



November 20, 2014

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) Permits No. 8-28548 and No. 8-28875

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 Permits No. 8-28548 and No. 8-28875. Enclosed are the analytical results for the following sampling activities recently conducted:

- VMP-15 (Soil and Soil Vapor Samples)
- VMP-55 (Soil Vapor Samples)

If you have any questions or require further information please contact Nick Eldred at nicholas.eldred@urs.com (314/743-7753).

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

A handwritten signature in blue ink, appearing to read "Michael Currier".

Michael Currier
Environmental Scientist

A handwritten signature in blue ink, appearing to read "Nick Eldred".

Nick Eldred
Senior Project Manager

Attachments

cc: Kevin Dyer, SOPUS
Repositories – Roxana Public Works, Roxana Public Library, website
Project File

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

5/19/2014

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

Project Name: Roxana SoilVapor
Project #: 21562973.04002
Workorder #: 1405098A

Dear Ms. Elizabeth Kunkel

The following report includes the data for the above referenced project for sample(s) received on 5/6/2014 at Air Toxics Ltd.

The data and associated QC analyzed by 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



Air Toxics

WORK ORDER #: 1405098A

Work Order Summary

CLIENT:	Ms. Elizabeth Kunkel URS Corporation 1001 Highlands Plaza Dr. West Suite 300 St. Louis, MO 63110	BILL TO:	Accounts Payable Austin URS Corporation P.O. BOX 203970 Austin, TX 78720-1088
PHONE:	314-743-4179	P.O. #	282676
FAX:		PROJECT #	21562973.04002 Roxana SoilVapor
DATE RECEIVED:	05/06/2014	CONTACT:	Kelly Buettner
DATE COMPLETED:	05/19/2014		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
05A	VMP-55-20-050514	TO-15	6.1 "Hg	15 psi
06A	VMP-55-20-050514-Dup	TO-15	8.2 "Hg	14.9 psi
07A	Lab Blank	TO-15	NA	NA
08A	CCV	TO-15	NA	NA
09A	LCS	TO-15	NA	NA
09AA	LCSD	TO-15	NA	NA

CERTIFIED BY:

Technical Director

DATE: 05/19/14

Certification numbers: AZ Licensure AZ0775, CA NELAP - 12282CA, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-13-6, UT NELAP CA009332013-4, VA NELAP - 460197, WA NELAP - C935

Name of Accrediting Agency: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005, Effective date: 10/18/2013, Expiration date: 10/17/2014.

Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

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180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 956

(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

**LABORATORY NARRATIVE
EPA Method TO-15
URS Corporation
Workorder# 1405098A**

Six 1 Liter Summa Canister samples were received on May 06, 2014. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified may be false positives.

Dilution was performed on all of the samples due to the presence of high level target species.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue



Air Toxics

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

Client Sample ID: VMP-55-20-050514

Lab ID#: 1405098A-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Hexane	640	320 J	2200	1100 J
Cyclohexane	640	15000	2200	51000
2,2,4-Trimethylpentane	640	120000	3000	550000
Butane	2500	48000	6000	110000
Isopentane	2500	270000	7500	790000

Client Sample ID: VMP-55-20-050514-Dup

Lab ID#: 1405098A-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Hexane	690	280 J	2400	1000 J
Cyclohexane	690	15000	2400	53000
2,2,4-Trimethylpentane	690	120000	3200	560000
Butane	2800	49000	6600	120000
Isopentane	2800	270000	8100	810000



Air Toxics

Client Sample ID: VMP-55-20-050514

Lab ID#: 1405098A-05A

EPA METHOD TO-15 GC/MS

File Name:	14051519	Date of Collection: 5/5/14 11:42:00 AM
Dil. Factor:	127	Date of Analysis: 5/15/14 06:15 PM

Compound	Rot. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	640	Not Detected	3100	Not Detected
Freon 114	640	Not Detected	4400	Not Detected
Chloromethane	2500	Not Detected	5200	Not Detected
Vinyl Chloride	640	Not Detected	1600	Not Detected
1,3-Butadiene	640	Not Detected	1400	Not Detected
Bromomethane	640	Not Detected	2500	Not Detected
Chloroethane	2500	Not Detected	6700	Not Detected
Freon 11	640	Not Detected	3600	Not Detected
Ethanol	2500	Not Detected	4800	Not Detected
Freon 113	640	Not Detected	4900	Not Detected
1,1-Dichloroethene	640	Not Detected	2500	Not Detected
Acetone	2500	Not Detected	6000	Not Detected
2-Propanol	2500	Not Detected	6200	Not Detected
Carbon Disulfide	640	Not Detected	2000	Not Detected
3-Chloropropene	2500	Not Detected	8000	Not Detected
Methylene Chloride	640	Not Detected	2200	Not Detected
Methyl tert-butyl ether	640	Not Detected	2300	Not Detected
trans-1,2-Dichloroethene	640	Not Detected	2500	Not Detected
Hexane	640	320 J	2200	1100 J
1,1-Dichloroethane	640	Not Detected	2600	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2500	Not Detected	7500	Not Detected
cis-1,2-Dichloroethene	640	Not Detected	2500	Not Detected
Tetrahydrofuran	640	Not Detected	1900	Not Detected
Chloroform	640	Not Detected	3100	Not Detected
1,1,1-Trichloroethane	640	Not Detected	3500	Not Detected
Cyclohexane	640	15000	2200	51000
Carbon Tetrachloride	640	Not Detected	4000	Not Detected
2,2,4-Trimethylpentane	640	120000	3000	550000
Benzene	640	Not Detected	2000	Not Detected
1,2-Dichloroethane	640	Not Detected	2600	Not Detected
Heptane	640	Not Detected	2600	Not Detected
Trichloroethene	640	Not Detected	3400	Not Detected
1,2-Dichloropropane	640	Not Detected	2900	Not Detected
1,4-Dioxane	2500	Not Detected	9200	Not Detected
Bromodichloromethane	640	Not Detected	4200	Not Detected
cis-1,3-Dichloropropene	640	Not Detected	2900	Not Detected
4-Methyl-2-pentanone	640	Not Detected	2600	Not Detected
Toluene	640	Not Detected	2400	Not Detected
trans-1,3-Dichloropropene	640	Not Detected	2900	Not Detected
1,1,2-Trichloroethane	640	Not Detected	3500	Not Detected
Tetrachloroethene	640	Not Detected	4300	Not Detected
2-Hexanone	2500	Not Detected	10000	Not Detected



Air Toxics

Client Sample ID: VMP-55-20-050514

Lab ID#: 1405098A-05A

EPA METHOD TO-15 GC/MS

File Name:	14051519	Date of Collection:	5/5/14 11:42:00 AM	
Dil. Factor:	127	Date of Analysis:	5/15/14 06:15 PM	
Compound	Rot. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	640	Not Detected	5400	Not Detected
1,2-Dibromoethane (EDB)	640	Not Detected	4900	Not Detected
Chlorobenzene	640	Not Detected	2900	Not Detected
Ethyl Benzene	640	Not Detected	2800	Not Detected
m,p-Xylene	640	Not Detected	2800	Not Detected
o-Xylene	640	Not Detected	2800	Not Detected
Styrene	640	Not Detected	2700	Not Detected
Bromoform	640	Not Detected	6600	Not Detected
Cumene	640	Not Detected	3100	Not Detected
1,1,2,2-Tetrachloroethane	640	Not Detected	4400	Not Detected
Propylbenzene	640	Not Detected	3100	Not Detected
4-Ethyltoluene	640	Not Detected	3100	Not Detected
1,3,5-Trimethylbenzene	640	Not Detected	3100	Not Detected
1,2,4-Trimethylbenzene	640	Not Detected	3100	Not Detected
1,3-Dichlorobenzene	640	Not Detected	3800	Not Detected
1,4-Dichlorobenzene	640	Not Detected	3800	Not Detected
alpha-Chlorotoluene	640	Not Detected	3300	Not Detected
1,2-Dichlorobenzene	640	Not Detected	3800	Not Detected
1,2,4-Trichlorobenzene	2500	Not Detected	19000	Not Detected
Hexachlorobutadiene	2500	Not Detected	27000	Not Detected
Butane	2500	48000	6000	110000
Isopentane	2500	270000	7500	790000

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	103	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	102	70-130



Air Toxics

Client Sample ID: VMP-55-20-050514-Dup

Lab ID#: 1405098A-06A

EPA METHOD TO-15 GC/MS

File Name:	14051520	Date of Collection: 5/5/14 11:42:00 AM
Dil. Factor:	138	Date of Analysis: 5/15/14 06:38 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	690	Not Detected	3400	Not Detected
Freon 114	690	Not Detected	4800	Not Detected
Chloromethane	2800	Not Detected	5700	Not Detected
Vinyl Chloride	690	Not Detected	1800	Not Detected
1,3-Butadiene	690	Not Detected	1500	Not Detected
Bromomethane	690	Not Detected	2700	Not Detected
Chloroethane	2800	Not Detected	7300	Not Detected
Freon 11	690	Not Detected	3900	Not Detected
Ethanol	2800	Not Detected	5200	Not Detected
Freon 113	690	Not Detected	5300	Not Detected
1,1-Dichloroethene	690	Not Detected	2700	Not Detected
Acetone	2800	Not Detected	6600	Not Detected
2-Propanol	2800	Not Detected	6800	Not Detected
Carbon Disulfide	690	Not Detected	2100	Not Detected
3-Chloropropene	2800	Not Detected	8600	Not Detected
Methylene Chloride	690	Not Detected	2400	Not Detected
Methyl tert-butyl ether	690	Not Detected	2500	Not Detected
trans-1,2-Dichloroethene	690	Not Detected	2700	Not Detected
Hexane	690	280 J	2400	1000 J
1,1-Dichloroethane	690	Not Detected	2800	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2800	Not Detected	8100	Not Detected
cis-1,2-Dichloroethene	690	Not Detected	2700	Not Detected
Tetrahydrofuran	690	Not Detected	2000	Not Detected
Chloroform	690	Not Detected	3400	Not Detected
1,1,1-Trichloroethane	690	Not Detected	3800	Not Detected
Cyclohexane	690	15000	2400	53000
Carbon Tetrachloride	690	Not Detected	4300	Not Detected
2,2,4-Trimethylpentane	690	120000	3200	560000
Benzene	690	Not Detected	2200	Not Detected
1,2-Dichloroethane	690	Not Detected	2800	Not Detected
Heptane	690	Not Detected	2800	Not Detected
Trichloroethene	690	Not Detected	3700	Not Detected
1,2-Dichloropropane	690	Not Detected	3200	Not Detected
1,4-Dioxane	2800	Not Detected	9900	Not Detected
Bromodichloromethane	690	Not Detected	4600	Not Detected
cis-1,3-Dichloropropene	690	Not Detected	3100	Not Detected
4-Methyl-2-pentanone	690	Not Detected	2800	Not Detected
Toluene	690	Not Detected	2600	Not Detected
trans-1,3-Dichloropropene	690	Not Detected	3100	Not Detected
1,1,2-Trichloroethane	690	Not Detected	3800	Not Detected
Tetrachloroethene	690	Not Detected	4700	Not Detected
2-Hexanone	2800	Not Detected	11000	Not Detected



Air Toxics

Client Sample ID: VMP-55-20-050514-Dup

Lab ID#: 1405098A-06A

EPA METHOD TO-15 GC/MS

File Name:	14051520	Date of Collection: 5/5/14 11:42:00 AM
Dil. Factor:	138	Date of Analysis: 5/15/14 06:38 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	690	Not Detected	5900	Not Detected
1,2-Dibromoethane (EDB)	690	Not Detected	5300	Not Detected
Chlorobenzene	690	Not Detected	3200	Not Detected
Ethyl Benzene	690	Not Detected	3000	Not Detected
m,p-Xylene	690	Not Detected	3000	Not Detected
o-Xylene	690	Not Detected	3000	Not Detected
Styrene	690	Not Detected	2900	Not Detected
Bromoform	690	Not Detected	7100	Not Detected
Cumene	690	Not Detected	3400	Not Detected
1,1,2,2-Tetrachloroethane	690	Not Detected	4700	Not Detected
Propylbenzene	690	Not Detected	3400	Not Detected
4-Ethyltoluene	690	Not Detected	3400	Not Detected
1,3,5-Trimethylbenzene	690	Not Detected	3400	Not Detected
1,2,4-Trimethylbenzene	690	Not Detected	3400	Not Detected
1,3-Dichlorobenzene	690	Not Detected	4100	Not Detected
1,4-Dichlorobenzene	690	Not Detected	4100	Not Detected
alpha-Chlorotoluene	690	Not Detected	3600	Not Detected
1,2-Dichlorobenzene	690	Not Detected	4100	Not Detected
1,2,4-Trichlorobenzene	2800	Not Detected	20000	Not Detected
Hexachlorobutadiene	2800	Not Detected	29000	Not Detected
Butane	2800	49000	6600	120000
Isopentane	2800	270000	8100	810000

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	100	70-130



Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 1405098A-07A

EPA METHOD TO-15 GC/MS

File Name:	14051507c	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	5/15/14 12:21 PM

Compound	Rot. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	5.0	Not Detected	25	Not Detected
Freon 114	5.0	Not Detected	35	Not Detected
Chloromethane	20	Not Detected	41	Not Detected
Vinyl Chloride	5.0	Not Detected	13	Not Detected
1,3-Butadiene	5.0	Not Detected	11	Not Detected
Bromomethane	5.0	Not Detected	19	Not Detected
Chloroethane	20	Not Detected	53	Not Detected
Freon 11	5.0	Not Detected	28	Not Detected
Ethanol	20	Not Detected	38	Not Detected
Freon 113	5.0	Not Detected	38	Not Detected
1,1-Dichloroethene	5.0	Not Detected	20	Not Detected
Acetone	20	Not Detected	48	Not Detected
2-Propanol	20	Not Detected	49	Not Detected
Carbon Disulfide	5.0	Not Detected	16	Not Detected
3-Chloropropene	20	Not Detected	63	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
Methyl tert-butyl ether	5.0	Not Detected	18	Not Detected
trans-1,2-Dichloroethene	5.0	Not Detected	20	Not Detected
Hexane	5.0	Not Detected	18	Not Detected
1,1-Dichloroethane	5.0	Not Detected	20	Not Detected
2-Butanone (Methyl Ethyl Ketone)	20	Not Detected	59	Not Detected
cis-1,2-Dichloroethene	5.0	Not Detected	20	Not Detected
Tetrahydrofuran	5.0	Not Detected	15	Not Detected
Chloroform	5.0	Not Detected	24	Not Detected
1,1,1-Trichloroethane	5.0	Not Detected	27	Not Detected
Cyclohexane	5.0	Not Detected	17	Not Detected
Carbon Tetrachloride	5.0	Not Detected	31	Not Detected
2,2,4-Trimethylpentane	5.0	Not Detected	23	Not Detected
Benzene	5.0	Not Detected	16	Not Detected
1,2-Dichloroethane	5.0	Not Detected	20	Not Detected
Heptane	5.0	Not Detected	20	Not Detected
Trichloroethene	5.0	Not Detected	27	Not Detected
1,2-Dichloropropane	5.0	Not Detected	23	Not Detected
1,4-Dioxane	20	Not Detected	72	Not Detected
Bromodichloromethane	5.0	Not Detected	34	Not Detected
cis-1,3-Dichloropropene	5.0	Not Detected	23	Not Detected
4-Methyl-2-pentanone	5.0	Not Detected	20	Not Detected
Toluene	5.0	Not Detected	19	Not Detected
trans-1,3-Dichloropropene	5.0	Not Detected	23	Not Detected
1,1,2-Trichloroethane	5.0	Not Detected	27	Not Detected
Tetrachloroethene	5.0	Not Detected	34	Not Detected
2-Hexanone	20	Not Detected	82	Not Detected



Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 1405098A-07A

EPA METHOD TO-15 GC/MS

File Name:	14051507c	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 5/15/14 12:21 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	5.0	Not Detected	42	Not Detected
1,2-Dibromoethane (EDB)	5.0	Not Detected	38	Not Detected
Chlorobenzene	5.0	Not Detected	23	Not Detected
Ethyl Benzene	5.0	Not Detected	22	Not Detected
m,p-Xylene	5.0	Not Detected	22	Not Detected
o-Xylene	5.0	Not Detected	22	Not Detected
Styrene	5.0	Not Detected	21	Not Detected
Bromoform	5.0	Not Detected	52	Not Detected
Cumene	5.0	Not Detected	24	Not Detected
1,1,2,2-Tetrachloroethane	5.0	Not Detected	34	Not Detected
Propylbenzene	5.0	Not Detected	24	Not Detected
4-Ethyltoluene	5.0	Not Detected	24	Not Detected
1,3,5-Trimethylbenzene	5.0	Not Detected	24	Not Detected
1,2,4-Trimethylbenzene	5.0	Not Detected	24	Not Detected
1,3-Dichlorobenzene	5.0	Not Detected	30	Not Detected
1,4-Dichlorobenzene	5.0	Not Detected	30	Not Detected
alpha-Chlorotoluene	5.0	Not Detected	26	Not Detected
1,2-Dichlorobenzene	5.0	Not Detected	30	Not Detected
1,2,4-Trichlorobenzene	20	Not Detected	150	Not Detected
Hexachlorobutadiene	20	Not Detected	210	Not Detected
Butane	20	Not Detected	48	Not Detected
Isopentane	20	Not Detected	59	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	96	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	104	70-130



