC18752-2, MC18752-4

CAS No.	Compound	Result	RL	MDL	Units Q
67-64-1	Acetone	ND	5.0	1.3	ug/kg
107-02-8	Acrolein	ND	25	10	ug/kg
107-13-1	Acrylonitrile	ND	25	1.3	ug/kg
71-43-2	Benzene	ND	0.50	0.29	ug/kg
108-86-1	Bromobenzene	ND	5.0	0.22	ug/kg
74-97-5	Bromochloromethane	ND	5.0	0.37	ug/kg
75-27-4	Bromodichloromethane	ND	2.0	0.21	ug/kg
75-25-2	Broinoforin	ND	2.0	2.0	ug/kg
74-83-9	Bromomethane	ND	2.0	0.52	ug/kg
78-93-3	2-Butanone (MEK)	ND	5.0	1.3	ug/kg
104-51-8	n-Butylbenzene	ND	5.0	0.18	ug/kg
135-98-8	sec-Butylbenzene	ND	5.0	0.23	ug/kg
98-06-6	tert-Butylbenzene	ND	5.0	0.88	ug/kg
75-15-0	Carbon disnlfide	ND	5.0	0.16	ug/kg
56-23-5	Carbon tetrachloride	ND	2.0	0.73	ug/kg
108-90-7	Chlorobenzene	ND	2.0	0.28	ug/kg
75-00-3	Chloroethane	ND	5.0	1.3	ug/kg
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	2.0	ug/kg
67-66-3	Chloroform	ND	2.0	0.52	ug/kg
74-87-3	Chloromethane	ND	5.0	0.46	ug/kg
95-49-8	o-Chlorotoluene	ND	5.0	1.1	ug/kg
106-43-4	p-Chlorotoluene	ND	5.0	0.23	ug/kg
124-48-1	Dibromochloromethane	ND	2.0	0.30	ug/kg
95-50-1	1,2-Dichlorobenzene	ND	2.0	0.22	ug/kg
541-73-1	1,3-Dichlorobenzene	ND	2.0	0.23	ug/kg
106-46-7	1,4-Dichlorobenzene	ND	2.0	0.21	ug/kg
75-71-8	Dichlorodifluoromethane	ND	2.0	1.1	ug/kg
75-34-3	1,1-Dichloroethane	ND	2.0	0.27	ug/kg
107-06-2	1,2-Dichloroethane	ND	2.0	0.29	ug/kg
75-35-4	1,1-Dichloroethene	ND	2.0	0.37	ug/kg
156-59-2	cis-1,2-Dichloroethene	ND	2.0	0.30	ug/kg
156-60-5	trans-1,2-Dichloroethene	ND	2.0	0.29	ug/kg
78-87-5	1,2-Dichloropropane	ND	2.0	0.37	ug/kg
142-28-9	1,3-Dichloropropane	ND	5.0	0.23	ug/kg
594-20-7	2,2-Dichloropropane	ND	5.0	0.87	ug/kg
563-58-6	1,1-Dichloropropene	ND	5.0	0.26	ug/kg





Job Number: Account: Project:	MC18752 SHELLWIC SI URSMOSTL: 1		Drilling, Roxana	, IL			
Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1869-MB1	M54869.D	1	03/20/13	AMY	n/a	n/a	MSM1869

The QC reported here applies to the following samples:

Method: SW846 8260B

MC18752-1, MC18752-2, MC18752-4

$\begin{array}{cccccccccccccccccccccccccccccccccccc$	CAS No.	Compound	Result	RL	MDL	Units Q
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	10061-01-5	cis-1,3-Dichloropropene	ND	2.0	0.17	ug/kg
97-63-2Ethyl methacrylateND $5.0$ $0.68$ $ug/kg$ 100-41-4EthylbenzeneND $2.0$ $0.24$ $ug/kg$ 87-68-3HexachlorobutadieneND $5.0$ $0.46$ $ug/kg$ $591-78-6$ 2-HexanoneND $5.0$ $0.23$ $ug/kg$ $98-82-8$ IsopropylbenzeneND $5.0$ $0.23$ $ug/kg$ $99-87-6$ $p$ -IsopropyltolueneND $5.0$ $0.23$ $ug/kg$ $1634-04-4$ Methyl Tert Butyl EtherND $2.0$ $0.29$ $ug/kg$ $108-10-1$ $4$ -Methyl-2-pentanone (MIBK) ND $5.0$ $0.50$ $ug/kg$ $74-95-3$ Methylene bromideND $5.0$ $0.49$ $ug/kg$ $75-09-2$ Methylene chloride $4.1$ $2.0$ $1.2$ $ug/kg$ $91-20-3$ NaphthaleneND $5.0$ $0.23$ $ug/kg$ $100-42-5$ StyreneND $5.0$ $0.23$ $ug/kg$ $100-42-5$ StyreneND $5.0$ $0.23$ $ug/kg$ $79-34-5$ $1,1,2$ -TetrachloroethaneND $5.0$ $0.24$ $ug/kg$ $102-88-3$ TolueneND $5.0$ $0.24$ $ug/kg$ $108-88-3$ TolueneND $5.0$ $0.23$ $ug/kg$ $17-55-6$ $1,1,1$ -TrichloroethaneND $2.0$ $0.23$ $ug/kg$ $17-55-6$ $1,1,2$ -TrichloroethaneND $2.0$ $0.21$ $ug/kg$ $19-05-5$ $1,1,2$ -TrichloroethaneND $2.0$ $0.21$ <td>10061-02-6</td> <td>trans-1,3-Dichloropropene</td> <td>ND</td> <td>2.0</td> <td>0.50</td> <td>ug/kg</td>	10061-02-6	trans-1,3-Dichloropropene	ND	2.0	0.50	ug/kg
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	123-91-1	1,4-Dioxane	ND	25	25	ug/kg
87-68-3HexachlorobutadieneND $5.0$ $0.46$ $ug/kg$ $591-78-6$ 2-HexanoneND $5.0$ $1.3$ $ug/kg$ $98-82-8$ IsopropylbenzeneND $5.0$ $0.23$ $ug/kg$ $99-87-6$ p-IsopropylbenzeneND $5.0$ $0.18$ $ug/kg$ $1634-04-4$ Methyl Tert Butyl EtherND $2.0$ $0.29$ $ug/kg$ $108-10-1$ $4$ -Methyl-2-pentanone (MIBK) ND $5.0$ $0.50$ $ug/kg$ $74-95-3$ Methylene bromideND $5.0$ $0.49$ $ug/kg$ $91-20-3$ NaphthaleneND $5.0$ $1.2$ $ug/kg$ $91-20-3$ NaphthaleneND $5.0$ $1.2$ $ug/kg$ $100-42-5$ StyreneND $5.0$ $1.3$ $ug/kg$ $100-42-5$ StyreneND $5.0$ $0.23$ $ug/kg$ $100-42-5$ StyreneND $5.0$ $0.24$ $ug/kg$ $127-18-4$ TetrachloroethaneND $2.0$ $0.43$ $ug/kg$ $120-82-1$ $1, 2, 2$ -TetrachloroethaneND $5.0$ $0.23$ $ug/kg$ $120-82-1$ $1, 2, 4$ -TrichlorobenzeneND $5.0$ $0.23$ $ug/kg$ $120-82-1$ $1, 2, 4$ -TrichlorobenzeneND $5.0$ $0.23$ $ug/kg$ $71-55-6$ $1, 1, 1$ -TrichloroethaneND $2.0$ $0.31$ $ug/kg$ $79-01-6$ TrichlorofhuoromethaneND $2.0$ $0.21$ $ug/kg$ $75-69-4$ TrichlorofhuoromethaneND <t< td=""><td>97-63-2</td><td>Ethyl methacrylate</td><td>ND</td><td>5.0</td><td>0.68</td><td>ug/kg</td></t<>	97-63-2	Ethyl methacrylate	ND	5.0	0.68	ug/kg
591-78-62-HexanoneND5.01.3ug/kg98-82-8IsopropylbenzeneND5.00.23ug/kg99-87-6p-IsopropyltolueneND5.00.18ug/kg1634-04-4Methyl Tert Butyl EtherND2.00.29ug/kg108-10-14-Methyl-2-pentanone (MIBK)ND5.00.50ug/kg74-95-3Methylene bromideND5.00.49ug/kg91-20-3NaphthaleneND5.01.3ug/kg100-42-5StyreneND5.01.0ug/kg100-42-5StyreneND5.00.23ug/kg630-20-61,1,2-TetrachloroethaneND5.00.23ug/kg127-18-4TetrachloroethaneND2.00.43ug/kg127-18-4TetrachloroetheneND5.00.23ug/kg108-88-3TolueneND5.00.23ug/kg120-82-11,2,4-TrichlorobenzeneND5.00.23ug/kg120-82-11,2,4-TrichlorobenzeneND5.00.24ug/kg17-55-61,1,1-TrichloroethaneND2.00.31ug/kg79-01-6TrichlorofhuoromethaneND2.00.31ug/kg95-63-61,2,4-TrimethylbenzeneND5.00.22ug/kg108-67-81,3,5-TrimethylbenzeneND5.00.21ug/kg108-67-81,3,5-TrimethylbenzeneND5.00.22ug/kg <td>100-41-4</td> <td>Ethylbenzene</td> <td>ND</td> <td>2.0</td> <td>0.24</td> <td>ug/kg</td>	100-41-4	Ethylbenzene	ND	2.0	0.24	ug/kg
98-82-8IsopropylbenzeneND $5.0$ $0.23$ $ug/kg$ 99-87-6p-IsopropyltolueneND $5.0$ $0.18$ $ug/kg$ 1634-04-4Methyl Tert Butyl EtherND $2.0$ $0.29$ $ug/kg$ 108-10-14-Methyl-2-pentanone (MIBK) ND $5.0$ $0.50$ $ug/kg$ 74-95-3Methylene bromideND $5.0$ $0.49$ $ug/kg$ 75-09-2Methylene chloride $4.1$ $2.0$ $1.2$ $ug/kg$ 91-20-3NaphthaleneND $5.0$ $1.3$ $ug/kg$ 103-65-1n-PropylbenzeneND $5.0$ $1.0$ $ug/kg$ 100-42-5StyreneND $5.0$ $0.23$ $ug/kg$ 630-20-6 $1, 1, 1, 2$ -TetrachloroethaneND $5.0$ $0.24$ $ug/kg$ 127-18-4TetrachloroethaneND $2.0$ $0.43$ $ug/kg$ 127-18-4TetrachloroetheneND $5.0$ $0.24$ $ug/kg$ 108-88-3TolueneND $5.0$ $0.24$ $ug/kg$ 127-18-4TetrachlorobenzeneND $5.0$ $0.24$ $ug/kg$ 127-18-4TetrachlorobenzeneND $5.0$ $0.23$ $ug/kg$ 108-88-3TolueneND $5.0$ $0.23$ $ug/kg$ 108-88-3TolueneND $2.0$ $0.23$ $ug/kg$ 127-18-4TetrachlorobenzeneND $5.0$ $0.24$ $ug/kg$ 108-68-5 $1, 2, 4$ -TrichlorobenzeneND $2.0$ $0.23$ $ug/kg$ <tr< td=""><td>87-68-3</td><td>Hexachlorobutadiene</td><td>ND</td><td>5.0</td><td>0.46</td><td>ug/kg</td></tr<>	87-68-3	Hexachlorobutadiene	ND	5.0	0.46	ug/kg
99-87-6         p-Isopropyloluene         ND         5.0         0.18         ug/kg           1634-04-4         Methyl Tert Butyl Ether         ND         2.0         0.29         ug/kg           108-10-1         4-Methyl-2-pentanone (MIBK) ND         5.0         0.50         ug/kg           74-95-3         Methylene bromide         ND         5.0         0.49         ug/kg           75-09-2         Methylene chloride         4.1         2.0         1.2         ug/kg           91-20-3         Naphthalene         ND         5.0         1.3         ug/kg           103-65-1         n-Propylbenzene         ND         5.0         0.23         ug/kg           100-42-5         Styrene         ND         5.0         0.24         ug/kg           630-20-6         1,1,1,2-Tetrachloroethane         ND         2.0         0.43         ug/kg           108-88-3         Toluene         ND         2.0         0.23         ug/kg           108-88-3         Toluene         ND         5.0         0.24         ug/kg           108-82-1         1,2,4-Tricblorobenzene         ND         5.0         0.23         ug/kg           120-82-1         1,2,4-Tricblorobenzene	591-78-6	2-Hexanone	ND	5.0	1.3	ug/kg
1634-04-4       Methyl Tert Butyl Ether       ND       2.0       0.29       ug/kg         108-10-1       4-Methyl-2-pentanone (MIBK) ND       5.0       0.50       ug/kg         74-95-3       Methylene bromide       ND       5.0       0.49       ug/kg         75-09-2       Methylene chloride       4.1       2.0       1.2       ug/kg         91-20-3       Naphthalene       ND       5.0       1.3       ug/kg         103-65-1       n-Propylbenzene       ND       5.0       1.0       ug/kg         100-42-5       Styrene       ND       5.0       0.23       ug/kg         630-20-6       1,1,1,2-Tetrachloroethane       ND       5.0       0.24       ug/kg         127-18-4       Tetrachloroethane       ND       2.0       0.43       ug/kg         127-18-4       Tetrachloroethene       ND       5.0       0.24       ug/kg         108-88-3       Toluene       ND       5.0       0.24       ug/kg         120-82-1       1,2,4-Tricblorobenzene       ND       5.0       0.24       ug/kg         71-55-6       1,1,1-Trichloroethane       ND       2.0       0.31       ug/kg         79-01-6       Tric	98-82-8	Isopropylbenzene	ND	5.0	0.23	ug/kg
108-10-1       4-Methyl-2-pentanone (MIBK) ND       5.0       0.50       ug/kg         74-95-3       Methylene bromide       ND       5.0       0.49       ug/kg         75-09-2       Methylene chloride       4.1       2.0       1.2       ug/kg         91-20-3       Naphthalene       ND       5.0       1.3       ug/kg         103-65-1       n-Propylbenzene       ND       5.0       1.0       ug/kg         100-42-5       Styrene       ND       5.0       0.23       ug/kg         630-20-6       1,1,1,2-Tetrachloroethane       ND       2.0       0.43       ug/kg         79-34-5       1,1,2,2-Tetrachloroethane       ND       2.0       0.43       ug/kg         108-88-3       Toluene       ND       5.0       0.24       ug/kg         120-82-1       1,2,4-Trichlorobenzene       ND       5.0       0.24       ug/kg         71-55-6       1,1,1-Trichlorobenzene       ND       5.0       0.23       ug/kg         79-00-5       1,1,2-Trichloroethane       ND       2.0       0.31       ug/kg         79-01-6       Trichlorofhuoromethane       ND       2.0       0.73       ug/kg         96-18-4	99-87-6	p-lsopropyltoluene	ND	5.0	0.18	ug/kg
74-95-3       Methylene bromide       ND       5.0       0.49       ug/kg         75-09-2       Methylene chloride       4.1       2.0       1.2       ug/kg         91-20-3       Naphthalene       ND       5.0       1.3       ug/kg         103-65-1       n-Propylbenzene       ND       5.0       1.3       ug/kg         100-42-5       Styrene       ND       5.0       0.23       ug/kg         630-20-6       1,1,1,2-Tetrachloroethane       ND       5.0       0.24       ug/kg         79-34-5       1,1,2,2-Tetrachloroethane       ND       2.0       0.43       ug/kg         127-18-4       Tetrachloroethene       ND       5.0       0.23       ug/kg         120-82-1       1,2,3-Trichlorobenzene       ND       5.0       0.85       ug/kg         120-82-1       1,2,4-Trichlorobenzene       ND       5.0       0.23       ug/kg         71-55-6       1,1,1-Trichloroethane       ND       2.0       0.31       ug/kg         79-00-5       1,1,2-Trichloroethane       ND       2.0       0.73       ug/kg         79-01-6       Trichlorofluoromethane       ND       2.0       0.21       ng/kg	1634-04-4	Methyl Tert Butyl Ether	ND	2.0	0.29	ug/kg
75-09-2       Methylene chloride       4.1       2.0       1.2       ug/kg         91-20-3       Naphthalene       ND       5.0       1.3       ug/kg         103-65-1       n-Propylbenzene       ND       5.0       1.0       ug/kg         100-42-5       Styrene       ND       5.0       0.23       ug/kg         630-20-6       1,1,1,2-Tetrachloroethane       ND       2.0       0.43       ug/kg         79-34-5       1,1,2,2-Tetrachloroethane       ND       2.0       0.23       ug/kg         127-18-4       Tetrachloroethene       ND       2.0       0.23       ug/kg         120-82-1       1,2,3-Trichlorobenzene       ND       5.0       0.85       ug/kg         120-82-1       1,2,4-Tricblorobenzene       ND       5.0       0.24       ug/kg         71-55-6       1,1,1-Trichloroethane       ND       2.0       0.31       ug/kg         79-00-5       1,1,2-Trichloroethane       ND       2.0       0.21       ng/kg         79-01-6       Trichlorofluoromethane       ND       2.0       0.21       ng/kg         75-69-4       Trichlorofluoromethane       ND       2.0       0.22       ug/kg	108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	0.50	ug/kg
91-20-3         Naphthalene         ND         5.0         1.3         ug/kg           103-65-1         n-Propylbenzene         ND         5.0         1.0         ug/kg           100-42-5         Styrene         ND         5.0         0.23         ug/kg           630-20-6         1,1,1,2-Tetrachloroethane         ND         5.0         0.24         ug/kg           79-34-5         1,1,2,2-Tetrachloroethane         ND         2.0         0.43         ug/kg           127-18-4         Tetrachloroethene         ND         2.0         0.23         ug/kg           108-88-3         Toluene         ND         5.0         0.85         ug/kg           120-82-1         1,2,4-Trichlorobenzene         ND         5.0         0.23         ug/kg           71-55-6         1,1,1-Trichloroethane         ND         5.0         0.24         ug/kg           79-00-5         1,1,2-Trichloroethane         ND         2.0         0.31         ug/kg           79-01-6         Trichloroethene         ND         2.0         0.21         ng/kg           75-69-4         Trichloropfuoromethane         ND         2.0         0.21         ug/kg           95-63-6         1,2,4-Trim	74-95-3	Methylene bromide	ND	5.0	0.49	ug/kg
103-65-1         n-Propylbenzene         ND         5.0         1.0         ug/kg           100-42-5         Styrene         ND         5.0         0.23         ug/kg           630-20-6         1,1,1,2-Tetrachloroethane         ND         5.0         0.24         ug/kg           79-34-5         1,1,2,2-Tetrachloroethane         ND         2.0         0.43         ug/kg           127-18-4         Tetrachloroethene         ND         2.0         0.23         ug/kg           108-88-3         Toluene         ND         5.0         0.85         ug/kg           120-82-1         1,2,3-Trichlorobenzene         ND         5.0         0.24         ug/kg           120-82-1         1,2,4-Tricblorobenzene         ND         5.0         0.24         ug/kg           71-55-6         1,1,1-Trichloroethane         ND         2.0         0.31         ug/kg           79-00-5         1,1,2-Trichloroethane         ND         2.0         0.73         ug/kg           75-69-4         Trichloroethene         ND         2.0         0.30         ug/kg           96-18-4         1,2,3-Trichloropropane         ND         5.0         0.22         ug/kg           108-67-8	75-09-2	Methylene chloride	4.1	2.0	1.2	ug/kg
100-42-5         Styrene         ND         5.0         0.23         ug/kg           630-20-6         1,1,1,2-Tetrachloroethane         ND         5.0         0.24         ug/kg           79-34-5         1,1,2,2-Tetrachloroethane         ND         2.0         0.43         ug/kg           127-18-4         Tetrachloroethene         ND         2.0         0.23         ug/kg           127-18-4         Tetrachloroethene         ND         2.0         0.23         ug/kg           108-88-3         Toluene         ND         5.0         0.85         ug/kg           120-82-1         1,2,3-Trichlorobenzene         ND         5.0         0.24         ug/kg           120-82-1         1,2,4-Tricblorobenzene         ND         5.0         0.23         ug/kg           71-55-6         1,1,1-Trichloroethane         ND         2.0         0.31         ug/kg           79-00-5         1,1,2-Trichloroethane         ND         2.0         0.73         ug/kg           75-69-4         Trichloroethene         ND         2.0         0.21         ng/kg           95-63-6         1,2,4-Trimethylbenzene         ND         5.0         0.22         ug/kg           108-67-8	91-20-3	Naphthalene	ND	5.0	1.3	ug/kg
630-20-6         1,1,2-Tetrachloroethane         ND         5.0         0.24         ug/kg           79-34-5         1,1,2,2-Tetrachloroethane         ND         2.0         0.43         ug/kg           127-18-4         Tetrachloroethene         ND         2.0         0.23         ug/kg           108-88-3         Toluene         ND         5.0         0.24         ug/kg           127-18-4         Tetrachloroethene         ND         5.0         0.23         ug/kg           108-88-3         Toluene         ND         5.0         0.24         ug/kg           120-82-1         1,2,3-Trichlorobenzene         ND         5.0         0.23         ug/kg           71-55-6         1,1,1-Trichloroethane         ND         2.0         0.31         ug/kg           79-00-5         1,1,2-Trichloroethane         ND         2.0         0.73         ug/kg           79-01-6         Trichloroethene         ND         2.0         0.30         ug/kg           75-69-4         Trichlorofluoromethane         ND         2.0         0.30         ug/kg           95-63-6         1,2,4-Trimethylbenzene         ND         5.0         0.22         ug/kg           108-67-8	103-65-1	n-Propylbenzene	ND	5.0	1.0	ug/kg
79-34-5       1,1,2,2-Tetrachloroethane       ND       2.0       0.43       ug/kg         127-18-4       Tetrachloroethene       ND       2.0       0.23       ug/kg         108-88-3       Toluene       ND       5.0       0.85       ug/kg         87-61-6       1,2,3-Trichlorobenzene       ND       5.0       0.24       ug/kg         120-82-1       1,2,4-Tricblorobenzene       ND       5.0       0.23       ug/kg         71-55-6       1,1,1-Trichloroethane       ND       2.0       0.31       ug/kg         79-00-5       1,1,2-Trichloroethane       ND       2.0       0.73       ug/kg         79-01-6       Trichloroethene       ND       2.0       0.21       ng/kg         75-69-4       Trichloroftuoromethane       ND       2.0       0.21       ng/kg         96-18-4       1,2,3-Trichloropropane       ND       5.0       0.29       ug/kg         95-63-6       1,2,4-Trimethylbenzene       ND       5.0       0.21       ug/kg         108-67-8       1,3,5-Trimethylbenzene       ND       5.0       0.21       ug/kg         108-05-4       Vinyl Acetate       ND       5.0       1.3       ug/kg	100-42-5	Styrene	ND	5.0	0.23	ug/kg
127-18-4       Tetrachloroethene       ND       2.0       0.23       ug/kg         108-88-3       Toluene       ND       5.0       0.85       ug/kg         87-61-6       1,2,3-Trichlorobenzene       ND       5.0       0.24       ug/kg         120-82-1       1,2,4-Tricblorobenzene       ND       5.0       0.23       ug/kg         71-55-6       1,1,1-Trichloroethane       ND       2.0       0.31       ug/kg         79-00-5       1,1,2-Trichloroethane       ND       2.0       0.73       ug/kg         79-01-6       Trichloroethene       ND       2.0       0.21       ng/kg         75-69-4       Trichloroftuoromethane       ND       2.0       0.21       ng/kg         96-18-4       1,2,3-Trichloropropane       ND       5.0       0.22       ug/kg         95-63-6       1,2,4-Trimethylbenzene       ND       5.0       0.21       ug/kg         108-67-8       1,3,5-Trimethylbenzene       ND       5.0       0.21       ug/kg         108-05-4       Vinyl Acetate       ND       5.0       1.3       ug/kg         75-01-4       Vinyl chloride       ND       2.0       0.27       ug/kg         95-	630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	0.24	ug/kg
108-88-3       Toluene       ND       5.0       0.85       ug/kg         87-61-6       1,2,3-Trichlorobenzene       ND       5.0       0.24       ug/kg         120-82-1       1,2,4-Tricblorobenzene       ND       5.0       0.23       ug/kg         71-55-6       1,1,1-Trichloroethane       ND       2.0       0.31       ug/kg         79-00-5       1,1,2-Trichloroethane       ND       2.0       0.73       ug/kg         79-01-6       Trichloroethene       ND       2.0       0.21       ng/kg         75-69-4       Trichloroftuoromethane       ND       2.0       0.30       ug/kg         96-18-4       1,2,3-Trichloropropane       ND       5.0       0.22       ug/kg         95-63-6       1,2,4-Trimethylbenzene       ND       5.0       0.22       ug/kg         108-67-8       1,3,5-Trimethylbenzene       ND       5.0       0.21       ug/kg         108-05-4       Vinyl Acetate       ND       5.0       1.3       ug/kg         75-01-4       Vinyl chloride       ND       2.0       0.27       ug/kg         95-47-6       o-Xylene       ND       2.0       0.24       ug/kg	79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	0.43	ug/kg
87-61-6       1,2,3-Trichlorobenzene       ND       5.0       0.24       ug/kg         120-82-1       1,2,4-Tricblorobenzene       ND       5.0       0.23       ug/kg         71-55-6       1,1,1-Trichloroethane       ND       2.0       0.31       ug/kg         79-00-5       1,1,2-Trichloroethane       ND       2.0       0.73       ug/kg         79-01-6       Trichloroethene       ND       2.0       0.21       ng/kg         75-69-4       Trichlorofluoromethane       ND       2.0       0.30       ug/kg         96-18-4       1,2,3-Trichloropropane       ND       5.0       0.22       ug/kg         95-63-6       1,2,4-Trimethylbenzene       ND       5.0       0.22       ug/kg         108-67-8       1,3,5-Trimethylbenzene       ND       5.0       0.21       ug/kg         108-05-4       Vinyl Acetate       ND       5.0       1.3       ug/kg         75-01-4       Vinyl chloride       ND       2.0       0.27       ug/kg         95-47-6       o-Xylene       ND       2.0       0.24       ug/kg	127-18-4	Tetrachloroethene	ND	2.0	0.23	ug/kg
87-61-6       1,2,3-Trichlorobenzene       ND       5.0       0.24       ug/kg         120-82-1       1,2,4-Trichlorobenzene       ND       5.0       0.23       ug/kg         71-55-6       1,1,1-Trichloroethane       ND       2.0       0.31       ug/kg         79-00-5       1,1,2-Trichloroethane       ND       2.0       0.73       ug/kg         79-01-6       Trichloroethene       ND       2.0       0.21       ng/kg         75-69-4       Trichlorofluoromethane       ND       2.0       0.30       ug/kg         96-18-4       1,2,3-Trichloropropane       ND       5.0       0.22       ug/kg         95-63-6       1,2,4-Trimethylbenzene       ND       5.0       0.22       ug/kg         108-67-8       1,3,5-Trimethylbenzene       ND       5.0       0.21       ug/kg         108-05-4       Vinyl Acetate       ND       5.0       0.21       ug/kg         75-01-4       Vinyl chloride       ND       2.0       0.27       ug/kg         95-47-6       o-Xylene       ND       2.0       0.79       ug/kg	108-88-3	Toluene	ND	5.0	0.85	ug/kg
71-55-6       1,1,1-Trichloroethane       ND       2.0       0.31       ug/kg         79-00-5       1,1,2-Trichloroethane       ND       2.0       0.73       ug/kg         79-01-6       Trichloroethene       ND       2.0       0.21       ng/kg         75-69-4       Trichloroethene       ND       2.0       0.21       ng/kg         96-18-4       1,2,3-Trichloropropane       ND       5.0       0.29       ug/kg         95-63-6       1,2,4-Trimethylbenzene       ND       5.0       0.22       ug/kg         108-67-8       1,3,5-Trimethylbenzene       ND       5.0       0.21       ug/kg         108-67-4       Vinyl Acetate       ND       5.0       0.21       ug/kg         75-01-4       Vinyl chloride       ND       2.0       0.27       ug/kg         95-47-6       o-Xylene       ND       2.0       0.79       ug/kg	87-61-6	1,2,3-Trichlorobenzene	ND	5.0	0.24	ug/kg
79-00-5       1,1,2-Trichloroethane       ND       2.0       0.73       ug/kg         79-01-6       Trichloroethene       ND       2.0       0.21       ng/kg         75-69-4       Trichlorofluoromethane       ND       2.0       0.30       ug/kg         96-18-4       1,2,3-Trichloropropane       ND       5.0       0.29       ug/kg         95-63-6       1,2,4-Trimethylbenzene       ND       5.0       0.22       ug/kg         108-67-8       1,3,5-Trimethylbenzene       ND       5.0       0.21       ug/kg         108-05-4       Vinyl Acetate       ND       5.0       1.3       ug/kg         75-01-4       Vinyl chloride       ND       2.0       0.27       ug/kg         95-47-6       o-Xylene       ND       2.0       0.79       ug/kg	120-82-1	1,2,4-Tricblorobenzene	ND	5.0	0.23	ug/kg
79-01-6         Trichloroethene         ND         2.0         0.21         ng/kg           75-69-4         Trichlorofluoromethane         ND         2.0         0.30         ug/kg           96-18-4         1,2,3-Trichloropropane         ND         5.0         0.29         ug/kg           95-63-6         1,2,4-Trimethylbenzene         ND         5.0         0.22         ug/kg           108-67-8         1,3,5-Trimethylbenzene         ND         5.0         0.21         ug/kg           108-05-4         Vinyl Acetate         ND         5.0         0.21         ug/kg           75-01-4         Vinyl chloride         ND         2.0         0.27         ug/kg           m,p-Xylene         ND         2.0         0.79         ug/kg           95-47-6         o-Xylene         ND         2.0         0.24         ug/kg	71-55-6	1,1,1-Trichloroethane	ND	2.0	0.31	ug/kg
75-69-4         Trichlorofluoromethane         ND         2.0         0.30         ug/kg           96-18-4         1,2,3-Trichloropropane         ND         5.0         0.29         ug/kg           95-63-6         1,2,4-Trimethylbenzene         ND         5.0         0.22         ug/kg           108-67-8         1,3,5-Trimethylbenzene         ND         5.0         0.21         ug/kg           108-05-4         Vinyl Acetate         ND         5.0         1.3         ug/kg           75-01-4         Vinyl chloride         ND         2.0         0.27         ug/kg           m,p-Xylene         ND         2.0         0.79         ug/kg           95-47-6         o-Xylene         ND         2.0         0.24         ug/kg	79-00-5	1,1,2-Trichloroethane	ND	2.0	0.73	ug/kg
96-18-4         1,2,3-Trichloropropane         ND         5.0         0.29         ug/kg           95-63-6         1,2,4-Trimethylbenzene         ND         5.0         0.22         ug/kg           108-67-8         1,3,5-Trimethylbenzene         ND         5.0         0.21         ug/kg           108-05-4         Vinyl Acetate         ND         5.0         1.3         ug/kg           75-01-4         Vinyl chloride         ND         2.0         0.27         ug/kg           95-47-6         o-Xylene         ND         2.0         0.24         ug/kg	79-01-6	Trichloroethene	ND	2.0	0.21	ng/kg
95-63-6         1,2,4-Trimethylbenzene         ND         5.0         0.22         ug/kg           108-67-8         1,3,5-Trimethylbenzene         ND         5.0         0.21         ug/kg           108-05-4         Vinyl Acetate         ND         5.0         1.3         ug/kg           75-01-4         Vinyl chloride         ND         2.0         0.27         ug/kg           m,p-Xylene         ND         2.0         0.79         ug/kg           95-47-6         o-Xylene         ND         2.0         0.24         ug/kg	75-69-4	Trichlorofluoromethane	ND	2.0	0.30	ug/kg
108-67-8         1,3,5-Trimethylbenzene         ND         5.0         0.21         ug/kg           108-05-4         Vinyl Acetate         ND         5.0         1.3         ug/kg           75-01-4         Vinyl chloride         ND         2.0         0.27         ug/kg           m,p-Xylene         ND         2.0         0.79         ug/kg           95-47-6         o-Xylene         ND         2.0         0.24         ug/kg	96-18-4	1,2,3-Trichloropropane	ND	5.0	0.29	ug/kg
108-67-8         1,3,5-Trimethylbenzene         ND         5.0         0.21         ug/kg           108-05-4         Vinyl Acetate         ND         5.0         1.3         ug/kg           75-01-4         Vinyl chloride         ND         2.0         0.27         ug/kg           m,p-Xylene         ND         2.0         0.79         ug/kg           95-47-6         o-Xylene         ND         2.0         0.24         ug/kg	95-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.22	ug/kg
75-01-4         Vinyl chloride         ND         2.0         0.27         ug/kg           m,p-Xylene         ND         2.0         0.79         ug/kg           95-47-6         o-Xylene         ND         2.0         0.24         ug/kg	108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.21	
m,p-Xylene ND 2.0 0.79 ug/kg 95-47-6 o-Xylene ND 2.0 0.24 ug/kg	108-05-4	Vinyl Acetate	ND	5.0	1.3	ug/kg
95-47-6 o-Xylene ND 2.0 0.24 ug/kg	75-01-4	Vinyl chloride	ND	2.0	0.27	ug/kg
J 0 0		m,p-Xylene	ND	2.0	0.79	ug/kg
1330-20-7 Xylene (total) ND 2.0 0.24 ug/kg	95-47-6	o-Xylene	ND	2.0	0.24	ug/kg
	1330-20-7	Xylene (total)	ND	2.0	0.24	ug/kg

