URS

May 13, 2013

Illinois Department of Transportation
Kirk H. Brown, PE
Project Support Engineer
Division of Highways/Region 5/District 8
1102 Eastport Plaza Drive
Collinsville, Illinois 62234-6198

Subject: **Analytical Data for Soil and Soil Vapor Sampling according to Illinois Department of Transportation (IDOT) Permit No. 8-28548**

Dear Mr. Brown:

URS Corporation, on behalf of Shell Oil Products US (SOPUS), is submitting analytical results for soil and soil vapor sampling conducted according to IDOT Permit No. 8-28548. Enclosed are the analytical results for the following drilling and sampling activities recently conducted:

- GP-14 (Soil Samples) – MC16999
- VMP-55 (Soil Samples) – MC16961
- VMP-55 (Vapor Samples) – 1302355A

If you have any questions or require further information please contact Bob Billman at bob.billman@urs.com (314/743-4108).

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

Kelly Hurst
Senior Environmental Scientist

Bob Billman
Senior Project Manager

Attachments

Cc: Kevin Dyer (SOPUS)

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

New England ACCUTEST LABORATORIES

01/04/13

01/04/13

Technical Report for

Shell Oil

URSMOSTL: Roxana Drilling, Roxana, IL

21562850.15000

Accutest Job Number: MC16999

Sampling Date: 12/18/12

Report to:

URS Corporation

elizabeth.kunkel@URS.com

ATTN: Elizabeth Kunkel

Total number of pages in report: **129**

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

Reza Tand
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)

Test results relate only to samples analyzed.

Report of Analysis

Client Sample ID:	GP-14-13		
Lab Sample ID:	MC16999-1	**Date Sampled:**	12/18/12
Matrix:	SO - Soil	**Date Received:**	12/19/12
Method:	SW846 8260B	**Percent Solids:**	74.8
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M53169.D	1	12/28/12	AMY	n/a	n/a	MSM1806
Run #2							

	Initial Weight	Final Volume
Run #1	5.80 g	5.0 ml
Run #2		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	0.0058	0.0015	mg/kg	
107-02-8	Acrolein	ND	0.029	0.012	mg/kg	
107-13-1	Acrylonitrile	ND	0.029	0.0014	mg/kg	
71-43-2	Benzene	0.00049	0.00058	0.00034	mg/kg	J
108-86-1	Bromobenzene	ND	0.0058	0.00026	mg/kg	
74-97-5	Bromochloromethane	ND	0.0058	0.00043	mg/kg	
75-27-4	Bromodichloromethane	ND	0.0023	0.00024	mg/kg	
75-25-2	Bromoform	ND	0.0023	0.0023	mg/kg	
74-83-9	Bromomethane	ND	0.0023	0.00060	mg/kg	
78-93-3	2-Butanone (MEK)	ND	0.0058	0.0014	mg/kg	
104-51-8	n-Butylbenzene	ND	0.0058	0.00021	mg/kg	
135-98-8	sec-Butylbenzene	ND	0.0058	0.00026	mg/kg	
98-06-6	tert-Butylbenzene	ND	0.0058	0.0010	mg/kg	
75-15-0	Carbon disulfide	ND	0.0058	0.00019	mg/kg	
56-23-5	Carbon tetrachloride	ND	0.0023	0.00084	mg/kg	
108-90-7	Chlorobenzene	ND	0.0023	0.00032	mg/kg	
75-00-3	Chloroethane	ND	0.0058	0.0014	mg/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	0.0058	0.0023	mg/kg	
67-66-3	Chloroform	ND	0.0023	0.00059	mg/kg	
74-87-3	Chloromethane	ND	0.0058	0.00053	mg/kg	
95-49-8	o-Chlorotoluene	ND	0.0058	0.0013	mg/kg	
106-43-4	p-Chlorotoluene	ND	0.0058	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	Dichlorodifluoromethane	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	0.00035	mg/kg	
156-60-5	trans-1,2-Dichloroethene	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

Report of Analysis

Client Sample ID:	GP-14-13		
Lab Sample ID:	MC16999-1	**Date Sampled:**	12/18/12
Matrix:	SO - Soil	**Date Received:**	12/19/12
Method:	SW846 8260B	**Percent Solids:**	74.8
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	0.0023	0.00043	mg/kg	
142-28-9	1,3-Dichloropropane	ND	0.0058	0.00027	mg/kg	
594-20-7	2,2-Dichloropropane	ND	0.0058	0.0010	mg/kg	
563-58-6	1,1-Dichloropropene	ND	0.0058	0.00030	mg/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	0.0023	0.00020	mg/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	0.0023	0.00057	mg/kg	
123-91-1	1,4-Dioxane	ND	0.029	0.029	mg/kg	
97-63-2	Ethyl methacrylate	ND	0.0058	0.00078	mg/kg	
100-41-4	Ethylbenzene	ND	0.0023	0.00028	mg/kg	
87-68-3	Hexachlorobutadiene	ND	0.0058	0.00054	mg/kg	
591-78-6	2-Hexanone	ND	0.0058	0.00058	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0058	0.00026	mg/kg	
99-87-6	p-Isopropyltoluene	ND	0.0058	0.00021	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.0023	0.00033	mg/kg	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	0.0058	0.00058	mg/kg	
74-95-3	Methylene bromide	ND	0.0058	0.00057	mg/kg	
75-09-2	Methylene chloride	ND	0.0023	0.0013	mg/kg	
91-20-3	Naphthalene	ND	0.0058	0.0014	mg/kg	
103-65-1	n-Propylbenzene	ND	0.0058	0.0012	mg/kg	
100-42-5	Styrene	ND	0.0058	0.00027	mg/kg	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.0058	0.0012	mg/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.0023	0.00049	mg/kg	
127-18-4	Tetrachloroethene	ND	0.0023	0.00026	mg/kg	
108-88-3	Toluene	ND	0.0058	0.00098	mg/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	0.0058	0.00027	mg/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	0.0058	0.00026	mg/kg	
71-55-6	1,1,1-Trichloroethane	ND	0.0023	0.00036	mg/kg	
79-00-5	1,1,2-Trichloroethane	ND	0.0023	0.00085	mg/kg	
79-01-6	Trichloroethene	ND	0.0023	0.00024	mg/kg	
75-69-4	Trichlorofluoromethane	ND	0.0023	0.00035	mg/kg	
96-18-4	1,2,3-Trichloropropane	ND	0.0058	0.00034	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0058	0.00026	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0058	0.00025	mg/kg	
108-05-4	Vinyl Acetate	ND	0.0058	0.00064	mg/kg	
75-01-4	Vinyl chloride	ND	0.0023	0.00031	mg/kg	
	m,p-Xylene	ND	0.0023	0.00091	mg/kg	
95-47-6	o-Xylene	ND	0.0023	0.00028	mg/kg	
1330-20-7	Xylene (total)	ND	0.0023	0.00028	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

Report of Analysis

Client Sample ID:	GP-14-13		
Lab Sample ID:	MC16999-1	**Date Sampled:**	12/18/12
Matrix:	SO - Soil	**Date Received:**	12/19/12
Method:	SW846 8260B	**Percent Solids:**	74.8
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	88%		70-130%
2037-26-5	Toluene-D8	88%		70-130%
460-00-4	4-Bromofluorobenzene	82%		70-130%

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

Report of Analysis

Client Sample ID:	GP-14-13		
Lab Sample ID:	MC16999-1	**Date Sampled:**	12/18/12
Matrix:	SO - Soil	**Date Received:**	12/19/12
Method:	SW846 8011 SW846 3550B	**Percent Solids:**	74.8
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BK20278.D	1	12/28/12	AP	12/19/12	OP31493	GBK733
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	50.0 ml
Run #2		

VOA Special List

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

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	126%		61-167%
460-00-4	Bromofluorobenzene (S)	97%		61-167%

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

Report of Analysis

Client Sample ID:	GP-14-33		
Lab Sample ID:	MC16999-2	**Date Sampled:**	12/18/12
Matrix:	SO - Soil	**Date Received:**	12/19/12
Method:	SW846 8260B	**Percent Solids:**	88.0
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	K65937.D	1	12/21/12	GK	n/a	n/a	MSK2166
Run #2	G123187.D	1	12/26/12	JM	n/a	n/a	MSG4896

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	4.95 g	10.0 ml	100 ul
Run #2	4.95 g	10.0 ml	100 ul

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	0.61	0.15	mg/kg	
107-02-8	Acrolein	ND [a]	3.0	1.2	mg/kg	
107-13-1	Acrylonitrile	ND	3.0	0.15	mg/kg	
71-43-2	Benzene	3.57	0.061	0.036	mg/kg	
108-86-1	Bromobenzene	ND	0.61	0.027	mg/kg	
74-97-5	Bromochloromethane	ND	0.61	0.045	mg/kg	
75-27-4	Bromodichloromethane	ND	0.24	0.026	mg/kg	
75-25-2	Bromoform	ND	0.24	0.24	mg/kg	
74-83-9	Bromomethane	ND	0.24	0.063	mg/kg	
78-93-3	2-Butanone (MEK)	ND	0.61	0.15	mg/kg	
104-51-8	n-Butylbenzene	0.0877	0.61	0.022	mg/kg	J
135-98-8	sec-Butylbenzene	ND	0.61	0.028	mg/kg	
98-06-6	tert-Butylbenzene	ND	0.61	0.11	mg/kg	
75-15-0	Carbon disulfide	ND	0.61	0.020	mg/kg	
56-23-5	Carbon tetrachloride	ND	0.24	0.088	mg/kg	
108-90-7	Chlorobenzene	ND	0.24	0.033	mg/kg	
75-00-3	Chloroethane	ND	0.61	0.15	mg/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	0.61	0.24	mg/kg	
67-66-3	Chloroform	ND	0.24	0.063	mg/kg	
74-87-3	Chloromethane	ND	0.61	0.056	mg/kg	
95-49-8	o-Chlorotoluene	ND	0.61	0.13	mg/kg	
106-43-4	p-Chlorotoluene	ND	0.61	0.028	mg/kg	
124-48-1	Dibromochloromethane	ND	0.24	0.036	mg/kg	
95-50-1	1,2-Dichlorobenzene	ND	0.24	0.026	mg/kg	
541-73-1	1,3-Dichlorobenzene	ND	0.24	0.027	mg/kg	
106-46-7	1,4-Dichlorobenzene	ND	0.24	0.026	mg/kg	
75-71-8	Dichlorodifluoromethane	ND	0.24	0.14	mg/kg	
75-34-3	1,1-Dichloroethane	ND	0.24	0.033	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.24	0.035	mg/kg	
75-35-4	1,1-Dichloroethene	ND	0.24	0.045	mg/kg	
156-59-2	cis-1,2-Dichloroethene	ND	0.24	0.037	mg/kg	
156-60-5	trans-1,2-Dichloroethene	ND	0.24	0.035	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

Report of Analysis

Client Sample ID:	GP-14-33		
Lab Sample ID:	MC16999-2	**Date Sampled:**	12/18/12
Matrix:	SO - Soil	**Date Received:**	12/19/12
Method:	SW846 8260B	**Percent Solids:**	88.0
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	0.24	0.045	mg/kg	
142-28-9	1,3-Dichloropropane	ND	0.61	0.028	mg/kg	
594-20-7	2,2-Dichloropropane	ND	0.61	0.11	mg/kg	
563-58-6	1,1-Dichloropropene	ND	0.61	0.032	mg/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	0.24	0.021	mg/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	0.24	0.060	mg/kg	
123-91-1	1,4-Dioxane	ND	3.0	3.0	mg/kg	
97-63-2	Ethyl methacrylate	ND	0.61	0.083	mg/kg	
100-41-4	Ethylbenzene	ND	0.24	0.029	mg/kg	
87-68-3	Hexachlorobutadiene	ND	0.61	0.057	mg/kg	
591-78-6	2-Hexanone	ND	0.61	0.061	mg/kg	
98-82-8	Isopropylbenzene	ND	0.61	0.028	mg/kg	
99-87-6	p-Isopropyltoluene	ND	0.61	0.022	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.24	0.035	mg/kg	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	0.61	0.061	mg/kg	
74-95-3	Methylene bromide	ND	0.61	0.060	mg/kg	
75-09-2	Methylene chloride	ND	0.24	0.14	mg/kg	
91-20-3	Naphthalene	ND	0.61	0.15	mg/kg	
103-65-1	n-Propylbenzene	ND	0.61	0.12	mg/kg	
100-42-5	Styrene	ND	0.61	0.028	mg/kg	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.61	0.12	mg/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.24	0.052	mg/kg	
127-18-4	Tetrachloroethene	ND	0.24	0.028	mg/kg	
108-88-3	Toluene	ND	0.61	0.10	mg/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	0.61	0.029	mg/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	0.61	0.028	mg/kg	
71-55-6	1,1,1-Trichloroethane	ND	0.24	0.038	mg/kg	
79-00-5	1,1,2-Trichloroethane	ND	0.24	0.089	mg/kg	
79-01-6	Trichloroethene	ND	0.24	0.026	mg/kg	
75-69-4	Trichlorofluoromethane	ND	0.24	0.037	mg/kg	
96-18-4	1,2,3-Trichloropropane	ND	0.61	0.036	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.61	0.027	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.61	0.026	mg/kg	
108-05-4	Vinyl Acetate	ND	0.61	0.068	mg/kg	
75-01-4	Vinyl chloride	ND	0.24	0.033	mg/kg	
	m,p-Xylene	ND	0.24	0.096	mg/kg	
95-47-6	o-Xylene	ND	0.24	0.029	mg/kg	
1330-20-7	Xylene (total)	ND	0.24	0.029	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

Report of Analysis

Client Sample ID:	GP-14-33		
Lab Sample ID:	MC16999-2	**Date Sampled:**	12/18/12
Matrix:	SO - Soil	**Date Received:**	12/19/12
Method:	SW846 8260B	**Percent Solids:**	88.0
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%	100%	70-130%
2037-26-5	Toluene-D8	105%	96%	70-130%
460-00-4	4-Bromofluorobenzene	103%	91%	70-130%