Air Toxics

Client Sample ID: CCV

Lab ID#: 1405098A-08A

EPA METHOD TO-15 GC/MS

File Name:	14051502	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 5/15/14 10:10 AM

Compound	%Recovery
Freon 12	88
Freon 114	94
Chloromethane	86
Vinyl Chloride	84
1,3-Butadiene	83
Bromomethane	102
Chloroethane	88
Freon 11	88
Ethanol	82
Freon 113	92
1,1-Dichloroethene	83
Acetone	93
2-Propanol	94
Carbon Disulfide	84
3-Chloropropene	96
Methylene Chloride	79
Methyl tert-butyl ether	96
trans-1,2-Dichloroethene	92
Hexane	92
1,1-Dichloroethane	86
2-Butanone (Methyl Ethyl Ketone)	97
cis-1,2-Dichloroethene	85
Tetrahydrofuran	84
Chloroform	87
1,1,1-Trichloroethane	90
Cyclohexane	93
Carbon Tetrachloride	89
2,2,4-Trimethylpentane	90
Benzene	84
1,2-Dichloroethane	86
Heptane	92
Trichloroethene	91
1,2-Dichloropropane	85
1,4-Dioxane	96
Bromodichloromethane	84
cis-1,3-Dichloropropene	92
4-Methyl-2-pentanone	100
Toluene	91
trans-1,3-Dichloropropene	91
1,1,2-Trichloroethane	90
Tetrachloroethene	95
2-Hexanone	95



Air Toxics

Client Sample ID: CCV

Lab ID#: 1405098A-08A

EPA METHOD TO-15 GC/MS

File Name:	14051502	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 5/15/14 10:10 AM

Compound	%Recovery
Dibromochloromethane	89
1,2-Dibromoethane (EDB)	92
Chlorobenzene	92
Ethyl Benzene	98
m,p-Xylene	101
o-Xylene	104
Styrene	101
Bromoform	94
Cumene	102
1,1,2,2-Tetrachloroethane	90
Propylbenzene	100
4-Ethyltoluene	103
1,3,5-Trimethylbenzene	103
1,2,4-Trimethylbenzene	107
1,3-Dichlorobenzene	98
1,4-Dichlorobenzene	99
alpha-Chlorotoluene	105
1,2-Dichlorobenzene	99
1,2,4-Trichlorobenzene	126
Hexachlorobutadiene	118
Butane	95
Isopentane	92

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	94	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	106	70-130



Air Toxics

Client Sample ID: LCS

Lab ID#: 1405098A-09A

EPA METHOD TO-15 GC/MS

File Name:	14051503	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 5/15/14 10:44 AM

Compound	%Recovery	Method Limits
Freon 12	93	70-130
Freon 114	102	70-130
Chloromethane	90	70-130
Vinyl Chloride	91	70-130
1,3-Butadiene	90	70-130
Bromomethane	96	70-130
Chloroethane	77	70-130
Freon 11	95	70-130
Ethanol	93	70-130
Freon 113	110	70-130
1,1-Dichloroethene	105	70-130
Acetone	96	70-130
2-Propanol	101	70-130
Carbon Disulfide	83	70-130
3-Chloropropene	102	70-130
Methylene Chloride	92	70-130
Methyl tert-butyl ether	103	70-130
trans-1,2-Dichloroethene	84	70-130
Hexane	97	70-130
1,1-Dichloroethane	97	70-130
2-Butanone (Methyl Ethyl Ketone)	102	70-130
cis-1,2-Dichloroethene	103	70-130
Tetrahydrofuran	88	70-130
Chloroform	97	70-130
1,1,1-Trichloroethane	100	70-130
Cyclohexane	105	70-130
Carbon Tetrachloride	98	70-130
2,2,4-Trimethylpentane	98	70-130
Benzene	91	70-130
1,2-Dichloroethane	93	70-130
Heptane	103	70-130
Trichloroethene	100	70-130
1,2-Dichloropropane	92	70-130
1,4-Dioxane	108	70-130
Bromodichloromethane	95	70-130
cis-1,3-Dichloropropene	104	70-130
4-Methyl-2-pentanone	110	70-130
Toluene	96	70-130
trans-1,3-Dichloropropene	94	70-130
1,1,2-Trichloroethane	96	70-130
Tetrachloroethene	103	70-130
2-Hexanone	104	70-130



Air Toxics

Client Sample ID: LCS

Lab ID#: 1405098A-09A

EPA METHOD TO-15 GC/MS

File Name: 14051503
Dil. Factor: 1.00

Date of Collection: NA
Date of Analysis: 5/15/14 10:44 AM

Compound	%Recovery	Method Limits
Dibromochloromethane	100	70-130
1,2-Dibromoethane (EDB)	97	70-130
Chlorobenzene	96	70-130
Ethyl Benzene	103	70-130
m,p-Xylene	106	70-130
o-Xylene	107	70-130
Styrene	109	70-130
Bromoform	105	70-130
Cumene	111	70-130
1,1,2,2-Tetrachloroethane	95	70-130
Propylbenzene	106	70-130
4-Ethyltoluene	108	70-130
1,3,5-Trimethylbenzene	107	70-130
1,2,4-Trimethylbenzene	111	70-130
1,3-Dichlorobenzene	101	70-130
1,4-Dichlorobenzene	102	70-130
alpha-Chlorotoluene	124	70-130
1,2-Dichlorobenzene	104	70-130
1,2,4-Trichlorobenzene	119	70-130
Hexachlorobutadiene	114	70-130
Butane	107	60-140
Isopentane	78	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	94	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	106	70-130



Air Toxics

Client Sample ID: LCSD

Lab ID#: 1405098A-09AA

EPA METHOD TO-15 GC/MS

File Name:	14051504	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 5/15/14 11:06 AM

Compound	%Recovery	Method Limits
Freon 12	95	70-130
Freon 114	102	70-130
Chloromethane	91	70-130
Vinyl Chloride	93	70-130
1,3-Butadiene	85	70-130
Bromomethane	99	70-130
Chloroethane	80	70-130
Freon 11	98	70-130
Ethanol	92	70-130
Freon 113	116	70-130
1,1-Dichloroethene	104	70-130
Acetone	100	70-130
2-Propanol	101	70-130
Carbon Disulfide	83	70-130
3-Chloropropene	104	70-130
Methylene Chloride	92	70-130
Methyl tert-butyl ether	104	70-130
trans-1,2-Dichloroethene	85	70-130
Hexane	98	70-130
1,1-Dichloroethane	97	70-130
2-Butanone (Methyl Ethyl Ketone)	106	70-130
cis-1,2-Dichloroethene	103	70-130
Tetrahydrofuran	88	70-130
Chloroform	98	70-130
1,1,1-Trichloroethane	101	70-130
Cyclohexane	105	70-130
Carbon Tetrachloride	100	70-130
2,2,4-Trimethylpentane	99	70-130
Benzene	90	70-130
1,2-Dichloroethane	96	70-130
Heptane	101	70-130
Trichloroethene	99	70-130
1,2-Dichloropropane	91	70-130
1,4-Dioxane	108	70-130
Bromodichloromethane	95	70-130
cis-1,3-Dichloropropene	105	70-130
4-Methyl-2-pentanone	107	70-130
Toluene	96	70-130
trans-1,3-Dichloropropene	93	70-130
1,1,2-Trichloroethane	95	70-130
Tetrachloroethene	102	70-130
2-Hexanone	105	70-130



Air Toxics

Client Sample ID: LCSD

Lab ID#: 1405098A-09AA

EPA METHOD TO-15 GC/MS

File Name:	14051504	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 5/15/14 11:06 AM

Compound	%Recovery	Method Limits
Dibromochloromethane	100	70-130
1,2-Dibromoethane (EDB)	96	70-130
Chlorobenzene	95	70-130
Ethyl Benzene	101	70-130
m,p-Xylene	104	70-130
o-Xylene	106	70-130
Styrene	110	70-130
Bromoform	104	70-130
Cumene	110	70-130
1,1,2,2-Tetrachloroethane	94	70-130
Propylbenzene	106	70-130
4-Ethyltoluene	108	70-130
1,3,5-Trimethylbenzene	106	70-130
1,2,4-Trimethylbenzene	110	70-130
1,3-Dichlorobenzene	100	70-130
1,4-Dichlorobenzene	99	70-130
alpha-Chlorotoluene	122	70-130
1,2-Dichlorobenzene	102	70-130
1,2,4-Trichlorobenzene	120	70-130
Hexachlorobutadiene	111	70-130
Butane	101	60-140
Isopentane	87	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	95	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	106	70-130

5/20/2014
Ms. Elizabeth Kunkel
URS Corporation
1001 Highlands Plaza Dr. West
Suite 300
St. Louis MO 63110

Project Name: Roxana SoilVapor
Project #: 21562973.04002
Workorder #: 1405098B

Dear Ms. Elizabeth Kunkel

The following report includes the data for the above referenced project for sample(s) received on 5/6/2014 at Air Toxics Ltd.

The data and associated QC analyzed by Modified ASTM D-1946 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



Air Toxics

WORK ORDER #: 1405098B

Work Order Summary

CLIENT:	Ms. Elizabeth Kunkel URS Corporation 1001 Highlands Plaza Dr. West Suite 300 St. Louis, MO 63110	BILL TO:	Accounts Payable Austin URS Corporation P.O. BOX 203970 Austin, TX 78720-1088
PHONE:	314-743-4179	P.O. #	282676
FAX:		PROJECT #	21562973.04002 Roxana SoilVapor
DATE RECEIVED:	05/06/2014	CONTACT:	Kelly Buettner
DATE COMPLETED:	05/20/2014		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
05A	VMP-55-20-050514	Modified ASTM D-1946	6.1 "Hg	15 psi
06A	VMP-55-20-050514-Dup	Modified ASTM D-1946	8.2 "Hg	14.9 psi
07A	Lab Blank	Modified ASTM D-1946	NA	NA
07B	Lab Blank	Modified ASTM D-1946	NA	NA
08A	LCS	Modified ASTM D-1946	NA	NA
08AA	LCSD	Modified ASTM D-1946	NA	NA

CERTIFIED BY:

Technical Director

DATE: 05/20/14

Certification numbers: AZ Licensure AZ0775, CA NELAP - 12282CA, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-13-6, UT NELAP CA009332013-4, VA NELAP - 460197, WA NELAP - C935

Name of Accrediting Agency: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005, Effective date: 10/18/2013, Expiration date: 10/17/2014.

Eurofins Air Toxics Inc. certifies that the test results contained in this report meet all requirements of the NELAC standards

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180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 9563

(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified ASTM D-1946
URS Corporation
Workorder# 1405098B

Six 1 Liter Summa Canister samples were received on May 06, 2014. The laboratory performed analysis via Modified ASTM Method D-1946 for Methane and fixed gases in air using GC/FID or GC/TCD. The method involves direct injection of 1.0 mL of sample.

On the analytical column employed for this analysis, Oxygen coelutes with Argon. The corresponding peak is quantitated as Oxygen.

Since Nitrogen is used to pressurize samples, the reported Nitrogen values are calculated by adding all the sample components and subtracting from 100%.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the ATL modifications.

<i>Requirement</i>	<i>ASTM D-1946</i>	<i>ATL Modifications</i>
Calibration	A single point calibration is performed using a reference standard closely matching the composition of the unknown.	A 3-point calibration curve is performed. Quantitation is based on a daily calibration standard which may or may not resemble the composition of the associated samples.
Reference Standard	The composition of any reference standard must be known to within 0.01 mol % for any component.	The standards used by ATL are blended to a $\geq 95\%$ accuracy.
Sample Injection Volume	Components whose concentrations are in excess of 5 % should not be analyzed by using sample volumes greater than 0.5 mL.	The sample container is connected directly to a fixed volume sample loop of 1.0 mL on the GC. Linear range is defined by the calibration curve. Bags are loaded by vacuum.
Normalization	Normalize the mole percent values by multiplying each value by 100 and dividing by the sum of the original values. The sum of the original values should not differ from 100% by more than 1.0%.	Results are not normalized. The sum of the reported values can differ from 100% by as much as 15%, either due to analytical variability or an unusual sample matrix.
Precision	Precision requirements established at each concentration level.	Duplicates should agree within 25% RPD for detections $> 5 \times$ the RL.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

As per project specific client request the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

B - Compound present in laboratory blank greater than reporting limit.

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the detection limit.

M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue



Air Toxics

Summary of Detected Compounds
NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

Client Sample ID: VMP-55-20-050514

Lab ID#: 1405098B-05A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.25	1.8
Nitrogen	0.25	77
Methane	0.00025	3.9
Carbon Dioxide	0.025	17
Ethane	0.0025	0.028

Client Sample ID: VMP-55-20-050514-Dup

Lab ID#: 1405098B-06A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.28	1.8
Nitrogen	0.28	77
Methane	0.00028	3.8
Carbon Dioxide	0.028	17
Ethane	0.0028	0.028



Air Toxics

Client Sample ID: VMP-55-20-050514

Lab ID#: 1405098B-05A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	10051211	Date of Collection: 5/5/14 11:42:00 AM
Dil. Factor:	2.54	Date of Analysis: 5/12/14 12:11 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.25	1.8
Nitrogen	0.25	77
Carbon Monoxide	0.025	Not Detected
Methane	0.00025	3.9
Carbon Dioxide	0.025	17
Ethane	0.0025	0.028
Ethene	0.0025	Not Detected
Helium	0.13	Not Detected

Container Type: 1 Liter Summa Canister



Air Toxics

Client Sample ID: VMP-55-20-050514-Dup

Lab ID#: 1405098B-06A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	10051212	Date of Collection: 5/5/14 11:42:00 AM
Dil. Factor:	2.77	Date of Analysis: 5/12/14 12:34 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.28	1.8
Nitrogen	0.28	77
Carbon Monoxide	0.028	Not Detected
Methane	0.00028	3.8
Carbon Dioxide	0.028	17
Ethane	0.0028	0.028
Ethene	0.0028	Not Detected
Helium	0.14	Not Detected

Container Type: 1 Liter Summa Canister



Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 1405098B-07A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	10051204a	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	5/12/14 08:47 AM
Compound	Rpt. Limit (%)	Amount (%)	
Oxygen	0.10	0.015 J	
Nitrogen	0.10	0.072 J	
Carbon Monoxide	0.010	Not Detected	
Methane	0.00010	Not Detected	
Carbon Dioxide	0.010	Not Detected	
Ethane	0.0010	Not Detected	
Ethene	0.0010	Not Detected	

J = Estimated value.

Container Type: NA - Not Applicable



Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 1405098B-07B

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	10051203c	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 5/12/14 08:15 AM

Compound	Rpt. Limit (%)	Amount (%)
Helium	0.050	Not Detected

Container Type: NA - Not Applicable



Air Toxics

Client Sample ID: LCS

Lab ID#: 1405098B-08A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name: 10051202
Dil. Factor: 1.00

Date of Collection: NA
Date of Analysis: 5/12/14 07:48 AM

Compound	%Recovery	Method Limits
Oxygen	101	85-115
Nitrogen	100	85-115
Carbon Monoxide	101	85-115
Methane	100	85-115
Carbon Dioxide	100	85-115
Ethane	98	85-115
Ethene	101	85-115
Helium	99	85-115

Container Type: NA - Not Applicable



Air Toxics

Client Sample ID: LCSD

Lab ID#: 1405098B-08AA

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	10051218	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 5/12/14 03:10 PM

Compound	%Recovery	Method Limits
Oxygen	101	85-115
Nitrogen	100	85-115
Carbon Monoxide	101	85-115
Methane	99	85-115
Carbon Dioxide	100	85-115
Ethane	97	85-115
Ethene	100	85-115
Helium	100	85-115

Container Type: NA - Not Applicable

8/27/2014
Ms. Elizabeth Kunkel
URS Corporation
1001 Highlands Plaza Dr. West
Suite 300
St. Louis MO 63110

Project Name: Roxana SoilVapor
Project #: 21562973.04003
Workorder #: 1408263A

Dear Ms. Elizabeth Kunkel

The following report includes the data for the above referenced project for sample(s) received on 8/15/2014 at Air Toxics Ltd.