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Sample MSM1869-MB1	File ID M54869.D	DF 1	Analyzed 03/20/13	<b>В</b> у АМҮ	Prep Date n/a	Prep I n/a	Batch	Analytical Batcl MSM1869
The QC reporte	d here applies	to the follo	- wing sample	s:		Method:	SW846	6 8260B
MC18752-1, MC	18752-2, MC1	8752-4						
	18752-2, MC1			Limits				
CAS No. Suri		ies	88%	Limits 70-130%				
CAS No. Suri 1868-53-7 Dibi 2037-26-5 Toli	ogate Recover omofluorometh ene-D8	<b>ies</b> nane	110%	70-130% 70-130%				
CAS No. Surr 1868-53-7 Dibr 2037-26-5 Toh	ogate Recover	<b>ies</b> nane		70-130%				
1868-53-7 Dibi 2037-26-5 Toli 460-00-4 4-Br	ogate Recover omofluorometh ene-D8	ies nane ene	110% 88%	70-130% 70-130%	Est. Conc.	Units Q		



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6.1.3

Job Number: Account: Project:	MC18752 SHELLWIC SI URSMOSTL: 1		Drilling, Roxana,	, IL			U
Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1871-MB	M54899.D	1	03/21/13	AMY	n/a	n/a	MSM1871

The QC reported here applies to the following samples:

Method: SW846 8260B

MC18752-3

CAS No.	Compound	Result	RL	MDL	Units Q
67-64-1	Acetone	ND	5.0	1.3	ug/kg
107-02-8	Acrolein	ND	25	10	ug/kg
107-13-1	Acrylonitrile	ND	25	1.3	ug/kg
71-43-2	Benzene	ND	0.50	0.29	ug/kg
108-86-1	Bromobenzene	ND	5.0	0.22	ug/kg
74-97-5	Bromochloromethane	ND	5.0	0.37	ug/kg
75-27-4	Bromodichloromethane	ND	2.0	0.21	ug/kg
75-25-2	Bromoform	ND	2.0	2.0	ug/kg
74-83-9	Bromomethane	ND	2.0	0.52	ug/kg
78-93-3	2-Butanone (MEK)	ND	5.0	1.3	ug/kg
104-51-8	n-Butylbenzene	ND	5.0	0.18	ug/kg
135-98-8	sec-Butylbenzene	ND	5.0	0.23	ug/kg
98-06-6	tert-Butylbenzene	ND	5.0	0.88	ug/kg
75-15-0	Carbon disnlfide	ND	5.0	0.16	ug/kg
56-23-5	Carbon tetrachloride	ND	2.0	0.73	ug/kg
108-90-7	Chlorobenzene	ND	2.0	0.28	ug/kg
75-00-3	Chloroethane	ND	5.0	1.3	ug/kg
67-66~3	Chloroform	ND	2.0	0.52	ug/kg
74-87-3	Chloromethane	ND	5.0	0.46	ug/kg
95-49-8	o-Chlorotoluene	ND	5.0	1.1	ug/kg
106-43-4	p-Chlorotoluene	ND	5.0	0.23	ug/kg
124-48-1	Dibromochloromethane	ND	2.0	0.30	ug/kg
95-50-1	1,2-Dichlorobenzene	ND	2.0	0.22	ug/kg
541-73-1	1,3-Dichlorobenzene	ND	2.0	0.23	ug/kg
106-46-7	1,4-Dichlorobenzene	ND	2.0	0.21	ug/kg
75-71-8	Dichlorodifluoromethane	ND	2.0	1.1	ug/kg
75-34-3	1,1-Dichloroethane	ND	2.0	0.27	ug/kg
107-06-2	1,2-Dichloroethane	ND	2.0	0.29	ug/kg
75-35-4	1,1-Dichloroethene	ND	2.0	0.37	ug/kg
156-59-2	cis-1,2-Dichloroethene	ND	2.0	0.30	ug/kg
156-60-5	trans-1,2-Dichloroethene	ND	2.0	0.29	ug/kg
78-87-5	1,2-Dichloropropane	ND	2.0	0.37	ug/kg
142-28-9	1,3-Dichloropropane	ND	5.0	0.23	ug/kg
594-20-7	2,2-Dichloropropane	ND	5.0	0.87	ug/kg
563-58-6	1,1-Dichloropropene	ND	5.0	0.26	ug/kg
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	0.17	ug/kg

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Job Number: Aecount: Project:	MC18752 SHELLWIC SI URSMOSTL: 1		Drilling, Roxana,	, IL			Ū
Sample MSM1871-MB	File ID M54899.D	DF 1	Analyzed 03/21/13	By AMY	Prep Date n/a	Prep Batch n/a	Analytical Bateh MSM1871
The QC report	ed here applies	to the fo	llowing sample	s:		Method: SW84	6 8260B

MC18752-3

CAS No.	Compound	Result	RL	MDL	Units Q
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	0.50	ug/kg
123-91-1	1,4-Dioxane	ND	25	25	ug/kg
97-63-2	Ethyl methacrylate	ND	5.0	0.68	ug/kg
100-41-4	Ethylbenzene	ND	2.0	0.24	ug/kg
87-68-3	Hexachlorobutadiene	ND	5.0	0.46	ug/kg
591-78-6	2-Hexanone	ND	5.0	1.3	ug/kg
98-82-8	Isopropylbenzene	ND	5.0	0.23	ug/kg
99-87-6	p-Isopropyltoluene	ND	5.0	0.18	ug/kg
1634-04-4	Methyl Tert Butyl Ether	ND	2.0	0.29	ug/kg
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	0.50	ug/kg
74-95-3	Methylene bromide	ND	5.0	0.49	ug/kg
75-09-2	Methylene chloride	4.1	2.0	1.2	ug/kg
91-20-3	Naphthalene	ND	5.0	1.3	ug/kg
103-65-1	n-Propylbenzene	ND	5.0	1.0	ug/kg
100-42-5	Styrene	ND	5.0	0.23	ug/kg
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	0.24	ug/kg
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	0.43	ug/kg
127-18-4	Tetrachloroethene	ND	2.0	0.23	ug/kg
108-88-3	Toluene	ND	5.0	0.85	ug/kg
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	0.24	ug/kg
120-82-1	1,2,4-Trichlorobenzeue	ND	5.0	0.23	ug/kg
71-55-6	1,1,1-Trichloroethane	ND	2.0	0.31	ug/kg
79-00-5	1,1,2-Trichloroethane	ND	2.0	0.73	ug/kg
79-01-6	Trichloroetheue	ND	2.0	0.21	ug/kg
75-69-4	Trichlorofluoromethane	ND	2.0	0.30	ug/kg
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.29	ug/kg
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.22	ug/kg
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.21	ug/kg
108-05-4	Vinyl Acetate	ND	5.0	1.3	ug/kg
75-01-4	Vinyl chloride	ND	2.0	0.27	ug/kg
	m,p-Xylene	ND	2.0	0.79	ug/kg
95-47-6	o-Xylene	ND	2.0	0.24	ug/kg
1330-20-7	Xylene (total)	ND	2.0	0.24	ug/kg