CAS No.	Tentatively Identified Compounds	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

Report of Analysis

Client Sample ID:	GP-14-33		
Lab Sample ID:	MC16999-2	**Date Sampled:**	12/18/12
Matrix:	SO - Soil	**Date Received:**	12/19/12
Method:	SW846 8011 SW846 3550B	**Percent Solids:**	88.0
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BK20279.D	1	12/28/12	AP	12/19/12	OP31493	GBK733
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	50.0 ml
Run #2		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.0028	0.0012	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.0028	0.0011	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	133%		61-167%
460-00-4	Bromofluorobenzene (S)	101%		61-167%

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

Report of Analysis

Client Sample ID:	GP-14-39		
Lab Sample ID:	MC16999-3	**Date Sampled:**	12/18/12
Matrix:	SO - Soil	**Date Received:**	12/19/12
Method:	SW846 8260B	**Percent Solids:**	85.3
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	K65938.D	1	12/21/12	GK	n/a	n/a	MSK2166
Run #2	G123188.D	1	12/26/12	JM	n/a	n/a	MSG4896

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.17 g	10.0 ml	100 ul
Run #2	5.17 g	10.0 ml	100 ul

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	0.61	0.15	mg/kg	
107-02-8	Acrolein	ND [a]	3.0	1.2	mg/kg	
107-13-1	Acrylonitrile	ND	3.0	0.15	mg/kg	
71-43-2	Benzene	3.75	0.061	0.036	mg/kg	
108-86-1	Bromobenzene	ND	0.61	0.027	mg/kg	
74-97-5	Bromochloromethane	ND	0.61	0.046	mg/kg	
75-27-4	Bromodichloromethane	ND	0.24	0.026	mg/kg	
75-25-2	Bromoform	ND	0.24	0.24	mg/kg	
74-83-9	Bromomethane	ND	0.24	0.063	mg/kg	
78-93-3	2-Butanone (MEK)	ND	0.61	0.15	mg/kg	
104-51-8	n-Butylbenzene	0.754	0.61	0.022	mg/kg	
135-98-8	sec-Butylbenzene	0.205	0.61	0.028	mg/kg	J
98-06-6	tert-Butylbenzene	0.143	0.61	0.11	mg/kg	J
75-15-0	Carbon disulfide	ND	0.61	0.020	mg/kg	
56-23-5	Carbon tetrachloride	ND	0.24	0.089	mg/kg	
108-90-7	Chlorobenzene	ND	0.24	0.034	mg/kg	
75-00-3	Chloroethane	ND	0.61	0.15	mg/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	0.61	0.24	mg/kg	
67-66-3	Chloroform	ND	0.24	0.063	mg/kg	
74-87-3	Chloromethane	ND	0.61	0.057	mg/kg	
95-49-8	o-Chlorotoluene	ND	0.61	0.13	mg/kg	
106-43-4	p-Chlorotoluene	ND	0.61	0.028	mg/kg	
124-48-1	Dibromochloromethane	ND	0.24	0.036	mg/kg	
95-50-1	1,2-Dichlorobenzene	ND	0.24	0.026	mg/kg	
541-73-1	1,3-Dichlorobenzene	ND	0.24	0.028	mg/kg	
106-46-7	1,4-Dichlorobenzene	ND	0.24	0.026	mg/kg	
75-71-8	Dichlorodifluoromethane	ND	0.24	0.14	mg/kg	
75-34-3	1,1-Dichloroethane	ND	0.24	0.033	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.24	0.035	mg/kg	
75-35-4	1,1-Dichloroethene	ND	0.24	0.045	mg/kg	
156-59-2	cis-1,2-Dichloroethene	ND	0.24	0.037	mg/kg	
156-60-5	trans-1,2-Dichloroethene	ND	0.24	0.035	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

Report of Analysis

Client Sample ID:	GP-14-39		
Lab Sample ID:	MC16999-3	**Date Sampled:**	12/18/12
Matrix:	SO - Soil	**Date Received:**	12/19/12
Method:	SW846 8260B	**Percent Solids:**	85.3
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	0.24	0.045	mg/kg	
142-28-9	1,3-Dichloropropane	ND	0.61	0.028	mg/kg	
594-20-7	2,2-Dichloropropane	ND	0.61	0.11	mg/kg	
563-58-6	1,1-Dichloropropene	ND	0.61	0.032	mg/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	0.24	0.021	mg/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	0.24	0.061	mg/kg	
123-91-1	1,4-Dioxane	ND	3.0	3.0	mg/kg	
97-63-2	Ethyl methacrylate	ND	0.61	0.083	mg/kg	
100-41-4	Ethylbenzene	0.111	0.24	0.029	mg/kg	J
87-68-3	Hexachlorobutadiene	ND	0.61	0.057	mg/kg	
591-78-6	2-Hexanone	ND	0.61	0.061	mg/kg	
98-82-8	Isopropylbenzene	0.395	0.61	0.028	mg/kg	J
99-87-6	p-Isopropyltoluene	0.101	0.61	0.022	mg/kg	J
1634-04-4	Methyl Tert Butyl Ether	ND	0.24	0.035	mg/kg	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	0.61	0.061	mg/kg	
74-95-3	Methylene bromide	ND	0.61	0.060	mg/kg	
75-09-2	Methylene chloride	ND	0.24	0.14	mg/kg	
91-20-3	Naphthalene	ND	0.61	0.15	mg/kg	
103-65-1	n-Propylbenzene	1.29	0.61	0.12	mg/kg	
100-42-5	Styrene	ND	0.61	0.029	mg/kg	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.61	0.12	mg/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.24	0.052	mg/kg	
127-18-4	Tetrachloroethene	ND	0.24	0.028	mg/kg	
108-88-3	Toluene	ND	0.61	0.10	mg/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	0.61	0.029	mg/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	0.61	0.028	mg/kg	
71-55-6	1,1,1-Trichloroethane	ND	0.24	0.038	mg/kg	
79-00-5	1,1,2-Trichloroethane	ND	0.24	0.090	mg/kg	
79-01-6	Trichloroethene	ND	0.24	0.026	mg/kg	
75-69-4	Trichlorofluoromethane	ND	0.24	0.037	mg/kg	
96-18-4	1,2,3-Trichloropropane	ND	0.61	0.036	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	0.114	0.61	0.027	mg/kg	J
108-67-8	1,3,5-Trimethylbenzene	0.0692	0.61	0.026	mg/kg	J
108-05-4	Vinyl Acetate	0.629	0.61	0.068	mg/kg	
75-01-4	Vinyl chloride	ND	0.24	0.033	mg/kg	
	m,p-Xylene	0.441	0.24	0.096	mg/kg	
95-47-6	o-Xylene	ND	0.24	0.029	mg/kg	
1330-20-7	Xylene (total)	0.441	0.24	0.029	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

Report of Analysis

Client Sample ID:	GP-14-39		
Lab Sample ID:	MC16999-3	**Date Sampled:**	12/18/12
Matrix:	SO - Soil	**Date Received:**	12/19/12
Method:	SW846 8260B	**Percent Solids:**	85.3
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%	92%	70-130%
2037-26-5	Toluene-D8	104%	88%	70-130%
460-00-4	4-Bromofluorobenzene	109%	83%	70-130%

CAS No.	Tentatively Identified Compounds	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

Report of Analysis

Client Sample ID:	GP-14-39		
Lab Sample ID:	MC16999-3	**Date Sampled:**	12/18/12
Matrix:	SO - Soil	**Date Received:**	12/19/12
Method:	SW846 8011 SW846 3550B	**Percent Solids:**	85.3
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BK20280.D	1	12/28/12	AP	12/19/12	OP31493	GBK733
Run #2							

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

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.0029	0.0013	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.0029	0.0011	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	123%		61-167%
460-00-4	Bromofluorobenzene (S)	92%		61-167%

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

Report of Analysis

Client Sample ID:	GP-14-45		
Lab Sample ID:	MC16999-4	**Date Sampled:**	12/18/12
Matrix:	SO - Soil	**Date Received:**	12/19/12
Method:	SW846 8260B	**Percent Solids:**	88.4
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M53170.D	1	12/28/12	AMY	n/a	n/a	MSM1806
Run #2							

	Initial Weight	Final Volume
Run #1	5.79 g	5.0 ml
Run #2		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	0.0049	0.0012	mg/kg	
107-02-8	Acrolein	ND	0.024	0.0098	mg/kg	
107-13-1	Acrylonitrile	ND	0.024	0.0012	mg/kg	
71-43-2	Benzene	0.160	0.00049	0.00029	mg/kg	
108-86-1	Bromobenzene	ND	0.0049	0.00022	mg/kg	
74-97-5	Bromochloromethane	ND	0.0049	0.00036	mg/kg	
75-27-4	Bromodichloromethane	ND	0.0020	0.00021	mg/kg	
75-25-2	Bromoform	ND	0.0020	0.0020	mg/kg	
74-83-9	Bromomethane	ND	0.0020	0.00051	mg/kg	
78-93-3	2-Butanone (MEK)	ND	0.0049	0.0012	mg/kg	
104-51-8	n-Butylbenzene	0.0024	0.0049	0.00018	mg/kg	J
135-98-8	sec-Butylbenzene	0.0016	0.0049	0.00022	mg/kg	J
98-06-6	tert-Butylbenzene	0.0011	0.0049	0.00086	mg/kg	J
75-15-0	Carbon disulfide	0.0011	0.0049	0.00016	mg/kg	J
56-23-5	Carbon tetrachloride	ND	0.0020	0.00071	mg/kg	
108-90-7	Chlorobenzene	ND	0.0020	0.00027	mg/kg	
75-00-3	Chloroethane	ND	0.0049	0.0012	mg/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	0.0049	0.0020	mg/kg	
67-66-3	Chloroform	ND	0.0020	0.00050	mg/kg	
74-87-3	Chloromethane	ND	0.0049	0.00045	mg/kg	
95-49-8	o-Chlorotoluene	ND	0.0049	0.0011	mg/kg	
106-43-4	p-Chlorotoluene	ND	0.0049	0.00022	mg/kg	
124-48-1	Dibromochloromethane	ND	0.0020	0.00029	mg/kg	
95-50-1	1,2-Dichlorobenzene	ND	0.0020	0.00021	mg/kg	
541-73-1	1,3-Dichlorobenzene	ND	0.0020	0.00022	mg/kg	
106-46-7	1,4-Dichlorobenzene	ND	0.0020	0.00021	mg/kg	
75-71-8	Dichlorodifluoromethane	ND	0.0020	0.0011	mg/kg	
75-34-3	1,1-Dichloroethane	0.00036	0.0020	0.00026	mg/kg	J
107-06-2	1,2-Dichloroethane	ND	0.0020	0.00028	mg/kg	
75-35-4	1,1-Dichloroethene	ND	0.0020	0.00036	mg/kg	
156-59-2	cis-1,2-Dichloroethene	ND	0.0020	0.00029	mg/kg	
156-60-5	trans-1,2-Dichloroethene	ND	0.0020	0.00028	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

Report of Analysis

Client Sample ID:	GP-14-45		
Lab Sample ID:	MC16999-4	**Date Sampled:**	12/18/12
Matrix:	SO - Soil	**Date Received:**	12/19/12
Method:	SW846 8260B	**Percent Solids:**	88.4
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	0.0020	0.00036	mg/kg	
142-28-9	1,3-Dichloropropane	ND	0.0049	0.00023	mg/kg	
594-20-7	2,2-Dichloropropane	ND	0.0049	0.00085	mg/kg	
563-58-6	1,1-Dichloropropene	ND	0.0049	0.00026	mg/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	0.0020	0.00017	mg/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	0.0020	0.00048	mg/kg	
123-91-1	1,4-Dioxane	ND	0.024	0.024	mg/kg	
97-63-2	Ethyl methacrylate	ND	0.0049	0.00067	mg/kg	
100-41-4	Ethylbenzene	0.0032	0.0020	0.00024	mg/kg	
87-68-3	Hexachlorobutadiene	ND	0.0049	0.00045	mg/kg	
591-78-6	2-Hexanone	ND	0.0049	0.00049	mg/kg	
98-82-8	Isopropylbenzene	0.0061	0.0049	0.00022	mg/kg	
99-87-6	p-Isopropyltoluene	0.00049	0.0049	0.00017	mg/kg	J
1634-04-4	Methyl Tert Butyl Ether	ND	0.0020	0.00028	mg/kg	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	0.0049	0.00049	mg/kg	
74-95-3	Methylene bromide	ND	0.0049	0.00048	mg/kg	
75-09-2	Methylene chloride	ND	0.0020	0.0011	mg/kg	
91-20-3	Naphthalene	ND	0.0049	0.0012	mg/kg	
103-65-1	n-Propylbenzene	0.0136	0.0049	0.00099	mg/kg	
100-42-5	Styrene	ND	0.0049	0.00023	mg/kg	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.0049	0.00098	mg/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.0020	0.00042	mg/kg	
127-18-4	Tetrachloroethene	ND	0.0020	0.00022	mg/kg	
108-88-3	Toluene	0.0111	0.0049	0.00083	mg/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	0.0049	0.00023	mg/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	0.0049	0.00022	mg/kg	
71-55-6	1,1,1-Trichloroethane	ND	0.0020	0.00031	mg/kg	
79-00-5	1,1,2-Trichloroethane	ND	0.0020	0.00072	mg/kg	
79-01-6	Trichloroethene	ND	0.0020	0.00021	mg/kg	
75-69-4	Trichlorofluoromethane	ND	0.0020	0.00030	mg/kg	
96-18-4	1,2,3-Trichloropropane	ND	0.0049	0.00029	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	0.00048	0.0049	0.00022	mg/kg	J
108-67-8	1,3,5-Trimethylbenzene	ND	0.0049	0.00021	mg/kg	
108-05-4	Vinyl Acetate	ND	0.0049	0.00055	mg/kg	
75-01-4	Vinyl chloride	ND	0.0020	0.00027	mg/kg	
	m,p-Xylene	0.0080	0.0020	0.00077	mg/kg	
95-47-6	o-Xylene	0.0026	0.0020	0.00023	mg/kg	
1330-20-7	Xylene (total)	0.0105	0.0020	0.00023	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

Report of Analysis

Client Sample ID:	GP-14-45		
Lab Sample ID:	MC16999-4	**Date Sampled:**	12/18/12
Matrix:	SO - Soil	**Date Received:**	12/19/12
Method:	SW846 8260B	**Percent Solids:**	88.4
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	83%		70-130%
2037-26-5	Toluene-D8	88%		70-130%
460-00-4	4-Bromofluorobenzene	88%		70-130%

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

Report of Analysis

Client Sample ID:	GP-14-45		
Lab Sample ID:	MC16999-4	**Date Sampled:**	12/18/12
Matrix:	SO - Soil	**Date Received:**	12/19/12
Method:	SW846 8011 SW846 3550B	**Percent Solids:**	88.4
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BK20281.D	1	12/28/12	AP	12/19/12	OP31493	GBK733
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	50.0 ml
Run #2		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.0028	0.0012	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.0028	0.0011	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	124%		61-167%
460-00-4	Bromofluorobenzene (S)	102%		61-167%

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

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

New England ACCUTEST LABORATORIES

01/03/13

01/03/13

Technical Report for

Shell Oil

URSMOSTL: Roxana Drilling, Roxana, IL

21562850.15000

Accutest Job Number: MC16961

Sampling Date: 12/17/12

Report to:

URS Corporation

elizabeth.kunkel@URS.com

ATTN: Elizabeth Kunkel

Total number of pages in report: **61**

ACCREDITED IN ACCORDANCE WITH nelac

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

Reza Tand
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)

Test results relate only to samples analyzed.