The data and associated QC analyzed by 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



Air Toxics

WORK ORDER #: 1408263A

Work Order Summary

CLIENT:	Ms. Elizabeth Kunkel URS Corporation 1001 Highlands Plaza Dr. West Suite 300 St. Louis, MO 63110	BILL TO:	Accounts Payable Austin URS Corporation P.O. BOX 203970 Austin, TX 78720-1088
PHONE:	314-743-4179	P.O. #	282676
FAX:		PROJECT #	21562973.04003 Roxana SoilVapor
DATE RECEIVED:	08/15/2014	CONTACT:	Kelly Buettner
DATE COMPLETED:	08/27/2014		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
05A	VMP-15-21.5-081414	TO-15	9.8 "Hg	14.7 psi
06A	VMP-15-25.5-081414	TO-15	9.4 "Hg	15.1 psi
07A	VMP-15-29-081414	TO-15	9 "Hg	15.1 psi
10A	VMP-55-20-081314	TO-15	6.9 "Hg	14.8 psi
15A	Lab Blank	TO-15	NA	NA
15B	Lab Blank	TO-15	NA	NA
16A	CCV	TO-15	NA	NA
16B	CCV	TO-15	NA	NA
17A	LCS	TO-15	NA	NA
17AA	LCSD	TO-15	NA	NA
17B	LCS	TO-15	NA	NA

Continued on next page



Air Toxics

WORK ORDER #: 1408263A

Work Order Summary

CLIENT:	Ms. Elizabeth Kunkel URS Corporation 1001 Highlands Plaza Dr. West Suite 300 St. Louis, MO 63110	BILL TO:	Accounts Payable Austin URS Corporation P.O. BOX 203970 Austin, TX 78720-1088
PHONE:	314-743-4179	P.O. #	282676
FAX:		PROJECT #	21562973.04003 Roxana SoilVapor
DATE RECEIVED:	08/15/2014	CONTACT:	Kelly Buettner
DATE COMPLETED:	08/27/2014		

FRACTION #
17BB

NAME
LCSD

TEST
TO-15

RECEIPT
VAC./PRES.
NA

FINAL
PRESSURE
NA

CERTIFIED BY:

Technical Director

DATE: 08/27/14

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-13-6, UT NELAP CA009332014-5, VA NELAP - 460197, WA NELAP - C935
Name of Accrediting Agency: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005, Effective date: 10/18/2013, Expiration date: 10/17/2014.

Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

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180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 9563
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
EPA Method TO-15
URS Corporation
Workorder# 1408263A

Fourteen 1 Liter Summa Canister samples were received on August 15, 2014. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified may be false positives.

Dilution was performed on sample

VMP-55-20-081314

high level target species.

due to the presence of

All Quality Control Limit exceedances and affected sample results are noted by flags. Each flag is defined at the bottom of this Case Narrative and on each Sample Result Summary page.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue



Air Toxics

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

Client Sample ID: VMP-15-21.5-081414

Lab ID#: 1408263A-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
2,2,4-Trimethylpentane	15	27	69	120
Isopentane	59	14 J	180	41 J

Client Sample ID: VMP-15-25.5-081414

Lab ID#: 1408263A-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Hexane	15	10 J	52	37 J
Cyclohexane	15	460	51	1600
2,2,4-Trimethylpentane	15	2800	69	13000
Benzene	15	12 J	47	37 J
Heptane	15	9.6 J	60	39 J
Butane	59	93	140	220
Isopentane	59	2500	170	7400



Air Toxics

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

Client Sample ID: VMP-15-29-081414

Lab ID#: 1408263A-07A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	58	55 J	140	130 J
Carbon Disulfide	14	7.5 J	45	23 J
Cyclohexane	14	52	50	180
2,2,4-Trimethylpentane	14	1400	68	6700
Benzene	14	35	46	110
Butane	58	54 J	140	130 J
Isopentane	58	830	170	2400



Air Toxics

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

Client Sample ID: VMP-55-20-081314

Lab ID#: 1408263A-10A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Hexane	260	100 J	920	360 J
Cyclohexane	260	570	900	1900
2,2,4-Trimethylpentane	260	160000	1200	760000
Benzene	260	150 J	830	470 J
Toluene	260	100 J	980	400 J
m,p-Xylene	260	85 J	1100	370 J
4-Ethyltoluene	260	76 J	1300	370 J
1,2,4-Trimethylbenzene	260	84 J	1300	410 J
Butane	1000	540 J	2500	1300 J
Isopentane	1000	5000	3100	15000



Air Toxics

Client Sample ID: VMP-15-21.5-081414

Lab ID#: 1408263A-05A

EPA METHOD TO-15 GC/MS

EPA METHOD TO-15 GC/MS				
File Name:	14081923	Date of Collection:	8/14/14 1:11:00 PM	
Dil. Factor:	2.97	Date of Analysis:	8/19/14 07:09 PM	
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	15	Not Detected	73	Not Detected
Freon 114	15	Not Detected	100	Not Detected
Chloromethane	59	Not Detected	120	Not Detected
Vinyl Chloride	15	Not Detected	38	Not Detected
1,3-Butadiene	15	Not Detected	33	Not Detected
Bromomethane	15	Not Detected	58	Not Detected
Chloroethane	59	Not Detected	160	Not Detected
Freon 11	15	Not Detected	83	Not Detected
Ethanol	59	Not Detected	110	Not Detected
Freon 113	15	Not Detected	110	Not Detected
1,1-Dichloroethene	15	Not Detected	59	Not Detected
Acetone	59	Not Detected	140	Not Detected
2-Propanol	59	Not Detected	140	Not Detected
Carbon Disulfide	15	Not Detected	46	Not Detected
3-Chloropropene	59	Not Detected	180	Not Detected
Methylene Chloride	15	Not Detected	52	Not Detected
Methyl tert-butyl ether	15	Not Detected	54	Not Detected
trans-1,2-Dichloroethene	15	Not Detected	59	Not Detected
Hexane	15	Not Detected	52	Not Detected
1,1-Dichloroethane	15	Not Detected	60	Not Detected
2-Butanone (Methyl Ethyl Ketone)	59	Not Detected	180	Not Detected
cis-1,2-Dichloroethene	15	Not Detected	59	Not Detected
Tetrahydrofuran	15	Not Detected	44	Not Detected
Chloroform	15	Not Detected	72	Not Detected
1,1,1-Trichloroethane	15	Not Detected	81	Not Detected
Cyclohexane	15	Not Detected	51	Not Detected
Carbon Tetrachloride	15	Not Detected	93	Not Detected
2,2,4-Trimethylpentane	15	27	69	120
Benzene	15	Not Detected	47	Not Detected
1,2-Dichloroethane	15	Not Detected	60	Not Detected
Heptane	15	Not Detected	61	Not Detected
Trichloroethene	15	Not Detected	80	Not Detected
1,2-Dichloropropane	15	Not Detected	69	Not Detected
1,4-Dioxane	59	Not Detected	210	Not Detected
Bromodichloromethane	15	Not Detected	100	Not Detected
cis-1,3-Dichloropropene	15	Not Detected	67	Not Detected
4-Methyl-2-pentanone	15	Not Detected	61	Not Detected
Toluene	15	Not Detected	56	Not Detected
trans-1,3-Dichloropropene	15	Not Detected	67	Not Detected
1,1,2-Trichloroethane	15	Not Detected	81	Not Detected
Tetrachloroethene	15	Not Detected	100	Not Detected
2-Hexanone	59	Not Detected	240	Not Detected



Air Toxics

Client Sample ID: VMP-15-21.5-081414

Lab ID#: 1408263A-05A

EPA METHOD TO-15 GC/MS

File Name:	14081923	Date of Collection:	8/14/14 1:11:00 PM
Dil. Factor:	2.97	Date of Analysis:	8/19/14 07:09 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	15	Not Detected	130	Not Detected
1,2-Dibromoethane (EDB)	15	Not Detected	110	Not Detected
Chlorobenzene	15	Not Detected	68	Not Detected
Ethyl Benzene	15	Not Detected	64	Not Detected
m,p-Xylene	15	Not Detected	64	Not Detected
o-Xylene	15	Not Detected	64	Not Detected
Styrene	15	Not Detected	63	Not Detected
Bromoform	15	Not Detected	150	Not Detected
Cumene	15	Not Detected	73	Not Detected
1,1,2,2-Tetrachloroethane	15	Not Detected	100	Not Detected
Propylbenzene	15	Not Detected	73	Not Detected
4-Ethyltoluene	15	Not Detected	73	Not Detected
1,3,5-Trimethylbenzene	15	Not Detected	73	Not Detected
1,2,4-Trimethylbenzene	15	Not Detected	73	Not Detected
1,3-Dichlorobenzene	15	Not Detected	89	Not Detected
1,4-Dichlorobenzene	15	Not Detected	89	Not Detected
alpha-Chlorotoluene	15	Not Detected	77	Not Detected
1,2-Dichlorobenzene	15	Not Detected	89	Not Detected
1,2,4-Trichlorobenzene	59	Not Detected	440	Not Detected
Hexachlorobutadiene	59	Not Detected	630	Not Detected
Butane	59	Not Detected	140	Not Detected
Isopentane	59	14 J	180	41 J

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	89	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	102	70-130



Air Toxics

Client Sample ID: VMP-15-25.5-081414

Lab ID#: 1408263A-06A

EPA METHOD TO-15 GC/MS

File Name:	14081924	Date of Collection: 8/14/14 1:40:00 PM
Dil. Factor:	2.95	Date of Analysis: 8/19/14 07:27 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	15	Not Detected	73	Not Detected
Freon 114	15	Not Detected	100	Not Detected
Chloromethane	59	Not Detected	120	Not Detected
Vinyl Chloride	15	Not Detected	38	Not Detected
1,3-Butadiene	15	Not Detected	33	Not Detected
Bromomethane	15	Not Detected	57	Not Detected
Chloroethane	59	Not Detected	160	Not Detected
Freon 11	15	Not Detected	83	Not Detected
Ethanol	59	Not Detected	110	Not Detected
Freon 113	15	Not Detected	110	Not Detected
1,1-Dichloroethene	15	Not Detected	58	Not Detected
Acetone	59	Not Detected	140	Not Detected
2-Propanol	59	Not Detected	140	Not Detected
Carbon Disulfide	15	Not Detected	46	Not Detected
3-Chloropropene	59	Not Detected	180	Not Detected
Methylene Chloride	15	Not Detected	51	Not Detected
Methyl tert-butyl ether	15	Not Detected	53	Not Detected
trans-1,2-Dichloroethene	15	Not Detected	58	Not Detected
Hexane	15	10 J	52	37 J
1,1-Dichloroethane	15	Not Detected	60	Not Detected
2-Butanone (Methyl Ethyl Ketone)	59	Not Detected	170	Not Detected
cis-1,2-Dichloroethene	15	Not Detected	58	Not Detected
Tetrahydrofuran	15	Not Detected	43	Not Detected
Chloroform	15	Not Detected	72	Not Detected
1,1,1-Trichloroethane	15	Not Detected	80	Not Detected
Cyclohexane	15	460	51	1600
Carbon Tetrachloride	15	Not Detected	93	Not Detected
2,2,4-Trimethylpentane	15	2800	69	13000
Benzene	15	12 J	47	37 J
1,2-Dichloroethane	15	Not Detected	60	Not Detected
Heptane	15	9.6 J	60	39 J
Trichloroethene	15	Not Detected	79	Not Detected
1,2-Dichloropropane	15	Not Detected	68	Not Detected
1,4-Dioxane	59	Not Detected	210	Not Detected
Bromodichloromethane	15	Not Detected	99	Not Detected
cis-1,3-Dichloropropene	15	Not Detected	67	Not Detected
4-Methyl-2-pentanone	15	Not Detected	60	Not Detected
Toluene	15	Not Detected	56	Not Detected
trans-1,3-Dichloropropene	15	Not Detected	67	Not Detected
1,1,2-Trichloroethane	15	Not Detected	80	Not Detected
Tetrachloroethene	15	Not Detected	100	Not Detected
2-Hexanone	59	Not Detected	240	Not Detected



Air Toxics

Client Sample ID: VMP-15-25.5-081414

Lab ID#: 1408263A-06A

EPA METHOD TO-15 GC/MS

File Name:	14081924	Date of Collection:	8/14/14 1:40:00 PM	
Dil. Factor:	2.95	Date of Analysis:	8/19/14 07:27 PM	
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	15	Not Detected	120	Not Detected
1,2-Dibromoethane (EDB)	15	Not Detected	110	Not Detected
Chlorobenzene	15	Not Detected	68	Not Detected
Ethyl Benzene	15	Not Detected	64	Not Detected
m,p-Xylene	15	Not Detected	64	Not Detected
o-Xylene	15	Not Detected	64	Not Detected
Styrene	15	Not Detected	63	Not Detected
Bromoform	15	Not Detected	150	Not Detected
Cumene	15	Not Detected	72	Not Detected
1,1,2,2-Tetrachloroethane	15	Not Detected	100	Not Detected
Propylbenzene	15	Not Detected	72	Not Detected
4-Ethyltoluene	15	Not Detected	72	Not Detected
1,3,5-Trimethylbenzene	15	Not Detected	72	Not Detected
1,2,4-Trimethylbenzene	15	Not Detected	72	Not Detected
1,3-Dichlorobenzene	15	Not Detected	89	Not Detected
1,4-Dichlorobenzene	15	Not Detected	89	Not Detected
alpha-Chlorotoluene	15	Not Detected	76	Not Detected
1,2-Dichlorobenzene	15	Not Detected	89	Not Detected
1,2,4-Trichlorobenzene	59	Not Detected	440	Not Detected
Hexachlorobutadiene	59	Not Detected	630	Not Detected
Butane	59	93	140	220
Isopentane	59	2500	170	7400

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	97	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	105	70-130



Air Toxics

Client Sample ID: VMP-15-29-081414

Lab ID#: 1408263A-07A

EPA METHOD TO-15 GC/MS

File Name:	14081925	Date of Collection: 8/14/14 2:05:00 PM		
Dil. Factor:	2.89	Date of Analysis: 8/19/14 07:46 PM		
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	14	Not Detected	71	Not Detected
Freon 114	14	Not Detected	100	Not Detected
Chloromethane	58	Not Detected	120	Not Detected
Vinyl Chloride	14	Not Detected	37	Not Detected
1,3-Butadiene	14	Not Detected	32	Not Detected
Bromomethane	14	Not Detected	56	Not Detected
Chloroethane	58	Not Detected	150	Not Detected
Freon 11	14	Not Detected	81	Not Detected
Ethanol	58	Not Detected	110	Not Detected
Freon 113	14	Not Detected	110	Not Detected
1,1-Dichloroethene	14	Not Detected	57	Not Detected
Acetone	58	55 J	140	130 J
2-Propanol	58	Not Detected	140	Not Detected
Carbon Disulfide	14	7.5 J	45	23 J
3-Chloropropene	58	Not Detected	180	Not Detected
Methylene Chloride	14	Not Detected	50	Not Detected
Methyl tert-butyl ether	14	Not Detected	52	Not Detected
trans-1,2-Dichloroethene	14	Not Detected	57	Not Detected
Hexane	14	Not Detected	51	Not Detected
1,1-Dichloroethane	14	Not Detected	58	Not Detected
2-Butanone (Methyl Ethyl Ketone)	58	Not Detected	170	Not Detected
cis-1,2-Dichloroethene	14	Not Detected	57	Not Detected
Tetrahydrofuran	14	Not Detected	43	Not Detected
Chloroform	14	Not Detected	70	Not Detected
1,1,1-Trichloroethane	14	Not Detected	79	Not Detected
Cyclohexane	14	52	50	180
Carbon Tetrachloride	14	Not Detected	91	Not Detected
2,2,4-Trimethylpentane	14	1400	68	6700
Benzene	14	35	46	110
1,2-Dichloroethane	14	Not Detected	58	Not Detected
Heptane	14	Not Detected	59	Not Detected
Trichloroethene	14	Not Detected	78	Not Detected
1,2-Dichloropropane	14	Not Detected	67	Not Detected
1,4-Dioxane	58	Not Detected	210	Not Detected
Bromodichloromethane	14	Not Detected	97	Not Detected
cis-1,3-Dichloropropene	14	Not Detected	66	Not Detected
4-Methyl-2-pentanone	14	Not Detected	59	Not Detected
Toluene	14	Not Detected	54	Not Detected
trans-1,3-Dichloropropene	14	Not Detected	66	Not Detected
1,1,2-Trichloroethane	14	Not Detected	79	Not Detected
Tetrachloroethene	14	Not Detected	98	Not Detected
2-Hexanone	58	Not Detected	240	Not Detected



Air Toxics

Client Sample ID: VMP-15-29-081414

Lab ID#: 1408263A-07A

EPA METHOD TO-15 GC/MS

File Name:	14081925	Date of Collection:	8/14/14 2:05:00 PM	
Dil. Factor:	2.89	Date of Analysis:	8/19/14 07:46 PM	
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	14	Not Detected	120	Not Detected
1,2-Dibromoethane (EDB)	14	Not Detected	110	Not Detected
Chlorobenzene	14	Not Detected	66	Not Detected
Ethyl Benzene	14	Not Detected	63	Not Detected
m,p-Xylene	14	Not Detected	63	Not Detected
o-Xylene	14	Not Detected	63	Not Detected
Styrene	14	Not Detected	62	Not Detected
Bromoform	14	Not Detected	150	Not Detected
Cumene	14	Not Detected	71	Not Detected
1,1,2,2-Tetrachloroethane	14	Not Detected	99	Not Detected
Propylbenzene	14	Not Detected	71	Not Detected
4-Ethyltoluene	14	Not Detected	71	Not Detected
1,3,5-Trimethylbenzene	14	Not Detected	71	Not Detected
1,2,4-Trimethylbenzene	14	Not Detected	71	Not Detected
1,3-Dichlorobenzene	14	Not Detected	87	Not Detected
1,4-Dichlorobenzene	14	Not Detected	87	Not Detected
alpha-Chlorotoluene	14	Not Detected	75	Not Detected
1,2-Dichlorobenzene	14	Not Detected	87	Not Detected
1,2,4-Trichlorobenzene	58	Not Detected	430	Not Detected
Hexachlorobutadiene	58	Not Detected	620	Not Detected
Butane	58	54 J	140	130 J
Isopentane	58	830	170	2400