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Account: Project:	SHELLWIC Sh URSMOSTL: F		rilling, Roxana	, IL			
Sample MSM1871-MB	File ID M54899.D	DF 1	Analyzed 03/21/13	By AMY	Prep Date n/a	<b>Prep Batch</b> n/a	Analytical Batch MSM1871
	ted here applies	to the fol	lowing sample			Method: SW8	46 8260B
MC18752-3							
CAS No. Su	irrogate Recover	ies		Limits			
1868-53-7 Di	ibromofluorometh	апе	88%	70-130%			
	oluene-D8		111%	70-130%			
460-00-4 4-3	Bromofluorobenz	ene	88%	70-130%			
CAS No. T	entatively 1denti	fied Com	pounds	R.T.	Est. Conc.	Units Q	
г	Cotal TIC, Volatile	е				ug/kg	

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6.1.4



Job Number: Account: Project:	MC18752 SHELLWIC Sh URSMOSTL: F		Drilling, Roxana	, IL			
Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSG4957-MB1	G125279.D	1	03/14/13	JM	n/a	n/a	MSG4957

The QC reported here applies to the following samples:

Method: SW846 8260B

#### MC18723-2MS, MC18723-2MSD

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	1.3	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	ng/l
104-51-8	n-Butylbenzene	ND	5.0	0.61	ug/l
135-98-8	sec-Butylbenzene	ND	5.0	0.55	ng/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	1.3	ug/I
67-66-3	Chloroform	ND	1.0	0.50	ug/1
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-Dichlorohenzene	ND	1.0	0.45	ng/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/I
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

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Job Number: Account: Project:	MC18752 SHELLWIC SH URSMOSTL: H		Drilling, Roxana	, IL			0
Sample	File 1D	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSG4957-MB1	G125279.D	1	03/14/13	JM	n/a	n/a	MSG4957

The QC reported here applies to the following samples:

Method: SW846 8260B

MC18723-2MS, MC18723-2MSD

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	Ethylhenzene	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	lsopropylbenzene	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	0.50	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/I
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	1.3	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/i
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	ng/l
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.47	ug/l
108-05-4	Vinyl Acetate	ND	5.0	1.3	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
	-				

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Job Number: Account: Project:	MC18752 SHELLWIC Sh URSMOSTL: F		Drilling, Roxana,	IL			-
Sample MSG4957-MB1	File ID G125279.D	DF 1	Analyzed 03/14/13	By JM	Prep Date n/a	Prep Batch n/a	Analytical Batch MSG4957
	ed here applies MC18723-2MS		llowing sample:	3:	]	Method: SW84	6 8260B
CAS No. Sur	rogate Recover	ies		Limits			

	e		
1868-53-7	Dibromofluoromethane	77%	70-130%
2037-26-5	Toluene-D8	76%	70-130%
460-00-4	4-Bromofluorobenzene	78%	70-130%

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6,1.5

	6		
3-7	Dibromofluoromethane	77%	70-130
5-5	Toluene-D8	76%	70-130

## Method Blank Summary

Job Number:	MC18752								
Account:	SHELLWIC Shell Oil								
Project:	URSMOSTL: Roxana Drilling, Roxana, IL								
Sample	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch		
MSM1869-MB	M54845.D	1	03/19/13	АМҮ	n/a	n/a	MSM1869		

The QC reported here applies to the following samples:

Method: SW846 8260B

MSM1869-BSD, MSM1869-BS1

CAS No.	Compound	Result	RL	MDL	Units Q
67-64-1	Acetone	ND	5.0	1.3	ug/kg
107-02-8	Acrolein	ND	25	10	ug/kg
107-13-1	Acrylonitrile	ND	25	1.3	ug/kg
71-43-2	Benzene	ND	0.50	0.29	ug/kg
108-86-1	Bromobenzene	ND	5.0	0.22	ug/kg
74-97-5	Bromochloromethane	ND	5.0	0.37	ug/kg
75-27-4	Bromodichloromethane	ND	2.0	0.21	ug/kg
75-25-2	Bromoform	ND	2.0	2.0	ug/kg
74-83-9	Bromomethane	ND	2.0	0.52	ug/kg
78-93-3	2-Butanone (MEK)	ND	5.0	1.3	ug/kg
104-51-8	n-Butylbenzene	ND	5.0	0.18	ug/kg
135-98-8	sec-Butylbenzene	ND	5.0	0.23	ug/kg
98-06-6	tert-Butylbenzene	ND	5.0	0.88	ug/kg
75-15-0	Carbon disulfide	ND	5.0	0.16	ug/kg
56-23-5	Carbon tetrachloride	ND	2.0	0.73	ug/kg
108-90-7	Chlorobenzene	ND	2.0	0.28	ug/kg
75-00-3	Chloroethane	ND	5.0	1.3	ug/kg
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	2.0	ug/kg
67-66-3	Chloroform	ND	2.0	0.52	ug/kg
74-87-3	Chloromethane	ND	5.0	0.46	ug/kg
95-49-8	o-Chlorotolueue	ND	5.0	1.1	ug/kg
106-43-4	p-Chlorotoluene	ND	5.0	0.23	ug/kg
124-48-1	Dibromochloromethane	ND	2.0	0.30	ug/kg
95-50-1	1,2-Dichlorobenzene	ND	2.0	0.22	ug/kg
541-73-1	1,3-Dichlorobenzene	ND	2.0	0.23	ug/kg
106-46-7	1,4-Dichlorobenzene	ND	2.0	0.21	ug/kg
75-71-8	Dichlorodifluoromethane	ND	2.0	1.1	ug/kg
75-34-3	1,1-Dichloroethane	ND	2.0	0.27	ug/kg
107-06-2	1,2-Dichloroethane	ND	2.0	0.29	ug/kg
75-35-4	1,1-Dichloroethene	ND	2.0	0.37	ug/kg
156-59-2	cis-1,2-Dichloroethene	ND	2.0	0.30	ug/kg
156-60-5	trans-1,2-Dichloroethene	ND	2.0	0.29	ug/kg
78-87-5	1,2-Dichloropropane	ND	2.0	0.37	ug/kg
142-28-9	1,3-Dichloropropane	ND	5.0	0.23	ug/kg
594-20-7	2,2-Dichloropropane	ND	5.0	0.87	ug/kg
563-58-6	1,1-Dichloropropene	ND	5.0	0.26	ug/kg

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## Method Blank Summary

Method Bl	Aethod Blank Summary Page 2 of 3										
Job Number:	MC18752	•					0				
Account:	SHELLWIC SH	iell Oil									
Project:	URSMOSTL: I	Roxana E	Drilling, Roxana,	, IL							
Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch				
MSM1869-MB	M54845.D	1	03/19/13	AMY	n/a	n/a	MSM1869				
		4 - 41 - 6-									
The QC report	ed here applies	to the fo	nowing sample	s:		Method: SW84	0 82008				

MSM1869-BSD, MSM1869-BS1

10061-01-5       cis-1,3-Dichloropropene       ND       2.0       0.17       ug/kg         10061-02-6       trans-1,3-Dichloropropene       ND       2.0       0.50       ug/kg         123-91-1       1,4-Dioxane       ND       25       25       ug/kg         97-63-2       Ethyl methacrylate       ND       5.0       0.68       ug/kg         100-41-4       Ethylbenzene       ND       2.0       0.24       ug/kg         87-68-3       Hexachlorobutadiene       ND       5.0       0.46       ug/kg         591-78-6       2-Hexanone       ND       5.0       0.23       ug/kg         98-82-8       Isopropylbenzene       ND       5.0       0.18       ug/kg         99-87-6       p-Isopropyltoluene       ND       5.0       0.18       ug/kg         1634-04-4       Methyl Tert Butyl Ether       ND       2.0       0.29       ug/kg         108-10-1       4-Methyl-2-pentanone (MIBK)       ND       5.0       0.50       ug/kg	CAS No.	Compound	Result	RL	MDL	Units Q
10061-02-6trans-1,3-DichloropropeneND2.00.50ug/kg123-91-11,4-DioxaneND2525ug/kg97-63-2Ethyl methacrylateND5.00.68ug/kg100-41-4EthylbenzeneND2.00.24ug/kg87-68-3HexachlorobutadieneND5.00.46ug/kg591-78-62-HexanoneND5.01.3ug/kg98-82-8IsopropylbenzeneND5.00.23ug/kg99-87-6p-IsopropyltolueneND5.00.18ug/kg1634-04-4Methyl Tert Butyl EtherND2.00.29ug/kg108-10-14-Methyl-2-pentanone (MIBK)ND5.00.50ug/kg	10061-01-5	cis-1,3-Dichloropropene	ND	2.0	0.17	ug/kg
123-91-1       1,4-Dioxane       ND       25       25       ug/kg         97-63-2       Ethyl methacrylate       ND       5.0       0.68       ug/kg         100-41-4       Ethylbenzene       ND       2.0       0.24       ug/kg         87-68-3       Hexachlorobutadiene       ND       5.0       0.46       ug/kg         591-78-6       2-Hexanone       ND       5.0       1.3       ug/kg         98-82-8       Isopropylbenzene       ND       5.0       0.23       ug/kg         99-87-6       p-Isopropyltoluene       ND       5.0       0.18       ug/kg         1634-04-4       Methyl Tert Butyl Ether       ND       2.0       0.29       ug/kg         108-10-1       4-Methyl-2-pentanone (MIBK)       ND       5.0       0.50       ug/kg			ND	2.0		
97-63-2         Ethyl methacrylate         ND         5.0         0.68         ug/kg           100-41-4         Ethylbenzene         ND         2.0         0.24         ug/kg           87-68-3         Hexachlorobutadiene         ND         5.0         0.46         ug/kg           591-78-6         2-Hexanone         ND         5.0         1.3         ug/kg           98-82-8         Isopropylbenzene         ND         5.0         0.23         ug/kg           99-87-6         p-Isopropyltoluene         ND         5.0         0.18         ug/kg           1634-04-4         Methyl Tert Butyl Ether         ND         2.0         0.29         ug/kg           108-10-1         4-Methyl-2-pentanone (MIBK)         ND         5.0         0.50         ug/kg			ND	25	25	
100-41-4         Ethylbenzene         ND         2.0         0.24         ug/kg           87-68-3         Hexachlorobutadiene         ND         5.0         0.46         ug/kg           591-78-6         2-Hexanone         ND         5.0         1.3         ug/kg           98-82-8         Isopropylbenzene         ND         5.0         0.23         ug/kg           99-87-6         p-Isopropyltoluene         ND         5.0         0.18         ug/kg           1634-04-4         Methyl Tert Butyl Ether         ND         2.0         0.29         ug/kg           108-10-1         4-Methyl-2-pentanone (MIBK) ND         5.0         0.50         ug/kg	97-63-2	Ethyl methacrylate	ND	5.0	0.68	
87-68-3         Hexachlorobutadiene         ND         5.0         0.46         ug/kg           591-78-6         2-Hexanone         ND         5.0         1.3         ug/kg           98-82-8         Isopropylbenzene         ND         5.0         0.23         ug/kg           99-87-6         p-Isopropyltoluene         ND         5.0         0.18         ug/kg           1634-04-4         Methyl Tert Butyl Ether         ND         2.0         0.29         ug/kg           108-10-1         4-Methyl-2-pentanone (MIBK)         ND         5.0         0.50         ug/kg	100-41-4	Ethylbenzene	ND	2.0	0.24	
591-78-6         2-Hexanone         ND         5.0         1.3         ug/kg           98-82-8         Isopropylbenzene         ND         5.0         0.23         ug/kg           99-87-6         p-Isopropyltoluene         ND         5.0         0.18         ug/kg           1634-04-4         Methyl Tert Butyl Ether         ND         2.0         0.29         ug/kg           108-10-1         4-Methyl-2-pentanone (MIBK)         ND         5.0         0.50         ug/kg	87-68-3	Hexachlorobutadiene	ND	5.0	0.46	
99-87-6         p-Isopropyltoluene         ND         5.0         0.18         ug/kg           1634-04-4         Methyl Tert Butyl Ether         ND         2.0         0.29         ug/kg           108-10-1         4-Methyl-2-pentanone (MIBK) ND         5.0         0.50         ug/kg	591-78-6	2-Hexanone	ND	5.0	1.3	
1634-04-4Methyl Tert Butyl EtherND2.00.29ug/kg108-10-14-Methyl-2-pentanone (MIBK) ND5.00.50ug/kg	98-82-8	Isopropylbenzene	ND	5.0	0.23	
108-10-1 4-Methyl-2-pentanone (MIBK) ND 5.0 0.50 ug/kg	99-87-6	p-Isopropyltoluene	ND	5.0	0.18	ug/kg
	1634-04-4	Methyl Tert Butyl Ether	ND	2.0	0.29	ug/kg
74.05.2 Mathulana browida ND 5.0 0.40	108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	0.50	ug/kg
r4-55-5 intensiene bronnue ND 5.0 0.49 ug/kg	74-95-3	Methylene bromide	ND	5.0	0.49	ug/kg
75-09-2 Methylene chloride (3.8) 2.0 1.2 ug/kg	75-09-2	Methylene chloride	3.8 🔵	2.0	1.2	ug/kg
91-20-3 Naphthalene ND 5.0 1.3 ug/kg	91-20-3	Naphthalene	ND	5.0	1.3	ug/kg
103-65-1 n-Propylbenzene ND 5.0 1.0 ug/kg	103-65-1	n-Propylbenzene	ND	5.0	1.0	ug/kg
100-42-5 Styrene ND 5.0 0.23 ug/kg	100-42-5		ND	5.0	0.23	ug/kg
630-20-6 1,1,1,2-Tetrachloroethane ND 5.0 0.24 ug/kg	630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	0.24	ug/kg
79-34-5 1,1,2,2-Tetrachloroethane ND 2.0 0.43 ug/kg	79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	0.43	ug/kg
127-18-4 Tetrachloroethene ND 2.0 0.23 ug/kg	127-18-4	Tetrachloroethene	ND	2.0	0.23	ug/kg
108-88-3 Toluene ND 5.0 0.85 ug/kg	108-88-3	Toluene	ND	5.0	0.85	ug/kg
87-61-6 1,2,3-Trichlorobenzene ND 5.0 0.24 ug/kg	87-61-6	1,2,3-Trichlorobenzene	ND	5.0	0.24	ug/kg
120-82-1 1,2,4-Trichlorobenzene ND 5.0 0.23 ug/kg	120-82-1	1,2,4-Trichlorobenzene	ND	5.0	0.23	ug/kg
71-55-6 1,1,1-Trichloroethane ND 2.0 0.31 ug/kg	71-55-6	1,1,1-Trichloroethane	ND	2.0	0.31	ug/kg
79-00-5 1,1,2-Trichloroethane ND 2.0 0.73 ug/kg			ND	2.0	0.73	ug/kg
79-01-6 Trichloroethene ND 2.0 0.21 ug/kg	79-01-6	Trichloroethene	ND	2.0	0.21	ug/kg
75-69-4 Trichlorofluoromethane ND 2.0 0.30 ug/kg		Trichlorofluoromethane	ND	2.0	0.30	ug/kg
96-18-4 1,2,3-Trichloropropane ND 5.0 0.29 ug/kg	96-18-4	1,2,3-Trichloropropane	ND	5.0	0.29	ug/kg
95-63-6 1,2,4-Trituethyllienzene ND 5.0 0.22 ug/kg	95-63-6	1,2,4-Trinuethyllienzene	ND	5.0	0.22	ug/kg
108-67-8 1,3,5-Trimethylbenzene ND 5.0 0.21 ug/kg			ND	5.0		ug/kg
108-05-4 Vinyl Acetate ND 5.0 1.3 ug/kg	108-05-4	Vinyl Acetate	ND	5.0	1.3	ug/kg
75-01-4 Vinyl chloride ND 2.0 0.27 ug/kg	75-01-4	Vinyl chloride	ND	2.0	0.27	ug/kg
m,p-Xylene ND 2.0 0.79 ug/kg			ND	2.0	0.79	
95-47-6 o-Xylene ND 2.0 0.24 ug/kg	95-47-6	5	ND	2.0	0.24	ug/kg
1330-20-7 Xylene (total) ND 2.0 0.24 ug/kg	1330-20-7	Xylene (total)	ND	2.0	0.24	ug/kg



6.1.6



## Method Blank Summary

460-00-4 4-Bromofluorobenzene

Method Bl Job Number:	ank Summar MC18752	У	Page 3 o			
Account:	SHELLWIC Shell	l Oil				
Project:	URSMOSTL: Ro:	xana Drilling, Rox	kana, IL			
Sample MSM1869-MB		OF Analyz 03/19/1	-	Prep Date n/a	Prep Batch n/a	Analytical Batch MSM1869
The QC report	ted here applies to	the following san	nples:		Method: SW84	6 8260B
MSM1869-BSI	D, MSM1869-BS1					
CAS No. Su	rrogate Recoveries	S	Limits			
1868-53-7 Di	bromofluoromethan	ie <b>86</b> %	70-130%			
2037-26-5 To	luene-D8	111%	70-130%			
400 00 4		000/	50 1000/			

70-130%

88%

6.1.6



Job Number: Account: Project:		MC18752 SHELLWIC Shell Oil URSMOSTL: Roxana Drilling, Roxana, IL									
Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch				
MSG4957-BS	G125254.D	1	03/13/13	JM	n/a	n/a	MSG4957				

#### The QC reported here applies to the following samples:

Method: SW846 8260B

MC18752-5, MC18752-6

		Spike	BSP	BSP	
CAS No.	Compound	ug/1	ug/l	%	Limits
				and the second se	2
67-64-1	Acetone	50	76.0	( <u>152* a</u>	T-2
107-02-8	Acrolein	250	128	51* a	70-130
107-13-1	Acrylonitrile	50	36.7	73	70-130
71-43-2	Benzene	50	47.2	94	70-130
108-86-1	Bromobenzene	50	55.1	110	70-130
74-97-5	Bromochloromethane	50	49.6	99	70-130
75-27-4	Bromodichloromethane	50	46.6	93	70-130
75-25-2	Bromoform	50	47.2	94	70-130
74-83-9	Bromomethane	50	46.2	92	<b>`</b>
78-93-3	2-Butanone (MEK)	50	70.8	(142* a	/70-130
104-51-8	n-Butylbenzene	50	56.9	114	70-130
135-98-8	sec-Butylbenzene	50	54.1	108	70-130
98-06-6	tert-Butylbenzene	50	50.5	101	70-130
75-15-0	Carbon disulfide	50	45.7	91	70-130
56-23-5	Carbon tetrachloride	50	50.0	100	70-130
108-90-7	Chlorobenzene	50	52.2	104	70-130
75-00-3	Chloroethane	50	47.4	95	<b>70-130</b>
110-75-8	2-Chloroethyl vinyl ether	50	33.1	(66* ª	/ 70-130
67-66-3	Chloroform	50	45.3	91	70-130
74-87-3	Chlorometbane	50	46.0	92	70-130
95-49-8	o-Chlorotoluene	50	50.2	100	70-130
106-43-4	p-Chlorotoluene	50	50.3	101	70-130
124-48-1	Dibromochloromethane	50	50.1	100	70-130
95-50-1	1,2-Dichlorobenzene	50	49.7	99	70-130
541-73-1	1,3-Dichlorobenzene	50	52.1	104	70-130
106-46-7	1,4-Dichlorobenzene	50	53.7	107	70-130
75-71-8	Dichlorodifluoromethane	50	40.7	81	70-130
75-34-3	1,1-Dichloroethane	50	46.5	93	70-130
107-06-2	1,2-Dichloroethane	50	45.0	90	70-130
75-35-4	1,1-Dichloroethene	50	46.8	94	70-130
156-59-2	cis-1,2-Dichloroethene	50	49.3	99	70-130
156-60-5	trans-1,2-Dichloroethene	50	49.6	99	70-130
78-87-5	1,2-Dichloropropane	50	46.7	93	70-130
142-28-9	1,3-Dichloropropane	50	50.1	100	70-130
594-20-7	2,2-Dichloropropane	50	62.7	125	70-130
563-58-6	1,1-Dichloropropene	50	51.9	104	70-130
	, <b></b>			_ 0 _	

\* = Outside of Control Limits.