Report of Analysis

Client Sample ID:	VMP-55-13		
Lab Sample ID:	MC16961-1	**Date Sampled:**	12/17/12
Matrix:	SO - Soil	**Date Received:**	12/18/12
Method:	SW846 8260B	**Percent Solids:**	76.4
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M53176.D	1	12/28/12	AMY	n/a	n/a	MSM1806
Run #2							

	Initial Weight	Final Volume
Run #1	6.24 g	5.0 ml
Run #2		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	0.0052	0.0013	mg/kg	
107-02-8	Acrolein	ND	0.026	0.010	mg/kg	
107-13-1	Acrylonitrile	ND	0.026	0.0013	mg/kg	
71-43-2	Benzene	ND	0.00052	0.00031	mg/kg	
108-86-1	Bromobenzene	ND	0.0052	0.00023	mg/kg	
74-97-5	Bromochloromethane	ND	0.0052	0.00039	mg/kg	
75-27-4	Bromodichloromethane	ND	0.0021	0.00022	mg/kg	
75-25-2	Bromoform	ND	0.0021	0.0021	mg/kg	
74-83-9	Bromomethane	ND	0.0021	0.00054	mg/kg	
78-93-3	2-Butanone (MEK)	ND	0.0052	0.0013	mg/kg	
104-51-8	n-Butylbenzene	ND	0.0052	0.00019	mg/kg	
135-98-8	sec-Butylbenzene	ND	0.0052	0.00024	mg/kg	
98-06-6	tert-Butylbenzene	ND	0.0052	0.00092	mg/kg	
75-15-0	Carbon disulfide	ND	0.0052	0.00017	mg/kg	
56-23-5	Carbon tetrachloride	ND	0.0021	0.00076	mg/kg	
108-90-7	Chlorobenzene	ND	0.0021	0.00029	mg/kg	
75-00-3	Chloroethane	ND	0.0052	0.0013	mg/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	0.0052	0.0021	mg/kg	
67-66-3	Chloroform	ND	0.0021	0.00054	mg/kg	
74-87-3	Chloromethane	ND	0.0052	0.00049	mg/kg	
95-49-8	o-Chlorotoluene	ND	0.0052	0.0012	mg/kg	
106-43-4	p-Chlorotoluene	ND	0.0052	0.00024	mg/kg	
124-48-1	Dibromochloromethane	ND	0.0021	0.00031	mg/kg	
95-50-1	1,2-Dichlorobenzene	ND	0.0021	0.00023	mg/kg	
541-73-1	1,3-Dichlorobenzene	ND	0.0021	0.00024	mg/kg	
106-46-7	1,4-Dichlorobenzene	ND	0.0021	0.00022	mg/kg	
75-71-8	Dichlorodifluoromethane	ND	0.0021	0.0012	mg/kg	
75-34-3	1,1-Dichloroethane	ND	0.0021	0.00028	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.0021	0.00030	mg/kg	
75-35-4	1,1-Dichloroethene	ND	0.0021	0.00039	mg/kg	
156-59-2	cis-1,2-Dichloroethene	ND	0.0021	0.00032	mg/kg	
156-60-5	trans-1,2-Dichloroethene	ND	0.0021	0.00030	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

Report of Analysis

Client Sample ID:	VMP-55-13		
Lab Sample ID:	MC16961-1	**Date Sampled:**	12/17/12
Matrix:	SO - Soil	**Date Received:**	12/18/12
Method:	SW846 8260B	**Percent Solids:**	76.4
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	0.0021	0.00039	mg/kg	
142-28-9	1,3-Dichloropropane	ND	0.0052	0.00024	mg/kg	
594-20-7	2,2-Dichloropropane	ND	0.0052	0.00091	mg/kg	
563-58-6	1,1-Dichloropropene	ND	0.0052	0.00028	mg/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	0.0021	0.00018	mg/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	0.0021	0.00052	mg/kg	
123-91-1	1,4-Dioxane	ND	0.026	0.026	mg/kg	
97-63-2	Ethyl methacrylate	ND	0.0052	0.00071	mg/kg	
100-41-4	Ethylbenzene	ND	0.0021	0.00025	mg/kg	
87-68-3	Hexachlorobutadiene	ND	0.0052	0.00049	mg/kg	
591-78-6	2-Hexanone	ND	0.0052	0.00052	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0052	0.00024	mg/kg	
99-87-6	p-Isopropyltoluene	ND	0.0052	0.00019	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.0272	0.0021	0.00030	mg/kg	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	0.0052	0.00052	mg/kg	
74-95-3	Methylene bromide	ND	0.0052	0.00052	mg/kg	
75-09-2	Methylene chloride	ND	0.0021	0.0012	mg/kg	
91-20-3	Naphthalene	ND	0.0052	0.0013	mg/kg	
103-65-1	n-Propylbenzene	ND	0.0052	0.0011	mg/kg	
100-42-5	Styrene	ND	0.0052	0.00025	mg/kg	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.0052	0.0010	mg/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.0021	0.00045	mg/kg	
127-18-4	Tetrachloroethene	ND	0.0021	0.00024	mg/kg	
108-88-3	Toluene	ND	0.0052	0.00089	mg/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	0.0052	0.00025	mg/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	0.0052	0.00024	mg/kg	
71-55-6	1,1,1-Trichloroethane	ND	0.0021	0.00033	mg/kg	
79-00-5	1,1,2-Trichloroethane	ND	0.0021	0.00077	mg/kg	
79-01-6	Trichloroethene	ND	0.0021	0.00022	mg/kg	
75-69-4	Trichlorofluoromethane	ND	0.0021	0.00032	mg/kg	
96-18-4	1,2,3-Trichloropropane	ND	0.0052	0.00031	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0052	0.00023	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0052	0.00022	mg/kg	
108-05-4	Vinyl Acetate	ND	0.0052	0.00059	mg/kg	
75-01-4	Vinyl chloride	ND	0.0021	0.00029	mg/kg	
	m,p-Xylene	ND	0.0021	0.00083	mg/kg	
95-47-6	o-Xylene	ND	0.0021	0.00025	mg/kg	
1330-20-7	Xylene (total)	ND	0.0021	0.00025	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

Report of Analysis

Client Sample ID:	VMP-55-13		
Lab Sample ID:	MC16961-1	**Date Sampled:**	12/17/12
Matrix:	SO - Soil	**Date Received:**	12/18/12
Method:	SW846 8260B	**Percent Solids:**	76.4
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	86%		70-130%
2037-26-5	Toluene-D8	88%		70-130%
460-00-4	4-Bromofluorobenzene	81%		70-130%

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

Report of Analysis

Client Sample ID:	VMP-55-13		
Lab Sample ID:	MC16961-1	**Date Sampled:**	12/17/12
Matrix:	SO - Soil	**Date Received:**	12/18/12
Method:	SW846 8011 SW846 3550B	**Percent Solids:**	76.4
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BK20291.D	1	12/28/12	AP	12/19/12	OP31493	GBK733
Run #2							

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

VOA Special List

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

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	125%		61-167%
460-00-4	Bromofluorobenzene (S)	101%		61-167%

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

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

Report of Analysis

Client Sample ID:	VMP-55-25		
Lab Sample ID:	MC16961-2	**Date Sampled:**	12/17/12
Matrix:	SO - Soil	**Date Received:**	12/18/12
Method:	SW846 8260B	**Percent Solids:**	94.7
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M53177.D	1	12/28/12	AMY	n/a	n/a	MSM1806
Run #2							

	Initial Weight	Final Volume
Run #1	5.13 g	5.0 ml
Run #2		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	0.0051	0.0013	mg/kg	
107-02-8	Acrolein	ND	0.026	0.010	mg/kg	
107-13-1	Acrylonitrile	ND	0.026	0.0013	mg/kg	
71-43-2	Benzene	0.0035	0.00051	0.00030	mg/kg	
108-86-1	Bromobenzene	ND	0.0051	0.00023	mg/kg	
74-97-5	Bromochloromethane	ND	0.0051	0.00038	mg/kg	
75-27-4	Bromodichloromethane	ND	0.0021	0.00022	mg/kg	
75-25-2	Bromoform	ND	0.0021	0.0021	mg/kg	
74-83-9	Bromomethane	ND	0.0021	0.00053	mg/kg	
78-93-3	2-Butanone (MEK)	ND	0.0051	0.0013	mg/kg	
104-51-8	n-Butylbenzene	ND	0.0051	0.00019	mg/kg	
135-98-8	sec-Butylbenzene	ND	0.0051	0.00024	mg/kg	
98-06-6	tert-Butylbenzene	ND	0.0051	0.00091	mg/kg	
75-15-0	Carbon disulfide	ND	0.0051	0.00017	mg/kg	
56-23-5	Carbon tetrachloride	ND	0.0021	0.00075	mg/kg	
108-90-7	Chlorobenzene	ND	0.0021	0.00028	mg/kg	
75-00-3	Chloroethane	ND	0.0051	0.0013	mg/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	0.0051	0.0021	mg/kg	
67-66-3	Chloroform	ND	0.0021	0.00053	mg/kg	
74-87-3	Chloromethane	ND	0.0051	0.00048	mg/kg	
95-49-8	o-Chlorotoluene	ND	0.0051	0.0011	mg/kg	
106-43-4	p-Chlorotoluene	ND	0.0051	0.00023	mg/kg	
124-48-1	Dibromochloromethane	ND	0.0021	0.00030	mg/kg	
95-50-1	1,2-Dichlorobenzene	ND	0.0021	0.00022	mg/kg	
541-73-1	1,3-Dichlorobenzene	ND	0.0021	0.00023	mg/kg	
106-46-7	1,4-Dichlorobenzene	ND	0.0021	0.00022	mg/kg	
75-71-8	Dichlorodifluoromethane	ND	0.0021	0.0012	mg/kg	
75-34-3	1,1-Dichloroethane	ND	0.0021	0.00028	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.0021	0.00030	mg/kg	
75-35-4	1,1-Dichloroethene	ND	0.0021	0.00038	mg/kg	
156-59-2	cis-1,2-Dichloroethene	ND	0.0021	0.00031	mg/kg	
156-60-5	trans-1,2-Dichloroethene	ND	0.0021	0.00029	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

Report of Analysis

Client Sample ID:	VMP-55-25		
Lab Sample ID:	MC16961-2	**Date Sampled:**	12/17/12
Matrix:	SO - Soil	**Date Received:**	12/18/12
Method:	SW846 8260B	**Percent Solids:**	94.7
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	0.0021	0.00038	mg/kg	
142-28-9	1,3-Dichloropropane	ND	0.0051	0.00024	mg/kg	
594-20-7	2,2-Dichloropropane	ND	0.0051	0.00089	mg/kg	
563-58-6	1,1-Dichloropropene	ND	0.0051	0.00027	mg/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	0.0021	0.00018	mg/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	0.0021	0.00051	mg/kg	
123-91-1	1,4-Dioxane	ND	0.026	0.026	mg/kg	
97-63-2	Ethyl methacrylate	ND	0.0051	0.00070	mg/kg	
100-41-4	Ethylbenzene	ND	0.0021	0.00025	mg/kg	
87-68-3	Hexachlorobutadiene	ND	0.0051	0.00048	mg/kg	
591-78-6	2-Hexanone	ND	0.0051	0.00051	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0051	0.00024	mg/kg	
99-87-6	p-Isopropyltoluene	ND	0.0051	0.00018	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.0021	0.00030	mg/kg	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	0.0051	0.00051	mg/kg	
74-95-3	Methylene bromide	ND	0.0051	0.00051	mg/kg	
75-09-2	Methylene chloride	ND	0.0021	0.0012	mg/kg	
91-20-3	Naphthalene	ND	0.0051	0.0013	mg/kg	
103-65-1	n-Propylbenzene	ND	0.0051	0.0010	mg/kg	
100-42-5	Styrene	ND	0.0051	0.00024	mg/kg	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.0051	0.0010	mg/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.0021	0.00044	mg/kg	
127-18-4	Tetrachloroethene	ND	0.0021	0.00024	mg/kg	
108-88-3	Toluene	ND	0.0051	0.00087	mg/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	0.0051	0.00024	mg/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	0.0051	0.00024	mg/kg	
71-55-6	1,1,1-Trichloroethane	ND	0.0021	0.00032	mg/kg	
79-00-5	1,1,2-Trichloroethane	ND	0.0021	0.00076	mg/kg	
79-01-6	Trichloroethene	ND	0.0021	0.00022	mg/kg	
75-69-4	Trichlorofluoromethane	ND	0.0021	0.00031	mg/kg	
96-18-4	1,2,3-Trichloropropane	ND	0.0051	0.00030	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0051	0.00023	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0051	0.00022	mg/kg	
108-05-4	Vinyl Acetate	ND	0.0051	0.00057	mg/kg	
75-01-4	Vinyl chloride	ND	0.0021	0.00028	mg/kg	
	m,p-Xylene	ND	0.0021	0.00081	mg/kg	
95-47-6	o-Xylene	ND	0.0021	0.00025	mg/kg	
1330-20-7	Xylene (total)	ND	0.0021	0.00025	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