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	90	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	102	70-130



Air Toxics

Client Sample ID: VMP-55-20-081314

Lab ID#: 1408263A-10A

EPA METHOD TO-15 GC/MS

File Name:	14081930	Date of Collection: 8/13/14 3:04:00 PM		
Dil. Factor:	52.2	Date of Analysis: 8/19/14 09:32 PM		
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	260	Not Detected	1300	Not Detected
Freon 114	260	Not Detected	1800	Not Detected
Chloromethane	1000	Not Detected	2200	Not Detected
Vinyl Chloride	260	Not Detected	670	Not Detected
1,3-Butadiene	260	Not Detected	580	Not Detected
Bromomethane	260	Not Detected	1000	Not Detected
Chloroethane	1000	Not Detected	2800	Not Detected
Freon 11	260	Not Detected	1500	Not Detected
Ethanol	1000	Not Detected	2000	Not Detected
Freon 113	260	Not Detected	2000	Not Detected
1,1-Dichloroethene	260	Not Detected	1000	Not Detected
Acetone	1000	Not Detected	2500	Not Detected
2-Propanol	1000	Not Detected	2600	Not Detected
Carbon Disulfide	260	Not Detected	810	Not Detected
3-Chloropropene	1000	Not Detected	3300	Not Detected
Methylene Chloride	260	Not Detected	910	Not Detected
Methyl tert-butyl ether	260	Not Detected	940	Not Detected
trans-1,2-Dichloroethene	260	Not Detected	1000	Not Detected
Hexane	260	100 J	920	360 J
1,1-Dichloroethane	260	Not Detected	1000	Not Detected
2-Butanone (Methyl Ethyl Ketone)	1000	Not Detected	3100	Not Detected
cis-1,2-Dichloroethene	260	Not Detected	1000	Not Detected
Tetrahydrofuran	260	Not Detected	770	Not Detected
Chloroform	260	Not Detected	1300	Not Detected
1,1,1-Trichloroethane	260	Not Detected	1400	Not Detected
Cyclohexane	260	570	900	1900
Carbon Tetrachloride	260	Not Detected	1600	Not Detected
2,2,4-Trimethylpentane	260	160000	1200	760000
Benzene	260	150 J	830	470 J
1,2-Dichloroethane	260	Not Detected	1000	Not Detected
Heptane	260	Not Detected	1100	Not Detected
Trichloroethene	260	Not Detected	1400	Not Detected
1,2-Dichloropropane	260	Not Detected	1200	Not Detected
1,4-Dioxane	1000	Not Detected	3800	Not Detected
Bromodichloromethane	260	Not Detected	1700	Not Detected
cis-1,3-Dichloropropene	260	Not Detected	1200	Not Detected
4-Methyl-2-pentanone	260	Not Detected	1100	Not Detected
Toluene	260	100 J	980	400 J
trans-1,3-Dichloropropene	260	Not Detected	1200	Not Detected
1,1,2-Trichloroethane	260	Not Detected	1400	Not Detected
Tetrachloroethene	260	Not Detected	1800	Not Detected
2-Hexanone	1000	Not Detected	4300	Not Detected



Air Toxics

Client Sample ID: VMP-55-20-081314

Lab ID#: 1408263A-10A

EPA METHOD TO-15 GC/MS

EPA METHOD 10-15 GC/MS

File Name:	14081930	Date of Collection: 8/13/14 3:04:00 PM		
Dil. Factor:	52.2	Date of Analysis: 8/19/14 09:32 PM		
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	260	Not Detected	2200	Not Detected
1,2-Dibromoethane (EDB)	260	Not Detected	2000	Not Detected
Chlorobenzene	260	Not Detected	1200	Not Detected
Ethyl Benzene	260	Not Detected	1100	Not Detected
m,p-Xylene	260	85 J	1100	370 J
o-Xylene	260	Not Detected	1100	Not Detected
Styrene	260	Not Detected	1100	Not Detected
Bromoform	260	Not Detected	2700	Not Detected
Cumene	260	Not Detected	1300	Not Detected
1,1,2,2-Tetrachloroethane	260	Not Detected	1800	Not Detected
Propylbenzene	260	Not Detected	1300	Not Detected
4-Ethyltoluene	260	76 J	1300	370 J
1,3,5-Trimethylbenzene	260	Not Detected	1300	Not Detected
1,2,4-Trimethylbenzene	260	84 J	1300	410 J
1,3-Dichlorobenzene	260	Not Detected	1600	Not Detected
1,4-Dichlorobenzene	260	Not Detected	1600	Not Detected
alpha-Chlorotoluene	260	Not Detected	1400	Not Detected
1,2-Dichlorobenzene	260	Not Detected	1600	Not Detected
1,2,4-Trichlorobenzene	1000	Not Detected	7700	Not Detected
Hexachlorobutadiene	1000	Not Detected	11000	Not Detected
Butane	1000	540 J	2500	1300 J
Isopentane	1000	5000	3100	15000

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	97	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	101	70-130



Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 1408263A-15A

EPA METHOD TO-15 GC/MS

File Name:	14081907d	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/19/14 11:16 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	5.0	Not Detected	25	Not Detected
Freon 114	5.0	Not Detected	35	Not Detected
Chloromethane	20	Not Detected	41	Not Detected
Vinyl Chloride	5.0	Not Detected	13	Not Detected
1,3-Butadiene	5.0	Not Detected	11	Not Detected
Bromomethane	5.0	Not Detected	19	Not Detected
Chloroethane	20	Not Detected	53	Not Detected
Freon 11	5.0	Not Detected	28	Not Detected
Ethanol	20	Not Detected	38	Not Detected
Freon 113	5.0	Not Detected	38	Not Detected
1,1-Dichloroethene	5.0	Not Detected	20	Not Detected
Acetone	20	Not Detected	48	Not Detected
2-Propanol	20	Not Detected	49	Not Detected
Carbon Disulfide	5.0	Not Detected	16	Not Detected
3-Chloropropene	20	Not Detected	63	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
Methyl tert-butyl ether	5.0	Not Detected	18	Not Detected
trans-1,2-Dichloroethene	5.0	Not Detected	20	Not Detected
Hexane	5.0	Not Detected	18	Not Detected
1,1-Dichloroethane	5.0	Not Detected	20	Not Detected
2-Butanone (Methyl Ethyl Ketone)	20	Not Detected	59	Not Detected
cis-1,2-Dichloroethene	5.0	Not Detected	20	Not Detected
Tetrahydrofuran	5.0	Not Detected	15	Not Detected
Chloroform	5.0	Not Detected	24	Not Detected
1,1,1-Trichloroethane	5.0	Not Detected	27	Not Detected
Cyclohexane	5.0	Not Detected	17	Not Detected
Carbon Tetrachloride	5.0	Not Detected	31	Not Detected
2,2,4-Trimethylpentane	5.0	Not Detected	23	Not Detected
Benzene	5.0	Not Detected	16	Not Detected
1,2-Dichloroethane	5.0	Not Detected	20	Not Detected
Heptane	5.0	Not Detected	20	Not Detected
Trichloroethene	5.0	Not Detected	27	Not Detected
1,2-Dichloropropane	5.0	Not Detected	23	Not Detected
1,4-Dioxane	20	Not Detected	72	Not Detected
Bromodichloromethane	5.0	Not Detected	34	Not Detected
cis-1,3-Dichloropropene	5.0	Not Detected	23	Not Detected
4-Methyl-2-pentanone	5.0	Not Detected	20	Not Detected
Toluene	5.0	Not Detected	19	Not Detected
trans-1,3-Dichloropropene	5.0	Not Detected	23	Not Detected
1,1,2-Trichloroethane	5.0	Not Detected	27	Not Detected
Tetrachloroethene	5.0	Not Detected	34	Not Detected
2-Hexanone	20	Not Detected	82	Not Detected



Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 1408263A-15A

EPA METHOD TO-15 GC/MS

EPA METHOD 10-15 GC/MS

File Name:	14081907d	Date of Collection:	NA	
Dil. Factor:	1.00	Date of Analysis:	8/19/14 11:16 AM	
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	5.0	Not Detected	42	Not Detected
1,2-Dibromoethane (EDB)	5.0	Not Detected	38	Not Detected
Chlorobenzene	5.0	Not Detected	23	Not Detected
Ethyl Benzene	5.0	Not Detected	22	Not Detected
m,p-Xylene	5.0	Not Detected	22	Not Detected
o-Xylene	5.0	Not Detected	22	Not Detected
Styrene	5.0	Not Detected	21	Not Detected
Bromoform	5.0	Not Detected	52	Not Detected
Cumene	5.0	Not Detected	24	Not Detected
1,1,2,2-Tetrachloroethane	5.0	Not Detected	34	Not Detected
Propylbenzene	5.0	Not Detected	24	Not Detected
4-Ethyltoluene	5.0	Not Detected	24	Not Detected
1,3,5-Trimethylbenzene	5.0	Not Detected	24	Not Detected
1,2,4-Trimethylbenzene	5.0	Not Detected	24	Not Detected
1,3-Dichlorobenzene	5.0	Not Detected	30	Not Detected
1,4-Dichlorobenzene	5.0	Not Detected	30	Not Detected
alpha-Chlorotoluene	5.0	Not Detected	26	Not Detected
1,2-Dichlorobenzene	5.0	Not Detected	30	Not Detected
1,2,4-Trichlorobenzene	20	Not Detected	150	Not Detected
Hexachlorobutadiene	20	Not Detected	210	Not Detected
Butane	20	Not Detected	48	Not Detected
Isopentane	20	Not Detected	59	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	86	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	100	70-130



Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 1408263A-15B

EPA METHOD TO-15 GC/MS

File Name:	14082009d	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/20/14 12:29 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	5.0	Not Detected	25	Not Detected
Freon 114	5.0	Not Detected	35	Not Detected
Chloromethane	20	Not Detected	41	Not Detected
Vinyl Chloride	5.0	Not Detected	13	Not Detected
1,3-Butadiene	5.0	Not Detected	11	Not Detected
Bromomethane	5.0	Not Detected	19	Not Detected
Chloroethane	20	Not Detected	53	Not Detected
Freon 11	5.0	Not Detected	28	Not Detected
Ethanol	20	Not Detected UJ	38	Not Detected UJ
Freon 113	5.0	Not Detected	38	Not Detected
1,1-Dichloroethene	5.0	Not Detected	20	Not Detected
Acetone	20	Not Detected	48	Not Detected
2-Propanol	20	Not Detected	49	Not Detected
Carbon Disulfide	5.0	Not Detected	16	Not Detected
3-Chloropropene	20	Not Detected	63	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
Methyl tert-butyl ether	5.0	Not Detected	18	Not Detected
trans-1,2-Dichloroethene	5.0	Not Detected	20	Not Detected
Hexane	5.0	Not Detected	18	Not Detected
1,1-Dichloroethane	5.0	Not Detected	20	Not Detected
2-Butanone (Methyl Ethyl Ketone)	20	Not Detected	59	Not Detected
cis-1,2-Dichloroethene	5.0	Not Detected	20	Not Detected
Tetrahydrofuran	5.0	Not Detected	15	Not Detected
Chloroform	5.0	Not Detected	24	Not Detected
1,1,1-Trichloroethane	5.0	Not Detected	27	Not Detected
Cyclohexane	5.0	Not Detected	17	Not Detected
Carbon Tetrachloride	5.0	Not Detected	31	Not Detected
2,2,4-Trimethylpentane	5.0	Not Detected	23	Not Detected
Benzene	5.0	Not Detected	16	Not Detected
1,2-Dichloroethane	5.0	Not Detected	20	Not Detected
Heptane	5.0	Not Detected	20	Not Detected
Trichloroethene	5.0	Not Detected	27	Not Detected
1,2-Dichloropropane	5.0	Not Detected	23	Not Detected
1,4-Dioxane	20	Not Detected	72	Not Detected
Bromodichloromethane	5.0	Not Detected	34	Not Detected
cis-1,3-Dichloropropene	5.0	Not Detected	23	Not Detected
4-Methyl-2-pentanone	5.0	Not Detected	20	Not Detected
Toluene	5.0	Not Detected	19	Not Detected
trans-1,3-Dichloropropene	5.0	Not Detected	23	Not Detected
1,1,2-Trichloroethane	5.0	Not Detected	27	Not Detected
Tetrachloroethene	5.0	Not Detected	34	Not Detected
2-Hexanone	20	Not Detected	82	Not Detected



Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 1408263A-15B

EPA METHOD TO-15 GC/MS

EPA METHOD 10-15 GC/MS

File Name:	14082009d	Date of Collection:	NA	
Dil. Factor:	1.00	Date of Analysis:	8/20/14 12:29 PM	
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	5.0	Not Detected	42	Not Detected
1,2-Dibromoethane (EDB)	5.0	Not Detected	38	Not Detected
Chlorobenzene	5.0	Not Detected	23	Not Detected
Ethyl Benzene	5.0	Not Detected	22	Not Detected
m,p-Xylene	5.0	Not Detected	22	Not Detected
o-Xylene	5.0	Not Detected	22	Not Detected
Styrene	5.0	Not Detected	21	Not Detected
Bromoform	5.0	Not Detected	52	Not Detected
Cumene	5.0	Not Detected	24	Not Detected
1,1,2,2-Tetrachloroethane	5.0	Not Detected	34	Not Detected
Propylbenzene	5.0	Not Detected	24	Not Detected
4-Ethyltoluene	5.0	Not Detected	24	Not Detected
1,3,5-Trimethylbenzene	5.0	Not Detected	24	Not Detected
1,2,4-Trimethylbenzene	5.0	Not Detected	24	Not Detected
1,3-Dichlorobenzene	5.0	Not Detected	30	Not Detected
1,4-Dichlorobenzene	5.0	Not Detected	30	Not Detected
alpha-Chlorotoluene	5.0	Not Detected	26	Not Detected
1,2-Dichlorobenzene	5.0	Not Detected	30	Not Detected
1,2,4-Trichlorobenzene	20	11 J	150	80 J
Hexachlorobutadiene	20	16 J	210	170 J
Butane	20	Not Detected	48	Not Detected
Isopentane	20	Not Detected	59	Not Detected

UJ = Analyte associated with low bias in the CCV and/or LCS.