Job Number: Account: Project:	MC18752 SHELLWIC Sh URSMOSTL: F		Drilling, Roxana,	, IL			
Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSG4957-BS	G125254.D	1	03/13/13	JM	n/a	n/a	MSG4957

The QC reported here applies to the following samples:

Method: SW846 8260B

MC18752-5, MC18752-6

		Spike	BSP	BSP	
CAS No.	Compound	ug/l	ug/l	%	Limits
10061 01 5	sia 1.2 Dishlarannana	50	43.0	86	70-130
	cis-1,3-Dichloropropene	50 50		89	
10061-02-6 123-91-1	trans-1,3-Dichloropropene 1,4-Dioxane	250	44.3 253	89 101	70-130 70-130
97-63-2	-	230 50	42.8	86	70-130
	Ethyl methacrylate Ethylbenzene	50 50	42.0 53.7	80 107	70-130
100-41-4 87-68-3	Hexachlorobutadiene	50 50	55.7 64.2	128	70-130
591-78-6	2-Hexanone	50 50	76.5	153* ª	
		50		102	70-130
98-82-8	Isopropylbenzene	50 50	50.8 60.2	102	70-130
99-87-6 1634-04-4	p-Isopropyltoluene	50 50	41.5	83	70-130
	Methyl Tert Butyl Ether	50 50	41.5 39.8	80	70-130
108-10-1	4-Methyl-2-pentanone (MIBK)			80 91	
74-95-3	Methylene bromide	50	45.6		70-130
75-09-2	Methylene chloride	50	46.3	93	70-130
91-20-3	Naphthalene	50	46.0	92	70-130
103-65-1	n-Propylbenzene	50	50.9	102	70-130
100-42-5	Styrene	50	54.2	108	70-130
630-20-6	1,1,1,2-Tetrachloroethane	50	55.3	111	70-130
79-34-5	1,1,2,2-Tetrachloroethane	50	47.8	96	70-130
127-18-4	Tetrachloroethene	50	58.2	116	70-130
108-88-3	Toluene	50	48.5	97	70-130
87-61-6	1,2,3-Trichlorohenzene	50	53.7	107	70-130
120-82-1	1,2,4-Trichlorobenzene	50	56.4	113	70-130
71-55-6	1,1,1-Trichloroethane	50	56.0	112	70-130
79-00-5	1,1,2-Trichloroethane	50	44.8	90	70-130
79-01-6	Trichloroethene	50	44.3	89	70-130
75-69-4	Trichlorofluoromethane	50	43.5	87	70-130
96-18-4	1,2,3-Trichloropropane	50	44.6	89	70-130
95-63-6	1,2,4-Trimethylhenzene	50	49.2	98	70-130
108-67-8	1,3,5-Trimethylhenzene	50	48.0	96	70-130
108-05-4	Vinyl Acetate	50	64.0	128	70-130
75-01-4	Vinyl chloride	50	43.8	88	70-130
	m,p-Xylene	100	106	106	70-130
95-47-6	o-Xylene	50	50.5	101	70-130
1330-20-7	Xylene (total)	150	157	105	70-130

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6.2.1





460-00-4

Blank Spi Job Number: Account: Project:	ike Summary MC18752 SHELLWIC Shell Oil URSMOSTL: Roxana 1	Drilling, Roxana	, IL			Page 3 of 3
Sample MSG4957-BS	File 1D DF G125254.D 1	Analyzed 03/13/13	By JM	Prep Date n/a	Prep Batch n/a	Analytical Batch MSG4957
The QC repo MC18752-5, 1	rted here applies to the f MC18752-6	ollowing sample	s:	1	Method: SW84	6 8260B
CAS No. S	urrogate Recoveries	BSP	Limits			
	Dibromofluoromethane Soluene-D8	76% 76%	70-130% 70-130%			

70-130%

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

72%

4-Bromofluorobenzene



\* = Outside of Control Limits.

Job Number: Account: Project:	MC18752 SHELLWIC SI URSMOSTL: 1		Drilling, Roxana,	IL			Ū
Sample	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
MSM1869-BS1	M54867.D	1	03/20/13	АМҮ	n/a	n/a	MSM1869

The QC reported here applies to the following samples:

Method: SW846 8260B

#### MC18752-1, MC18752-2, MC18752-4

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
67-64-1	Acetone	50	59.4	119	70-130
	Acrolein	250	59.4 274	119	70-130
107-02-8 107-13-1	Acrylonitrile	230 50	47.6	95	70-130
71-43-2	Benzene	50 50	55.3	95 1 <b>11</b>	70-130
108-86-1	Bromobenzene	50 50	53.9	108	70-130
74-97-5	Bromochloromethane	50 50	53.9 54.4	108	70-130
75-27-4	Bromodichloromethane	50 50	54.4 54.1	109	70-130
75-25-2	Bromoforin	50 50	48.9	98	70-130
73-23-2	Bromomethane	50 50	40.9 54.9	38 110	70-130
74-83-9	2-Butanone (MEK)	50 50	<b>46.4</b>	93	70-130
104-51-8		50 50	40.4 53.0	93 106	70-130
135-98-8	n-Butylbenzene sec-Butylbenzene	50 50	52.3	105	70-130
135-98-8 98-06-6	tert-Butylbenzene	50 50	52.5 51.8	103	70-130
98-00-0 75-15-0	Carbon disulfide	50 50	55.6	104	70-130
75-15-0 56-23-5	Carbon tetrachloride	50 50	55.0 54.5	109	70-130
56-23-5 108-90-7	Chlorobenzene	50 50	54.5 50.6	109	70-130
75-00-3	Chloroethane	50 50	58.4	117	70-130
75-00-3 110-75-8		50 50	38.4 39.0	78	10-150
	2-Chloroethyl viuyl ether Chloroform	50 50	54.6		
67-66-3	Chloromethane	50 50		109	70-130
74-87-3		50 50	60.3	121 103	70-130 70-130
95-49-8	o-Chlorotoluene		51.3		
106-43-4	p-Chlorotoluene	50 50	53.2 52.1	106 104	70-130
124-48-1	Dibromochloromethane				70-130
95-50-1	1,2-Dichlorobenzene	50 50	50.7	101	70-130
541-73-1	1,3-Dichlorobenzene	50 50	49.8	100	70-130
106-46-7	1,4-Dichlorobenzene	50 50	52.1	104	70-130
75-71-8	Dichlorodifluoromethane	50 50	59.5	119	70-130
75-34-3	1,1-Dichloroethane	50	56.3	113	70-130
107-06-2	1,2-Dichloroethane	50 50	53.3	107	70-130
75-35-4	1,1-Dichloroethene	50	58.4	117	70-130
156-59-2	cis-1,2-Dichloroethene	50	54.1	108	70-130
156-60-5	trans-1,2-Dichloroethene	50	55.4	111	70-130
78-87-5	1,2-Dichloropropane	50	54.0	108	70-130
142-28-9	1,3-Dichloropropane	50	51.9	104	70-130
594-20-7	2,2-Dichloropropane	50	54.7	109	70-130
563-58-6	1,1-Dichloropropene	50	56.6	113	70-130

\* = Outside of Control Limits.



# 6.2.2 J



Job Number: Account: Project:	MC18752 SHELLWIC SH URSMOSTL: 1		Drilling, Roxana,	, IL			, , , , , , , , , , , , , , , , , , ,
Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1869-BS1	M54867.D	1	03/20/13	AMY	n/a	n/a	MSM1869

#### The QC reported here applies to the following samples:

Method: SW846 8260B

MC18752-1, MC18752-2, MC18752-4

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
10061-01-5	cis-1,3-Dichloropropene	50	52.8	106	70-130
10061-02-6	trans-1,3-Dichloropropene	50	56.4	113	70-130
123-91-1	1,4-Dioxane	250	257	103	70-130
97-63-2	Ethyl methacrylate	50	53.7	107	76-141
100-41-4	Ethylbenzene	50	52.9	106	70-130
87-68-3	Hexachlorobutadiene	50	51.3	103	70-130
591-78-6	2-Hexanone	50	52.9	106	70-130
98-82-8	Isopropylbenzene	50	52.9	106	70-130
99-87-6	p-Isopropyltoluene	50	55.4	111	70-130
1634-04-4	Methyl Tert Bntyl Ether	50	53.2	106	70-130
108-10-1	4-Methyl-2-pentanone (MIBK)	50	48.7	97	70-130
74-95-3	Methylene bromide	50	53.1	106	70-130
75-09-2	Methylene chloride	50	54.7	109	70-130
91-20-3	Naphthalene	50	51.8	104	70-130
103-65-1	n-Propylbenzene	50	52.1	104	70-130
100-42-5	Styrene	50	51.5	103	70-130
630-20-6	1,1,1,2-Tetrachloroethane	50	52.6	105	70-130
7 <del>9</del> -34-5	1,1,2,2-Tetrachloroethane	50	51.6	103	70-130
127-18-4	Tetrachloroethene	50	53.9	108	70-130
108-88-3	Toluene	50	55.4	111	70-130
87-61-6	1,2,3-Trichlorobenzene	50	52.0	104	70-130
120-82-1	1,2,4-Trichlorobenzene	50	51.4	103	70-130
71-55-6	1,1,1-Trichloroethane	50	54.4	109	70-130
79-00-5	1,1,2-Trichloroethane	50	51.3	103	70-130
79-01-6	Trichloroethene	50	53.4	107	70-130
75-69-4	Trichlorofluoromethane	50	51.6	103	70-130
96-18-4	1,2,3-Trichloropropane	50	52.3	105	70-130
95-63-6	1,2,4-Trimethylbenzene	50	52.9	106	70-130
108-67-8	1,3,5-Trimethylbenzene	50	52.8	106	70-130
108-05-4	Vinyl Acetate	50	42.4	85	70-130
75-01-4	Vinyl chloride	50	53.8	108	70-130
	m,p-Xylene	100	103	103	70-130
95-47-6	o-Xylene	50	49.9	100	70-130
1330-20-7	Xylene (total)	150	153	102	70-130

\* = Ontside of Control Limits.





Page 2 of 3

Loh Mumbon	MC10752	,					- "Bo o or o
Job Number:	MC18752						
Account:	SHELLWIC SI						
Project:	URSMOSTL: 1	Roxana I	Drilling, Roxana	, IL			
Sample MSM1869-BS1	File ID M54867.D	DF 1	Analyzed 03/20/13	By AMY	Prep Date n/a	Prep Batch n/a	Analytical Batch MSM1869
The QC report	ed here applies	to the fo	blowing sample	s:	]	Method: SW84	6 8260B
MC18752-1, M	C18752-2, MC1	8752-4					
CAS No. Sui	rogate Recover	ies	BSP	Limits			

1868-53-7	Dibromofluoromethane	87%	70-130%
2037-26-5	Toluene-D8	109%	70-130%
460-00-4	4-Bromofluorobenzene	<b>8</b> 9%	70-130%



Page 3 of 3

6.2.2

Blank Sp Job Number Account: Project:	ike/Blank Spik : MC18752 SHELLWIC Shel URSMOSTL: Ro	r I Oil		•				Page 1 of 1
Sample MSK2225-BS MSK2225-BS	6 K67886.D 1	i 03/1	2/13	By GK GK	Prep Dat n/a n/a	I	Prep Bato 1/a 1/a	ch Analytical Batch MSK2225 MSK2225
The QC repo MC18752-3	orted here applies to	the following	samples:			Met	thod: SV	V846 8260B
CAS No.	Compound	Spik ug/k;		BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
110-75-8	2-Chloroethyl vinyl et	her 2500	1830	73	1850	74	1	10-160/25
CAS No.	Surrogate Recoveries	s BSP	в	SD	Limits			

105%

107%

**1**01%

70-130%

70-130%

70-130%

106%

110%

100%

6.3.1

1868-53-7 Dibromofluoromethane

Toluene-D8

4-Bromofluorobenzene

2037-26-5

460-00-4

## Blank Spike/Blank Spike Duplicate Summary

Job Number:	MC18752
Account:	SHELLWIC Shell Oil
Project:	URSMOSTL: Roxana Drilling, Roxana, IL

MSM1869-BSD M54843.D 1 03/19/13 AMY n/a n/a MSM1869
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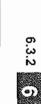
#### The QC reported here applies to the following samples:

Method: SW846 8260B

#### MC18752-1, MC18752-2, MC18752-4

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	50	43.9	88	40.2	80	9	70-130/25
107-02-8	Acrolein	250	247	99	222	89	11	70-130/25
107-13-1	Acrylonitrile	50	51.0	102	48.3	97	5	70-130/25
71-43-2	Benzene	50	53.6	107	52.4	105	2	70-130/25
108-86-1	Bromohenzene	50	47.7	95	47.1	94	1	70-130/25
74-97-5	Bromochloromethane	50	50.2	100	48.5	97	3	70-130/25
75-27-4	Bromodichloromethane	50	49.6	99	47.6	95	4	70-130/25
75-25-2	Bromoform	50	46.1	92	44.4	89	4	70-130/25
74-83-9	Bromomethane	50	55.7	111	54.1	108	3	70-130/25
78-93-3	2-Butanone (MEK)	50	52.3	105	49.2	98	6	70-130/25
104-51-8	n-Butylbenzene	50	50.2	100	50.7	101	1	70-130/25
135-98-8	sec-Butylbenzene	50	49.0	98	49.8	100	2	70-130/25
98-06-6	tert-Butylbenzene	50	48.3	97	49.0	98	1	70-130/25
75-15-0	Carbon disulfide	50	59.1	118	57.9	116	2	70-130/25
56-23-5	Carbon tetrachloride	50	56.5	113	56.3	113	0	70-130/25
108-90-7	Cblorobenzene	50	47.8	96	46.9	94	2	70-130/25
75-00-3	Chloroethane	50	58.5	117	57.5	115	2	70-130/25
67-66-3	Chloroform	50	52.7	105	50.8	102	4	70-130/25
74-87-3	Chloromethane	50	63.1	126	62.3	125	1	70-130/25
95-49-8	o-Chlorotoluene	50	47.3	95	47.5	95	0	70-130/25
106-43-4	p-Chlorotoluene	50	48.7	97	48.3	97	1	70-130/25
124-48-1	Dibromochloromethane	50	46.9	94	45.4	91	3	70-130/25
95-50-1	1,2-Dichlorobenzene	50	45.3	91	44.0	88	3	70-130/25
541-73-1	1,3-Dichlorobenzene	50	45.7	91	45.0	90	2	70-130/25
106-46-7	1,4-Dichlorobenzene	50	47.1	94	46.4	93	1	70-130/25
75-71-8	Dichlorodifluoromethane	50	67.4	(135* 3		(133* )		70-130/25
75-34-3	1,1-Dichloroethane	50	55.4	111	54.0	108	3	70-130/25
107-06-2	1,2-Dichloroethane	50	48.4	97	47.4	95	2	70-130/25
75-35-4	1,1-Dichloroethene	50	61.7	123	60.1	120	3	70-130/25
156-59-2	cis-1,2-Dichloroethene	50	52.1	104	51.1	102	2	70-130/25
156-60-5	trans-1,2-Dichloroethene	50	56.9	114	56.7	113	0	70-130/25
78-87-5	1,2-Dichloropropane	50	50.0	100	49.0	98	2	70-130/25
142-28-9	1,3-Dichloropropane	50	47.9	96	46.2	92	4	70-130/25
594-20-7	2,2-Dichloropropane	50	58.1	116	56.4	113	3	70-130/25
563-58-6	1,1-Dichloropropene	50	58.3	117	57.8	116	1	70-130/25
10061-01-5	cis-1,3-Dichloropropene	50	48.5	97	47.0	94	3	70-130/25

\* = Outside of Control Limits.