Report of Analysis

Client Sample ID:	VMP-55-25		
Lab Sample ID:	MC16961-2	**Date Sampled:**	12/17/12
Matrix:	SO - Soil	**Date Received:**	12/18/12
Method:	SW846 8260B	**Percent Solids:**	94.7
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	85%		70-130%
2037-26-5	Toluene-D8	88%		70-130%
460-00-4	4-Bromofluorobenzene	83%		70-130%

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

Report of Analysis

Client Sample ID:	VMP-55-25		
Lab Sample ID:	MC16961-2	**Date Sampled:**	12/17/12
Matrix:	SO - Soil	**Date Received:**	12/18/12
Method:	SW846 8011 SW846 3550B	**Percent Solids:**	94.7
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BK20292.D	1	12/28/12	AP	12/19/12	OP31493	GBK733
Run #2							

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

VOA Special List

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

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	131%		61-167%
460-00-4	Bromofluorobenzene (S)	108%		61-167%

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

Report of Analysis

Client Sample ID:	VMP-55-31		
Lab Sample ID:	MC16961-3	**Date Sampled:**	12/17/12
Matrix:	SO - Soil	**Date Received:**	12/18/12
Method:	SW846 8260B	**Percent Solids:**	87.6
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M53198.D	1	12/31/12	AMY	n/a	n/a	MSM1807
Run #2							

	Initial Weight	Final Volume
Run #1	5.39 g	5.0 ml
Run #2		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	0.0339	0.0053	0.0013	mg/kg	
107-02-8	Acrolein	ND	0.026	0.011	mg/kg	
107-13-1	Acrylonitrile	ND	0.026	0.0013	mg/kg	
71-43-2	Benzene	ND	0.00053	0.00031	mg/kg	
108-86-1	Bromobenzene	ND	0.0053	0.00024	mg/kg	
74-97-5	Bromochloromethane	ND	0.0053	0.00040	mg/kg	
75-27-4	Bromodichloromethane	ND	0.0021	0.00022	mg/kg	
75-25-2	Bromoform	ND	0.0021	0.0021	mg/kg	
74-83-9	Bromomethane	ND	0.0021	0.00055	mg/kg	
78-93-3	2-Butanone (MEK)	ND	0.0053	0.0013	mg/kg	
104-51-8	n-Butylbenzene	ND	0.0053	0.00019	mg/kg	
135-98-8	sec-Butylbenzene	ND	0.0053	0.00024	mg/kg	
98-06-6	tert-Butylbenzene	ND	0.0053	0.00093	mg/kg	
75-15-0	Carbon disulfide	ND	0.0053	0.00017	mg/kg	
56-23-5	Carbon tetrachloride	ND	0.0021	0.00077	mg/kg	
108-90-7	Chlorobenzene	ND	0.0021	0.00029	mg/kg	
75-00-3	Chloroethane	ND	0.0053	0.0013	mg/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	0.0053	0.0021	mg/kg	
67-66-3	Chloroform	ND	0.0021	0.00055	mg/kg	
74-87-3	Chloromethane	ND	0.0053	0.00049	mg/kg	
95-49-8	o-Chlorotoluene	ND	0.0053	0.0012	mg/kg	
106-43-4	p-Chlorotoluene	ND	0.0053	0.00024	mg/kg	
124-48-1	Dibromochloromethane	ND	0.0021	0.00031	mg/kg	
95-50-1	1,2-Dichlorobenzene	ND	0.0021	0.00023	mg/kg	
541-73-1	1,3-Dichlorobenzene	ND	0.0021	0.00024	mg/kg	
106-46-7	1,4-Dichlorobenzene	ND	0.0021	0.00022	mg/kg	
75-71-8	Dichlorodifluoromethane	ND	0.0021	0.0012	mg/kg	
75-34-3	1,1-Dichloroethane	ND	0.0021	0.00029	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.0021	0.00030	mg/kg	
75-35-4	1,1-Dichloroethene	ND	0.0021	0.00039	mg/kg	
156-59-2	cis-1,2-Dichloroethene	ND	0.0021	0.00032	mg/kg	
156-60-5	trans-1,2-Dichloroethene	ND	0.0021	0.00030	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

Report of Analysis

Client Sample ID:	VMP-55-31		
Lab Sample ID:	MC16961-3	**Date Sampled:**	12/17/12
Matrix:	SO - Soil	**Date Received:**	12/18/12
Method:	SW846 8260B	**Percent Solids:**	87.6
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	0.0021	0.00039	mg/kg	
142-28-9	1,3-Dichloropropane	ND	0.0053	0.00024	mg/kg	
594-20-7	2,2-Dichloropropane	ND	0.0053	0.00092	mg/kg	
563-58-6	1,1-Dichloropropene	ND	0.0053	0.00028	mg/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	0.0021	0.00018	mg/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	0.0021	0.00053	mg/kg	
123-91-1	1,4-Dioxane	ND	0.026	0.026	mg/kg	
97-63-2	Ethyl methacrylate	ND	0.0053	0.00072	mg/kg	
100-41-4	Ethylbenzene	ND	0.0021	0.00026	mg/kg	
87-68-3	Hexachlorobutadiene	ND	0.0053	0.00049	mg/kg	
591-78-6	2-Hexanone	ND	0.0053	0.00053	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0053	0.00024	mg/kg	
99-87-6	p-Isopropyltoluene	ND	0.0053	0.00019	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.0021	0.00031	mg/kg	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	0.0053	0.00053	mg/kg	
74-95-3	Methylene bromide	ND	0.0053	0.00052	mg/kg	
75-09-2	Methylene chloride	ND	0.0021	0.0012	mg/kg	
91-20-3	Naphthalene	ND	0.0053	0.0013	mg/kg	
103-65-1	n-Propylbenzene	ND	0.0053	0.0011	mg/kg	
100-42-5	Styrene	ND	0.0053	0.00025	mg/kg	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.0053	0.0011	mg/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.0021	0.00045	mg/kg	
127-18-4	Tetrachloroethene	ND	0.0021	0.00024	mg/kg	
108-88-3	Toluene	ND	0.0053	0.00090	mg/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	0.0053	0.00025	mg/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	0.0053	0.00024	mg/kg	
71-55-6	1,1,1-Trichloroethane	ND	0.0021	0.00033	mg/kg	
79-00-5	1,1,2-Trichloroethane	ND	0.0021	0.00078	mg/kg	
79-01-6	Trichloroethene	ND	0.0021	0.00022	mg/kg	
75-69-4	Trichlorofluoromethane	ND	0.0021	0.00032	mg/kg	
96-18-4	1,2,3-Trichloropropane	ND	0.0053	0.00031	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0053	0.00024	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0053	0.00023	mg/kg	
108-05-4	Vinyl Acetate	ND	0.0053	0.00059	mg/kg	
75-01-4	Vinyl chloride	ND	0.0021	0.00029	mg/kg	
	m,p-Xylene	ND	0.0021	0.00083	mg/kg	
95-47-6	o-Xylene	ND	0.0021	0.00025	mg/kg	
1330-20-7	Xylene (total)	ND	0.0021	0.00025	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

Report of Analysis

Client Sample ID:	VMP-55-31		
Lab Sample ID:	MC16961-3	**Date Sampled:**	12/17/12
Matrix:	SO - Soil	**Date Received:**	12/18/12
Method:	SW846 8260B	**Percent Solids:**	87.6
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	85%		70-130%
2037-26-5	Toluene-D8	88%		70-130%
460-00-4	4-Bromofluorobenzene	80%		70-130%

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

Report of Analysis

Client Sample ID:	VMP-55-31		
Lab Sample ID:	MC16961-3	**Date Sampled:**	12/17/12
Matrix:	SO - Soil	**Date Received:**	12/18/12
Method:	SW846 8011 SW846 3550B	**Percent Solids:**	87.6
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BK20293.D	1	12/28/12	AP	12/19/12	OP31493	GBK733
Run #2							

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

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.0028	0.0013	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.0028	0.0011	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	120%		61-167%
460-00-4	Bromofluorobenzene (S)	102%		61-167%

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

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

Report of Analysis

Client Sample ID:	VMP-55-31-DUP		
Lab Sample ID:	MC16961-4	**Date Sampled:**	12/17/12
Matrix:	SO - Soil	**Date Received:**	12/18/12
Method:	SW846 8260B	**Percent Solids:**	88.5
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M53179.D	1	12/28/12	AMY	n/a	n/a	MSM1806
Run #2							

	Initial Weight	Final Volume
Run #1	5.49 g	5.0 ml
Run #2		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	0.0051	0.0013	mg/kg	
107-02-8	Acrolein	ND	0.026	0.010	mg/kg	
107-13-1	Acrylonitrile	ND	0.026	0.0013	mg/kg	
71-43-2	Benzene	0.317	0.00051	0.00030	mg/kg	
108-86-1	Bromobenzene	ND	0.0051	0.00023	mg/kg	
74-97-5	Bromochloromethane	ND	0.0051	0.00038	mg/kg	
75-27-4	Bromodichloromethane	ND	0.0021	0.00022	mg/kg	
75-25-2	Bromoform	ND	0.0021	0.0021	mg/kg	
74-83-9	Bromomethane	ND	0.0021	0.00053	mg/kg	
78-93-3	2-Butanone (MEK)	ND	0.0051	0.0013	mg/kg	
104-51-8	n-Butylbenzene	0.0013	0.0051	0.00019	mg/kg	J
135-98-8	sec-Butylbenzene	0.0012	0.0051	0.00024	mg/kg	J
98-06-6	tert-Butylbenzene	ND	0.0051	0.00091	mg/kg	
75-15-0	Carbon disulfide	ND	0.0051	0.00017	mg/kg	
56-23-5	Carbon tetrachloride	ND	0.0021	0.00075	mg/kg	
108-90-7	Chlorobenzene	ND	0.0021	0.00028	mg/kg	
75-00-3	Chloroethane	ND	0.0051	0.0013	mg/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	0.0051	0.0021	mg/kg	
67-66-3	Chloroform	ND	0.0021	0.00053	mg/kg	
74-87-3	Chloromethane	ND	0.0051	0.00048	mg/kg	
95-49-8	o-Chlorotoluene	ND	0.0051	0.0011	mg/kg	
106-43-4	p-Chlorotoluene	ND	0.0051	0.00023	mg/kg	
124-48-1	Dibromochloromethane	ND	0.0021	0.00030	mg/kg	
95-50-1	1,2-Dichlorobenzene	ND	0.0021	0.00022	mg/kg	
541-73-1	1,3-Dichlorobenzene	ND	0.0021	0.00023	mg/kg	
106-46-7	1,4-Dichlorobenzene	ND	0.0021	0.00022	mg/kg	
75-71-8	Dichlorodifluoromethane	ND	0.0021	0.0012	mg/kg	
75-34-3	1,1-Dichloroethane	ND	0.0021	0.00028	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.0021	0.00030	mg/kg	
75-35-4	1,1-Dichloroethene	ND	0.0021	0.00038	mg/kg	
156-59-2	cis-1,2-Dichloroethene	ND	0.0021	0.00031	mg/kg	
156-60-5	trans-1,2-Dichloroethene	ND	0.0021	0.00029	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

Report of Analysis

Client Sample ID:	VMP-55-31-DUP		
Lab Sample ID:	MC16961-4	**Date Sampled:**	12/17/12
Matrix:	SO - Soil	**Date Received:**	12/18/12
Method:	SW846 8260B	**Percent Solids:**	88.5
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	0.0021	0.00038	mg/kg	
142-28-9	1,3-Dichloropropane	ND	0.0051	0.00024	mg/kg	
594-20-7	2,2-Dichloropropane	ND	0.0051	0.00089	mg/kg	
563-58-6	1,1-Dichloropropene	ND	0.0051	0.00027	mg/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	0.0021	0.00018	mg/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	0.0021	0.00051	mg/kg	
123-91-1	1,4-Dioxane	ND	0.026	0.026	mg/kg	
97-63-2	Ethyl methacrylate	ND	0.0051	0.00070	mg/kg	
100-41-4	Ethylbenzene	0.0011	0.0021	0.00025	mg/kg	J
87-68-3	Hexachlorobutadiene	ND	0.0051	0.00048	mg/kg	
591-78-6	2-Hexanone	ND	0.0051	0.00051	mg/kg	
98-82-8	Isopropylbenzene	0.0011	0.0051	0.00024	mg/kg	J
99-87-6	p-Isopropyltoluene	ND	0.0051	0.00018	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.0110	0.0021	0.00030	mg/kg	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	0.0051	0.00051	mg/kg	
74-95-3	Methylene bromide	ND	0.0051	0.00051	mg/kg	
75-09-2	Methylene chloride	ND	0.0021	0.0012	mg/kg	
91-20-3	Naphthalene	ND	0.0051	0.0013	mg/kg	
103-65-1	n-Propylbenzene	0.0011	0.0051	0.0010	mg/kg	J
100-42-5	Styrene	ND	0.0051	0.00024	mg/kg	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.0051	0.0010	mg/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.0021	0.00044	mg/kg	
127-18-4	Tetrachloroethene	ND	0.0021	0.00024	mg/kg	
108-88-3	Toluene	0.0011	0.0051	0.00087	mg/kg	J
87-61-6	1,2,3-Trichlorobenzene	ND	0.0051	0.00024	mg/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	0.0051	0.00024	mg/kg	
71-55-6	1,1,1-Trichloroethane	ND	0.0021	0.00032	mg/kg	
79-00-5	1,1,2-Trichloroethane	ND	0.0021	0.00076	mg/kg	
79-01-6	Trichloroethene	ND	0.0021	0.00022	mg/kg	
75-69-4	Trichlorofluoromethane	ND	0.0021	0.00031	mg/kg	
96-18-4	1,2,3-Trichloropropane	ND	0.0051	0.00030	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0051	0.00023	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0051	0.00022	mg/kg	
108-05-4	Vinyl Acetate	ND	0.0051	0.00057	mg/kg	
75-01-4	Vinyl chloride	ND	0.0021	0.00028	mg/kg	
	m,p-Xylene	0.0013	0.0021	0.00081	mg/kg	J
95-47-6	o-Xylene	0.00072	0.0021	0.00025	mg/kg	J
1330-20-7	Xylene (total)	0.0020	0.0021	0.00025	mg/kg	J