J = Estimated value.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	86	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	104	70-130



Air Toxics

Client Sample ID: CCV

Lab ID#: 1408263A-16A

EPA METHOD TO-15 GC/MS

File Name:	14081902	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/19/14 08:46 AM

Compound	%Recovery
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Freon 12	72
Freon 114	76
Chloromethane	71
Vinyl Chloride	76
1,3-Butadiene	72
Bromomethane	73
Chloroethane	78
Freon 11	75
Ethanol	73
Freon 113	82
1,1-Dichloroethene	74
Acetone	84
2-Propanol	75
Carbon Disulfide	82
3-Chloropropene	86
Methylene Chloride	71
Methyl tert-butyl ether	86
trans-1,2-Dichloroethene	86
Hexane	81
1,1-Dichloroethane	81
2-Butanone (Methyl Ethyl Ketone)	89
cis-1,2-Dichloroethene	79
Tetrahydrofuran	76
Chloroform	80
1,1,1-Trichloroethane	82
Cyclohexane	87
Carbon Tetrachloride	81
2,2,4-Trimethylpentane	80
Benzene	83
1,2-Dichloroethane	78
Heptane	86
Trichloroethene	79
1,2-Dichloropropane	84
1,4-Dioxane	92
Bromodichloromethane	81
cis-1,3-Dichloropropene	89
4-Methyl-2-pentanone	90
Toluene	90
trans-1,3-Dichloropropene	88
1,1,2-Trichloroethane	93
Tetrachloroethene	91
2-Hexanone	83



Air Toxics

Client Sample ID: CCV

Lab ID#: 1408263A-16A

EPA METHOD TO-15 GC/MS

File Name:	14081902	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/19/14 08:46 AM

Compound	%Recovery
Dibromochloromethane	88
1,2-Dibromoethane (EDB)	91
Chlorobenzene	90
Ethyl Benzene	95
m,p-Xylene	92
o-Xylene	92
Styrene	99
Bromoform	91
Cumene	94
1,1,2,2-Tetrachloroethane	92
Propylbenzene	95
4-Ethyltoluene	92
1,3,5-Trimethylbenzene	102
1,2,4-Trimethylbenzene	96
1,3-Dichlorobenzene	102
1,4-Dichlorobenzene	100
alpha-Chlorotoluene	105
1,2-Dichlorobenzene	103
1,2,4-Trichlorobenzene	125
Hexachlorobutadiene	124
Butane	79
Isopentane	72

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	84	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	102	70-130



Air Toxics

Client Sample ID: CCV

Lab ID#: 1408263A-16B

EPA METHOD TO-15 GC/MS

File Name:	14082002	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/20/14 08:59 AM

Compound	%Recovery
Freon 12	72
Freon 114	79
Chloromethane	70
Vinyl Chloride	77
1,3-Butadiene	71
Bromomethane	74
Chloroethane	78
Freon 11	75
Ethanol	68 Q
Freon 113	78
1,1-Dichloroethene	74
Acetone	82
2-Propanol	74
Carbon Disulfide	84
3-Chloropropene	88
Methylene Chloride	70
Methyl tert-butyl ether	84
trans-1,2-Dichloroethene	92
Hexane	80
1,1-Dichloroethane	80
2-Butanone (Methyl Ethyl Ketone)	92
cis-1,2-Dichloroethene	79
Tetrahydrofuran	81
Chloroform	80
1,1,1-Trichloroethane	82
Cyclohexane	87
Carbon Tetrachloride	82
2,2,4-Trimethylpentane	82
Benzene	84
1,2-Dichloroethane	80
Heptane	90
Trichloroethene	78
1,2-Dichloropropane	85
1,4-Dioxane	94
Bromodichloromethane	83
cis-1,3-Dichloropropene	88
4-Methyl-2-pentanone	92
Toluene	91
trans-1,3-Dichloropropene	89
1,1,2-Trichloroethane	91
Tetrachloroethene	94
2-Hexanone	83



Air Toxics

Client Sample ID: CCV

Lab ID#: 1408263A-16B

EPA METHOD TO-15 GC/MS

File Name:	14082002	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/20/14 08:59 AM

Compound	%Recovery
Dibromochloromethane	88
1,2-Dibromoethane (EDB)	92
Chlorobenzene	92
Ethyl Benzene	94
m,p-Xylene	93
o-Xylene	93
Styrene	100
Bromoform	91
Cumene	95
1,1,2,2-Tetrachloroethane	92
Propylbenzene	94
4-Ethyltoluene	92
1,3,5-Trimethylbenzene	103
1,2,4-Trimethylbenzene	99
1,3-Dichlorobenzene	102
1,4-Dichlorobenzene	101
alpha-Chlorotoluene	106
1,2-Dichlorobenzene	102
1,2,4-Trichlorobenzene	126
Hexachlorobutadiene	120
Butane	78
Isopentane	71

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	84	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	102	70-130



Air Toxics

Client Sample ID: LCS

Lab ID#: 1408263A-17A

EPA METHOD TO-15 GC/MS

File Name:	14081903	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/19/14 09:16 AM

Compound	%Recovery	Method Limits
Freon 12	71	70-130
Freon 114	76	70-130
Chloromethane	69 Q	70-130
Vinyl Chloride	73	70-130
1,3-Butadiene	68 Q	70-130
Bromomethane	75	70-130
Chloroethane	75	70-130
Freon 11	73	70-130
Ethanol	74	70-130
Freon 113	92	70-130
1,1-Dichloroethene	76	70-130
Acetone	83	70-130
2-Propanol	69 Q	70-130
Carbon Disulfide	72	70-130
3-Chloropropene	72	70-130
Methylene Chloride	73	70-130
Methyl tert-butyl ether	79	70-130
trans-1,2-Dichloroethene	74	70-130
Hexane	78	70-130
1,1-Dichloroethane	78	70-130
2-Butanone (Methyl Ethyl Ketone)	84	70-130
cis-1,2-Dichloroethene	85	70-130
Tetrahydrofuran	71	70-130
Chloroform	76	70-130
1,1,1-Trichloroethane	76	70-130
Cyclohexane	84	70-130
Carbon Tetrachloride	74	70-130
2,2,4-Trimethylpentane	77	70-130
Benzene	77	70-130
1,2-Dichloroethane	71	70-130
Heptane	81	70-130
Trichloroethene	71	70-130
1,2-Dichloropropane	76	70-130
1,4-Dioxane	86	70-130
Bromodichloromethane	78	70-130
cis-1,3-Dichloropropene	82	70-130
4-Methyl-2-pentanone	82	70-130
Toluene	80	70-130
trans-1,3-Dichloropropene	75	70-130
1,1,2-Trichloroethane	80	70-130
Tetrachloroethene	84	70-130
2-Hexanone	71	70-130



Air Toxics

Client Sample ID: LCS

Lab ID#: 1408263A-17A

EPA METHOD TO-15 GC/MS

File Name:	14081903	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/19/14 09:16 AM

Compound	%Recovery	Method Limits
Dibromochloromethane	83	70-130
1,2-Dibromoethane (EDB)	83	70-130
Chlorobenzene	81	70-130
Ethyl Benzene	83	70-130
m,p-Xylene	83	70-130
o-Xylene	82	70-130
Styrene	89	70-130
Bromoform	87	70-130
Cumene	88	70-130
1,1,2,2-Tetrachloroethane	83	70-130
Propylbenzene	87	70-130
4-Ethyltoluene	89	70-130
1,3,5-Trimethylbenzene	85	70-130
1,2,4-Trimethylbenzene	86	70-130
1,3-Dichlorobenzene	91	70-130
1,4-Dichlorobenzene	92	70-130
alpha-Chlorotoluene	106	70-130
1,2-Dichlorobenzene	97	70-130
1,2,4-Trichlorobenzene	129	70-130
Hexachlorobutadiene	122	70-130
Butane	75	60-140
Isopentane	72	60-140

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	87	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	101	70-130



Air Toxics

Client Sample ID: LCSD

Lab ID#: 1408263A-17AA

EPA METHOD TO-15 GC/MS

File Name:	14081904	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/19/14 09:34 AM

Compound	%Recovery	Method Limits
Freon 12	68 Q	70-130
Freon 114	72	70-130
Chloromethane	63 Q	70-130
Vinyl Chloride	69 Q	70-130
1,3-Butadiene	62 Q	70-130
Bromomethane	65 Q	70-130
Chloroethane	68 Q	70-130
Freon 11	70	70-130
Ethanol	68 Q	70-130
Freon 113	92	70-130
1,1-Dichloroethene	75	70-130
Acetone	79	70-130
2-Propanol	65 Q	70-130
Carbon Disulfide	69 Q	70-130
3-Chloropropene	74	70-130
Methylene Chloride	69 Q	70-130
Methyl tert-butyl ether	76	70-130
trans-1,2-Dichloroethene	70	70-130
Hexane	73	70-130
1,1-Dichloroethane	75	70-130
2-Butanone (Methyl Ethyl Ketone)	79	70-130
cis-1,2-Dichloroethene	81	70-130
Tetrahydrofuran	69 Q	70-130
Chloroform	74	70-130
1,1,1-Trichloroethane	74	70-130
Cyclohexane	80	70-130
Carbon Tetrachloride	73	70-130
2,2,4-Trimethylpentane	75	70-130
Benzene	76	70-130
1,2-Dichloroethane	72	70-130
Heptane	82	70-130
Trichloroethene	71	70-130
1,2-Dichloropropane	76	70-130
1,4-Dioxane	85	70-130
Bromodichloromethane	78	70-130
cis-1,3-Dichloropropene	82	70-130
4-Methyl-2-pentanone	81	70-130
Toluene	81	70-130
trans-1,3-Dichloropropene	74	70-130
1,1,2-Trichloroethane	83	70-130
Tetrachloroethene	84	70-130
2-Hexanone	72	70-130



Air Toxics

Client Sample ID: LCSD

Lab ID#: 1408263A-17AA

EPA METHOD TO-15 GC/MS

File Name:	14081904	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/19/14 09:34 AM

Compound	%Recovery	Method Limits
Dibromochloromethane	84	70-130
1,2-Dibromoethane (EDB)	81	70-130
Chlorobenzene	82	70-130
Ethyl Benzene	82	70-130
m,p-Xylene	86	70-130
o-Xylene	82	70-130
Styrene	90	70-130
Bromoform	88	70-130
Cumene	88	70-130
1,1,2,2-Tetrachloroethane	84	70-130
Propylbenzene	87	70-130
4-Ethyltoluene	90	70-130
1,3,5-Trimethylbenzene	86	70-130
1,2,4-Trimethylbenzene	89	70-130
1,3-Dichlorobenzene	93	70-130
1,4-Dichlorobenzene	92	70-130
alpha-Chlorotoluene	109	70-130
1,2-Dichlorobenzene	97	70-130
1,2,4-Trichlorobenzene	126	70-130
Hexachlorobutadiene	127	70-130
Butane	67	60-140
Isopentane	65	60-140

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	86	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	104	70-130



Air Toxics

Client Sample ID: LCS

Lab ID#: 1408263A-17B

EPA METHOD TO-15 GC/MS

File Name:	14082003	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/20/14 09:53 AM

Compound	%Recovery	Method Limits
Freon 12	76	70-130
Freon 114	82	70-130
Chloromethane	74	70-130
Vinyl Chloride	79	70-130
1,3-Butadiene	75	70-130
Bromomethane	74	70-130
Chloroethane	72	70-130
Freon 11	78	70-130
Ethanol	79	70-130
Freon 113	94	70-130
1,1-Dichloroethene	83	70-130
Acetone	90	70-130
2-Propanol	74	70-130
Carbon Disulfide	78	70-130
3-Chloropropene	80	70-130
Methylene Chloride	80	70-130
Methyl tert-butyl ether	86	70-130
trans-1,2-Dichloroethene	78	70-130
Hexane	81	70-130
1,1-Dichloroethane	84	70-130
2-Butanone (Methyl Ethyl Ketone)	87	70-130
cis-1,2-Dichloroethene	88	70-130
Tetrahydrofuran	74	70-130
Chloroform	82	70-130
1,1,1-Trichloroethane	82	70-130
Cyclohexane	90	70-130
Carbon Tetrachloride	80	70-130
2,2,4-Trimethylpentane	82	70-130
Benzene	87	70-130
1,2-Dichloroethane	81	70-130
Heptane	90	70-130
Trichloroethene	79	70-130
1,2-Dichloropropane	84	70-130
1,4-Dioxane	94	70-130
Bromodichloromethane	85	70-130
cis-1,3-Dichloropropene	88	70-130
4-Methyl-2-pentanone	84	70-130
Toluene	88	70-130
trans-1,3-Dichloropropene	80	70-130
1,1,2-Trichloroethane	91	70-130
Tetrachloroethene	93	70-130
2-Hexanone	78	70-130



Air Toxics

Client Sample ID: LCS

Lab ID#: 1408263A-17B

EPA METHOD TO-15 GC/MS

File Name:	14082003	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/20/14 09:53 AM

Compound	%Recovery	Method Limits
Dibromochloromethane	91	70-130
1,2-Dibromoethane (EDB)	88	70-130
Chlorobenzene	89	70-130
Ethyl Benzene	88	70-130
m,p-Xylene	90	70-130
o-Xylene	88	70-130
Styrene	94	70-130
Bromoform	92	70-130
Cumene	94	70-130
1,1,2,2-Tetrachloroethane	89	70-130
Propylbenzene	94	70-130
4-Ethyltoluene	94	70-130
1,3,5-Trimethylbenzene	87	70-130
1,2,4-Trimethylbenzene	88	70-130
1,3-Dichlorobenzene	94	70-130
1,4-Dichlorobenzene	92	70-130
alpha-Chlorotoluene	100	70-130
1,2-Dichlorobenzene	94	70-130
1,2,4-Trichlorobenzene	83	70-130
Hexachlorobutadiene	90	70-130
Butane	91	60-140
Isopentane	78	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	83	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	101	70-130



Air Toxics

Client Sample ID: LCSD

Lab ID#: 1408263A-17BB

EPA METHOD TO-15 GC/MS

File Name:	14082004	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/20/14 10:30 AM

Compound	%Recovery	Method Limits
Freon 12	81	70-130
Freon 114	86	70-130
Chloromethane	77	70-130
Vinyl Chloride	85	70-130
1,3-Butadiene	78	70-130
Bromomethane	74	70-130
Chloroethane	71	70-130
Freon 11	83	70-130
Ethanol	80	70-130
Freon 113	89	70-130
1,1-Dichloroethene	89	70-130
Acetone	93	70-130
2-Propanol	75	70-130
Carbon Disulfide	81	70-130
3-Chloropropene	78	70-130
Methylene Chloride	80	70-130
Methyl tert-butyl ether	89	70-130
trans-1,2-Dichloroethene	82	70-130
Hexane	83	70-130
1,1-Dichloroethane	87	70-130
2-Butanone (Methyl Ethyl Ketone)	93	70-130
cis-1,2-Dichloroethene	91	70-130
Tetrahydrofuran	80	70-130
Chloroform	85	70-130
1,1,1-Trichloroethane	86	70-130
Cyclohexane	93	70-130
Carbon Tetrachloride	84	70-130
2,2,4-Trimethylpentane	85	70-130
Benzene	86	70-130
1,2-Dichloroethane	82	70-130
Heptane	90	70-130
Trichloroethene	81	70-130
1,2-Dichloropropane	85	70-130
1,4-Dioxane	93	70-130
Bromodichloromethane	87	70-130
cis-1,3-Dichloropropene	90	70-130
4-Methyl-2-pentanone	94	70-130
Toluene	90	70-130
trans-1,3-Dichloropropene	78	70-130
1,1,2-Trichloroethane	92	70-130
Tetrachloroethene	97	70-130
2-Hexanone	77	70-130



Air Toxics

Client Sample ID: LCSD

Lab ID#: 1408263A-17BB

EPA METHOD TO-15 GC/MS

File Name:	14082004	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/20/14 10:30 AM

Compound	%Recovery	Method Limits
Dibromochloromethane	91	70-130
1,2-Dibromoethane (EDB)	91	70-130
Chlorobenzene	91	70-130
Ethyl Benzene	91	70-130
m,p-Xylene	92	70-130
o-Xylene	87	70-130
Styrene	99	70-130
Bromoform	95	70-130
Cumene	93	70-130
1,1,2,2-Tetrachloroethane	90	70-130
Propylbenzene	95	70-130
4-Ethyltoluene	95	70-130
1,3,5-Trimethylbenzene	88	70-130
1,2,4-Trimethylbenzene	93	70-130
1,3-Dichlorobenzene	95	70-130
1,4-Dichlorobenzene	96	70-130
alpha-Chlorotoluene	104	70-130
1,2-Dichlorobenzene	99	70-130
1,2,4-Trichlorobenzene	105	70-130
Hexachlorobutadiene	112	70-130
Butane	84	60-140
Isopentane	77	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	84	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	104	70-130

8/29/2014

Ms. Elizabeth Kunkel

URS Corporation

1001 Highlands Plaza Dr. West

Suite 300

St. Louis MO 63110

Project Name: Roxana SoilVapor

Project #: 21562973.04003

Workorder #: 1408263B

Dear Ms. Elizabeth Kunkel

The following report includes the data for the above referenced project for sample(s) received on 8/15/2014 at Air Toxics Ltd.

The data and associated QC analyzed by Modified ASTM D-1946 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



Air Toxics

WORK ORDER #: 1408263B

Work Order Summary

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

PHONE: 314-743-4179

FAX:

DATE RECEIVED: 08/15/2014

DATE COMPLETED: 08/29/2014

BILL TO: Accounts Payable Austin
URS Corporation
P.O. BOX 203970
Austin, TX 78720-1088

P.O. # 282676

PROJECT # 21562973.04003 Roxana Soil Vapor

CONTACT: Kelly Buettner

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
05A	VMP-15-21.5-081414	Modified ASTM D-1946	9.8 "Hg	14.7 psi
06A	VMP-15-25.5-081414	Modified ASTM D-1946	9.4 "Hg	15.1 psi
07A	VMP-15-29-081414	Modified ASTM D-1946	9 "Hg	15.1 psi
10A	VMP-55-20-081314	Modified ASTM D-1946	6.9 "Hg	14.8 psi
15A	Lab Blank	Modified ASTM D-1946	NA	NA
15B	Lab Blank	Modified ASTM D-1946	NA	NA
16A	LCS	Modified ASTM D-1946	NA	NA
16AA	LCSD	Modified ASTM D-1946	NA	NA

CERTIFIED BY:

Technical Director

DATE: 08/29/14

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-13-6, UT NELAP CA009332014-5, VA NELAP - 460197, WA NELAP - C935
Name of Accrediting Agency: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005, Effective date: 10/18/2013, Expiration date: 10/17/2014.

Eurofins Air Toxics Inc., certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, Inc.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 9563

(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified ASTM D-1946
URS Corporation
Workorder# 1408263B

Fourteen 1 Liter Summa Canister samples were received on August 15, 2014. The laboratory performed analysis via Modified ASTM Method D-1946 for Methane and fixed gases in air using GC/FID or GC/TCD. The method involves direct injection of 1.0 mL of sample.

On the analytical column employed for this analysis, Oxygen coelutes with Argon. The corresponding peak is quantitated as Oxygen.

Since Nitrogen is used to pressurize samples, the reported Nitrogen values are calculated by adding all the sample components and subtracting from 100%.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the ATL modifications.