## Blank Spike/Blank Spike Duplicate Summary

Job Number:	MC18752
Account:	SHELLWIC Shell Oil
Project:	URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	<b>Ву</b>	Prep Date	Prep Batch	Analytical Batch
MSM1869-BS	M54842.D	1	03/19/13	АМҮ	n/a	n/a	MSM1869
MSM1869-BSD	M54843.D	1	03/19/13	АМҮ	n/a	n/a	MSM1869

#### The QC reported here applies to the following samples:

Method: SW846 8260B

#### MC18752-1, MC18752-2, MC18752-4

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
10061-02-6	trans-1,3-Dichloropropene	50	51.5	103	49.5	99	4	70-130/25
123-91-1	1,4-Dioxane	250	260	104	263	105	1	70-130/25
97-63-2	Ethyl methacrylate	50	53.6	107	51.7	103	4	76-141/25
100-41-4	Ethylbenzene	50	52.2	104	51.0	102	2	70-130/25
87-68-3	Hexachlorobutadiene	50	47.8	96	48.4	97	1	70-130/25
591-78-6	2-Hexanone	50	61.8	124	56.8	114	8	70-130/25
98-82-8	Isopropylbenzene	50	49.7	99	50.7	101	2	70-130/25
99-87-6	p-Isopropyltoluene	50	51.8	104	53.0	106	2	70-130/25
1634-04-4	Methyl Tert Butyl Ether	50	47.3	95	43.2	86	9	70-130/25
108-10-1	4-Methyl-2-pentanone (MIBK)	50	55.7	111	54.3	109	3	70-130/25
74-95-3	Methylene bromide	50	48.8	98	46.6	93	5	70-130/25
75-09-2	Methylene chloride	50	51.5	103	49.6	99	4	70-130/25
91-20-3	Naphthalene	50	52.7	105	51.4	103	2	70-130/25
103-65-1	n-Propylbenzene	50	49.7	99	49.8	100	0	70-130/25
100-42-5	Styrene	50	48.0	96	46.6	93	3	70-130/25
630-20-6	1,1,1,2-Tetrachloroethane	50	48.3	97	46.9	94	3	70-130/25
79-34-5	1,1,2,2-Tetrachloroetbane	50	50.5	101	49.0	98	3	70-130/25
127-18-4	Tetrachloroethene	50	54.8	110	54.3	109	1	70-130/25
108-88-3	Toluene	50	53.8	108	53.1	106	1	70-130/25
87-61-6	1,2,3-Trichlorobenzene	50	45.6	91	44.5	89	2	70-130/25
120-82-1	1,2,4-Trichlorobenzene	50	45.9	92	45.1	90	2	70-130/25
71-55-6	1,1,1-Trichloroethane	50	56.7	113	54.6	109	4	70-130/25
79-00-5	1,1,2-Trichloroethane	50	47.8	96	45.8	92	4	70-130/25
79-01-6	Trichloroethene	50	53.9	108	53.8	108	0	70-130/25
75-69-4	Trichlorofluoromethane	50	56.2	112	55.1	110	2	70-130/25
96-18-4	1,2,3-Trichloropropane	50	53.2	106	52.4	105	2	70-130/25
95-63-6	1,2,4-Trimethylbenzene	50	48.6	97	49.1	98	1	70-130/25
108-67-8	1,3,5-Trimethylbenzene	50	49.3	99	50.0	100	1	70-130/25
108-05-4	Vinyl Acetate	50	41.1	82	36.1	72	13	70-130/25
75-01-4	Vinyl chloride	50	58.9	118	57.3	115	3	70-130/25
	m,p-Xylene	100	102	102	99.4	99	3	70-130/25
95-47-6	o-Xylene	50	48.7	97	47.8	96	2	70-130/25
1330-20-7	Xylene (total)	150	150	100	147	98	2	70-130/25

Blank Spike/Blank Spike Duplicate SummaryPage 3 of 3Job Number:MC18752Account:SHELLWIC Shell OilProject:URSMOSTL: Roxana Drilling, Roxana, IL									
Sample MSM1869-BS MSM1869-BSD	File 1D M54842.D M54843.D	DF 1 1	Analyzed 03/19/13 03/19/13	Ву АМҮ АМҮ	Prep Date n/a n/a	Prep Batch n/a n/a	Analytical Batch MSM1869 MSM1869		
The QC reported here applies to the following samples: Method: SW846 8260B MC18752-1, MC18752-2, MC18752-4									
CAS No. Surr	ogate Recover	ies	BSP	BSD	Limits				

1868-53-7	Dibromofluoromethane	91%	<b>89</b> %	70-130%
2037-26-5	Toluene-D8	110%	111%	70-130%
460-00-4	4-Broinofluorobenzene	88%	88%	70-130%

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

6.3.2 🔓

## Blank Spike/Blank Spike Duplicate Summary

Job Number:	MC18752
Account:	SHELLWIC Shell Oil
Project:	URSMOSTL: Roxana Drilling, Roxana, IL

MSM1871-BSD M54897.D 1 03/21/13 AMY n/a n/a MSM1871	Sample	File 1D	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
	MSM1871-BS	M54896.D	1	03/21/13	AMY	n/a	n/a	MSM1871
	MSM1871-BSD	M54897.D	1	03/21/13	AMY	n/a	n/a	MSM1871

#### The QC reported here applies to the following samples:

Method: SW846 8260B

MC18752-3

		Spike	BSP	BSP	BSD	BSD		Limits
CAS No.	Compound	ug/kg	ug/kg	%	ug/kg	%	RPD	Rec/RPD
67-64-1	Acetone	50	34.3	69* ª	39.4	79	14	70-130/25
107-02-8	Acrolein	250	188	75	185	74	2	70-130/25
107-13-1	Acrylonitrile	50	41.7	83	46.3	93	10	70-130/25
71-43-2	Benzene	50	45.2	90	51.3	103	13	70-130/25
108-86-1	Bromobenzene	50	39.7	79	45.1	90	13	70-130/25
74-97-5	Bromochloromethane	50	41.5	83	45.7	91	10	70-130/25
75-27-4	Bromodichloromethane	50	41.7	83	47.4	95	13	70-130/25
75-25-2	Bromoforin	50	38.7	77	43.2	86	11	70-130/25
74-83-9	Bromomethane	50	48.0	96	51.5	103	7	70-130/25
78-93-3	2-Butanone (MEK)	50	41.7	83	43.1	86	3	70-130/25
104-51-8	n-Butylbenzene	50	41.1	82	47.5	95	14	70-130/25
135-98-8	sec-Butylbenzene	50	40.6	81	47.3	95	15	70-130/25
98-06-6	tert-Butylbenzene	50	41.7	83	47.7	95	13	70-130/25
75-15-0	Carbon disulfide	50	49.5	99	55.0	110	11	70-130/25
56-23-5	Carbon tetrachloride	50	47.1	94	53.6	107	13	70-130/25
108-90-7	Chlorobenzene	50	39.4	79	44.9	90	13	70-130/25
75-00-3	Chloroethane	50	52.0	104	55.4	111	6	70-130/25
67-66-3	Chloroform	50	43.6	87	48.9	98	11	70-130/25
74-87-3	Chloromethane	50	53.6	107	58.6	117	9	70-130/25
95-49-8	o-Chlorotoluene	50	39.2	78	45.4	91	15	70-130/25
106-43-4	p-Chlorotoluene	50	40.0	80	45.8	92	14	70-130/25
124-48-1	Dibromochloromethane	50	39.8	80	44.5	89	11	70-130/25
95-50-1	1,2-Dichlorobenzene	50	36.4	73	41.7	83	14	70-130/25
541-73-1	1,3-Dichlorobenzene	50	37.3	75	42.4	85	13	70-130/25
106-46-7	1,4-Dichlorobenzene	50	37.4	75	42.7	85	13	70-130/25
75-71-8	Dichlorodifluoromethane	50	56.2	112	61.5	123	9	70-130/25
75-34-3	1,1-Dichloroethane	50	46.5	93	52.5	105	12	70-130/25
107-06-2	1,2-Dichloroethane	50	41.6	83	46.0	92	10	70-130/25
75-35-4	1,1-Dichloroethene	50	50.5	101	57.8	116	13	70-130/25
156-59-2	cis-1,2-Dichloroethene	50	44.1	88	49.3	99	11	70-130/25
156-60-5	trans-1,2-Dichloroethene	50	48.1	96	53.4	107	10	70-130/25
78-87-5	1,2-Dichloropropane	50	41.8	84	47.8	96	13	70-130/25
142-28-9	1,3-Dichloropropane	50	40.7	81	45.3	91	11	70-130/25
594-20-7	2,2-Dichloropropane	50	47.7	95	54.2	108	13	70-130/25
563-58-6	1,1-Dichloropropene	50	48.8	98	55.1	110	12	70-130/25
	cis-1,3-Dichloropropene	50	40.3	81	45.4	91	12	70-130/25

\* = Outside of Control Limits.



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## Blank Spike/Blank Spike Duplicate Summary

Job Number:	MC18752
Account:	SHELLWIC Shell Oil
Project:	URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	<b>Ву</b>	Prep Date	Prep Batch	Analytical Batch
MSM1871-BS	M54896.D	1	03/21/13	АМҮ	n/a	n/a	MSM1871
MSM1871-BSD	M54897.D	1	03/21/13	АМҮ	n/a	n/a	MSM1871

The QC reported here applies to the following samples:

Method: SW846 8260B

MC18752-3

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
10061-02-6	trans-1,3-Dichloropropene	50	42.9	86	48.2	96	12	70-130/25
123-91-1	1,4-Dioxane	250	212	85	261	104	21	70-130/25
97-63-2	Ethyl methacrylate	50	44.1	88	49.7	99	12	76-141/25
100-41-4	Ethylbenzene	50	42.8	86	49.1	98	14	70-130/25
87-68-3	Hexachlorobutadiene	50	39.0	78	46.2	92	17	70-130/25
591-78-6	2-Hexanone	50	48.0	96	55.3	111	14	70-130/25
98-82-8	Isopropylbenzene	50	41.3	83	48.4	97	16	70-130/25
99-87-6	p-Isopropyltolnene	50	42.5	85	49.6	99	15	70-130/25
1634-04-4	Methyl Tert Butyl Ether	50	37.3	75	43.6	87	16	70-130/25
108-10-1	4-Methyl-2-pentanone (MIBK)	50	45.5	91	51.7	103	13	70-130/25
74-95-3	Methylene bromide	50	40.9	82	45.9	92	12	70-130/25
75-09-2	Methylene chloride	50	43.4	87	48.5	97	11	70-130/25
91-20-3	Naphthalene	50	42.7	85	48.6	97	13	70-130/25
103-65-1	n-Propylbenzene	50	40.8	82	47.4	95	15	70-130/25
100-42-5	Styrene	50	39.2	78	44.7	89	13	70-130/25
630-20-6	1,1,1,2-Tetrachloroethane	50	40.2	80	46.1	92	14	70-130/25
79-34-5	1,1,2,2-Tetrachloroethane	50	41.7	83	47.2	94	12	70-130/25
127-18-4	Tetrachloroethene	50	45.7	91	52.2	104	13	70~130/25
108-88-3	Toluene	50	44.6	89	51.3	103	14	70-130/25
87-61-6	1,2,3-Trichlorohenzene	50	36.9	74	41.8	84	12	70-130/25
120-82-1	1,2,4-Trichlorobenzene	50	36.6	73	41.0	82	11	70-130/25
71-55-6	1,1,1-Trichloroethane	50	47.5	95	53.5	107	12	70-130/25
79-00-5	1,1,2-Trichloroethane	50	40.0	80	45.1	90	12	70-130/25
79-01-6	Trichloroethene	50	45.2	90	50.5	101	11	70-130/25
75-69-4	Trichlorofluoromethane	50	48.0	96	53.1	106	10	70-130/25
96-18-4	1,2,3-Trichloropropane	50	43.9	88	49.0	98	11	70-130/25
95-63-6	1,2,4-Trimethylbenzene	50	39.9	80	46.4	93	15	70-130/25
108-67-8	1,3,5-Trimethylbenzene	50	40.7	81	47.3	95	ູ 15	70-130/25
108-05-4	Vinyl Acetate	50	29.6	(59* a		( <u>60* a</u>	2	70-130/25
75-01-4	Vinyl chloride	50	50.1	100	54.5	109	8	70-130/25
	m,p-Xylene	100	85.4	85	96.1	96	12	70-130/25
95-47-6	o-Xylene	50	40.9	82	46.1	92	12	70-130/25
1330-20-7	Xylene (total)	150	126	84	142	95	12	70-130/25

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Blank Spike/Blank Spike Duplicate Summary       Paj         Job Number:       MC18752         Account:       SHELLWIC Shell Oil         Project:       URSMOSTL: Roxana Drilling, Roxana, IL									
Sample MSM1871-BS MSM1871-BSD	File ID M54896.D M54897.D	DF 1 1	Analyzed 03/21/13 03/21/13	<b>Ву</b> АМҮ АМҮ	Prep Date n/a n/a	Prep Batch n/a n/a	Analytical Batch MSM1871 MSM1871		
The QC reporte	ed here applies	to the fo	llowing sample	s:		Method: SW84	6 8260B		
CAS No. Sur	rogate Recover	ies	BSP	BSD	Limits				
	romofluorometl uene-D8	ane	90% 110%	89% 110%	70-130% 70-130%				

90%

70-130%

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

88%

4-Bromofluorobenzene



MC18752

6.3.3

\* = Outside of Control Limits.

460-00-4

Matrix S Job Numbe Account:	r: M	/ <b>Matrix</b> ( C18752 IELLWIC SH	•	uplica	te S	Summa	ary				Р	age 1 of 1
Project:		RSMOSTL: I		lling, Roy	ana.	II.						
						••						
Sample		File ID	DF	Analyz	æd	Ву	Prep	Date	Prep I	Batch	Analyti	cal Batch
MC18768-6	MS	K67901.D	1	03/12/1	13	GK	n/a		n/a		MSK22	25
MC18768-6	MSD	K67902.D	1	03/12/1	13	GK	n/a		n/a		MSK22	25
MC18768-6	5	K67893.D	1	03/12/1	13	GK	n/a		n/a		MSK22	25
MC18752-3 CAS No.		nere applies bund	to the long	MC187 ug/kg	-		MS ug/kg	MS %	Method: MSD ug/kg	MSD %	RPD	Limits Rec/RPD
110-75-8	2-Chlo	roethyl vinyl	ether	ND		3300	2530	77	2550	77	1	10-160/30
CAS No.	Surrog	ate Recover	ies	MS		MSD	М	C18768-6	Limits			
1868-53-7	Dibron	nofluorometh	ane	103%		101%	107	7%	70-130	%		

106%

100%

101%

98%

70-130%

70-130%

111%

105%



\* = Outside of Control Limits.

2037-26-5 Toluene-D8

4-Bromofluorobenzene

460-00-4



## Matrix Spike/Matrix Spike Duplicate Summary

Job Number:	MC18752
Account:	SHELLWIC Shell Oil
Project:	URSMOSTL: Roxana Drilling, Roxana, IL

Sample         File ID         DF           MC18723-2MS         G125284.D         1           MC18723-2MSD         G125285.D         1           MC18723-2         G125266.D         1	Analyzed 03/14/13 03/14/13 03/13/13	By JM JM JM	Prep Date n/a n/a n/a	Prep Batch n/a n/a n/a	Analytical Batch MSG4957 MSG4957 MSG4957 MSG4957
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The QC reported here applies to the following samples:

Method: SW846 8260B

MC18752-5, MC18752-6

CAS No.	Compound	MC18723-2 ug/l Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND	50	35.4	71	37.1	74	5	70-130/30
107-02-8	Acrolein	ND	250	125	50* a	131	52* a	5	70-130/30
107-13-1	Acrylonitrile	ND	50	35.3	71	35.4	71	0	70-130/30
71-43-2	Benzene	ND	50	46.7	93	46.2	92	1	70-130/30
108-86-1	Bromobenzene	ND	50	53.1	106	53.5	107	1	70-130/30
74-97-5	Bromochloromethane	ND	50	48.8	98	48.0	96	2	70-130/30
75-27-4	Bromodichloromethane	ND	50	46.6	93	45.5	91	2	70-130/30
75-25-2	Bromoform	ND	50	44.3	89	44.9	90	1	70-130/30
74-83-9	Bromomethane	ND	50	44.8	90	44.4	89	1	70-130/30
78-93-3	2-Butanone (MEK)	ND	50	38.3	77	38.5	77	1	70-130/30
104-51-8	n-Butylbenzene	ND	50	51.5	103	51.1	102	1	70-130/30
135-98-8	sec-Butylbenzene	ND	50	51.1	102	51.5	103	1	70-130/30
98-06-6	tert-Butylbenzene	ND	50	48.3	97	48.8	98	1	70-130/30
75-15-0	Carbon disulfide	ND	50	39.1	78	38.8	78	1	70-130/30
56-23-5	Carbon tetrachloride	ND	50	50.2	100	49.0	98	2	70-130/30
108-90-7	Chlorobenzene	ND	50	51.8	104	50.6	101	2	70-130/30
75-00-3	Chloroethane	ND	50	47.8	96	46.7	93	2	70-130/30
110-75-8	2-Chloroethyl vinyl ether	ND	50	ND	0* a	ND	0* a	nc	70-130/30
67-66-3	Chloroform	ND	50	44.4	89	44.0	88	1	70-130/30
74-87-3	Chloromethane	ND	50	47.1	94	45.7	91	3	70-130/30
95-49-8	o-Chlorotoluene	ND	50	47.8	96	47.9	96	0	70-130/30
106-43-4	p-Chlorotoluene	ND	50	48.7	97	48.9	98	0	70-130/30
124-48-1	Dibromochloromethane	ND	50	48.6	97	48.8	98	0	70-130/30
95-50-1	1,2-Dichlorobenzene	ND	50	47.4	95	48.2	96	2	70-130/30
541-73-1	1,3-Dichlorobenzene	ND	50	49.3	99	49.5	99	0	70-130/30
106-46-7	1,4-Dichlorobenzene	ND	50	51.3	103	51.1	102	0	70-130/30
75-71-8	Dichlorodifluoromethane	ND	50	38.0	76	40.0	80	5	70-130/30
75-34-3	1,1-Dichloroethane	ND	50	46.6	93	46.1	92	1	70-130/30
107-06-2	1,2-Dichloroethane	ND	50	43.9	88	43.7	87	0	70-130/30
75-35-4	1,1-Dichloroethene	ND	50	46.0	92	45.4	91	1	70-130/30
156-59-2	cis-1,2-Dichloroethene	ND	50	48.8	98	48.5	97	1	70-130/30
156-60-5	trans-1,2-Dichloroethene	ND	50	49.4	99	48.6	97	2	70-130/30
78-87-5	1,2-Dichloropropane	ND	50	45.8	92	45.7	91	0	70-130/30
142-28-9	1,3-Dichloropropane	ND	50	48.9	98	48.4	97	1	70-130/30
594-20-7	2,2-Dichloropropane	ND	50	35.4	71	35.3	71	0	70-130/30
563-58-6	1.1-Dichloropropene	ND	50	50.9	102	49.4	99	3	70-130/30

\* = Outside of Control Limits.



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## Matrix Spike/Matrix Spike Duplicate Summary

Job Number:	MC18752
Account:	SHELLWIC Shell Oil
Project:	URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	1	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC18723-2MS	G125284.D		03/14/13	JM	n/a	n/a	MSG4957
MC18723-2MSD	G125285.D		03/14/13	JM	n/a	n/a	MSG4957
MC18723-2	G125266.D		03/13/13	JM	n/a	n/a	MSG4957

The QC reported here applies to the following samples:

Mcthod: SW846 8260B

MC18752-5, MC18752-6

CAS No.	Compound	MC1872 ug/l	3-2 Q	Spike ug/l	MS ug/1	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
10061-01-5	cis-1,3-Dichloropropene	ND		50	38.7	77	38.3	77	1	70-130/30
	trans-1,3-Dichloropropene	ND		50	39.8	80	39.5	79	1	70-130/30
123-91-1	1,4-Dioxane	ND		250	256	102	283	113	10	70-130/30
97-63-2	Ethyl methacrylate	ND		50	41.0	82	41.3	83	1	72-139/30
100-41-4	Ethylbenzene	ND		50	52.2	104	51.7	103	1	70-130/30
87-68-3	Hexachlorobutadiene	ND		50	58.4	117	60.1	120	3	70-130/30
591-78-6	2-Hexanone	ND		50	38.6	77	39.6	79	3	70-130/30
98-82-8	Isopropylbenzene	ND		50	49.6	99	49.5	99	0	70-130/30
99-87-6	p-Isopropyltoluene	ND		50	56.7	113	56.6	113	0	70-130/30
1634-04-4	Methyl Tert Bntyl Ether	ND		50	40.0	80	39.8	80	1	70-130/30
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		50	26.5	53* a	26.4	53* a	0	70-130/30
74-95-3	Methylene bromide	ND		50	44.5	89	44.3	89	0	70-130/30
75-09-2	Methylene chloride	ND		50	46.1	92	46.1	92	0	70-130/30
91-20-3	Naphthalene	ND		50	41.9	84	45. <del>9</del>	92	9	70-130/30
103-65-1	n-Propylbenzene	ND		50	48.1	96	48.1	96	0	70-130/30
100-42-5	Styrene	ND		50	51.9	104	51.4	103	1	70-130/30
630-20-6	1,1,1,2-Tetrachloroethane	ND		50	53.8	108	53.7	107	0	70-130/30
7 <del>9</del> -34-5	1,1,2,2-Tetrachloroethane	ND		50	45.9	92	47.9	96	4	70-130/30
127-18-4	Tetrachloroethene	1.2		50	56.0	110	54.0	106	4	70-130/30
108-88-3	Tolnene	ND		50	48.2	96	47.3	95	2	70-130/30
87-61-6	1,2,3-Trichlorobenzene	ND		50	49.2	98	53.0	106	7	70-130/30
120-82-1	1,2,4-Trichlorobenzene	ND		50	51. <del>9</del>	104	54.1	108	4	70-130/30
71-55-6	1,1,1-Trichloroethane	ND		50	55.8	112	54.7	109	2	70-130/30
79-00-5	1,1,2-Trichloroethane	ND		50	44.0	88	44.1	88	0	70-130/30
79-01-6	Trichloroethene	ND		50	43.4	87	42.6	85	2	70-130/30
75-69-4	Trichlorofluoromethane	ND		50	42.4	85	42.2	84	0	70-130/30
96-18-4	1,2,3-Trichloropropane	ND		50	42.1	84	43.7	87	4	70-130/30
95-63-6	1,2,4-Trimethylbenzene	ND		50	46.7	93	47.0	94	1	70-130/30
108-67-8	1,3,5-Trimethylbenzene	ND		50	46.1	92	46.2	92	0	70-130/30
108-05-4	Vinyl Acetate	ND		50	58.0	116	58.2	116	0	70-130/30
75-01-4	Vinyl chloride	ND		50	43.9	88	42.8	86	3	70-130/30
	m,p-Xylene	ND		100	103	103	101	101	2	70-130/30
95-47-6	o-Xylene	ND		50	49.5	<del>99</del>	48.9	98	1	70-130/30
1330-20-7	Xylene (total)	ND		150	153	102	150	100	2	70-130/30