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

Report of Analysis

Client Sample ID:	VMP-55-31-DUP		
Lab Sample ID:	MC16961-4	**Date Sampled:**	12/17/12
Matrix:	SO - Soil	**Date Received:**	12/18/12
Method:	SW846 8260B	**Percent Solids:**	88.5
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	83%		70-130%
2037-26-5	Toluene-D8	88%		70-130%
460-00-4	4-Bromofluorobenzene	92%		70-130%

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

Report of Analysis

Client Sample ID:	VMP-55-31-DUP		
Lab Sample ID:	MC16961-4	**Date Sampled:**	12/17/12
Matrix:	SO - Soil	**Date Received:**	12/18/12
Method:	SW846 8011 SW846 3550B	**Percent Solids:**	88.5
Project:	URSMOSTL: Roxana Drilling, Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BK20294.D	1	12/28/12	AP	12/19/12	OP31493	GBK733
Run #2							

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

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.0028	0.0012	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.0028	0.0011	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	126%		61-167%
460-00-4	Bromofluorobenzene (S)	103%		61-167%

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

Method Blank Summary

Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1806-MB	M53166.D	1	12/28/12	AMY	n/a	n/a	MSM1806

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

MC16961-1, MC16961-2, MC16961-4

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	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-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	

Method Blank Summary

Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1806-MB	M53166.D	1	12/28/12	AMY	n/a	n/a	MSM1806

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

MC16961-1, MC16961-2, MC16961-4

CAS No.	Compound	Result	RL	MDL	Units	Q
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	0.50	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	ND	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	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-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	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	0.56	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	

Method Blank Summary

Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1806-MB	M53166.D	1	12/28/12	AMY	n/a	n/a	MSM1806

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

MC16961-1, MC16961-2, MC16961-4

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	82%	70-130%
2037-26-5	Toluene-D8	88%	70-130%
460-00-4	4-Bromofluorobenzene	79%	70-130%

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

Method Blank Summary

Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1807-MB	M53193.D	1	12/31/12	AMY	n/a	n/a	MSM1807

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

MC16961-3

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 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-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	

Method Blank Summary

Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1807-MB	M53193.D	1	12/31/12	AMY	n/a	n/a	MSM1807

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

MC16961-3

CAS No.	Compound	Result	RL	MDL	Units	Q
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	0.50	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	ND	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	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-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	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	0.56	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	

Method Blank Summary

Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1807-MB	M53193.D	1	12/31/12	AMY	n/a	n/a	MSM1807

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

MC16961-3

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	83%	70-130%
2037-26-5	Toluene-D8	89%	70-130%
460-00-4	4-Bromofluorobenzene	79%	70-130%

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

Blank Spike Summary

Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1806-BS	M53164.D	1	12/28/12	AMY	n/a	n/a	MSM1806

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

MC16961-1, MC16961-2, MC16961-4

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
67-64-1	Acetone	50	31.9	64* [a]	70-130
107-02-8	Acrolein	250	214	86	70-130
107-13-1	Acrylonitrile	50	47.0	94	70-130
71-43-2	Benzene	50	49.5	99	70-130
108-86-1	Bromobenzene	50	47.2	94	70-130
74-97-5	Bromochloromethane	50	46.9	94	70-130
75-27-4	Bromodichloromethane	50	48.0	96	70-130
75-25-2	Bromoform	50	46.7	93	70-130
74-83-9	Bromomethane	50	56.5	113	70-130
78-93-3	2-Butanone (MEK)	50	53.1	106	70-130
104-51-8	n-Butylbenzene	50	53.9	108	70-130
135-98-8	sec-Butylbenzene	50	50.9	102	70-130
98-06-6	tert-Butylbenzene	50	49.1	98	70-130
75-15-0	Carbon disulfide	50	61.5	123	70-130
56-23-5	Carbon tetrachloride	50	57.5	115	70-130
108-90-7	Chlorobenzene	50	46.8	94	70-130
75-00-3	Chloroethane	50	58.2	116	70-130
110-75-8	2-Chloroethyl vinyl ether	50	48.8	98	10-160
67-66-3	Chloroform	50	48.5	97	70-130
74-87-3	Chloromethane	50	66.0	132* [a]	70-130
95-49-8	o-Chlorotoluene	50	45.9	92	70-130
106-43-4	p-Chlorotoluene	50	47.9	96	70-130
124-48-1	Dibromochloromethane	50	46.2	92	70-130
95-50-1	1,2-Dichlorobenzene	50	44.3	89	70-130
541-73-1	1,3-Dichlorobenzene	50	46.3	93	70-130
106-46-7	1,4-Dichlorobenzene	50	47.3	95	70-130
75-71-8	Dichlorodifluoromethane	50	79.9	160* [a]	70-130
75-34-3	1,1-Dichloroethane	50	50.1	100	70-130
107-06-2	1,2-Dichloroethane	50	47.2	94	70-130
75-35-4	1,1-Dichloroethene	50	59.9	120	70-130
156-59-2	cis-1,2-Dichloroethene	50	47.8	96	70-130
156-60-5	trans-1,2-Dichloroethene	50	53.5	107	70-130
78-87-5	1,2-Dichloropropane	50	45.6	91	70-130
142-28-9	1,3-Dichloropropane	50	45.2	90	70-130
594-20-7	2,2-Dichloropropane	50	55.3	111	70-130
563-58-6	1,1-Dichloropropene	50	56.7	113	70-130

* = Outside of Control Limits.

Blank Spike Summary

Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1806-BS	M53164.D	1	12/28/12	AMY	n/a	n/a	MSM1806

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

MC16961-1, MC16961-2, MC16961-4

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
10061-01-5	cis-1,3-Dichloropropene	50	45.4	91	70-130
10061-02-6	trans-1,3-Dichloropropene	50	48.6	97	70-130
123-91-1	1,4-Dioxane	250	282	113	70-130
97-63-2	Ethyl methacrylate	50	50.3	101	76-141
100-41-4	Ethylbenzene	50	51.6	103	70-130
87-68-3	Hexachlorobutadiene	50	56.1	112	70-130
591-78-6	2-Hexanone	50	56.0	112	70-130
98-82-8	Isopropylbenzene	50	48.8	98	70-130
99-87-6	p-Isopropyltoluene	50	55.6	111	70-130
1634-04-4	Methyl Tert Butyl Ether	50	42.9	86	70-130
108-10-1	4-Methyl-2-pentanone (MIBK)	50	51.1	102	70-130
74-95-3	Methylene bromide	50	46.8	94	70-130
75-09-2	Methylene chloride	50	44.6	89	70-130
91-20-3	Naphthalene	50	56.7	113	70-130
103-65-1	n-Propylbenzene	50	49.1	98	70-130
100-42-5	Styrene	50	48.3	97	70-130
630-20-6	1,1,1,2-Tetrachloroethane	50	47.3	95	70-130
79-34-5	1,1,2,2-Tetrachloroethane	50	46.9	94	70-130
127-18-4	Tetrachloroethene	50	57.2	114	70-130
108-88-3	Toluene	50	52.9	106	70-130
87-61-6	1,2,3-Trichlorobenzene	50	49.7	99	70-130
120-82-1	1,2,4-Trichlorobenzene	50	50.7	101	70-130
71-55-6	1,1,1-Trichloroethane	50	54.2	108	70-130
79-00-5	1,1,2-Trichloroethane	50	45.5	91	70-130
79-01-6	Trichloroethene	50	53.3	107	70-130
75-69-4	Trichlorofluoromethane	50	63.9	128	70-130
96-18-4	1,2,3-Trichloropropane	50	48.7	97	70-130
95-63-6	1,2,4-Trimethylbenzene	50	49.9	100	70-130
108-67-8	1,3,5-Trimethylbenzene	50	50.4	101	70-130
108-05-4	Vinyl Acetate	50	50.2	100	70-130
75-01-4	Vinyl chloride	50	59.7	119	70-130
	m,p-Xylene	100	102	102	70-130
95-47-6	o-Xylene	50	48.5	97	70-130
1330-20-7	Xylene (total)	150	151	101	70-130

* = Outside of Control Limits.

Blank Spike Summary

Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1806-BS	M53164.D	1	12/28/12	AMY	n/a	n/a	MSM1806

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

MC16961-1, MC16961-2, MC16961-4

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	84%	70-130%
2037-26-5	Toluene-D8	88%	70-130%
460-00-4	4-Bromofluorobenzene	80%	70-130%

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

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1807-BS	M53190.D	1	12/31/12	AMY	n/a	n/a	MSM1807
MSM1807-BSD	M53191.D	1	12/31/12	AMY	n/a	n/a	MSM1807

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

MC16961-3

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	50	33.2	66* [a]	36.5	73	9	70-130/25
107-02-8	Acrolein	250	184	74	186	74	1	70-130/25
107-13-1	Acrylonitrile	50	43.5	87	48.5	97	11	70-130/25
71-43-2	Benzene	50	44.5	89	50.3	101	12	70-130/25
108-86-1	Bromobenzene	50	42.1	84	46.0	92	9	70-130/25
74-97-5	Bromochloromethane	50	44.0	88	47.5	95	8	70-130/25
75-27-4	Bromodichloromethane	50	43.1	86	47.9	96	11	70-130/25
75-25-2	Bromoform	50	42.3	85	46.2	92	9	70-130/25
74-83-9	Bromomethane	50	52.2	104	57.0	114	9	70-130/25
78-93-3	2-Butanone (MEK)	50	40.3	81	46.3	93	14	70-130/25
104-51-8	n-Butylbenzene	50	47.2	94	53.8	108	13	70-130/25
135-98-8	sec-Butylbenzene	50	44.9	90	51.6	103	14	70-130/25
98-06-6	tert-Butylbenzene	50	43.8	88	50.1	100	13	70-130/25
75-15-0	Carbon disulfide	50	55.4	111	61.8	124	11	70-130/25
56-23-5	Carbon tetrachloride	50	50.9	102	58.3	117	14	70-130/25
108-90-7	Chlorobenzene	50	41.8	84	46.9	94	11	70-130/25
75-00-3	Chloroethane	50	52.7	105	59.1	118	11	70-130/25
110-75-8	2-Chloroethyl vinyl ether	50	46.2	92	50.1	100	8	10-160/25
67-66-3	Chloroform	50	45.3	91	49.5	99	9	70-130/25
74-87-3	Chloromethane	50	59.9	120	66.2	132* [a]	10	70-130/25
95-49-8	o-Chlorotoluene	50	41.5	83	46.3	93	11	70-130/25
106-43-4	p-Chlorotoluene	50	42.4	85	47.2	94	11	70-130/25
124-48-1	Dibromochloromethane	50	42.0	84	45.5	91	8	70-130/25
95-50-1	1,2-Dichlorobenzene	50	40.7	81	44.2	88	8	70-130/25
541-73-1	1,3-Dichlorobenzene	50	42.0	84	45.8	92	9	70-130/25
106-46-7	1,4-Dichlorobenzene	50	42.1	84	45.9	92	9	70-130/25
75-71-8	Dichlorodifluoromethane	50	67.4	135* [a]	77.2	154* [a]	14	70-130/25
75-34-3	1,1-Dichloroethane	50	46.5	93	51.9	104	11	70-130/25
107-06-2	1,2-Dichloroethane	50	42.4	85	46.5	93	9	70-130/25
75-35-4	1,1-Dichloroethene	50	53.9	108	61.1	122	13	70-130/25
156-59-2	cis-1,2-Dichloroethene	50	44.7	89	48.0	96	7	70-130/25
156-60-5	trans-1,2-Dichloroethene	50	48.8	98	54.4	109	11	70-130/25
78-87-5	1,2-Dichloropropane	50	40.7	81	46.1	92	12	70-130/25
142-28-9	1,3-Dichloropropane	50	41.3	83	45.0	90	9	70-130/25
594-20-7	2,2-Dichloropropane	50	50.5	101	56.8	114	12	70-130/25
563-58-6	1,1-Dichloropropene	50	49.6	99	57.4	115	15	70-130/25

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1807-BS	M53190.D	1	12/31/12	AMY	n/a	n/a	MSM1807
MSM1807-BSD	M53191.D	1	12/31/12	AMY	n/a	n/a	MSM1807