<i>Requirement</i>	<i>ASTM D-1946</i>	<i>ATL Modifications</i>
Calibration	A single point calibration is performed using a reference standard closely matching the composition of the unknown.	A minimum of 5-point calibration curve is performed. Quantitation is based on average Response Factor.
Reference Standard	The composition of any reference standard must be known to within 0.01 mol % for any component.	The standards used by ATL are blended to a $\geq 95\%$ accuracy.
Sample Injection Volume	Components whose concentrations are in excess of 5 % should not be analyzed by using sample volumes greater than 0.5 mL.	The sample container is connected directly to a fixed volume sample loop of 1.0 mL on the GC. Linear range is defined by the calibration curve. Bags are loaded by vacuum.
Normalization	Normalize the mole percent values by multiplying each value by 100 and dividing by the sum of the original values. The sum of the original values should not differ from 100% by more than 1.0%.	Results are not normalized. The sum of the reported values can differ from 100% by as much as 15%, either due to analytical variability or an unusual sample matrix.
Precision	Precision requirements established at each concentration level.	Duplicates should agree within 25% RPD for detections $> 5 \times$ the RL.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

As per project specific client request the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

B - Compound present in laboratory blank greater than reporting limit.

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the detection limit.

M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue



Air Toxics

Summary of Detected Compounds
NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

Client Sample ID: VMP-15-21.5-081414

Lab ID#: 1408263B-05A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.30	1.8
Nitrogen	0.30	87
Methane	0.00030	0.10
Carbon Dioxide	0.030	11

Client Sample ID: VMP-15-25.5-081414

Lab ID#: 1408263B-06A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.30	1.5
Nitrogen	0.30	86
Methane	0.00030	0.21
Carbon Dioxide	0.030	12
Ethane	0.0030	0.00012 J
Helium	0.15	0.025 J

Client Sample ID: VMP-15-29-081414

Lab ID#: 1408263B-07A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.29	1.5
Nitrogen	0.29	86
Methane	0.00029	0.13
Carbon Dioxide	0.029	12



Air Toxics

Summary of Detected Compounds
NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

Client Sample ID: VMP-55-20-081314

Lab ID#: 1408263B-10A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.26	2.5
Nitrogen	0.26	79
Methane	0.00026	0.90
Carbon Dioxide	0.026	17
Ethane	0.0026	0.014



Air Toxics

Client Sample ID: VMP-15-21.5-081414

Lab ID#: 1408263B-05A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	9082105	Date of Collection: 8/14/14 1:11:00 PM
Dil. Factor:	2.97	Date of Analysis: 8/21/14 09:32 AM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.30	1.8
Nitrogen	0.30	87
Carbon Monoxide	0.030	Not Detected
Methane	0.00030	0.10
Carbon Dioxide	0.030	11
Ethane	0.0030	Not Detected
Ethene	0.0030	Not Detected
Helium	0.15	Not Detected

Container Type: 1 Liter Summa Canister



Air Toxics

Client Sample ID: VMP-15-25.5-081414

Lab ID#: 1408263B-06A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	9082106	Date of Collection: 8/14/14 1:40:00 PM
Dil. Factor:	2.95	Date of Analysis: 8/21/14 09:59 AM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.30	1.5
Nitrogen	0.30	86
Carbon Monoxide	0.030	Not Detected
Methane	0.00030	0.21
Carbon Dioxide	0.030	12
Ethane	0.0030	0.00012 J
Ethene	0.0030	Not Detected
Helium	0.15	0.025 J

J = Estimated value.

Container Type: 1 Liter Summa Canister



Air Toxics

Client Sample ID: VMP-15-29-081414

Lab ID#: 1408263B-07A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	9082107	Date of Collection: 8/14/14 2:05:00 PM
Dil. Factor:	2.89	Date of Analysis: 8/21/14 10:29 AM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.29	1.5
Nitrogen	0.29	86
Carbon Monoxide	0.029	Not Detected
Methane	0.00029	0.13
Carbon Dioxide	0.029	12
Ethane	0.0029	Not Detected
Ethene	0.0029	Not Detected
Helium	0.14	Not Detected

Container Type: 1 Liter Summa Canister



Air Toxics

Client Sample ID: VMP-55-20-081314

Lab ID#: 1408263B-10A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	9082114	Date of Collection: 8/13/14 3:04:00 PM
Dil. Factor:	2.61	Date of Analysis: 8/21/14 02:40 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.26	2.5
Nitrogen	0.26	79
Carbon Monoxide	0.026	Not Detected
Methane	0.00026	0.90
Carbon Dioxide	0.026	17
Ethane	0.0026	0.014
Ethene	0.0026	Not Detected
Helium	0.13	Not Detected

Container Type: 1 Liter Summa Canister



Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 1408263B-15A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	9082104a	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/21/14 09:04 AM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.10	0.012 J
Nitrogen	0.10	0.050 J
Carbon Monoxide	0.010	Not Detected
Methane	0.00010	Not Detected
Carbon Dioxide	0.010	Not Detected
Ethane	0.0010	Not Detected
Ethene	0.0010	Not Detected

J = Estimated value.

Container Type: NA - Not Applicable



Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 1408263B-15B

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	9082103ba	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	8/21/14 08:32 AM
Compound	Rpt. Limit (%)	Amount (%)	
Helium	0.050	Not Detected	

Container Type: NA - Not Applicable



Air Toxics

Client Sample ID: LCS

Lab ID#: 1408263B-16A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	9082102	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/21/14 08:03 AM

Compound	%Recovery	Method Limits
Oxygen	100	85-115
Nitrogen	93	85-115
Carbon Monoxide	106	85-115
Methane	95	85-115
Carbon Dioxide	100	85-115
Ethane	100	85-115
Ethene	102	85-115
Helium	102	85-115

Container Type: NA - Not Applicable



Air Toxics

Client Sample ID: LCSD

Lab ID#: 1408263B-16AA

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	9082124	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/21/14 08:42 PM

Compound	%Recovery	Method Limits
Oxygen	99	85-115
Nitrogen	93	85-115
Carbon Monoxide	105	85-115
Methane	95	85-115
Carbon Dioxide	100	85-115
Ethane	99	85-115
Ethene	102	85-115
Helium	101	85-115

Container Type: NA - Not Applicable

8/29/2014
Ms. Elizabeth Kunkel
URS Corporation
1001 Highlands Plaza Dr. West
Suite 300
St. Louis MO 63110

Project Name: Roxana Soil Vapor
Project #: 21562973.04003
Workorder #: 1408264A

Dear Ms. Elizabeth Kunkel

The following report includes the data for the above referenced project for sample(s) received on 8/15/2014 at Air Toxics Ltd.

The data and associated QC analyzed by 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



Air Toxics

WORK ORDER #: 1408264A

Work Order Summary

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

PHONE: 314-743-4179

FAX:

DATE RECEIVED: 08/15/2014

DATE COMPLETED: 08/29/2014

BILL TO: Accounts Payable Austin
URS Corporation
P.O. BOX 203970
Austin, TX 78720-1088

P.O. # 282676

PROJECT # 21562973.04003 Roxana Soil Vapor

CONTACT: Kelly Buettner

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
04A	VMP-15-5-081414	TO-15	9.4 "Hg	14.8 psi
16A	Lab Blank	TO-15	NA	NA
17A	CCV	TO-15	NA	NA
18A	LCS	TO-15	NA	NA
18AA	LCSD	TO-15	NA	NA

CERTIFIED BY:

Technical Director

DATE: 08/29/14

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-13-6, UT NELAP CA009332014-5, VA NELAP - 460197, WA NELAP - C935
Name of Accrediting Agency: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2013, Expiration date: 10/17/2014.

Eurofins Air Toxics Inc., certifies that the test results contained in this report meet all requirements of the NELAC standards

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**LABORATORY NARRATIVE
EPA Method TO-15
URS Corporation
Workorder# 1408264A**

Fifteen 1 Liter Summa Canister samples were received on August 15, 2014. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified (0.2 ppbv for compounds reported at 0.5 ppbv and 0.8 ppbv for compounds reported at 2.0 ppbv) may be false positives.

All Quality Control Limit exceedances and affected sample results are noted by flags. Each flag is defined at the bottom of this Case Narrative and on each Sample Result Summary page.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue



Air Toxics

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

Client Sample ID: VMP-15-5-081414

Lab ID#: 1408264A-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.5	0.44 J	7.2	2.2 J
Ethanol	5.8	4.3 J	11	8.1 J
Acetone	15	12 J	35	28 J
2-Propanol	5.8	0.61 J	14	1.5 J
Carbon Disulfide	5.8	0.54 J	18	1.7 J
2-Butanone (Methyl Ethyl Ketone)	5.8	1.9 J	17	5.6 J
Chloroform	1.5	1.4 J	7.1	6.6 J
Toluene	1.5	0.22 J	5.5	0.81 J
Tetrachloroethene	1.5	1.2 J	9.9	8.4 J
Isopentane	5.8	1.1 J	17	3.3 J



Air Toxics

Client Sample ID: VMP-15-5-081414

Lab ID#: 1408264A-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	17082110	Date of Collection: 8/14/14 12:51:00 PM
Dil. Factor:	2.92	Date of Analysis: 8/21/14 12:12 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.5	0.44 J	7.2	2.2 J
Freon 114	1.5	Not Detected	10	Not Detected
Chloromethane	15	Not Detected	30	Not Detected
Vinyl Chloride	1.5	Not Detected	3.7	Not Detected
1,3-Butadiene	1.5	Not Detected	3.2	Not Detected
Bromomethane	15	Not Detected	57	Not Detected
Chloroethane	5.8	Not Detected	15	Not Detected
Freon 11	1.5	Not Detected	8.2	Not Detected
Ethanol	5.8	4.3 J	11	8.1 J
Freon 113	1.5	Not Detected	11	Not Detected
1,1-Dichloroethene	1.5	Not Detected	5.8	Not Detected
Acetone	15	12 J	35	28 J
2-Propanol	5.8	0.61 J	14	1.5 J
Carbon Disulfide	5.8	0.54 J	18	1.7 J
3-Chloropropene	5.8	Not Detected	18	Not Detected
Methylene Chloride	15	Not Detected	51	Not Detected
Methyl tert-butyl ether	1.5	Not Detected	5.3	Not Detected
trans-1,2-Dichloroethene	1.5	Not Detected	5.8	Not Detected
Hexane	1.5	Not Detected	5.1	Not Detected
1,1-Dichloroethane	1.5	Not Detected	5.9	Not Detected
2-Butanone (Methyl Ethyl Ketone)	5.8	1.9 J	17	5.6 J
cis-1,2-Dichloroethene	1.5	Not Detected	5.8	Not Detected
Tetrahydrofuran	1.5	Not Detected	4.3	Not Detected
Chloroform	1.5	1.4 J	7.1	6.6 J
1,1,1-Trichloroethane	1.5	Not Detected	8.0	Not Detected
Cyclohexane	1.5	Not Detected	5.0	Not Detected
Carbon Tetrachloride	1.5	Not Detected	9.2	Not Detected
2,2,4-Trimethylpentane	1.5	Not Detected	6.8	Not Detected
Benzene	1.5	Not Detected	4.7	Not Detected
1,2-Dichloroethane	1.5	Not Detected	5.9	Not Detected
Heptane	1.5	Not Detected	6.0	Not Detected
Trichloroethene	1.5	Not Detected	7.8	Not Detected
1,2-Dichloropropane	1.5	Not Detected	6.7	Not Detected
1,4-Dioxane	5.8	Not Detected	21	Not Detected
Bromodichloromethane	1.5	Not Detected	9.8	Not Detected
cis-1,3-Dichloropropene	1.5	Not Detected	6.6	Not Detected
4-Methyl-2-pentanone	1.5	Not Detected	6.0	Not Detected
Toluene	1.5	0.22 J	5.5	0.81 J
trans-1,3-Dichloropropene	1.5	Not Detected	6.6	Not Detected
1,1,2-Trichloroethane	1.5	Not Detected	8.0	Not Detected
Tetrachloroethene	1.5	1.2 J	9.9	8.4 J
2-Hexanone	5.8	Not Detected	24	Not Detected



Air Toxics

Client Sample ID: VMP-15-5-081414

Lab ID#: 1408264A-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	17082110	Date of Collection:	8/14/14 12:51:00 PM	
Dil. Factor:	2.92	Date of Analysis:	8/21/14 12:12 PM	
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.5	Not Detected	12	Not Detected
1,2-Dibromoethane (EDB)	1.5	Not Detected	11	Not Detected
Chlorobenzene	1.5	Not Detected	6.7	Not Detected
Ethyl Benzene	1.5	Not Detected	6.3	Not Detected
m,p-Xylene	1.5	Not Detected	6.3	Not Detected
o-Xylene	1.5	Not Detected	6.3	Not Detected
Styrene	1.5	Not Detected	6.2	Not Detected
Bromoform	1.5	Not Detected	15	Not Detected
Cumene	1.5	Not Detected	7.2	Not Detected
1,1,2,2-Tetrachloroethane	1.5	Not Detected	10	Not Detected
Propylbenzene	1.5	Not Detected	7.2	Not Detected
4-Ethyltoluene	1.5	Not Detected	7.2	Not Detected
1,3,5-Trimethylbenzene	1.5	Not Detected	7.2	Not Detected
1,2,4-Trimethylbenzene	1.5	Not Detected	7.2	Not Detected
1,3-Dichlorobenzene	1.5	Not Detected	8.8	Not Detected
1,4-Dichlorobenzene	1.5	Not Detected	8.8	Not Detected
alpha-Chlorotoluene	1.5	Not Detected	7.6	Not Detected
1,2-Dichlorobenzene	1.5	Not Detected	8.8	Not Detected
1,2,4-Trichlorobenzene	5.8	Not Detected	43	Not Detected
Hexachlorobutadiene	5.8	Not Detected	62	Not Detected
Butane	5.8	Not Detected	14	Not Detected
Isopentane	5.8	1.1 J	17	3.3 J

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	96	70-130
1,2-Dichloroethane-d4	99	70-130
4-Bromofluorobenzene	101	70-130



Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 1408264A-16A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	17082105c	Date of Collection:	NA	
Dil. Factor:	1.00	Date of Analysis:	8/21/14 09:06 AM	
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Freon 114	0.50	Not Detected	3.5	Not Detected
Chloromethane	5.0	Not Detected	10	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,3-Butadiene	0.50	Not Detected	1.1	Not Detected
Bromomethane	5.0	Not Detected	19	Not Detected
Chloroethane	2.0	Not Detected	5.3	Not Detected
Freon 11	0.50	Not Detected	2.8	Not Detected
Ethanol	2.0	Not Detected UJ	3.8	Not Detected UJ
Freon 113	0.50	Not Detected	3.8	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Acetone	5.0	0.38 J	12	0.90 J
2-Propanol	2.0	Not Detected	4.9	Not Detected
Carbon Disulfide	2.0	0.16 J	6.2	0.49 J
3-Chloropropene	2.0	Not Detected	6.3	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
Methyl tert-butyl ether	0.50	Not Detected	1.8	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Hexane	0.50	Not Detected	1.8	Not Detected
1,1-Dichloroethane	0.50	Not Detected	2.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2.0	Not Detected	5.9	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Tetrahydrofuran	0.50	Not Detected	1.5	Not Detected
Chloroform	0.50	Not Detected	2.4	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Cyclohexane	0.50	Not Detected	1.7	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
2,2,4-Trimethylpentane	0.50	Not Detected	2.3	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
1,2-Dichloroethane	0.50	Not Detected	2.0	Not Detected
Heptane	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
1,2-Dichloropropane	0.50	Not Detected	2.3	Not Detected
1,4-Dioxane	2.0	Not Detected	7.2	Not Detected
Bromodichloromethane	0.50	Not Detected	3.4	Not Detected
cis-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
4-Methyl-2-pentanone	0.50	Not Detected	2.0	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
trans-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
1,1,2-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
2-Hexanone	2.0	Not Detected	8.2	Not Detected



Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 1408264A-16A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	17082105c	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/21/14 09:06 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	0.50	Not Detected	4.2	Not Detected
1,2-Dibromoethane (EDB)	0.50	Not Detected	3.8	Not Detected
Chlorobenzene	0.50	0.087 J	2.3	0.40 J
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
Styrene	0.50	Not Detected	2.1	Not Detected
Bromoform	0.50	Not Detected	5.2	Not Detected
Cumene	0.50	Not Detected	2.4	Not Detected
1,1,2,2-Tetrachloroethane	0.50	Not Detected	3.4	Not Detected
Propylbenzene	0.50	0.11 J	2.4	0.52 J
4-Ethyltoluene	0.50	0.11 J	2.4	0.54 J
1,3,5-Trimethylbenzene	0.50	0.11 J	2.4	0.54 J
1,2,4-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,3-Dichlorobenzene	0.50	0.13 J	3.0	0.78 J
1,4-Dichlorobenzene	0.50	0.13 J	3.0	0.80 J
alpha-Chlorotoluene	0.50	Not Detected	2.6	Not Detected
1,2-Dichlorobenzene	0.50	0.14 J	3.0	0.86 J
1,2,4-Trichlorobenzene	2.0	Not Detected	15	Not Detected
Hexachlorobutadiene	2.0	Not Detected	21	Not Detected
Butane	2.0	Not Detected	4.8	Not Detected
Isopentane	2.0	Not Detected	5.9	Not Detected

UJ = Analyte associated with low bias in the CCV and/or LCS.