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Matrix Sp	oike/Matrix S	Spike	Duplicate 8	Summa	ry		Page 3 of 3
Job Number:		-	-		-		Ū
Account:	SHELLWIC Sh	ell Oil					
Project:	URSMOSTL: F	Roxana I	Drilling, Roxana	, IL			
Sample	File 1D	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
MC18723-2M	S G125284.D	1	03/14/13	JM	n/a	n/a	MSG4957
MC18723-2M	SD G125285.D	1	03/14/13	JM	n/a	п/а	MSG4957
MC18723-2	G125266.D	1	03/13/13	JM	n/a	n/a	MSG4957
The QC repo	rted here applies	to the fo	ollowing sample	s:	N	dethod: SW84	6 8260B
MC18752-5, I	MC18752-6						
CAS No. S	urrogate Recover	ies	MS	MSD	MC18723-2	Limits	
1868-53-7 D	) ibromofluorometh	апе	77%	77%	<b>79%</b>	70-130%	
2037-26-5 T	oluene-D8		77%	77%	77%	70-130%	

73%

77%

70-130%

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

72%

4-Bromofluorobenzene



6.4.2

(رو)

460-00-4

## Matrix Spike/Matrix Spike Duplicate Summary

Job Number:	MU18752
Account:	SHELLWIC Shell Oil
Project:	URSMOSTL: Roxana Drilling, Roxana, IL

MC18752-2MS M MC18752-2MSD M	File 1 <b>D</b> M54873.D M54874.D M54871.D	DF 1 1 1	Analyzed 03/20/13 03/20/13 03/20/13	By AMY AMY AMY	Prep Date n/a n/a n/a	Prep Batch n/a n/a n/a	Analytical Batch MSM1869 MSM1869 MSM1869
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The QC reported here applies to the following samples:

Method: SW846 8260B

#### MC18752-1, MC18752-2, MC18752-4

	~ .	MC187		-1	MS	MS	MSD	MSD		Limits
CAS No.	Compound	ug/kg	Q	ug/kg	ug/kg	%	ug/kg	%	RPD	Rec/RPD
67-64-1	Acetone	ND		59.8	91.4	(153***	90.2	(146* a)	<sup>,</sup> 1	70-130/30
107-02-8	Acrolein	ND		299	283	95	271	87	4	70-130/30
107-13-1	Acrylonitrile	ND		59.8	72.1	121	72.2	117	0	70-130/30
71-43-2	Benzene	1.2		59.8	65,5	108	60.9	96	7	70-130/30
108-86-1	Bromobenzenc	ND		59.8	60.3	101	51.9	84	15	70-130/30
74-97-5	Bromochloromethane	ND		59.8	63.8	107	61.3	99	4	70-130/30
75-27-4	Bromodichloromethane	ND		59.8	62.1	104	59.3	96	5	70-130/30
75-25-2	Bromoform	ND		59.8	64.2	107	61.5	99	4	70-130/30
74-83-9	Bromomethane	ND		59.8	67.1	112	63.6	103	5	70-130/30
78-93-3	2-Butanone (MEK)	ND		59.8	76.9	129	75.6	122	2	70-130/30
104-51-8	n-Butylbenzene	ND		59.8	59.6	100	37.9	(61*ª)	(45* b)	70-130/30
135-98-8	sec-Butylbenzene	ND		59.8	59.0	99	40.8	66* a)	36* b)	70-130/30
98-06-6	tert-Butylbenzene	ND		59.8	58.4	98	45.7	74	24	70-130/30
75-15-0	Carbon disulfide	5.8	J	59.8	66.4	101	63.6	93	4	70-130/30
56-23-5	Carbon tetrachloride	ND		59.8	66.3	111	61.0	98	8	70-130/30
108-90-7	Chlorobenzene	ND		59.8	57.3	96	51.4	83	11	70-130/30
75-00-3	Chloroethane	ND		59.8	69.4	116~	64.9	105	7	70-130/30
110-75-8	2-Chloroethyl vinyl ether	ND		59.8	ND	(0* a)	ND	( <u>0* a</u> )	nc	10-160/30
67-66-3	Chloroform	ND		59.8	62.7	105	59.7	96	5	70-130/30
74-87-3	Chloromethane	ND		59.8	77.0	129	71.7	116	7	70-130/30
95-49-8	o-Chlorotoluene	ND		59.8	58.2	97	45.7	74	24	70-130/30
106-43-4	p-Chlorotoluene	ND		59.8	59.2	99	47.0	76	23	70-130/30
124-48-1	Dibromochloromethane	ND		59.8	62.6	105	60.5	98	3	70-130/30
95-50-1	1,2-Dichlorobenzene	ND		59.8	56.4	94	42.7	<u>(69* a</u>	28	70-130/30
541-73-1	1,3-Dichlorobenzene	ND		59.8	55.5	93	42.2	(68* ª)	27	70-130/30
106-46-7	1,4-Dichlorobenzene	ND		59.8	58.1	_97	44.3	71	27	70-130/30
75-71-8	Dichlorodifluoromethane	ND		59.8	80.7	(135*)	73.4	118	9	70~130/30
75-34-3	1,1-Dichloroethane	ND		59.8	65.7	110	62.2	100	5	70-130/30
107-06-2	1,2-Dichloroethane	ND		59.8	65.7	110	62.5	101	5	70-130/30
75-35-4	1,1-Dichloroethene	ND		59.8	70.3	118	65.7	106	7	70-130/30
156-59-2	cis-1,2-Dichloroethene	ND		59.8	62.2	104	59.4	96	5	70-130/30
156-60-5	trans-1,2-Dichloroethene	ND		59.8	64.3	108	61.5	99	4	70-130/30
78-87-5	1,2-Dichloropropane	ND		59.8	62.1	104	58.4	94	6	70-130/30
142-28-9	1,3-Dichloropropane	ND		59.8	63.7	107	62.2	100	2	70-130/30
594-20-7	2,2-Dichloropropane	ND		59.8	65.3	109	61.0	98	7	70-130/30
563-58-6	1.1-Dichloropropene	ND		59.8	68.6	115	62.9	101	9	70-130/30

\* = Outside of Control Limits.



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#### Matrix Spike/Matrix Spike Duplicate Summary Job Number: MC18752

JOD Number:	MC18752
Account:	SHELLWIC Shell Oil
Project:	URSMOSTL: Roxana Drilling, Roxana, IL

MC18752-2MS M54873.D 1 03/2 MC18752-2MSD M54874.D 1 03/2	lyzed By Prep D 0/13 AMY n/a 0/13 AMY n/a 0/13 AMY n/a 0/13 AMY n/a	Date Prep Batch Analytical Batch n/a MSM1869 n/a MSM1869 n/a MSM1869
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The QC reported here applies to the following samples:

Method: SW846 8260B

#### MC18752-1, MC18752-2, MC18752-4

CAS No.	Compound	MC1875 ug/kg	52-2 Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
10061-01-5	cis-1,3-Dichloropropene	ND		59.8	61.6	103	57.5	93	7	70-130/30
	trans-1,3-Dichloropropene	ND		59.8	68.0	114	64.0	103	6	70-130/30
123-91-1	1,4-Dioxane	ND		299	451	151* 2	428	(138* 3)	5	70-130/30
97-63-2	Ethyl methacrylate	ND		59.8	74.8	125	72.4	117	3	41-160/30
100-41-4	Ethylbenzene	2.3	J	59.8	62.9	101	54.9	85	14	70-130/30
87-68-3	Hexachlorobutadiene	ND	•	59.8	54.6	91	29.4	(47* 2)	60* b)	70-130/30
591-78-6	2-Hexanone	ND		59.8	90.3	(151*)	85.0	137* 3	6	70-130/30
98-82-8	Isopropylbenzene	ND		59.8	60.5	101	48.7	79	22	70-130/30
99-87-6	p-Isopropyltoluene	ND		59.8	62.6	105	43.3	70 /	36* b)	70-130/30
1634-04-4	Methyl Tert Butyl Ether	ND		59.8	64.7	108	61.7	100	5	70-130/30
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		59.8	86.4	(145* *)	81.1	(131* 2)	6	70-130/30
74-95-3	Methylene bromide	ND		59.8	66.4	111	63.7	103	4	70-130/30
75-09-2	Methylene chloride	3.7		59.8	61.1	96	59.7	90	2	70-130/30
91-20-3	Naphthalene	ND		59.8	73.6	123	45.6	74	(47* b)	70-130/30
103-65-1	n-Propylbenzene	ND		59.8	59.5	100	45.8	74	26	70-130/30
100-42-5	Styrene	ND		59.8	57.7	97	50.0	81	14	70-130/30
630-20-6	1,1,1,2-Tetrachloroethane	ND		59.8	60.2	101	55.9	90	7	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	ND		59.8	73.3	123	68.1	110	7	70-130/30
127-18-4	Tetrachloroethene	ND		59.8	63.6	106	56.8	92	11	70-130/30
108-88-3	Toluene	2.8	J	59.8	66.6	107	60.5	93	10	70-130/30
87-61-6	1,2,3-Trichlorobenzene	ND		59.8	58.2	97	32.2	(52* a)	58* b	70-130/30
120-82-1	1,2,4-Trichlorobenzene	ND		59.8	56.7	95	32.9	(53* a)	53* b	70-130/30
71-55-6	1,1,1-Trichloroethane	ND		59.8	65.4	109	61.6	99	6	70-130/30
79-00-5	1,1,2-Trichloroethane	ND		59.8	65.3	109	62.0	100	5	70~130/30
79-01-6	Trichloroethene	ND		5 <b>9.8</b>	65.6	110	60.2	97	9	70-130/30
75-69-4	Trichlorofluoromethane	ND		<b>59.8</b>	64.9	109	59.5	96	9	70-130/30
96-18-4	1,2,3-Trichloropropane	ND		59.8	79.0	(132*3)	73.4	118	7	70-130/30
95-63-6	1,2,4-Trimethylbenzene	ND		59.8	59.6	100	44.9	72	28	70-130/30
108-67-8	1,3,5-Trimethylbenzene	ND		59.8	60.3	101	45.1	73	29	70-130/30
108-05-4	Vinyl Acetate	ND		59.8	51.7	87	47.3	76	9	70-130/30
75-01-4	Vinyl chloride	ND		59.8	69.8	117	64.3	104	8	70-130/30
	m,p-Xylene	ND		120	120	100	105	85	13	70-130/30
95-47-6	o-Xylene	ND		59.8	57.9	97	51.9	84	11	70-130/30
1330-20-7	Xylene (total)	ND		179	178	99	157	84	13	70-130/30

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6.4.3

\* = Outside of Control Limits.



Account: S	e/Matrix S MC18752 SHELLWIC SH URSMOSTL: H	ell Oil	•		У		Page 3 of 3
Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC18752-2MS	M54873.D	1	03/20/13	AMY	n/a	n/a	MSM1869
MC18752-2MSD	M54874.D	1	03/20/13	AMY	n/a	n/a	MSM1869
MC18752-2	M54871.D	1	03/20/13	AMY	n/a	n/a	MSM1869
The QC reported MC18752-1, MC			owing sample	s:	]	Method: SW84(	5 8260B
CAS No. Surr	ogate Recover	ies	MS	MSD	MC18752-2	Limits	

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Dihromofluoromethane 88% 89% 87% 70-130% 1868-53-7 2037-26-5 70-130% Toluene-D8 112% 111% 111% **89**% 70-130% 460-00-4 4-Bromofluorobenzene 89% 89%

(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.



6.4.3

## Matrix Spike/Matrix Spike Duplicate Summary

Job Number:	MC18752
Account:	SHELLWIC Shell Oil
Project:	URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC18887-3MS	M54906.D	1	03/21/13	AMY	n/a	n/a	MSM1871
MC18887-3MSD	M54907.D	1	03/21/13	AMY	n/a	n/a	MSM1871
MC18887-3	M54905.D	1	03/21/13	AMY	n/a	n/a	MSM1871

The QC reported here applies to the following samples:

Method: SW846 8260B

MC18752-3

CAS No.	Compound	MC188 ug/kg	87-3 Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rcc/RPD
67-64-1	Acetone	ND		156	122	78	110	67* a	10	70-130/30
107-02-8	Acrolein	ND		782	604	77	572	69* a	5	70-130/30
107-13-1	Acrylonitrile	ND		156	152	97	146	89	4	70-130/30
71-43-2	Benzene	ND		156	150	96	140	85	7	70-130/30
108-86-1	Bromobenzene	ND		156	122	78	106	64* a	14	70-130/30
74-97-5	Bromochloromethane	ND		156	147	94	138	84	6	70-130/30
75-27-4	Bromodichloromethane	ND		156	145	93	135	82	7	70-130/30
75-25-2	Bromoform	ND		156	137	88	126	76	8	70-130/30
74-83-9	Bromomethane	ND		156	157	100	152	92	3	70-130/30
78-93-3	2-Butanone (MEK)	ND		156	169	108	164	99	3	70-130/30
104-51-8	n-Butylbenzene	ND		156	80.7	52* <sup>a</sup>	64.1	39* a	23	70-130/30
135-98-8	sec-Butylbenzene	ND		156	84.8	54* a	69.0	42* a	21	70-130/30
98-06-6	tert-Butylbenzene	ND		156	98.0	63* <sup>a</sup>	84.0	51* a	15	70-130/30
75-15-0	Carbon disulfide	ND		156	162	104	155	94	4	70-130/30
56-23-5	Carbon tetrachloride	ND		156	154	99	142	86	8	70-130/30
108-90-7	Chlorobenzene	ND		156	125	80	113	69* a	10	70-130/30
75-00-3	Chloroethane	ND		156	168	107	160	97	5	70-130/30
67-66-3	Chloroform	ND		156	147	94	140	85	5	70-130/30
74-87-3	Chloromethane	ND		156	174	111	171	104	2	70-130/30
95-49-8	o-Chlorotoluene	ND		156	109	70	90.6	55* a	18	70-130/30
106-43-4	p-Chlorotoluene	ND		156	112	72	94.8	57* <sup>a</sup>	17	70-130/30
124-48-1	Dibromochloromethane	ND		156	139	89	130	79	7	70-130/30
95-50-1	1,2-Dichlorobenzene	ND		156	99.6	64* a	83.1	50* <sup>a</sup>	18	70-130/30
541-73-1	1,3-Dichlorobenzene	ND		156	102	65* <sup>a</sup>	84.2	51* a	19	70-130/30
106-46-7	1,4-Dichlorobenzene	ND		156	105	67* a	88.5	54* <sup>a</sup>	17	70-130/30
75-71-8	Dichlorodifluoromethane	ND		156	176	113	166	101	6	70-130/30
75-34-3	1,1-Dichloroethane	ND		156	154	99	145	88	6	70-130/30
107-06-2	1,2-Dichloroethane	ND		156	149	95	137	83	8	70-130/30
75-35-4	1,1-Dichloroethene	ND		156	168	107	159	96	6	70-130/30
156-59-2	cis-1,2-Dichloroethene	ND		156	148	95	142	86	4	70-130/30
156-60-5	(rans-1,2-Dichloroethene	ND		156	156	100	146	89	7	70-130/30
78-87-5	1,2-Dichloropropane	ND		156	144	92	134	81	7	70-130/30
142-28-9	1,3-Dichloropropane	ND		156	143	91	133	81	7	70-130/30
594-20-7	2,2-Dichloropropane	ND		156	156	100	148	90	5	70-130/30
563-58-6	1,1-Dichloropropene	ND		156	157	100	146	89	7	70-130/30
10061-01-5	cis-1,3-Dichloropropene	ND		156	139	89	129	78	7	70-130/30

\* = Outside of Control Limits.

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# Matrix Spike/Matrix Spike Duplicate Summary

Job Number:	MC18752
Account:	SHELLWIC Shell Oil
Project:	URSMOSTL: Roxana Drilling, Roxana, IL

MC18887-3MSD M54907.D 1 03/21/13 AMY n/a n/a MSM1871 MC18887-3 M54905.D 1 03/21/13 AMY n/a n/a MSM1871		Sample MC18887-3MS MC18887-3MSD MC18887-3	File 1D M54906.D M54907.D M54905.D	DF 1 1 1	Analyzed 03/21/13 03/21/13 03/21/13	<b>Ву</b> АМҮ АМҮ АМҮ	Prep Date n/a n/a n/a	Prep Batch n/a n/a n/a	Analytical Batch MSM1871 MSM1871 MSM1871
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The QC reported here applies to the following samples:

Method: SW846 8260B

MC18752-3

CAS No.	Compound	MC1888 ug/kg	87-3 Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
10061-02-6	trans-1,3-Dichloropropene	ND		156	150	96	139	84	8	70-130/30
123-91-1	1,4-Dioxane	ND		782	657	84	687	83	4	70-130/30
97-63-2	Ethyl methacrylate	ND		156	164	105	149	90	10	41-160/30
100-41-4	Ethylbenzene	ND		156	126	81	110	67* a	14	70-130/30
87-68-3	Hexacblorohutadiene	ND		156	62.8	40* <sup>a</sup>	48.2	29* <sup>a</sup>	26	70-130/30
591-78-6	2-Hexanone	ND		156	180	115	171	104	5	70-130/30
98-82-8	Isopropylbenzene	ND		156	107	68* a	88.6	54* a	19	70-130/30
99-87-6	p-Isopropyltoluene	ND		156	88.8	57* a	71.5	43* a	22	70-130/30
1634-04-4	Methyl Tert Butyl Ether	ND		156	149	95	145	88	3	70-130/30
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		156	175	112	162	98	8	70-130/30
74-95-3	Methylene bromide	ND		156	147	94	135	82	9	70-130/30
75-09-2	Methylene chloride	8.4		156	149	90	141	80	6	70~130/30
91-20-3	Naphthalene	ND		156	90.9	58* a	69.0	42* a	27	70-130/30
103-65-1	n-Propylbenzene	ND		156	101	65* a	82.6	50* a	20	70-130/30
100-42-5	Styrene	ND		156	117	75	103	62* a	13	70-130/30
630-20-6	1,1,1,2-Tetrachloroethane	ND		156	131	84	120	73	9	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	ND		156	151	97	137	83	10	70-130/30
127-18-4	Tetrachloroethene	NÐ		156	138	88	124	75	11	70-130/30
108-88-3	Toluene	ND		156	144	92	130	79	10	70-130/30
87-61-6	1,2,3-Trichlorobenzene	ND		156	69.7	45* a	51.1	31* a	31* <sup>b</sup>	70-130/30
120-82-1	1,2,4-Trichlorobenzene	ND		156	72.7	47* a	53.1	32* a	31* <sup>b</sup>	70-130/30
71-55-6	1,1,1-Trichloroethane	ND		156	153	98	146	89	5	70-130/30
79-00-5	1,1,2-Trichloroethane	ND		156	143	91	132	80	8	70-130/30
79-01-6	Tricbloroethene	ND		156	148	95	140	85	6	70-130/30
75-69-4	Trichlorofluoromethane	ND		156	150	96	143	87	5	70-130/30
96-18-4	1,2,3-Trichloropropane	ND		156	160	102	145	88	10	70-130/30
95-63-6	1,2,4-Trimethylbenzene	ND		156	97.8	63* a	78.9	48* a	21	70-130/30
108-67-8	1,3,5-Trimethylbenzene	ND		156	97.9	63* a	79.5	48* a	21	70-130/30
108-05-4	Vinyl Acetate	ND		156	111	71	98.7	60* a	12	70-130/30
75-01-4	Vinyl chloride	ND		156	160	102	156	95	3	70-130/30
	m.p-Xylene	ND		313	248	79	223	68* a	11	70-130/30
95-47-6	o-Xylene	ND		156	121	77	109	66* a	10	70~130/30
1330-20-7	Xylene (total)	ND		469	369	79	332	67* a	11	70-130/30

6.4.4 🕞

\* = Outside of Control Limits.