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

MC16961-3

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
10061-01-5	cis-1,3-Dichloropropene	50	41.3	83	45.6	91	10	70-130/25
10061-02-6	trans-1,3-Dichloropropene	50	43.9	88	47.7	95	8	70-130/25
123-91-1	1,4-Dioxane	250	224	90	247	99	10	70-130/25
97-63-2	Ethyl methacrylate	50	46.9	94	50.7	101	8	76-141/25
100-41-4	Ethylbenzene	50	45.8	92	51.6	103	12	70-130/25
87-68-3	Hexachlorobutadiene	50	48.6	97	55.1	110	13	70-130/25
591-78-6	2-Hexanone	50	51.1	102	57.1	114	11	70-130/25
98-82-8	Isopropylbenzene	50	43.6	87	49.7	99	13	70-130/25
99-87-6	p-Isopropyltoluene	50	48.2	96	55.7	111	14	70-130/25
1634-04-4	Methyl Tert Butyl Ether	50	42.5	85	45.1	90	6	70-130/25
108-10-1	4-Methyl-2-pentanone (MIBK)	50	47.2	94	52.9	106	11	70-130/25
74-95-3	Methylene bromide	50	42.6	85	46.7	93	9	70-130/25
75-09-2	Methylene chloride	50	40.5	81	45.0	90	11	70-130/25
91-20-3	Naphthalene	50	51.8	104	53.0	106	2	70-130/25
103-65-1	n-Propylbenzene	50	44.3	89	49.8	100	12	70-130/25
100-42-5	Styrene	50	43.0	86	47.5	95	10	70-130/25
630-20-6	1,1,1,2-Tetrachloroethane	50	42.3	85	47.7	95	12	70-130/25
79-34-5	1,1,2,2-Tetrachloroethane	50	42.0	84	45.9	92	9	70-130/25
127-18-4	Tetrachloroethene	50	49.8	100	57.2	114	14	70-130/25
108-88-3	Toluene	50	47.1	94	53.5	107	13	70-130/25
87-61-6	1,2,3-Trichlorobenzene	50	44.8	90	47.0	94	5	70-130/25
120-82-1	1,2,4-Trichlorobenzene	50	44.2	88	47.4	95	7	70-130/25
71-55-6	1,1,1-Trichloroethane	50	50.1	100	56.6	113	12	70-130/25
79-00-5	1,1,2-Trichloroethane	50	41.2	82	46.0	92	11	70-130/25
79-01-6	Trichloroethene	50	47.7	95	54.3	109	13	70-130/25
75-69-4	Trichlorofluoromethane	50	58.5	117	65.9	132* [a]	12	70-130/25
96-18-4	1,2,3-Trichloropropane	50	43.9	88	48.8	98	11	70-130/25
95-63-6	1,2,4-Trimethylbenzene	50	44.2	88	49.5	99	11	70-130/25
108-67-8	1,3,5-Trimethylbenzene	50	44.7	89	50.5	101	12	70-130/25
108-05-4	Vinyl Acetate	50	43.6	87	43.5	87	0	70-130/25
75-01-4	Vinyl chloride	50	55.8	112	62.3	125	11	70-130/25
	m,p-Xylene	100	91.2	91	102	102	11	70-130/25
95-47-6	o-Xylene	50	43.5	87	48.6	97	11	70-130/25
1330-20-7	Xylene (total)	150	135	90	151	101	11	70-130/25

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM1807-BS	M53190.D	1	12/31/12	AMY	n/a	n/a	MSM1807
MSM1807-BSD	M53191.D	1	12/31/12	AMY	n/a	n/a	MSM1807

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

MC16961-3

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	87%	86%	70-130%
2037-26-5	Toluene-D8	88%	88%	70-130%
460-00-4	4-Bromofluorobenzene	81%	82%	70-130%

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

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC16999-1MS	M53173.D	1	12/28/12	AMY	n/a	n/a	MSM1806
MC16999-1MSD	M53174.D	1	12/28/12	AMY	n/a	n/a	MSM1806
MC16999-1	M53169.D	1	12/28/12	AMY	n/a	n/a	MSM1806

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

MC16961-1, MC16961-2, MC16961-4

CAS No.	Compound	MC16999-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND		81	67.0	83	71.5	85	6	70-130/30
107-02-8	Acrolein	ND		405	369	91	331	79	11	70-130/30
107-13-1	Acrylonitrile	ND		81	74.6	92	76.6	91	3	70-130/30
71-43-2	Benzene	0.49	J	81	75.1	92	81.2	96	8	70-130/30
108-86-1	Bromobenzene	ND		81	67.3	83	71.0	85	5	70-130/30
74-97-5	Bromochloromethane	ND		81	74.0	91	78.2	93	6	70-130/30
75-27-4	Bromodichloromethane	ND		81	73.6	91	77.7	93	5	70-130/30
75-25-2	Bromoform	ND		81	70.6	87	71.4	85	1	70-130/30
74-83-9	Bromomethane	ND		81	87.3	108	92.5	110	6	70-130/30
78-93-3	2-Butanone (MEK)	ND		81	57.3	71	81.6	97	35* [a]	70-130/30
104-51-8	n-Butylbenzene	ND		81	61.9	76	82.6	99	29	70-130/30
135-98-8	sec-Butylbenzene	ND		81	60.2	74	79.1	94	27	70-130/30
98-06-6	tert-Butylbenzene	ND		81	60.4	75	77.3	92	25	70-130/30
75-15-0	Carbon disulfide	ND		81	93.6	116	101	121	8	70-130/30
56-23-5	Carbon tetrachloride	ND		81	84.1	104	93.2	111	10	70-130/30
108-90-7	Chlorobenzene	ND		81	67.5	83	73.3	88	8	70-130/30
75-00-3	Chloroethane	ND		81	89.2	110	96.8	116	8	70-130/30
110-75-8	2-Chloroethyl vinyl ether	ND		81	63.0	78	70.8	85	12	10-160/30
67-66-3	Chloroform	ND		81	75.3	93	80.7	96	7	70-130/30
74-87-3	Chloromethane	ND		81	101	125	112	134* [b]	10	70-130/30
95-49-8	o-Chlorotoluene	ND		81	62.0	77	71.2	85	14	70-130/30
106-43-4	p-Chlorotoluene	ND		81	64.0	79	73.0	87	13	70-130/30
124-48-1	Dibromochloromethane	ND		81	71.0	88	73.9	88	4	70-130/30
95-50-1	1,2-Dichlorobenzene	ND		81	57.4	71	64.0	76	11	70-130/30
541-73-1	1,3-Dichlorobenzene	ND		81	60.0	74	69.0	82	14	70-130/30
106-46-7	1,4-Dichlorobenzene	ND		81	61.8	76	70.0	84	12	70-130/30
75-71-8	Dichlorodifluoromethane	ND		81	121	149* [b]	132	158* [b]	9	70-130/30
75-34-3	1,1-Dichloroethane	ND		81	78.3	97	84.2	101	7	70-130/30
107-06-2	1,2-Dichloroethane	ND		81	72.9	90	76.1	91	4	70-130/30
75-35-4	1,1-Dichloroethene	ND		81	91.5	113	99.3	119	8	70-130/30
156-59-2	cis-1,2-Dichloroethene	ND		81	73.7	91	78.8	94	7	70-130/30
156-60-5	trans-1,2-Dichloroethene	ND		81	81.0	100	88.4	106	9	70-130/30
78-87-5	1,2-Dichloropropane	ND		81	70.4	87	73.9	88	5	70-130/30
142-28-9	1,3-Dichloropropane	ND		81	69.5	86	72.8	87	5	70-130/30
594-20-7	2,2-Dichloropropane	ND		81	83.8	103	91.7	109	9	70-130/30
563-58-6	1,1-Dichloropropene	ND		81	83.7	103	92.8	111	10	70-130/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC16999-1MS	M53173.D	1	12/28/12	AMY	n/a	n/a	MSM1806
MC16999-1MSD	M53174.D	1	12/28/12	AMY	n/a	n/a	MSM1806
MC16999-1	M53169.D	1	12/28/12	AMY	n/a	n/a	MSM1806

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

MC16961-1, MC16961-2, MC16961-4

CAS No.	Compound	MC16999-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
10061-01-5	cis-1,3-Dichloropropene	ND		81	69.4	86	73.5	88	6	70-130/30
10061-02-6	trans-1,3-Dichloropropene	ND		81	76.0	94	78.3	93	3	70-130/30
123-91-1	1,4-Dioxane	ND		405	410	101	409	98	0	70-130/30
97-63-2	Ethyl methacrylate	ND		81	75.8	94	76.4	91	1	41-160/30
100-41-4	Ethylbenzene	ND		81	72.7	90	82.8	99	13	70-130/30
87-68-3	Hexachlorobutadiene	ND		81	56.7	70	83.0	99	38* [a]	70-130/30
591-78-6	2-Hexanone	ND		81	84.2	104	79.1	94	6	70-130/30
98-82-8	Isopropylbenzene	ND		81	65.4	81	78.1	93	18	70-130/30
99-87-6	p-Isopropyltoluene	ND		81	65.3	81	86.1	103	27	70-130/30
1634-04-4	Methyl Tert Butyl Ether	ND		81	69.7	86	75.1	90	7	70-130/30
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		81	81.5	101	82.4	98	1	70-130/30
74-95-3	Methylene bromide	ND		81	74.8	92	76.5	91	2	70-130/30
75-09-2	Methylene chloride	ND		81	69.8	86	74.3	89	6	70-130/30
91-20-3	Naphthalene	ND		81	52.7	65* [b]	59.5	71	12	70-130/30
103-65-1	n-Propylbenzene	ND		81	63.8	79	77.7	93	20	70-130/30
100-42-5	Styrene	ND		81	66.8	82	72.1	86	8	70-130/30
630-20-6	1,1,1,2-Tetrachloroethane	ND		81	70.5	87	75.9	91	7	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	ND		81	73.0	90	72.2	86	1	70-130/30
127-18-4	Tetrachloroethene	ND		81	80.1	99	92.1	110	14	70-130/30
108-88-3	Toluene	ND		81	78.4	97	84.5	101	7	70-130/30
87-61-6	1,2,3-Trichlorobenzene	ND		81	47.4	59* [b]	60.5	72	24	70-130/30
120-82-1	1,2,4-Trichlorobenzene	ND		81	51.9	64* [b]	66.5	79	25	70-130/30
71-55-6	1,1,1-Trichloroethane	ND		81	82.5	102	89.9	107	9	70-130/30
79-00-5	1,1,2-Trichloroethane	ND		81	71.5	88	73.5	88	3	70-130/30
79-01-6	Trichloroethene	ND		81	79.5	98	87.1	104	9	70-130/30
75-69-4	Trichlorofluoromethane	ND		81	96.6	119	107	128	10	70-130/30
96-18-4	1,2,3-Trichloropropane	ND		81	75.8	94	74.1	88	2	70-130/30
95-63-6	1,2,4-Trimethylbenzene	ND		81	63.5	78	77.5	93	20	70-130/30
108-67-8	1,3,5-Trimethylbenzene	ND		81	63.5	78	78.2	93	21	70-130/30
108-05-4	Vinyl Acetate	ND		81	89.0	110	84.7	101	5	70-130/30
75-01-4	Vinyl chloride	ND		81	91.3	113	101	121	10	70-130/30
	m,p-Xylene	ND		162	142	88	163	97	14	70-130/30
95-47-6	o-Xylene	ND		81	67.9	84	76.9	92	12	70-130/30
1330-20-7	Xylene (total)	ND		243	210	86	240	96	13	70-130/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC16999-1MS	M53173.D	1	12/28/12	AMY	n/a	n/a	MSM1806
MC16999-1MSD	M53174.D	1	12/28/12	AMY	n/a	n/a	MSM1806
MC16999-1	M53169.D	1	12/28/12	AMY	n/a	n/a	MSM1806

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

MC16961-1, MC16961-2, MC16961-4

CAS No.	Surrogate Recoveries	MS	MSD	MC16999-1	Limits
1868-53-7	Dibromofluoromethane	86%	86%	88%	70-130%
2037-26-5	Toluene-D8	89%	89%	88%	70-130%
460-00-4	4-Bromofluorobenzene	83%	81%	82%	70-130%

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

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC17066-2AMS	M53205.D	1	12/31/12	AMY	n/a	n/a	MSM1807
MC17066-2AMSD	M53206.D	1	12/31/12	AMY	n/a	n/a	MSM1807
MC17066-2A	M53204.D	1	12/31/12	AMY	n/a	n/a	MSM1807