J = Estimated value.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	100	70-130
4-Bromofluorobenzene	106	70-130



Air Toxics

Client Sample ID: CCV

Lab ID#: 1408264A-17A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	17082102	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/21/14 07:36 AM

Compound	%Recovery
Freon 12	95
Freon 114	93
Chloromethane	78
Vinyl Chloride	70
1,3-Butadiene	70
Bromomethane	80
Chloroethane	73
Freon 11	101
Ethanol	68 Q
Freon 113	93
1,1-Dichloroethene	81
Acetone	79
2-Propanol	72
Carbon Disulfide	82
3-Chloropropene	80
Methylene Chloride	76
Methyl tert-butyl ether	88
trans-1,2-Dichloroethene	87
Hexane	76
1,1-Dichloroethane	81
2-Butanone (Methyl Ethyl Ketone)	84
cis-1,2-Dichloroethene	85
Tetrahydrofuran	72
Chloroform	91
1,1,1-Trichloroethane	100
Cyclohexane	85
Carbon Tetrachloride	103
2,2,4-Trimethylpentane	76
Benzene	87
1,2-Dichloroethane	102
Heptane	91
Trichloroethene	85
1,2-Dichloropropane	80
1,4-Dioxane	88
Bromodichloromethane	97
cis-1,3-Dichloropropene	86
4-Methyl-2-pentanone	82
Toluene	93
trans-1,3-Dichloropropene	92
1,1,2-Trichloroethane	89
Tetrachloroethene	98
2-Hexanone	78



Air Toxics

Client Sample ID: CCV

Lab ID#: 1408264A-17A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	17082102	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/21/14 07:36 AM

Compound	%Recovery
Dibromochloromethane	99
1,2-Dibromoethane (EDB)	92
Chlorobenzene	89
Ethyl Benzene	95
m,p-Xylene	98
o-Xylene	93
Styrene	100
Bromoform	106
Cumene	100
1,1,2,2-Tetrachloroethane	90
Propylbenzene	95
4-Ethyltoluene	102
1,3,5-Trimethylbenzene	101
1,2,4-Trimethylbenzene	102
1,3-Dichlorobenzene	102
1,4-Dichlorobenzene	106
alpha-Chlorotoluene	101
1,2-Dichlorobenzene	102
1,2,4-Trichlorobenzene	102
Hexachlorobutadiene	112
Butane	69
Isopentane	71

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	110	70-130
4-Bromofluorobenzene	116	70-130



Air Toxics

Client Sample ID: LCS

Lab ID#: 1408264A-18A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	17082103	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/21/14 07:58 AM

Compound	%Recovery	Method Limits
Freon 12	91	70-130
Freon 114	91	70-130
Chloromethane	75	70-130
Vinyl Chloride	71	70-130
1,3-Butadiene	66 Q	70-130
Bromomethane	77	70-130
Chloroethane	71	70-130
Freon 11	95	70-130
Ethanol	64 Q	70-130
Freon 113	99	70-130
1,1-Dichloroethene	92	70-130
Acetone	72	70-130
2-Propanol	74	70-130
Carbon Disulfide	72	70-130
3-Chloropropene	79	70-130
Methylene Chloride	77	70-130
Methyl tert-butyl ether	80	70-130
trans-1,2-Dichloroethene	72	70-130
Hexane	73	70-130
1,1-Dichloroethane	80	70-130
2-Butanone (Methyl Ethyl Ketone)	80	70-130
cis-1,2-Dichloroethene	89	70-130
Tetrahydrofuran	66 Q	70-130
Chloroform	88	70-130
1,1,1-Trichloroethane	93	70-130
Cyclohexane	83	70-130
Carbon Tetrachloride	96	70-130
2,2,4-Trimethylpentane	76	70-130
Benzene	84	70-130
1,2-Dichloroethane	98	70-130
Heptane	89	70-130
Trichloroethene	81	70-130
1,2-Dichloropropane	78	70-130
1,4-Dioxane	93	70-130
Bromodichloromethane	95	70-130
cis-1,3-Dichloropropene	84	70-130
4-Methyl-2-pentanone	81	70-130
Toluene	87	70-130
trans-1,3-Dichloropropene	85	70-130
1,1,2-Trichloroethane	87	70-130
Tetrachloroethene	95	70-130
2-Hexanone	82	70-130



Air Toxics

Client Sample ID: LCS

Lab ID#: 1408264A-18A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	17082103	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/21/14 07:58 AM

Compound	%Recovery	Method Limits
Dibromochloromethane	100	70-130
1,2-Dibromoethane (EDB)	89	70-130
Chlorobenzene	85	70-130
Ethyl Benzene	93	70-130
m,p-Xylene	97	70-130
o-Xylene	90	70-130
Styrene	102	70-130
Bromoform	108	70-130
Cumene	100	70-130
1,1,2,2-Tetrachloroethane	86	70-130
Propylbenzene	94	70-130
4-Ethyltoluene	102	70-130
1,3,5-Trimethylbenzene	101	70-130
1,2,4-Trimethylbenzene	100	70-130
1,3-Dichlorobenzene	98	70-130
1,4-Dichlorobenzene	100	70-130
alpha-Chlorotoluene	104	70-130
1,2-Dichlorobenzene	100	70-130
1,2,4-Trichlorobenzene	98	70-130
Hexachlorobutadiene	105	70-130
Butane	71	60-140
Isopentane	70	60-140

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130
1,2-Dichloroethane-d4	106	70-130
4-Bromofluorobenzene	119	70-130



Air Toxics

Client Sample ID: LCSD

Lab ID#: 1408264A-18AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name: 17082104
Dil. Factor: 1.00

Date of Collection: NA
Date of Analysis: 8/21/14 08:19 AM

Compound	%Recovery	Method Limits
Freon 12	91	70-130
Freon 114	90	70-130
Chloromethane	76	70-130
Vinyl Chloride	71	70-130
1,3-Butadiene	69 Q	70-130
Bromomethane	77	70-130
Chloroethane	70	70-130
Freon 11	95	70-130
Ethanol	64 Q	70-130
Freon 113	101	70-130
1,1-Dichloroethene	92	70-130
Acetone	71	70-130
2-Propanol	75	70-130
Carbon Disulfide	72	70-130
3-Chloropropene	78	70-130
Methylene Chloride	78	70-130
Methyl tert-butyl ether	84	70-130
trans-1,2-Dichloroethene	70	70-130
Hexane	75	70-130
1,1-Dichloroethane	79	70-130
2-Butanone (Methyl Ethyl Ketone)	78	70-130
cis-1,2-Dichloroethene	91	70-130
Tetrahydrofuran	69 Q	70-130
Chloroform	87	70-130
1,1,1-Trichloroethane	94	70-130
Cyclohexane	83	70-130
Carbon Tetrachloride	96	70-130
2,2,4-Trimethylpentane	76	70-130
Benzene	83	70-130
1,2-Dichloroethane	95	70-130
Heptane	85	70-130
Trichloroethene	82	70-130
1,2-Dichloropropane	76	70-130
1,4-Dioxane	92	70-130
Bromodichloromethane	95	70-130
cis-1,3-Dichloropropene	86	70-130
4-Methyl-2-pentanone	84	70-130
Toluene	88	70-130
trans-1,3-Dichloropropene	84	70-130
1,1,2-Trichloroethane	83	70-130
Tetrachloroethene	96	70-130
2-Hexanone	82	70-130



Air Toxics

Client Sample ID: LCSD

Lab ID#: 1408264A-18AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	17082104	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/21/14 08:19 AM

Compound	%Recovery	Method Limits
Dibromochloromethane	98	70-130
1,2-Dibromoethane (EDB)	88	70-130
Chlorobenzene	87	70-130
Ethyl Benzene	95	70-130
m,p-Xylene	93	70-130
o-Xylene	90	70-130
Styrene	103	70-130
Bromoform	105	70-130
Cumene	102	70-130
1,1,2,2-Tetrachloroethane	85	70-130
Propylbenzene	95	70-130
4-Ethyltoluene	103	70-130
1,3,5-Trimethylbenzene	100	70-130
1,2,4-Trimethylbenzene	100	70-130
1,3-Dichlorobenzene	98	70-130
1,4-Dichlorobenzene	99	70-130
alpha-Chlorotoluene	105	70-130
1,2-Dichlorobenzene	101	70-130
1,2,4-Trichlorobenzene	108	70-130
Hexachlorobutadiene	112	70-130
Butane	73	60-140
Isopentane	68	60-140

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	106	70-130
4-Bromofluorobenzene	118	70-130

8/29/2014

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

Project Name: Roxana Soil Vapor
Project #: 21562973.04003
Workorder #: 1408264B

Dear Ms. Elizabeth Kunkel

The following report includes the data for the above referenced project for sample(s) received on 8/15/2014 at Air Toxics Ltd.

The data and associated QC analyzed by Modified ASTM D-1946 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



Air Toxics

WORK ORDER #: 1408264B

Work Order Summary

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

PHONE: 314-743-4179

FAX:

DATE RECEIVED: 08/15/2014

DATE COMPLETED: 08/29/2014

BILL TO: Accounts Payable Austin
URS Corporation
P.O. BOX 203970
Austin, TX 78720-1088

P.O. # 282676

PROJECT # 21562973.04003 Roxana Soil Vapor

CONTACT: Kelly Buettner

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
04A	VMP-15-5-081414	Modified ASTM D-1946	9.4 "Hg	14.8 psi
16A	Lab Blank	Modified ASTM D-1946	NA	NA
16B	Lab Blank	Modified ASTM D-1946	NA	NA
17A	LCS	Modified ASTM D-1946	NA	NA
17AA	LCSD	Modified ASTM D-1946	NA	NA

CERTIFIED BY:

Technical Director

DATE: 08/29/14

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-13-6, UT NELAP CA009332014-5, VA NELAP - 460197, WA NELAP - C935
Name of Accrediting Agency: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2013, Expiration date: 10/17/2014.

Eurofins Air Toxics Inc. certifies that the test results contained in this report meet all requirements of the NELAC standards

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180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 9563
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified ASTM D-1946
URS Corporation
Workorder# 1408264B

Fifteen 1 Liter Summa Canister samples were received on August 15, 2014. The laboratory performed analysis via Modified ASTM Method D-1946 for Methane and fixed gases in air using GC/FID or GC/TCD. The method involves direct injection of 1.0 mL of sample.

On the analytical column employed for this analysis, Oxygen coelutes with Argon. The corresponding peak is quantitated as Oxygen.

Since Nitrogen is used to pressurize samples, the reported Nitrogen values are calculated by adding all the sample components and subtracting from 100%.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the ATL modifications.

<i>Requirement</i>	<i>ASTM D-1946</i>	<i>ATL Modifications</i>
Calibration	A single point calibration is performed using a reference standard closely matching the composition of the unknown.	A minimum of 5-point calibration curve is performed. Quantitation is based on average Response Factor.
Reference Standard	The composition of any reference standard must be known to within 0.01 mol % for any component.	The standards used by ATL are blended to a $\geq 95\%$ accuracy.
Sample Injection Volume	Components whose concentrations are in excess of 5 % should not be analyzed by using sample volumes greater than 0.5 mL.	The sample container is connected directly to a fixed volume sample loop of 1.0 mL on the GC. Linear range is defined by the calibration curve. Bags are loaded by vacuum.
Normalization	Normalize the mole percent values by multiplying each value by 100 and dividing by the sum of the original values. The sum of the original values should not differ from 100% by more than 1.0%.	Results are not normalized. The sum of the reported values can differ from 100% by as much as 15%, either due to analytical variability or an unusual sample matrix.
Precision	Precision requirements established at each concentration level.	Duplicates should agree within 25% RPD for detections $> 5 \times$ the RL.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

As per project specific client request the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

B - Compound present in laboratory blank greater than reporting limit.

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the detection limit.

M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue



Air Toxics

Summary of Detected Compounds
NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

Client Sample ID: VMP-15-5-081414

Lab ID#: 1408264B-04A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.29	11
Nitrogen	0.29	80
Carbon Dioxide	0.029	8.9



Air Toxics

Client Sample ID: VMP-15-5-081414

Lab ID#: 1408264B-04A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	10082609	Date of Collection: 8/14/14 12:51:00 PM
Dil. Factor:	2.92	Date of Analysis: 8/26/14 07:02 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.29	11
Nitrogen	0.29	80
Carbon Monoxide	0.029	Not Detected
Methane	0.00029	Not Detected
Carbon Dioxide	0.029	8.9
Ethane	0.0029	Not Detected
Ethene	0.0029	Not Detected
Helium	0.15	Not Detected

Container Type: 1 Liter Summa Canister



Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 1408264B-16A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	10082605a	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/26/14 03:32 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.10	0.014 J
Nitrogen	0.10	0.049 J
Carbon Monoxide	0.010	Not Detected
Methane	0.00010	Not Detected
Carbon Dioxide	0.010	Not Detected
Ethane	0.0010	Not Detected
Ethene	0.0010	Not Detected

J = Estimated value.

Container Type: NA - Not Applicable



Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 1408264B-16B

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	10082604ca	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/26/14 03:05 PM

Compound	Rpt. Limit (%)	Amount (%)
Helium	0.050	Not Detected

Container Type: NA - Not Applicable



Air Toxics

Client Sample ID: LCS

Lab ID#: 1408264B-17A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	10082603	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/26/14 02:37 PM

Compound	%Recovery	Method Limits
Oxygen	100	85-115
Nitrogen	92	85-115
Carbon Monoxide	101	85-115
Methane	105	85-115
Carbon Dioxide	98	85-115
Ethane	100	85-115
Ethene	102	85-115
Helium	98	85-115

Container Type: NA - Not Applicable



Air Toxics

Client Sample ID: LCSD

Lab ID#: 1408264B-17AA

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	10082622	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/27/14 12:14 PM

Compound	%Recovery	Method Limits
Oxygen	100	85-115
Nitrogen	93	85-115
Carbon Monoxide	101	85-115
Methane	105	85-115
Carbon Dioxide	99	85-115
Ethane	100	85-115
Ethene	102	85-115
Helium	99	85-115

Container Type: NA - Not Applicable



08/15/14



Technical Report for

Shell Oil

URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL
21562973.18000

Accutest Job Number: MC32497

Sampling Date: 07/30/14

Report to:

URS Corporation

Melissa.mansker@urs.com

ATTN: Melissa Mansker

Total number of pages in report: 93



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

Reza Pand
Lab Director

Client Service contact: Matthew Morrell 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) DoD ELAP (L-A-B L2235)

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Test results relate only to samples analyzed.

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Sample Summary

Shell Oil

Job No: MC32497

URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL
Project No: 21562973.18000

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
MC32497-1	07/30/14	11:00	07/31/14	SO	Soil	VMP15-29-073014(28-30')
MC32497-2	07/30/14	11:00	07/31/14	SO	Soil	VMP15-29-073014(28-30')DUP
MC32497-3	07/30/14	00:00	07/31/14	AQ	Trip Blank Water	TB-073014-HCL
MC32497-4	07/30/14	00:00	07/31/14	AQ	Trip Blank Water	TB-073014-ST

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



SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Shell Oil

Job No MC32497

Site: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Ave

Report Date 8/14/2014 1:09:57 PM

2 Sample(s), 2 Trip Blank(s) were collected on 07/30/2014 and were received at Accutest on 07/31/2014 properly preserved, at 1.4 Deg. C and intact. These Samples received an Accutest job number of MC32497. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report. 1-Chlorohexane, Benzenethiol, Dibenz(a,h)acridine, Indene, and Quinoline were searched in the library search and reported only if detections were found.

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

Volatiles by GCMS By Method SW846 8260C

Matrix AQ

Batch ID: MSL3863

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC32562-1MS, MC32562-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for Acrolein, Dichlorodifluoromethane are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for 2-Butanone (MEK), 2-Hexanone, Acetone, Dichlorodifluoromethane are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 2-Hexanone, Acetone are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.

Matrix SO

Batch ID: MSM2388

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC32521-1MS, MC32521-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for Acrolein are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for 1,1,1,2-Tetrachloroethane, 1,1,1-Trichloroethane, 1,1-Dichloroethene, 1,1-Dichloropropene, 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 1,4-Dioxane, 2,2-Dichloropropane, 2-Chloroethyl vinyl ether, Acrolein, Benzene, Carbon disulfide, Carbon tetrachloride, Chlorobenzene, Chloroform, cis-1,2-Dichloroethene, Ethylbenzene, Hexachlorobutadiene, Isopropylbenzene, m,p-Xylene, n-Butylbenzene, n-Propylbenzene, o-Chlorotoluene, o-Xylene, p-Chlorotoluene, p-Isopropyltoluene, sec-Butylbenzene, Styrene, tert-Butylbenzene, Tetrachloroethene, Toluene, trans-1,2-Dichloroethene, Trichloroethene, Vinyl Acetate, Xylene (total) are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 1,1,1,2-Tetrachloroethane, 1,1,1-Trichloroethane, 1,1-Dichloroethane, 1,1-Dichloroethene, 1,1-Dichloropropene, 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, 1,2,4-Trimethylbenzene, 1,2-Dichlorobenzene, 1,2-Dichloropropane, 1,3,5-Trimethylbenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2,2-Dichloropropane, 2-Butanone (MEK), 2-Chloroethyl vinyl ether, Acetone, Benzene, Bromobenzene, Carbon disulfide, Carbon tetrachloride, Chlorobenzene, Chloroform, cis-1,2-Dichloroethene, Ethylbenzene, Hexachlorobutadiene, Isopropylbenzene, m,p-Xylene, n-Butylbenzene, n-Propylbenzene, o-Chlorotoluene, o-Xylene, p-Chlorotoluene, p-Isopropyltoluene, sec-Butylbenzene, Styrene, tert-Butylbenzene, Tetrachloroethene, Toluene, trans-1,2-Dichloroethene, Trichloroethene, Vinyl Acetate, Xylene (total), 2-Hexanone, Acrolein are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- RPD(s) for MSD for 1,2,3-Trichloropropane, 2-Hexanone, 4-Methyl-2-pentanone (MIBK), Acrolein, Naphthalene are outside control limits for sample MC32521-1MSD. High RPD due to possible matrix interference and/or sample non-homogeneity.