#### Matrix Spike/Matrix Spike Duplicate Summary Job Number: MC18752 Account: SHELLWIC Shell Oil Project: URSMOSTL: Roxana Drilling, Roxana, IL Analytical Batch Sample File ID DF Analyzed By Prep Date Prep Batch MC18887-3MS M54906.D 1 03/21/13 AMY n/a n/a MSM1871 MC18887-3MSD M54907.D 1 03/21/13 AMY n/a n/a MSM1871 MSM1871 MC18887-3 M54905.D 1 03/21/13 AMY n/a n/a The QC reported here applies to the following samples: Method: SW846 8260B MC18752-3

CAS No.	Surrogate Recoveries	MS	MSD	MC18887	-3 Limits
1868-53-7	Dibromofluoromethane	89%	<b>89</b> %	<b>89</b> %	70-130%
2037-26-5	Toluene-D8	111%	112%	111%	70-130%
460-00-4	4-Bromofluorobenzene	88%	88%	87%	70-130%

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

(b) High RPD due to possible matrix interference and/or sample non-homogeneity.



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ACCUTEST

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MC18752

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#### Volatile Internal Standard Area Summary Job Number: MC18752

Account: Project:	SHELLWIG URSMOST			, Roxan	a, IL					
Check Std: Lab File ID: Instrument ID:	MSG4957 G125253.1 GCMSG		8	Iı	njection Da njection Ti 1ethod:					
	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	89396	5.08	132090	6.21	55001	9.55	63633	12.18	17376	3.08
Upper Limit <sup>a</sup>	178792	5.58	264180	6.71	110002	10.05	127266	12.68	34752	3.58
Lower Limit <sup>b</sup>	44698	4.58	66045	5.71	27501	9.05	31817	11.68	8688	2.58
Lab	IS 1		1S 2		IS 3		IS 4		18 5	
Sample 1D	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
MSG4957-BS	90808	5.08	130888	6.21	54999	9.55	63615	12.18	18124	3.08
MSG4957-MB	85402	5.08	126429	6.21	52700	9.55	55058	12.18	17677	3.09
ZZZZZZ	85662	5.08	126221	6.21	56363	9.55	65280	12.18	15389	3.08
ZZZZZZ	90176	5.08	131417	6.21	54376	9.55	58685	12.18	16898	3.08
ZZZZZZ	89629	5.08	129745	6.21	55960	9.55	58607	12.18	17532	3.08
ZZZZZZ	91227	5.08	134243	6.21	58429	9.55	61530	12.18	17147	3.08
ZZZZZZ	103075	5.08	152324	6.21	71358	9.56	72246	12.18	19007	3.08
ZZZZZZ	92797	5.08	133081	6.21	56134	9.55	59416	12.18	18307	3.08
MC18752-5	89719	5.08	130612	6.21	54508	9.55	57390	12.18	16408	3.09
MC18752-6	89263	5.08	131253	6.21	54276	9.55	56537	12.18	16415	3.08
ZZZZZZ	87406	5.08	129010	6.21	53988	9.55	55656	12.18	16890	3.08
MC18723-2	86738	5.08	128710	6.21	53351	9.55	56141	12.18	16543	3.09
	00100	0.00		0.41	00001	0.00	001 11		10010	0.00

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.



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#### Volatile Internal Standard Area Summary

	MC18752				<b>/</b>					8-
	SHELLWI			D						
Project:	URSMOST	L: Koxa	ina Drilling	, Roxan	a, IL					
Check Std:	MSG4958	-CC4948	8	11	njection Da	ate: 03/	/14/13			
Lab File 1D:	G125275.I	D		11	njection Ti	me: 12:	17			
Instrument 1D:	GCMSG			N	fethod:	SM	/846 8260)	В		
	1S 1		1S 2		1S 3		1S 4		1S 5	-
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	97237	5.08	140264	6.21	59213	9.55	68425	12.18	20177	3.08
Upper Limit <sup>a</sup>	194474	5.58	280528	6.71	118426	10.05	136850	12.68	40354	3.58
Lower Limit <sup>b</sup>	48619	4.58	70132	5.71	29607	9.05	34213	11.68	10089	2.58
Lab	1S 1		1S 2		18 3		1S 4		IS 5	
Sample ID	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
MSG4958-MB	89357	5.08	130864	6.21	5450 <del>9</del>	9.55	56264	12.18	16198	3.08
MSG4957-MB1	89357	5.08	130864	6.21	5450 <del>9</del>	9.55	56264	12.18	16198	3.08
MSG4958-BS	92371	5.08	133990	6.21	56354	9.55	64189	12.18	16252	3.08
MSG4957-BS1	92371	5.08	133990	6.21	56354	9.55	64189	12.18	16252	3.08
MC18835-1MS	94248	5.08	136178	6.21	56787	9.55	65091	12.18	17408	3.08
MC18835-1MSD	92925	5.08	136296	6.21	5703 <del>9</del>	9.55	64610	12.18	17163	3.08
MC18835-1	88275	5.08	129965	6.21	55640	9.55	57948	12.18	16920	3.08
MC18723-2MS	93663	5.08	135563	6.21	57130	9.55	65687	12.18	17651	3.08
MC18723-2MSD	93049	5.08	135002	6.21	56603	9.55	64058	12.18	17547	3.08
ZZZZZZ	90598	5.08	131979	6.21	54673	9.55	56940	12.18	17377	3.08
ZZZZZZ	88456	5.08	130222	6.21	55101	9.55	75501	12.18	16835	3.08
ZZZZZZ	93065	5.08	134867	6.21	56108	9.55	61870	12.18	18450	3.09
ZZZZZZ	91909	5.08	135124	6.21	58135	9.55	61308	12.18	19597	3.08
ZZZZZZ	92209	5.08	135696	6.21	55820	9.55	59283	12.18	19464	3.09
ZZZZZZ	91453	5.08	134697	6.21	55349	9.55	58541	12.18	18000	3.08
ZZZZZZ	92599	5.08	135450	6.21	59170	9.55	63335	12.18	18426	3.08
ZZZZZZ	92706	5.08	136152	6.21	57018	9.55	65690	12.18	18581	3.08
ZZZZZZ	93427	5.08	134142	6.21	56883	9.55	61875	12.18	18949	3.08
ZZZZZ	93154	5.08	135429	6.21	56614	9.55	60514	12.18	18606	3.09
ŹZZZZZ	91448	5.08	134288	6.21	56135	9.55	59474	12.18	18176	3.08
GP15707-LB1	91115	5.08	133497	6.21	55077	9.55	58810	12.18	18805	3.08
GP15707-LS1	92797	5.08	134223	6.21	56387	9.55	65758	12.18	18250	3.08

IS 1 = Pentafluorobenzene

IS 2 = 1,4-Diflnorobenzene

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.

6.5.2



#### Volatile Internal Standard Area Summary Job Number: MC18752

Job Number: Account: Project:	MC18752 SHELLWIC URSMOSTI			, Roxana	a, IL					
Check Std: Lab File ID: Instrument ID:	MSK2225-0 K67885.D GCMSK	CC220	)	In	jection Date jection Time ethod:					
	1S 1 AREA	RT	1S 2 AREA	RT	1S 3 AREA	RT	IS 4 AREA	RT	1S 5 AREA	RT
Check Std	301965	8.82	374896	9.67			194702		55037	6.42
Upper Limit <sup>a</sup> Lower Limit <sup>b</sup>	603930 150983	9.32 8.32	749792 187448	10.17 9.17			389404 97351	15.99 14.99	110074 27519	6.92 5.92
Lab	IS 1		1S 2		1S 3		1S 4		18 5	
Sample 1D	AREA	RT	AREA	RT	AREA I	RT	AREA	RT	AREA	RT
MSK2225-BS	294051	8.82	368594	9.67	193867	12.93	191942	15.49	57350	6.41
MSK2225-BSD	298719	8.82	377857	9.67	195558	12.93	191737	15.49	59208	6.42
MSK2225-MB	295770	8.82	378530	9.67	188205	12.93	190027	15.49	53725	6.42
MC18752-3	285185	8.82	360748	9.67	181300	12.93	180515	15.49	54140	6.41
MC18768-6	277825	8.82	355119	9.67	179215	12.93	178979	15.49	54495	6.42
ZZZZZZ	276061	8.82	352017	9.67	180127	12.93	182978	15.49	56653	6.42
ZZZZZZ	296027	8.82	373281	9.67	189588	12.93	193260	15.49	58438	6.42
ZZZZZZ	313151	8.82	402291	9.67	199577	12.93	203581	15.49	63409	6.42
ZZZZZZ	306524	8.82	388300	9.67	195392	12.93	199289	15.49	59512	6.42
ZZZZZZ	310804	8.82	394417	9.67	198517	12.93	204659	15.49	62592	6.42
ZZZZZZ	321163	8.82	414010	9.67	202868	12.93	205956	15.49	60533	6.41
ZZZZZZ	310465	8.82	386237	9.67	184645	12.93	196534	15.49	57677	6.42
MC18768-6MS	322680	8.82	403339	9.67	206463	12.93	203762	15.49	63595	6.42
MC18768-6MSE	320061	8.82	403624	9.67	205832	12.93	204274	15.49	60775	6.41
ZZZZZ	329172	8.82	422117	9.67	205725	12.93	210253	15.49	63790	6.40
ZZZZZ	328696	8.82	418402	9.67	206307	12.93	201799	15.49	63976	6.41
ZZZZZ	331591	8.82	424511	9.67	203902	12.93	202138	15.49	63815	6.42
ZZZZZ	330994	8.82	427163	9.67	209884	12.93	209130	15.49	62927	6.41
ZZZZZZ	339448	8.82	438382	9.67	212809	12.93	214970	15.49	67675	6.42
ZZZZZZ	318990	8.82	405017	9.67			210575		66505	6.41

IS 1 = PentafInorobenzene

1S 2 = 1,4-Difluorobenzene

- **IS 3** = Chlorobenzene-D5
- 1S 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 Internal Standard Area Summary Job Number: MC18752

Check Std: Lab File ID: Instrument ID:	MSM1869 M54841.D GCMSM		8	In	jection Da jection Ti ethod:	me: 08:	19/13 42 /846 82601	3		
	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	502665	9.35	729518	10.24	358694	13.51	413512	16.08	328730	6.85
Upper Limit <sup>a</sup>	1005330	9.85	1459036	10.74	717388	14.0I	827024	16.58	657460	7.35
Lower Limit <sup>b</sup>	251333	8.85	364759	9.74	179347	13.01	206756	15.58	164365	6.35
Lab	IS 1		IS 2		IS 3		IS 4		IS 5	
Sample ID	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
MSM1869-BS	468995	9.36	697592	10.24	340612	13.51	396588	16.08	395623	6.85
MSM1869-BSD	470837	9.36	690180	10.24	338593	13.52	385247	16.08	400448	6.86
MSM1869-MB	508182	9.36	727896	10.24	341291	13.51	401062	16.08	194235	6.86
ZZZZZZ	528183	9.36	756292	10.24	350856	13.52	410738	16.08	342476	6.85
ZZZZZZ	503759	9.36	725984	10.24	331173	13.52	373619	16.08	254119	6.85
ZZZZZZ	493583	9.36	719228	10.24	328957	13.51	342879		279589	6.86
ZZZZZZ	498980	9.36	722030	10.24	329180	13.52	366330	16.08	319172	6.85
ZZZZZZ	378195	9.36	553266		264008	13.51	306490		356976	6.85
ZZZZZZ	476941	9.36	678876	10.24	316876	13.52	365488	16.08	370622	6.85
ZZZZZZ	505632	9.35	729878	10.24	341752	13.51	400752	16.08	402925	6.85

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.



6.5.4

## Volatile Internal Standard Area Summary

Job Number:	MC18752				-					
	SHELLWIC				**					
Project:	URSMOSTI	L: Roxa	ina Drilling	, Кохала	i, IL					
Check Std: Lab File ID: Instrument ID:	MSM1870- M54867.D GCMSM		8	In	jection Da jection Tir ethod:					
	IS I		IS 2		1S 3		IS 4		IS 5	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	562086	9.36	817082	10.24	398563	13.52	443387	16.08	211423	6.85
Upper Limit <sup>a</sup>	1124172	9.86	1634164	10.74	797126	14.02	886774	16.58	422846	7.35
Lower Limit <sup>b</sup>	281043	8.86	408541	9.74	199282	13.02	221694	15.58	105712	6.35
Lab	IS 1		IS 2		1S 3		IS 4		IS 5	
Sample ID	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
MSM1870-BS	562086	9.36	817082		398563		443387		211423	6.85
MSM1869-BS1	562086	9.36	817082		398563		443387		211423	6.85
MSM1869-MB1		9.36	711160		334700		390992		209587	6.85
MSM1870-MB	490706	9.36	711160		334700		390992		209587	6.85
MC18752-1	498384	9.36	715817	10.24			335108	16.08	360932	6.86
MC18752-2	485157	9.36	703987		335612		392567	16.08		6.85
MC18752-4	485887	9.36	697087		329196		383953	16.08	320050	6.85
MC18752-2MS	470701	9.36	682054		341053		385195	16.08		6.86
MC18752-2MSI	515200	9.35	752047	10.24	367214		419191	16.08	402047	6.85
MC18819-2MS	521176	9.36	764059	10.24	378022	13.52	426182	16.08	435141 <sup>c</sup>	6.86
MC18819-2MSI	D 473702	9.35	695300	10.24	345131		385798	16.08	377698	6.85
ZZZZZZ	483998	9.35	698267	10.24	331173	13.51	395212	16.08	389720	6.85
MC18819-2	481280	9.36	699085	10.24	333931	13.52	394535	16.08	357982	6.85
ZZZZZZ	415927	9.36	600339	10.24	283293	13.52	332914	16.08	297142	6.86
ZZZZZZ	502475	9.36	719831	10.24	343019	13.52	406734	16.08	370290	6.85
ZZZZZZ	523843	9.36	761213	10.24	365047	13.52	428214	16.08	336677 <sup>c</sup>	6.86
ZZZZZZ	505187	9.36	730090	10.24	346137	13.52	414365	16.08	322908	6.86
ZZZZZZ	497600	9.35	727165	10.24	343555	13.52	407218	16.08	339017	6.86
ZZZZZZ	500528	9.36	725740	10.24	346212	13.52	398976	16.08	431980 <sup>c</sup>	6.85
ZZZZZZ	455229	9.35	664160		317306		372694	16.08		6.86
ZZZZZZ	488510	9.35	702984		335636		399323		416537	6.85
ZZZZZZ	495451	9.36	710206		339805		393185		409888	6.85
ZZZZZZ	462626	9.35	667400		317036		376213		385976	6.85
ZZZZZZ	485851	9.35	700954		333939	13.51			275465	6.85
ZZZZZZ	397435	9.36	573811		242744		220976 <sup>d</sup>		191793	6.85

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

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

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

(c) Outside control limits. Target aualytes not associated with this internal standard.



6.5.5 බ

Volatile Int	ternal St	anda	rd Area	Sum	mary					Pa	ge 2 of 2
Job Number:	MC18752				•						
Account:	SHELLWI	C Shell	Oil								
Project:	URSMOST	L: Rox	апа Drillinį	g, Roxar	ia, IL						
Check Std:	MSM1870	)-CC18(	58	I	njection Da	ate: 03	3/20/13				
Lab File ID:	M54867.I	)		I	njection Ti	me: 09	:30				
Instrument ID:	GCMSM			N	Aethod:	SV	N846 8260	В			
Lab	IS I		IS 2		IS 3	_	IS 4		IS 5		
Sample ID	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	

(d) Outside control limits due to possible matrix interference. Confirmed by reanalysis.





#### Volatile Internal Standard Area Summary Job Number: MC18752

	SHELLWIC Shell Oil URSMOSTL: Roxana Drilling, Roxana, IL									
Check Std: Lab File ID: Instrument ID:	MSM1871- M54895.D GCMSM	1n	Injection Date:03/21/13Injection Time:08:37Method:SW846 8260B							
	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	533513	9.35	779419		379074		435546		222865	6.86
Upper Limit <sup>a</sup>	1067026	9.85	1558838		758148		871092		445730	7.36
Lower Limit <sup>b</sup>	266757	8.85	389710	9.74	189537	13.01	217773	15.58	111433	6.36
Lab	1S 1		IS 2		IS 3		1S 4		IS 5	
Sample ID	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
MSM1871-BS	499426	9.36	732728	10.24	358167	13.51	413679	16.08	388997	6.86
MSM1871-BSD	487795	9.36	711400	10.24	347500	13.52	396756	16.08	377796	6.85
MSM1871-MB	525096	9.36	764209	10.24	358446	13.51	418828	16.08	214639	6.86
ZZZZZZ	208251 <sup>c</sup>	9.35	295300 <sup>c</sup>	10.24	127013 <sup>c</sup>	13.52	118278 <sup>c</sup>	16.08	188650	6.85
ZZZZZZ	484490	9.35	708367	10.24	320354	13.52	343189	16.08	382916	6.85
ZZZZZZ	533850	9.35	778571	10.24	368949	13.51	446010	16.08	383184	6.85
ZZZZZZ	522880	9.35	757489	10.24	361984	13.51	430942	16.08	383083	6.86
MC18752-3	489490	9.35	706071	10.24	339318	13.52	397959	16.08	303478	6.85
MC18887-3	517098	9.35	746315	10.24	354714	13.52	427160	16.08	388800	6.85
MC18887-3MS	518108	9.36	754933	10.24	373245	13.52	426213	16.08	351000	6.85
MC18887-3MSE	507527	9.35	744059	10.24	364211	13.52	423504	16.08	396453	6.85
ZZZZZZ	537153	9.36	769708	10.24	371372	13.52	439832	16.08	379768	6.85
ZZZZZZ	517390	9.35	749342	10.24	360807	13.52	418778	16.08	305484	6.85
ZZZZZZ	505205	9.36	734615	10.24	355256	13.52	409143	16.08	365827	6.85
ZZZZZZ	475421	9.35	689853	10.24	324962	13.52	379500	16.08	335727	6.85
ZZZZZZ	508236	9.36	731972	10.24	351311		412922	16.08	316415	6.85
ZZZZZZ	475325	9.36	680993	10.24	325519		378298		344573	6.85
ZZZZZZ	478293	9.35	679914	10.24	328576	13.52	381500	16.08	350174	6.85
ZZZZZZ	464869	9.35	662897	10.24	366719	13.51	386002	16.08	287522	6.85
ZZZZZZ	464221	9.35	666231	10.24	320737	13.51	373098	16.08	307294	6.85

1S 1 = Pentafluorobenzene

1S 2 = 1,4-Difluorobenzene

IS 3 = Chlorobenzene-D5

1S 4 = 1,4-Dichlorobenzene-d4

- 1S 5 = Tert Butyl Alcohol-D9
- (a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.

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

(c) Outside control limits due to possible matrix interference. Confirmed by reanalysis.