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

MC16961-3

CAS No.	Compound	MC17066-2A ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND		74.4	198	266* a	209	277* a	5	70-130/30
107-02-8	Acrolein	ND		372	256	69* a	230	61* a	11	70-130/30
107-13-1	Acrylonitrile	ND		74.4	57.0	77	67.1	89	16	70-130/30
71-43-2	Benzene	1.7		74.4	60.8	79	62.7	81	3	70-130/30
108-86-1	Bromobenzene	ND		74.4	39.0	52* a	33.8	45* a	14	70-130/30
74-97-5	Bromochloromethane	ND		74.4	60.4	81	62.4	83	3	70-130/30
75-27-4	Bromodichloromethane	ND		74.4	55.9	75	55.3	73	1	70-130/30
75-25-2	Bromoform	ND		74.4	39.0	52* a	36.6	48* a	6	70-130/30
74-83-9	Bromomethane	ND		74.4	73.7	99	74.3	98	1	70-130/30
78-93-3	2-Butanone (MEK)	ND		74.4	62.7	84	70.8	94	12	70-130/30
104-51-8	n-Butylbenzene	ND		74.4	48.1	65* a	44.3	59* a	8	70-130/30
135-98-8	sec-Butylbenzene	ND		74.4	52.0	70	49.8	66* a	4	70-130/30
98-06-6	tert-Butylbenzene	ND		74.4	52.0	70	51.0	68* a	2	70-130/30
75-15-0	Carbon disulfide	ND		74.4	65.7	88	72.3	96	10	70-130/30
56-23-5	Carbon tetrachloride	ND		74.4	63.7	86	66.9	89	5	70-130/30
108-90-7	Chlorobenzene	ND		74.4	45.1	61* a	43.1	57* a	5	70-130/30
75-00-3	Chloroethane	ND		74.4	67.1	90	72.8	96	8	70-130/30
110-75-8	2-Chloroethyl vinyl ether	ND		74.4	ND	0* a	ND	0* a	nc	10-160/30
67-66-3	Chloroform	ND		74.4	59.7	80	62.6	83	5	70-130/30
74-87-3	Chloromethane	ND		74.4	92.1	124	99.3	132* a	8	70-130/30
95-49-8	o-Chlorotoluene	ND		74.4	41.9	56* a	38.5	51* a	8	70-130/30
106-43-4	p-Chlorotoluene	ND		74.4	40.5	54* a	35.8	47* a	12	70-130/30
124-48-1	Dibromochloromethane	ND		74.4	48.9	66* a	46.7	62* a	5	70-130/30
95-50-1	1,2-Dichlorobenzene	ND		74.4	26.2	35* a	21.1	28* a	22	70-130/30
541-73-1	1,3-Dichlorobenzene	ND		74.4	31.7	43* a	27.0	36* a	16	70-130/30
106-46-7	1,4-Dichlorobenzene	ND		74.4	31.1	42* a	26.1	35* a	17	70-130/30
75-71-8	Dichlorodifluoromethane	ND		74.4	98.8	133* a	110	146* a	11	70-130/30
75-34-3	1,1-Dichloroethane	ND		74.4	61.3	82	65.0	86	6	70-130/30
107-06-2	1,2-Dichloroethane	ND		74.4	60.3	81	59.9	79	1	70-130/30
75-35-4	1,1-Dichloroethene	ND		74.4	64.6	87	70.7	94	9	70-130/30
156-59-2	cis-1,2-Dichloroethene	ND		74.4	57.5	77	59.9	79	4	70-130/30
156-60-5	trans-1,2-Dichloroethene	ND		74.4	61.6	83	65.2	86	6	70-130/30
78-87-5	1,2-Dichloropropane	ND		74.4	55.9	75	56.8	75	2	70-130/30
142-28-9	1,3-Dichloropropane	ND		74.4	52.0	70	52.1	69* a	0	70-130/30
594-20-7	2,2-Dichloropropane	ND		74.4	64.1	86	69.4	92	8	70-130/30
563-58-6	1,1-Dichloropropene	ND		74.4	64.9	87	68.1	90	5	70-130/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC17066-2AMS	M53205.D	1	12/31/12	AMY	n/a	n/a	MSM1807
MC17066-2AMSD	M53206.D	1	12/31/12	AMY	n/a	n/a	MSM1807
MC17066-2A	M53204.D	1	12/31/12	AMY	n/a	n/a	MSM1807

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

MC16961-3

CAS No.	Compound	MC17066-2A ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
10061-01-5	cis-1,3-Dichloropropene	ND		74.4	52.5	71	51.0	68* [a]	3	70-130/30
10061-02-6	trans-1,3-Dichloropropene	ND		74.4	53.1	71	50.3	67* [a]	5	70-130/30
123-91-1	1,4-Dioxane	ND		372	390	105	422	112	8	70-130/30
97-63-2	Ethyl methacrylate	ND		74.4	60.8	82	56.5	75	7	41-160/30
100-41-4	Ethylbenzene	1.1	J	74.4	54.0	71	53.8	70	0	70-130/30
87-68-3	Hexachlorobutadiene	ND		74.4	50.3	68* [a]	48.7	65* [a]	3	70-130/30
591-78-6	2-Hexanone	ND		74.4	51.5	69* [a]	64.9	86	23	70-130/30
98-82-8	Isopropylbenzene	ND		74.4	52.7	71	51.2	68* [a]	3	70-130/30
99-87-6	p-Isopropyltoluene	ND		74.4	54.1	73	50.3	67* [a]	7	70-130/30
1634-04-4	Methyl Tert Butyl Ether	ND		74.4	64.7	87	68.3	90	5	70-130/30
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		74.4	69.7	94	68.0	90	2	70-130/30
74-95-3	Methylene bromide	ND		74.4	58.0	78	57.9	77	0	70-130/30
75-09-2	Methylene chloride	1.9	J	74.4	56.1	73	58.9	75	5	70-130/30
91-20-3	Naphthalene	ND		74.4	13.9	19* [a]	12.4	16* [a]	11	70-130/30
103-65-1	n-Propylbenzene	ND		74.4	50.0	67* [a]	47.5	63* [a]	5	70-130/30
100-42-5	Styrene	ND		74.4	39.6	53* [a]	35.8	47* [a]	10	70-130/30
630-20-6	1,1,1,2-Tetrachloroethane	ND		74.4	48.0	64* [a]	48.4	64* [a]	1	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	ND		74.4	39.6	53* [a]	35.9	48* [a]	10	70-130/30
127-18-4	Tetrachloroethene	ND		74.4	61.6	83	64.2	85	4	70-130/30
108-88-3	Toluene	3.2	J	74.4	62.5	80	63.1	79	1	70-130/30
87-61-6	1,2,3-Trichlorobenzene	ND		74.4	15.8	21* [a]	12.6	17* [a]	23	70-130/30
120-82-1	1,2,4-Trichlorobenzene	ND		74.4	19.9	27* [a]	15.6	21* [a]	24	70-130/30
71-55-6	1,1,1-Trichloroethane	ND		74.4	62.0	83	66.9	89	8	70-130/30
79-00-5	1,1,2-Trichloroethane	ND		74.4	52.2	70	49.9	66* [a]	5	70-130/30
79-01-6	Trichloroethene	ND		74.4	60.9	82	62.0	82	2	70-130/30
75-69-4	Trichlorofluoromethane	ND		74.4	73.2	98	81.0	107	10	70-130/30
96-18-4	1,2,3-Trichloropropane	ND		74.4	42.6	57* [a]	37.6	50* [a]	12	70-130/30
95-63-6	1,2,4-Trimethylbenzene	1.0	J	74.4	45.3	60* [a]	41.3	53* [a]	9	70-130/30
108-67-8	1,3,5-Trimethylbenzene	ND		74.4	48.3	65* [a]	45.4	60* [a]	6	70-130/30
108-05-4	Vinyl Acetate	ND		74.4	73.0	98	73.8	98	1	70-130/30
75-01-4	Vinyl chloride	ND		74.4	77.4	104	85.3	113	10	70-130/30
	m,p-Xylene	1.5	J	149	104	69* [a]	103	67* [a]	1	70-130/30
95-47-6	o-Xylene	0.59	J	74.4	47.0	62* [a]	47.0	61* [a]	0	70-130/30
1330-20-7	Xylene (total)	2.1	J	223	151	67* [a]	150	65* [a]	1	70-130/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC17066-2AMS	M53205.D	1	12/31/12	AMY	n/a	n/a	MSM1807
MC17066-2AMSD	M53206.D	1	12/31/12	AMY	n/a	n/a	MSM1807
MC17066-2A	M53204.D	1	12/31/12	AMY	n/a	n/a	MSM1807

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

MC16961-3

CAS No.	Surrogate Recoveries	MS	MSD	MC17066-2A	Limits
1868-53-7	Dibromofluoromethane	82%	83%	83%	70-130%
2037-26-5	Toluene-D8	88%	88%	88%	70-130%
460-00-4	4-Bromofluorobenzene	86%	86%	98%	70-130%

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

* = Outside of Control Limits.

Volatile Internal Standard Area Summary

Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Check Std:	MSM1806-CC1800	**Injection Date:**	12/28/12
Lab File ID:	M53163.D	**Injection Time:**	11:22
Instrument ID:	GCMSM	**Method:**	SW846 8260B

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	173299	9.36	235211	10.24	117006	13.52	132416	16.08	39437	6.87
Upper Limit [a]	346598	9.86	470422	10.74	234012	14.02	264832	16.58	78874	7.37
Lower Limit [b]	86650	8.86	117606	9.74	58503	13.02	66208	15.58	19719	6.37

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
MSM1806-BS	163710	9.36	224497	10.24	112617	13.52	132252	16.08	81702[c]	6.86
MSM1805-BS1	163710	9.36	224497	10.24	112617	13.52	132252	16.08	81702[c]	6.86
MSM1805-MB1	172436	9.36	232442	10.24	111084	13.52	135750	16.08	35961	6.86
MSM1806-MB	172436	9.36	232442	10.24	111084	13.52	135750	16.08	35961	6.86
MC17156-6MSD	168026	9.36	228465	10.24	115455	13.52	132327	16.08	83142[c]	6.85
MC16999-1	167958	9.36	231649	10.24	113379	13.52	135295	16.08	57519	6.86
ZZZZZZ	173461	9.36	240025	10.24	117213	13.52	136771	16.08	63208	6.86
ZZZZZZ	173436	9.36	237714	10.24	114587	13.52	137263	16.08	69045	6.86
ZZZZZZ	176636	9.36	237205	10.24	116669	13.52	133355	16.08	56739	6.86
MC16999-1MS	170605	9.36	236104	10.24	118568	13.52	136432	16.08	82307[c]	6.86
MC16999-1MSD	169923	9.36	236090	10.24	118380	13.52	138227	16.08	84603[c]	6.85
MC16961-1	173399	9.36	240001	10.24	117301	13.52	143276	16.08	81175[c]	6.86
MC16961-2	176917	9.36	241780	10.24	119429	13.52	144025	16.08	72631	6.86
MC16961-4	178397	9.36	244621	10.24	120908	13.52	143132	16.08	67801	6.86
ZZZZZZ	177909	9.36	241965	10.24	116211	13.52	139479	16.08	40154	6.86
ZZZZZZ	180126	9.36	242757	10.24	117501	13.52	141621	16.08	37284	6.86
ZZZZZZ	179902	9.36	246525	10.24	119062	13.52	142481	16.08	39089	6.86
ZZZZZZ	178502	9.36	242991	10.24	118836	13.52	141267	16.08	41213	6.86
ZZZZZZ	172725	9.36	236177	10.24	112464	13.52	133633	16.08	38616	6.86
ZZZZZZ	172828	9.36	234544	10.24	113041	13.52	133102	16.08	40116	6.86
ZZZZZZ	163814	9.36	223200	10.24	109309	13.52	134368	16.08	79213[c]	6.86

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 analytes not associated with this internal standard.

Volatile Internal Standard Area Summary

Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Check Std:	MSM1807-CC1800	**Injection Date:**	12/31/12
Lab File ID:	M53189.D	**Injection Time:**	09:51
Instrument ID:	GCMSM	**Method:**	SW846 8260B

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	186689	9.35	264688	10.24	132201	13.52	147574	16.08	47637	6.86
Upper Limit [a]	373378	9.85	529376	10.74	264402	14.02	295148	16.58	95274	7.36
Lower Limit [b]	93345	8.85	132344	9.74	66101	13.02	73787	15.58	23819	6.36
Lab Sample ID	**IS 1 AREA**	**RT**	**IS 2 AREA**	**RT**	**IS 3 AREA**	**RT**	**IS 4 AREA**	**RT**	**IS 5 AREA**	**RT**
MSM1807-BS	171041	9.36	242741	10.24	122649	13.52	144482	16.08	88347	6.86
MSM1807-BSD	168760	9.36	234211	10.24	118794	13.52	138826	16.08	86125	6.86
MSM1807-MB	168988	9.36	231354	10.24	112452	13.52	135443	16.08	41445	6.86
ZZZZZZ	138337	9.36	187555	10.24	89829	13.52	92550	16.08	51996	6.85
ZZZZZZ	122341	9.36	169022	10.24	74020	13.52	59363[c]	16.08	59071	6.86
ZZZZZZ	140719	9.36	191334	10.24	91758	13.52	96687	16.08	50838	6.86
ZZZZZZ	143805	9.36	192668	10.24	82165	13.52	58672[c]	16.08	58572	6.85
MC16961-3	166789	9.35	226381	10.24	111670	13.52	135654	16.08	66371	6.85
ZZZZZZ	167524	9.36	228779	10.24	110220	13.52	136767	16.08	76865	6.85
ZZZZZZ	173949	9.36	237012	10.24	116408	13.52	141838	16.08	70574	6.86
ZZZZZZ	173489	9.36	240185	10.24	118758	13.52	145056	16.08	71397	6.86
ZZZZZZ	168278	9.36	233486	10.24	115139	13.52	141574	16.08	70628	6.86
ZZZZZZ	151879	9.36	208490	10.24	95964	13.52	80892	16.08	72562	6.86
MC17066-2A	144615	9.36	197295	10.24	92292	13.52	82689	16.08	70786	6.85
MC17066-2AMS	158300	9.36	216496	10.24	107517	13.52	114343	16.08	74815	6.85
MC17066-2AMSD	147693	9.35	203662	10.24	99097	13.52	108944	16.08	73075	6.85
ZZZZZZ	128350	9.36	174471	10.24	69663	13.52	42050[c]	16.09	62995	6.85
ZZZZZZ	148557	9.36	200729	10.24	81101	13.52	53565[c]	16.08	71209	6.86

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

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

Volatile Surrogate Recovery Summary

Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Method: SW846 8260B **Matrix:** SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
MC16961-1	M53176.D	86.0	88.0	81.0
MC16961-2	M53177.D	85.0	88.0	83.0
MC16961-3	M53198.D	85.0	88.0	80.0
MC16961-4	M53179.D	83.0	88.0	92.0
MC16999-1MS	M53173.D	86.0	89.0	83.0
MC16999-1MSD	M53174.D	86.0	89.0	81.0
MC17066-2AMS	M53205.D	82.0	88.0	86.0
MC17066-2AMSD	M53206.D	83.0	88.0	86.0
MSM1806-BS	M53164.D	84.0	88.0	80.0
MSM1806-MB	M53166.D	82.0	88.0	79.0
MSM1807-BS	M53190.D	87.0	88.0	81.0
MSM1807-BSD	M53191.D	86.0	88.0	82.0
MSM1807-MB	M53193.D	83.0	89.0	79.0

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

GC Volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP31493-MB	BK20274.D	1	12/28/12	AP	12/19/12	OP31493	GBK733

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

MC16961-1, MC16961-2, MC16961-3, MC16961-4

CAS No.	Compound	Result	RL	MDL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.5	1.1	ug/kg	
106-93-4	1,2-Dibromoethane	ND	2.5	0.96	ug/kg	

CAS No.	Surrogate Recoveries		Limits
460-00-4	Bromofluorobenzene (S)	126%	61-167%
460-00-4	Bromofluorobenzene (S)	96%	61-167%

Blank Spike Summary

Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP31493-BS	BK20275.D	1	12/28/12	AP	12/19/12	OP31493	GBK733

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

MC16961-1, MC16961-2, MC16961-3, MC16961-4

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
96-12-8	1,2-Dibromo-3-chloropropane	32.6	35.8	110	59-142
106-93-4	1,2-Dibromoethane	32.6	37.6	115	56-140

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	Bromofluorobenzene (S)	114%	61-167%
460-00-4	Bromofluorobenzene (S)	85%	61-167%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP31493-MS	BK20289.D	1	12/28/12	AP	12/19/12	OP31493	GBK733
OP31493-MSD	BK20290.D	1	12/28/12	AP	12/19/12	OP31493	GBK733
MC16961-2	BK20292.D	1	12/28/12	AP	12/19/12	OP31493	GBK733

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

MC16961-1, MC16961-2, MC16961-3, MC16961-4

CAS No.	Compound	MC16961-2 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-chloropropane	ND		67.7	77.2	114	79.9	116	3	40-156/27
106-93-4	1,2-Dibromoethane	ND		67.7	85.7	127	88.0	128	3	48-141/27

CAS No.	Surrogate Recoveries	MS	MSD	MC16961-2	Limits
460-00-4	Bromofluorobenzene (S)	116%	130%	131%	61-167%
460-00-4	Bromofluorobenzene (S)	98%	102%	108%	61-167%

* = Outside of Control Limits.

Volatile Surrogate Recovery Summary

Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Method: SW846 8011 **Matrix:** SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 [a]	S1 [b]
MC16961-1	BK20291.D	125.0	101.0
MC16961-2	BK20292.D	131.0	108.0
MC16961-3	BK20293.D	120.0	102.0
MC16961-4	BK20294.D	126.0	103.0
OP31493-BS	BK20275.D	114.0	85.0
OP31493-MB	BK20274.D	126.0	96.0
OP31493-MS	BK20289.D	116.0	98.0
OP31493-MSD	BK20290.D	130.0	102.0

Surrogate Compounds	Recovery Limits
S1 = Bromofluorobenzene (S)	61-167%

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

GC Surrogate Retention Time Summary

Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Check Std:	GBK733-CC720	**Injection Date:**	12/28/12
Lab File ID:	BK20273.D	**Injection Time:**	14:13
Instrument ID:	GCBK	**Method:**	SW846 8011

	S1 [a] RT	S1 [b] RT
Check Std	4.78	4.45

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 [a] RT	S1 [b] RT
OP31493-MB	BK20274.D	12/28/12	14:39	4.78	4.45
OP31493-BS	BK20275.D	12/28/12	15:03	4.78	4.45
ZZZZZZ	BK20276.D	12/28/12	15:28	4.78	4.45
ZZZZZZ	BK20277.D	12/28/12	15:52	4.78	4.45
ZZZZZZ	BK20278.D	12/28/12	16:16	4.78	4.45
ZZZZZZ	BK20279.D	12/28/12	16:40	4.78	4.45
ZZZZZZ	BK20280.D	12/28/12	17:04	4.78	4.45
ZZZZZZ	BK20281.D	12/28/12	17:29	4.78	4.45
ZZZZZZ	BK20282.D	12/28/12	17:53	4.78	4.45
ZZZZZZ	BK20283.D	12/28/12	18:17	4.78	4.45

Surrogate Compounds

S1 = Bromofluorobenzene (S)

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

GC Surrogate Retention Time Summary

Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Check Std:	GBK733-CC720	**Injection Date:**	12/28/12
Lab File ID:	BK20284.D	**Injection Time:**	18:41
Instrument ID:	GCBK	**Method:**	SW846 8011

	S1 [a] RT	S1 [b] RT
Check Std	4.78	4.45

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 [a] RT	S1 [b] RT
ZZZZZZ	BK20285.D	12/28/12	19:06	4.77	4.45
ZZZZZZ	BK20286.D	12/28/12	19:30	4.78	4.45
ZZZZZZ	BK20287.D	12/28/12	19:54	4.78	4.45
ZZZZZZ	BK20288.D	12/28/12	20:19	4.78	4.45
OP31493-MS	BK20289.D	12/28/12	20:44	4.78	4.45
OP31493-MSD	BK20290.D	12/28/12	21:08	4.78	4.45
MC16961-1	BK20291.D	12/28/12	21:32	4.78	4.45
MC16961-2	BK20292.D	12/28/12	21:56	4.78	4.45
MC16961-3	BK20293.D	12/28/12	22:21	4.78	4.45
MC16961-4	BK20294.D	12/28/12	22:45	4.78	4.45
GBK733-ECC720	BK20295.D	12/28/12	23:09	4.78	4.45

Surrogate Compounds

S1 = Bromofluorobenzene (S)

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

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Percent Solids Raw Data Summary

Percent Solids Raw Data Summary

Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample: MC16961-1 **Analyzed:** 19-DEC-12 by MA **Method:** SM21 2540 B MOD.
ClientID: VMP-55-13

Wet Weight (Total)	32.738	g
Tare Weight	24.118	g
Dry Weight (Total)	30.706	g
Solids, Percent	76.4	%

Sample: MC16961-2 **Analyzed:** 19-DEC-12 by MA **Method:** SM21 2540 B MOD.
ClientID: VMP-55-25

Wet Weight (Total)	29.987	g
Tare Weight	19.32	g
Dry Weight (Total)	29.421	g
Solids, Percent	94.7	%

Sample: MC16961-3 **Analyzed:** 19-DEC-12 by MA **Method:** SM21 2540 B MOD.
ClientID: VMP-55-31

Wet Weight (Total)	30.227	g
Tare Weight	21.003	g
Dry Weight (Total)	29.085	g
Solids, Percent	87 6	%

Sample: MC16961-4 **Analyzed:** 19-DEC-12 by MA **Method:** SM21 2540 B MOD.
ClientID: VMP-55-31-DUP

Wet Weight (Total)	34.182	g
Tare Weight	25.662	g
Dry Weight (Total)	33.203	g
Solids, Percent	88 5	%

eurofins | Air Toxics

3/7/2013

Ms. Elizabeth Kunkel
URS Corporation
1001 Highlands Plaza Dr. West
Suite 300
St. Louis MO 63110

Project Name: Roxana Soil Vapor
Project #: 21562850.04001
Workorder #: 1302355A

Dear Ms. Elizabeth Kunkel

The following report includes the data for the above referenced project for sample(s) received on 2/20/2013 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Kelly Buettner at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kelly Buettner

Project Manager

eurofins | Air Toxics

Summary of Detected Compounds
EPA METHOD TO-15 GC/MS

Client Sample ID: VMP-16-19-021413

Lab ID#: 1302355A-05B

1,3,5-Trimethylbenzene	1300	800 J	6500	3900 J
1,2,4-Trimethylbenzene	1300	2600	6500	13000
Butane	5300	100000	12000	240000
Isopentane	5300	1300000	16000	3800000

Client Sample ID: VMP-16-31-021813

Lab ID#: 1302355A-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methylene Chloride	5000	3600 J	17000	12000 J
Methyl tert-butyl ether	5000	1100 J	18000	4100 J
Hexane	5000	860 J	18000	3000 J
Cyclohexane	5000	75000	17000	260000
2,2,4-Trimethylpentane	5000	2700000	23000	13000000
Benzene	5000	9000	16000	29000
1,2-Dichloropropane	5000	5400	23000	25000
Ethyl Benzene	5000	9900	22000	43000
Cumene	5000	4200 J	24000	21000 J
Propylbenzene	5000	7400	24000	36000
Butane	20000	120000	47000	290000
Isopentane	20000	1500000	59000	4600000

Client Sample ID: VMP-55-20-021513

Lab ID#: 1302355A-07A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methylene Chloride	3400	4100	12000	14000
Hexane	3400	12000	12000	42000
Cyclohexane	3400	66000	12000	230000
2,2,4-Trimethylpentane	3400	79000	16000	370000
Benzene	3400	410 J	11000	1300 J
Trichloroethene	3400	1000 J	18000	5500 J
1,2-Dichloropropane	3400	4200	16000	19000
Butane	14000	1200000	33000	2900000

eurofins | Air Toxics

Summary of Detected Compounds
EPA METHOD TO-15 GC/MS

Client Sample ID: VMP-55-20-021513

Lab ID#: 1302355A-07A

Isopentane	14000	1500000	41000	4500000

eurofins | Air Toxics

Client Sample ID: VMP-55-20-021513

Lab ID#: 1302355A-07A

EPA METHOD TO-15 GC/MS

File Name:	**14022809**	**Date of Collection:**	**2/15/13 10:45:00 AM**
Dil. Factor:	**690**	**Date of Analysis:**	**2/28/13 01:30 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	3400	Not Detected	17000	Not Detected
Freon 114	3400	Not Detected	24000	Not Detected
Chloromethane	14000	Not Detected	28000	Not Detected
Vinyl Chloride	3400	Not Detected	8800	Not Detected
1,3-Butadiene	3400	Not Detected	7600	Not Detected
Bromomethane	3400	Not Detected	13000	Not Detected
Chloroethane	14000	Not Detected	36000	Not Detected
Freon 11	3400	Not Detected	19000	Not Detected
Ethanol	14000	Not Detected	26000	Not Detected
Freon 113	3400	Not Detected	26000	Not Detected
1,1-Dichloroethene	3400	Not Detected	14000	Not Detected
Acetone	14000	Not Detected	33000	Not Detected
2-Propanol	14000	Not Detected	34000	Not Detected
Carbon Disulfide	3400	Not Detected	11000	Not Detected
3-Chloropropene	14000	Not Detected	43000	Not Detected
Methylene Chloride	3400	4100	12000	14000
Methyl tert-butyl ether	3400	Not Detected	12000	Not Detected
trans-1,2-Dichloroethene	3400	Not Detected	14000	Not Detected
Hexane	3400	12000	12000	42000
1,1-Dichloroethane	3400	Not Detected	14000	Not Detected
2-Butanone (Methyl Ethyl Ketone)	14000	Not Detected	41000	Not Detected
cis-1,2-Dichloroethene	3400	Not Detected	14000	Not Detected
Tetrahydrofuran	3400	Not Detected	10000	Not Detected
Chloroform	3400	Not Detected	17000	Not Detected
1,1,1-Trichloroethane	3400	Not Detected	19000	Not Detected
Cyclohexane	3400	66000	12000	230000
Carbon Tetrachloride	3400	Not Detected	22000	Not Detected
2,2,4-Trimethylpentane	3400	79000	16000	370000
Benzene	3400	410 J	11000	1300 J
1,2-Dichloroethane	3400	Not Detected	14000	Not Detected
Heptane	3400	Not Detected	14000	Not Detected
Trichloroethene	3400	1000 J	18000	5500 J
1,2-Dichloropropane	3400	4200	16000	19000
1,4-Dioxane	14000	Not Detected	50000	Not Detected
Bromodichloromethane	3400	Not Detected	23000	Not Detected
cis-1,3-Dichloropropene	3400	Not Detected	16000	Not Detected
4-Methyl-2-pentanone	14000	Not Detected	56000	Not Detected
Toluene	3400	Not Detected	13000	Not Detected
trans-1,3-Dichloropropene	3400	Not Detected	16000	Not Detected
1,1,2-Trichloroethane	3400	Not Detected	19000	Not Detected
Tetrachloroethene	3400	Not Detected	23000	Not Detected
2-Hexanone	14000	Not Detected	56000	Not Detected

eurofins | Air Toxics

Client Sample ID: VMP-55-20-021513

Lab ID#: 1302355A-07A

EPA METHOD TO-15 GC/MS

File Name:	**14022809**	**Date of Collection:**	**2/15/13 10:45:00 AM**
Dil. Factor:	**690**	**Date of Analysis:**	**2/28/13 01:30 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	3400	Not Detected	29000	Not Detected
1,2-Dibromoethane (EDB)	3400	Not Detected	26000	Not Detected
Chlorobenzene	3400	Not Detected	16000	Not Detected
Ethyl Benzene	3400	Not Detected	15000	Not Detected
m,p-Xylene	3400	Not Detected	15000	Not Detected
o-Xylene	3400	Not Detected	15000	Not Detected
Styrene	3400	Not Detected	15000	Not Detected
Bromoform	3400	Not Detected	36000	Not Detected
Cumene	3400	Not Detected	17000	Not Detected
1,1,2,2-Tetrachloroethane	3400	Not Detected	24000	Not Detected
Propylbenzene	3400	Not Detected	17000	Not Detected
4-Ethyltoluene	3400	Not Detected	17000	Not Detected
1,3,5-Trimethylbenzene	3400	Not Detected	17000	Not Detected
1,2,4-Trimethylbenzene	3400	Not Detected	17000	Not Detected
1,3-Dichlorobenzene	3400	Not Detected	21000	Not Detected
1,4-Dichlorobenzene	3400	Not Detected	21000	Not Detected
alpha-Chlorotoluene	3400	Not Detected	18000	Not Detected
1,2-Dichlorobenzene	3400	Not Detected	21000	Not Detected
1,2,4-Trichlorobenzene	14000	Not Detected	100000	Not Detected
Hexachlorobutadiene	14000	Not Detected	150000	Not Detected
Butane	14000	1200000	33000	2900000
Isopentane	14000	1500000	41000	4500000

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	118	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	98	70-130