6.5.6

## Volatile Surrogate Recovery Summary

Job Number:	MC18752
Account:	SHELLWIC Shell Oil
Project:	URSMOSTL: Roxana Drilling, Roxana, IL

Method: SW84	Matrix: AQ			
Samples and QC shown here apply to the above method				
Lab	Lab			
Sample ID	File ID	<b>S1</b>	<b>S2</b>	<b>S</b> 3
MC18752-5	G125263.D	77.0	76.0	77.0
MC18752-6	G125264.D	76.0	76.0	78.0
MC18723-2MS	G125284.D	77.0	77.0	72.0
MC18723-2MSE	O G125285.D	77.0	77.0	73.0
MSG4957-BS	G125254.D	76.0	76.0	72.0
MSG4957-MB	G125256.D	78.0	76.0	78.0
MSG4957-MB1	G125279.D	77.0	76.0	78.0
Surrogate		Recove	ry	
Compounds		Limits		
S1 = Dibromofl	uoromethane	70-130	%	
S2 = Tolueue-D8		70-130	%	
S3 = 4-Bromofluorobenzene		70-130		

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6.6.1



## Volatile Surrogate Recovery Summary

Job Number:	MC18752
Account:	SHELLWIC Shell Oil
Project:	URSMOSTL: Roxana Drilling, Roxana, IL

Method: SW846		Matrix: SO			
Samples and QC	shown here ap	ply to the al	ove meth	od	
Lab	Lab				
Sample ID	File ID	<b>S</b> 1	<b>S</b> 2	S3	
MC18752-1	M54870.D	91.0	110.0	<del>9</del> 5.0	
MC18752-2	M54871.D	87.0	111.0	89.0	
MC18752-3	M54904.D	88.0	112.0	89.0	
MC18752-3	K67892.D	115.0	110.0	104.0	
MC18752-4	M54872.D	87.0	112.0	89.0	
MC18752-2MS	M54873.D	88.0	112.0	89.0	
MC18752-2MSD	M54874.D	89.0	111.0	89.0	
MC18768-6MS	K67901.D	103.0	111.0	105.0	
MC18768-6MSD	K67902.D	101.0	106.0	100.0	
MC18887-3MS	M54906.D	89.0	111.0	88.0	
MC18887-3MSD	M54907.D	89.0	112.0	88.0	
MSK2225-BS	K67886.D	106.0	110.0	100.0	
MSK2225-BSD	K67887.D	105.0	107.0	101.0	
MSK2225-MB	K67889.D	113.0	107.0	100.0	
MSM1869-BS1	M54867.D	87.0	109.0	89.0	
MSM1869-BSD	M54843.D	89.0	111.0	88.0	
MSM1869-MB1	M54869.D	88.0	110.0	88.0	
MSM1871-BS	M54896.D	90.0	110.0	88.0	
MSM1871-BSD	M54897.D	89.0	110.0	90.0	
MSM1871-MB	M54899.D	88.0	111.0	88.0	
MSM1869-MB	M54845.D	86.0	111.0	88.0	
Surrogate		Recover	y		
Compounds		Limits	-		

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

Page 1 of 1





#### GC Volatiles

QC Data Summaries

Includes the following where applicable:

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



# Method Blank Summary

Job Numbe Account: Project:	er: MC18752 SHELLWIC Shell Oil URSMOSTL: Roxana Dri	lling, Roxana	a, IL					0
Sample OP32212-M	File ID DF IB BB46154.D 1	Analyzed 03/11/13	By CZ	<b>Prep Date</b> 03/11/13		Prep Batch OP32212		Analytical Batch GBB2782
	ported here applies to the follo 5, MC18752-6	wing sampl	es:			Method:	SW840	6 8011
CAS No.	Compound	Result	RL	MDL	Units	Q		
96-12-8 106-93-4	1,2-Dibromo-3-chloropropane 1,2-Dibromoethane	ND ND	0.015 0.015	0.013 0.010	ug/l ug/l			
CAS No.	Surrogate Recoveries		Limits	5				
460-00-4 460-00-4	Bromofluorobenzene (S) Bromofluorobenzene (S)	127% 154%	36-173 36-173					





# Method Blank Summary

Method Job Numb Account: Project:	Blank Summary er: MC18752 SHELLWIC Shell Oil URSMOSTL: Roxana Dri	lling, Roxana	ı, IL				Page 1 of 1	
Sample OP32247-N	File ID DF MB YZ78535.D 1	Analyzed 03/15/13	By CZ		p Date 13/13	Prep Batch OP32247	Analytical Batch GYZ7047	
The QC reported here applies to the following samples: Method: SW846 8011 MC18752-1, MC18752-2, MC18752-3, MC18752-4								
CAS No.	Compound	Result	RL	MDL	Units	Q		
96-12-8 106-93-4	1,2-Dibromo-3-chloropropane 1,2-Dibromoethane	ND ND	2.4 2.4	1.1 0.94	ug/kg ug/kg			
CAS No.	Surrogate Recoveries		Limit	5				
460-00-4 460-00-4	Bromofluorohenzene (S) Bromofluorohenzene (S)	159% 192%* ª	61-167 61-167					

(a) Ontside control limit.Samples are non-detect for analyte.





# Blank Spike Summary

Job Numbe Account: Project:	er: MC18752 SHELLWIC Shell Oil URSMOSTL: Roxana Dri	lling, Rox	ana, IL				-
Sample OP32212-B	File 1D DF S BB46155.D 1	Analyz 03/11/1	•		Prep Date 03/11/13	Prep Batch OP32212	Analytical Batch GBB2782
	ported here applies to the follo 5, MC18752-6	owing sam	nples:			Method: SW84	6 8011
CAS No.	Compound	Spike	BSP	BSP %	Limits		
96-12-8	Compound 1,2-Dibromo-3-chloropropane	ug/l 0.071	ug/l 0.11	<sup>70</sup> 155* <sup>a</sup>			

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
96-12-8 106-93-4	1,2-Dibromo-3-chloropropane 1,2-Dibromoethane	0.071 0.071	0.11 0.099	155* <sup>a</sup> 139	60-140 60-140
CAS No.	Surrogate Recoveries	BSP	Lin	iits	
460-00-4 460-00-4	Bromofluorobenzene (S) Bromofluorobenzene (S)	123% 15 <b>7</b> %		173% 173%	

(a) Outside control limits. Associated samples are non-detect for target analyte.



Sample OP32247-E OP32247-E		Analyz 03/15/ 03/15/	13 C	Z	Prep Da 03/13/13 03/13/13		Prep Bate OP32247 OP32247	ch Analytical Batch GYZ7047 GYZ7047
-	ported here applies to the foll 1, MC18752-2, MC18752-3, M	-				M	ethod: SV	V846 8011
CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
96-12-8 106-93-4	1,2-Dibromo-3-chloropropane 1,2-Dibromoethane	32.9 32.9	42.8 39.2	130 120	44.1 39.4	134 120	3 1	59-142/30 56-140/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
460-00-4	Bromofluorobenzene (S)	149%	157%	61-167%
460-00-4	Bromofluorobenzene (S)	(194%* ª)	218%* ª	61-167%

(a) Outside control limits. Targets recovery satisfactory.



7.3.1

									age 1 of 1		
Sample	File 1D	DF	Analyz		Ву		p Date	Prep I		-	cal Batch
OP32212-M		1	03/11/1	-	CZ		1/13	OP322		GBB27	
OP32212-M	SD BB46157.D	1	03/11/1	3	CZ	03/1	1/13	OP322	212	GBB27	82
MC18700-10	) BB46158.D	1	03/11/1	3	CZ	03/1	1/13	OP322	212	GBB27	82
The QC rep	orted here applies t	to the follo	wing sam	ıple	s:		١	Aethod:	SW846	8011	
MC18752-5,	MC18752-6										
			MC1870	)0-1	0 Spike	MS	MS	MSD	MSD		Limits
CAS No.	Compound		ug/l	Q	ug/l	ug/l	%	ug/l	%	RPD	Rec/RPD
96-12-8	1,2-Dibromo-3-chlo	ropropane	ND		0.071	0.12	169* a	0.12	169* a	0	64-141/29
106-93-4	1,2-Dibromoethane		ND		0.071	0.14	197* <sup>a</sup>	0.13	183* a	7	63-163/27

CAS No.	Surrogate Recoveries	MS	MSD	MC18700-	10Limits
460-00-4	Bromofluorobenzene (S)	164%	133%	156%	36-173%
460-00-4	Bromofluorobenzene (S)	174%* a	168%	159%	36-173%

(a) Outside control limits. Associated samples are non-detect for target analyte.



7.4.1

Matrix Spi Job Number: Account: Project:	Account: SHELLWIC Shell Oil								age 1 of 1	
Sample	File ID	DF	Analyzed	By	Pret	Date	Prep H	Batch	Analyti	cal Batch
OP32247-MS	YZ78538.D	1	03/15/13	ćz	1	3/13	OP322		GYZ70	
OP32247-MSD	YZ78539.D	1	03/15/13	CZ	03/1	3/13	OP322	47	GYZ70	47
MC18752-2	YZ78547.D	1	03/16/13	CZ	03/1	3/13	OP322	47	GYZ70	47
	The QC reported here applies to the following samples:       Method:       SW846 8011         MC18752-1, MC18752-2, MC18752-3, MC18752-4       Method:       SW846 8011									
CAS No. Co	mpound		MC18752-2 ug/kg Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
96-12-8 1,2	-Dibromo-3-chlor	ropropane	ND	35.6	49.3	138	48.4	136	2	40-156/27
106-93-4 1,2	-Dibromoethane		ND	35.6	43.1	121	43.3	121	0	48-141/27

CAS No.	Surrogate Recoveries	MS	MSD	MC18752-2	Limits
460-00-4	Bromofluorobenzene (S)	152%	150%	(177%* a)	61-167%
460 <b>-00</b> -4	Bromofluorobenzene (S)	189%* b	174%* b	208%* a)	61-167%

(a) Outside control limits.Sample non-detect for target analytes.(b) Outside control limits.Spike recovery satisfactory.



7.4.2

### Volatile Surrogate Recovery Summary

Job Number:	MC18752
Account:	SHELLWIC Shell Oil
Project:	URSMOSTL: Roxana Drilling, Roxana, IL

Method: SW846 8011	Matrix:	AQ					
Samples and QC shown here apply to the above method							

Lab Sample ID	Lab File ID	S1 <sup>a</sup>	S1 <sup>b</sup>
MC18752-5 MC18752-6 OP32212-BS OP32212-MB OP32212-MS OP32212-MSD	BB46162.D BB46163.D BB46155.D BB46154.D BB46156.D BB46157.D	83.0 61.0 123.0 127.0 164.0 133.0	149.0 75.0 157.0 154.0 174.0* <sup>c</sup> 168.0
Surrogate Compounds		Recovery Limits	
S1 = Bromofluor	obenzene (S)	36-173%	

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

(c) Outside control limits. Associated samples are non-detect for target analyte.



### Volatile Surrogate Recovery Summary

Job Number:	MC18752
Account:	SHELLWIC Shell Oil
Project:	URSMOSTL: Roxana Drilling, Roxana, IL

Samples and QC shown here apply to the above method

Matrix: SO

Lab Sample ID	Lab File ID	S1 <sup>a</sup>	S1 <sup>b</sup>
MC18752-1 MC18752-2 MC18752-3 MC18752-4 OP32247-BS OP32247-BSD OP32247-MB OP32247-MB	YZ78546.D YZ78547.D YZ78548.D YZ78549.D YZ78536.D YZ78537.D YZ78535.D YZ78538.D	162.0 177.0* c 158.0 158.0 149.0 157.0 159.0 159.0	202.0* c 208.0* c 200.0* c 218.0* c 194.0* d 192.0* e 189.0* f
OP32247-MSD	YZ78539.D	150.0	174.0* <sup>f</sup>
Surrogate Compounds		Recovery Limits	1

S1 = Bromofluorobenzene (S) 61-167%

(a) Recovery from GC signal #2

Method: SW846 8011

(b) Recovery from GC signal #1

(c) Outside control limits.Sample non-detect for target analytes.

(d) Outside control limits. Targets recovery satisfactory.

(e) Outside control limit.Samples are non-detect for analyte.

(f) Outside control limits.Spike recovery satisfactory.



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# GC Surrogate Retention Time Summary Job Number: MC18752

Account:SHELLWIC Shell OilProject:URSMOSTL: Roxana Drilling, Roxana, IL					
Check Std: GBB2782-ICC2782 Lab File ID: BB46149.D			Inje	ction Da	ime: 17:55
Instrument ID:	GCBB		Met	hod:	SW846 8011
				S1 a	S1 <sup>b</sup>
				RT	RT
Check Std				3.50	3.25
Lab	Lab	Date	Time	S1 <sup>a</sup>	S1 <sup>b</sup>
Sample ID	File ID	Analyzed	Analyzed	RT	RT
ZZZZZZ	BB46152A.D	03/11/13	19:13	3.48	3.25
OP32212-MB	BB46154.D	03/11/13	20:04	3.50	3.25
OP32212-BS	BB46155.D	03/11/13	20:30	3.50	3.25
OP32212-MS	BB46156.D	03/11/13	20:57	3.50	3.25
OP32212-MSD	BB46157.D	03/11/13	21:23	3.50	3.25
MC18700-10	BB46158.D	03/11/13	21:50	3.50	3.24
MC18752-5	BB46162.D	03/11/13	23:38	3.51	3.25
MC18752-6	BB46163.D	03/12/13	00:05	3.53	3.25
GBB2782-ECC2	78 <b>B</b> B46164.D	03/12/13	00:32	3.53	3.25

Surrogate

Compounds

S1 = Bromofluorobenzene (S)

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



7.6.1



### GC Surrogate Retention Time Summary Job Number: MC18752

Account: SHELLWIC Shell Oil Project: URSMOSTL: Roxana Drilling, Roxana, IL						
Check Std: Lab File 1D: Instrument ID:	YZ78529.D 1njec			ction Da ction Tin hod:		
				S1 <sup>a</sup> RT	S1 <sup>b</sup> RT	
Check Std				4.01	3.77	
Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 ª RT	S1 <sup>b</sup> RT	
OP32247-MB OP32247-BS OP32247-BSD OP32247-MS OP32247-MSD ZZZZZZ ZZZZZZ ZZZZZZ ZZZZZZ ZZZZZZ ZZZZ	YZ78535.D YZ78536.D YZ78537.D YZ78538.D YZ78539.D YZ78540.D YZ78541.D YZ78542.D YZ78543.D YZ78543.D YZ78544.D	03/15/13 03/15/13 03/15/13 03/15/13 03/15/13 03/15/13 03/16/13 03/16/13 03/16/13	21:36 22:04 22:32 23:00 23:29 23:57 00:25 00:53 01:21 01:49	4.01 4.00 4.00 4.00 4.00 4.00 4.00 4.00	3.77 3.77 3.77 3.77 3.77 3.77 3.77 3.77	

Surrogate

Compounds

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #2

(b) Retention time from GC signal #1

7.6.2



### GC Surrogate Retention Time Summary Job Number: MC18752

Job Number: MC18752 Account: SHELLWIC Shell Oil Project: URSMOSTL: Roxana Drilling, Roxana, IL						
YZ78545.D 1nje			ction Ti			
			S1 <sup>a</sup> RT	S1 <sup>b</sup> RT		
			4.01	3.77		
Lab File ID	Date Analyzed	Time Analyzed	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT		
YZ78546.D YZ78547.D	03/16/13 03/16/13	02:46 03:14	4.00 4.01	3.77 3.77		
YZ78548.D YZ78549.D	03/16/13 03/16/13	03:42 04:10	4.00 4.00	3.77 3.77 2.77		
YZ78551.D YZ78552.D	03/16/13 03/16/13	05:06 05:34	4.00 4.00	3.77 3.77		
YZ78553.D YZ78554.D YZ78555.D	03/16/13 03/16/13 03/16/13	06:01 06:29 06:58	4.00 4.00 4.00	3.77 3.77 3.77		
	URSMOSTL: R GYZ7047-CC7 YZ78545.D GCYZ Lab File ID YZ78546.D YZ78547.D YZ78547.D YZ78549.D YZ78550.D YZ78551.D YZ78551.D YZ78553.D YZ78553.D YZ78554.D	URSMOSTL: Roxana Drillir GYZ7047-CC7047 YZ78545.D GCYZ Lab Date File ID Analyzed YZ78546.D 03/16/13 YZ78546.D 03/16/13 YZ78548.D 03/16/13 YZ78550.D 03/16/13 YZ78551.D 03/16/13 YZ78552.D 03/16/13 YZ78553.D 03/16/13 YZ78553.D 03/16/13	URSMOSTL: Roxana Drilling, Roxana, I GYZ7047-CC7047 Injec YZ78545.D Injec GCYZ Met Lab Date Time File ID Analyzed Analyzed YZ78546.D 03/16/13 02:46 YZ78547.D 03/16/13 03:14 YZ78548.D 03/16/13 03:42 YZ78549.D 03/16/13 04:10 YZ78550.D 03/16/13 04:38 YZ78551.D 03/16/13 05:06 YZ78552.D 03/16/13 05:34 YZ78553.D 03/16/13 05:34 YZ78553.D 03/16/13 06:01 YZ78554.D 03/16/13 06:01	URSMOSTL: Roxana Drilling, Roxana, IL GYZ7047-CC7047 Injection Da YZ78545.D Injection Ti GCYZ Method:	URSMOSTL: Roxana Drilling, Roxana, IL         GYZ7047-CC7047         YZ78545.D       Injection Date: $03/16/13$ GCYZ       Injection Time: $02:18$ Method:       SW846 8011         SW846 8011         Lab         Date       Time         Analyzed       S1 a         S1 a       S1 b         RT       RT         YZ78546.D       03/16/13         03/16/13       02:46       4.00         Analyzed       Analyzed       RT         YZ78547.D       03/16/13       03:14         YZ78548.D       03/16/13       03:42         YZ78549.D       03/16/13       04:10       4.00       3.77         YZ78551.D       03/16/13       04:10       4.00       3.77         YZ78551.D       03/16/13       04:10       4.00       3.77         YZ78551.D       03/16/13       05:06       4.00       3.77         YZ78552.D       03/16/13       05:34       4.00       3.77         YZ78553.D       03/16/13       06:01       4.00       3.77         YZ78554.D       03/16/13       06:01       4.00<	

### Surrogate

Compounds

S1 = Bromofinorobenzene (S)

(a) Retention time from GC signal #2

(b) Retention time from GC signal #1

7.6.3

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## General Chemistry

QC Data Summaries

Includes the following where applicable:

• Percent Solids Raw Data Summary



# Percent Solids Raw Data Summary

Job Number:	MC18752
Account:	SHELLWIC Shell Oil
Project:	URSMOSTL: Roxana Drilling, Roxana, IL

Sample: MC18752-1 ClientID: MW-24-12	Analyzed: 12-MAR-13 by BF	Method: SM21 2540 B MOD.
Wet Weight (Total)	37.88 g	
Tare Weight	26.081 g	
Dry Weight (Total)	37.396 g	
Solids, Percent	95.9 % %	
Sample: MC18752-2 Client1D: MW-24-25	Analyzed: 12-MAR-13 by BF	Method: SM21 2540 B MOD
Wet Weight (Total)	37.545 g	
Tare Weight	24.373 g	
Dry Weight (Total)	36.707 g	
Solids, Percent	9 <b>3.6</b> %	
Sample: MC18752-3 Client1D: MW-24-47	Analyzed: 12-MAR-13 by BF	Method: SM21 2540 B MOD
Wet Weight (Total)	34.756 g	
Tare Weight	20.448 g	
Dry Weight (Total)	32.086 g	
Solids, Percent	81.3	
Sample: MC18752-4 Client1D: MW-24-47DUP	Analyzed: 12-MAR-13 by BF	Method: SM21 2540 B MOD
Wet Weight (Total)	34.62 g	
Tare Weight	21.176 g	
Dry Weight (Total)	32.179 g	
Solids, Percent	81.8	



8.1

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