Extractables by GCMS By Method SW846 8270D

Matrix SO	Batch ID: OP39211
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- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC32521-IMS, MC32521-1MSD were used as the QC samples indicated.
- OP39211-BS/BSD Recovery(s) for Benzyl Alcohol are outside control limits. Blank Spike meets program technical requirements.
- OP39211-MS/MSD Recovery(s) for Benzoic acid are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for Benzoic acid are outside control limits. High RPD due to possible matrix interference and/or sample heterogeneity.
- RPD(s) for MSD for Benzoic acid are outside control limits for sample OP39211-MSD. High RPD due to possible matrix interference and/or sample heterogeneity.
- RPD of OP39211-BSD for Benzoic acid: Outside control limits. Blank Spike meets program technical requirements.

Extractables by GCMS By Method SW846 8270D BY SIM

Matrix SO	Batch ID: OP39255
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- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC32549-IMS, MC32549-1MSD were used as the QC samples indicated.
- OP39255-MS/MSD Recovery(s) for 1-Methylnaphthalene, 2-Methylnaphthalene are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Volatiles by GC By Method SW846 8011

Matrix AQ	Batch ID: OP39247
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- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC32300-19MS, MC32300-19MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Matrix SO	Batch ID: OP39257
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- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC32521-IMS, MC32521-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Continuing calibration check standard GBK1299-CC1299, signal #1, file BK39971, BK39982 for 1,2-Dibromo-3-chloropropane exceed 15% Dev. 1,2-Dibromo-3-chloropropane was reported from signal #2 in associated samples.

Volatiles by GC By Method SW846 8015

Matrix SO	Batch ID: GAB4535
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- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC32521-IMS, MC32521-1MSD were used as the QC samples indicated.
- Calibration check standard GAB4536-CC4488 not associated with this job

Wet Chemistry By Method SM21 2540 B MOD.

Matrix SO	Batch ID: GN47846
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- Sample(s) MC32521-1DUP were used as the QC samples for Solids, Percent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety. The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC32497).

Summary of Hits

Page 1 of 1

Job Number: MC32497

Account: Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Collected: 07/30/14

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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MC32497-1 VMP15-29-073014(28-30')

Benzene	0.0072	0.00053	0.00036	mg/kg	SW846 8260C
Carbon disulfide	0.0015 J	0.0053	0.00014	mg/kg	SW846 8260C
Toluene	0.00056 J	0.0053	0.00022	mg/kg	SW846 8260C
Indeno(1,2,3-cd)pyrene	0.0014 J	0.0051	0.0013	mg/kg	SW846 8270D BY SIM

MC32497-2 VMP15-29-073014(28-30')DUP

Benzene	0.0058	0.00054	0.00037	mg/kg	SW846 8260C
Carbon disulfide	0.00050 J	0.0054	0.00014	mg/kg	SW846 8260C

MC32497-3 TB-073014-HCL

No hits reported in this sample.

MC32497-4 TB-073014-ST

No hits reported in this sample.

Sample Results

Report of Analysis

Report of Analysis

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Client Sample ID:	VMP15-29-073014(28-30')	Date Sampled:	07/30/14
Lab Sample ID:	MC32497-1	Date Received:	07/31/14
Matrix:	SO - Soil	Percent Solids:	94.9
Method:	SW846 8260C		
Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M67513.D	1	08/12/14	KD	n/a	n/a	MSM2388
Run #2							

Run #	Initial Weight	Final Volume
Run #1	4.93 g	5.0 ml
Run #2		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	0.011	0.0030	mg/kg	
107-02-8	Acrolein	ND	0.027	0.0094	mg/kg	
107-13-1	Acrylonitrile	ND	0.027	0.0029	mg/kg	
71-43-2	Benzene	0.0072	0.00053	0.00036	mg/kg	
108-86-1	Bromobenzene	ND	0.0053	0.00027	mg/kg	
74-97-5	Bromochloromethane	ND	0.0053	0.00037	mg/kg	
75-27-4	Bromodichloromethane	ND	0.0021	0.00022	mg/kg	
75-25-2	Bromoform	ND	0.0021	0.00038	mg/kg	
74-83-9	Bromomethane	ND	0.0021	0.00064	mg/kg	
78-93-3	2-Butanone (MEK)	ND	0.011	0.0033	mg/kg	
104-51-8	n-Butylbenzene	ND	0.0053	0.00026	mg/kg	
135-98-8	sec-Butylbenzene	ND	0.0053	0.00080	mg/kg	
98-06-6	tert-Butylbenzene	ND	0.0053	0.00023	mg/kg	
75-15-0	Carbon disulfide	0.0015	0.0053	0.00014	mg/kg	J
56-23-5	Carbon tetrachloride	ND	0.0021	0.00023	mg/kg	
108-90-7	Chlorobenzene	ND	0.0021	0.00017	mg/kg	
75-00-3	Chloroethane	ND	0.0053	0.00081	mg/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	0.0053	0.0013	mg/kg	
67-66-3	Chloroform	ND	0.0021	0.00018	mg/kg	
74-87-3	Chloromethane	ND	0.0053	0.00060	mg/kg	
95-49-8	o-Chlorotoluene	ND	0.0053	0.00021	mg/kg	
106-43-4	p-Chlorotoluene	ND	0.0053	0.00028	mg/kg	
124-48-1	Dibromochloromethane	ND	0.0021	0.00034	mg/kg	
95-50-1	1,2-Dichlorobenzene	ND	0.0021	0.00023	mg/kg	
541-73-1	1,3-Dichlorobenzene	ND	0.0021	0.00032	mg/kg	
106-46-7	1,4-Dichlorobenzene	ND	0.0021	0.00037	mg/kg	
75-71-8	Dichlorodifluoromethane	ND	0.0021	0.00086	mg/kg	
75-34-3	1,1-Dichloroethane	ND	0.0021	0.00029	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.0021	0.00034	mg/kg	
75-35-4	1,1-Dichloroethene	ND	0.0021	0.00044	mg/kg	
156-59-2	cis-1,2-Dichloroethene	ND	0.0021	0.00048	mg/kg	
156-60-5	trans-1,2-Dichloroethene	ND	0.0021	0.00045	mg/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

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J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	VMP15-29-073014(28-30')	Date Sampled:	07/30/14
Lab Sample ID:	MC32497-1	Date Received:	07/31/14
Matrix:	SO - Soil	Percent Solids:	94.9
Method:	SW846 8260C		
Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	0.0021	0.00045	mg/kg	
142-28-9	1,3-Dichloropropane	ND	0.0053	0.00035	mg/kg	
594-20-7	2,2-Dichloropropane	ND	0.0053	0.00060	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	0.00024	mg/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	0.0021	0.00028	mg/kg	
123-91-1	1,4-Dioxane	ND	0.027	0.021	mg/kg	
97-63-2	Ethyl methacrylate	ND	0.0053	0.00038	mg/kg	
100-41-4	Ethylbenzene	ND	0.0021	0.00074	mg/kg	
87-68-3	Hexachlorobutadiene	ND	0.0053	0.00061	mg/kg	
591-78-6	2-Hexanone	ND	0.011	0.00081	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0053	0.00018	mg/kg	
99-87-6	p-Isopropyltoluene	ND	0.0053	0.00019	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.0021	0.00019	mg/kg	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	0.0053	0.00058	mg/kg	
74-95-3	Methylene bromide	ND	0.0053	0.00049	mg/kg	
75-09-2	Methylene chloride	ND	0.0021	0.00057	mg/kg	
91-20-3	Naphthalene	ND	0.0053	0.00042	mg/kg	
103-65-1	n-Propylbenzene	ND	0.0053	0.00016	mg/kg	
100-42-5	Styrene	ND	0.0053	0.00018	mg/kg	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.0053	0.00043	mg/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.0021	0.00042	mg/kg	
127-18-4	Tetrachloroethene	ND	0.0021	0.00033	mg/kg	
108-88-3	Toluene	0.00056	0.0053	0.00022	mg/kg	J
87-61-6	1,2,3-Trichlorobenzene	ND	0.0053	0.00046	mg/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	0.0053	0.00055	mg/kg	
71-55-6	1,1,1-Trichloroethane	ND	0.0021	0.00023	mg/kg	
79-00-5	1,1,2-Trichloroethane	ND	0.0021	0.00061	mg/kg	
79-01-6	Trichloroethene	ND	0.0021	0.00026	mg/kg	
75-69-4	Trichlorofluoromethane	ND	0.0021	0.00042	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	0.0015	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0053	0.0016	mg/kg	
108-05-4	Vinyl Acetate	ND	0.0053	0.0016	mg/kg	
75-01-4	Vinyl chloride	ND	0.0021	0.00097	mg/kg	
	m,p-Xylene	ND	0.0021	0.00047	mg/kg	
95-47-6	o-Xylene	ND	0.0021	0.00030	mg/kg	
1330-20-7	Xylene (total)	ND	0.0021	0.00023	mg/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

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J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	VMP15-29-073014(28-30')	Date Sampled:	07/30/14
Lab Sample ID:	MC32497-1	Date Received:	07/31/14
Matrix:	SO - Soil	Percent Solids:	94.9
Method:	SW846 8260C		
Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		70-130%
2037-26-5	Toluene-D8	89%		70-130%
460-00-4	4-Bromofluorobenzene	87%		70-130%

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

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Report of Analysis

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Client Sample ID:	VMP15-29-073014(28-30')	Date Sampled:	07/30/14
Lab Sample ID:	MC32497-1	Date Received:	07/31/14
Matrix:	SO - Soil	Percent Solids:	94.9
Method:	SW846 8270D SW846 3546		
Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X04143.D	1	08/04/14	WK	08/01/14	OP39211	MSX136
Run #2							

Run #	Initial Weight	Final Volume
Run #1	20.3 g	1.0 ml
Run #2		

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	0.52	0.065	mg/kg	
95-57-8	2-Chlorophenol	ND	0.26	0.012	mg/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	0.52	0.013	mg/kg	
120-83-2	2,4-Dichlorophenol	ND	0.52	0.015	mg/kg	
105-67-9	2,4-Dimethylphenol	ND	0.52	0.085	mg/kg	
51-28-5	2,4-Dinitrophenol	ND	1.0	0.13	mg/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	0.52	0.065	mg/kg	
95-48-7	2-Methylphenol	ND	0.52	0.021	mg/kg	
	3&4-Methylphenol	ND	0.52	0.025	mg/kg	
88-75-5	2-Nitrophenol	ND	0.52	0.014	mg/kg	
100-02-7	4-Nitrophenol	ND	1.0	0.097	mg/kg	
87-86-5	Pentachlorophenol	ND	0.52	0.037	mg/kg	
108-95-2	Phenol	ND	0.26	0.015	mg/kg	
95-95-4	2,4,5-Trichlorophenol	ND	0.52	0.013	mg/kg	
88-06-2	2,4,6-Trichlorophenol	ND	0.52	0.013	mg/kg	
62-53-3	Aniline	ND	0.52	0.026	mg/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	0.26	0.013	mg/kg	
85-68-7	Butyl benzyl phthalate	ND	0.26	0.011	mg/kg	
100-51-6	Benzyl Alcohol	ND	0.52	0.026	mg/kg	
91-58-7	2-Chloronaphthalene	ND	0.26	0.014	mg/kg	
106-47-8	4-Chloroaniline	ND	0.52	0.013	mg/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	0.26	0.012	mg/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	0.26	0.016	mg/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	0.26	0.019	mg/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	0.26	0.016	mg/kg	
122-66-7	1,2-Diphenylhydrazine	ND	0.26	0.012	mg/kg	
121-14-2	2,4-Dinitrotoluene	ND	0.52	0.035	mg/kg	
606-20-2	2,6-Dinitrotoluene	ND	0.52	0.013	mg/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	0.26	0.026	mg/kg	
132-64-9	Dibenzofuran	ND	0.10	0.014	mg/kg	
84-74-2	Di-n-butyl phthalate	ND	0.26	0.028	mg/kg	
117-84-0	Di-n-octyl phthalate	ND	0.26	0.0081	mg/kg	

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Report of Analysis

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Client Sample ID:	VMP15-29-073014(28-30')	Date Sampled:	07/30/14
Lab Sample ID:	MC32497-1	Date Received:	07/31/14
Matrix:	SO - Soil	Percent Solids:	94.9
Method:	SW846 8270D SW846 3546		
Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL		

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
84-66-2	Diethyl phthalate	ND	0.26	0.013	mg/kg	
131-11-3	Dimethyl phthalate	ND	0.26	0.015	mg/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	0.26	0.0096	mg/kg	
118-74-1	Hexachlorobenzene	ND	0.26	0.016	mg/kg	
77-47-4	Hexachlorocyclopentadiene	ND	0.52	0.13	mg/kg	
67-72-1	Hexachloroethane	ND	0.26	0.013	mg/kg	
78-59-1	Isophorone	ND	0.26	0.012	mg/kg	
88-74-4	2-Nitroaniline	ND	0.52	0.013	mg/kg	
99-09-2	3-Nitroaniline	ND	0.52	0.028	mg/kg	
100-01-6	4-Nitroaniline	ND	0.52	0.013	mg/kg	
98-95-3	Nitrobenzene	ND	0.26	0.014	mg/kg	
62-75-9	n-Nitrosodimethylamine	ND	0.26	0.012	mg/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	0.26	0.015	mg/kg	
86-30-6	N-Nitrosodiphenylamine	ND	0.26	0.016	mg/kg	
110-86-1	Pyridine	ND	0.52	0.026	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	74%		30-130%
4165-62-2	Phenol-d5	78%		30-130%
118-79-6	2,4,6-Tribromophenol	95%		30-130%
4165-60-0	Nitrobenzene-d5	81%		30-130%
321-60-8	2-Fluorobiphenyl	77%		30-130%
1718-51-0	Terphenyl-d14	96%		30-130%

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

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Report of Analysis

Page 1 of 1

Client Sample ID:	VMP15-29-073014(28-30')	Date Sampled:	07/30/14
Lab Sample ID:	MC32497-1	Date Received:	07/31/14
Matrix:	SO - Soil	Percent Solids:	94.9
Method:	SW846 8270D BY SIM SW846 3546		
Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I91098.D	1	08/08/14	MR	08/04/14	OP39255	MSI3392
Run #2							

Run #	Initial Weight	Final Volume
Run #1	20.6 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.0051	0.00088	mg/kg	
208-96-8	Acenaphthylene	ND	0.0051	0.00078	mg/kg	
120-12-7	Anthracene	ND	0.0051	0.0011	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.0051	0.0023	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.0051	0.0020	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.0051	0.0023	mg/kg	
191-24-2	Benzo(g,h,i)perylene	ND	0.0051	0.0014	mg/kg	
207-08-9	Benzo(k)fluoranthene	ND	0.0051	0.0016	mg/kg	
218-01-9	Chrysene	ND	0.0051	0.0014	mg/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	0.0051	0.0015	mg/kg	
206-44-0	Fluoranthene	ND	0.0051	0.0015	mg/kg	
86-73-7	Fluorene	ND	0.0051	0.0010	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	0.0014	0.0051	0.0013	mg/kg	J
90-12-0	1-Methylnaphthalene	ND	0.010	0.0011	mg/kg	
91-57-6	2-Methylnaphthalene	ND	0.010	0.00095	mg/kg	
85-01-8	Phenanthrene	ND	0.0051	0.0011	mg/kg	
129-00-0	Pyrene	ND	0.0051	0.0016	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	71%		30-130%
321-60-8	2-Fluorobiphenyl	69%		30-130%
1718-51-0	Terphenyl-d14	95%		30-130%

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

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

Report of Analysis

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Client Sample ID:	VMP15-29-073014(28-30')	Date Sampled:	07/30/14
Lab Sample ID:	MC32497-1	Date Received:	07/31/14
Matrix:	SO - Soil	Percent Solids:	94.9
Method:	SW846 8011 SW846 3550B		
Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BK39970.D	1	08/07/14	NK	08/05/14	OP39257	GBK1299
Run #2							

	Initial Weight	Final Volume
Run #1	15.4 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	0.0051	0.0015	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.0051	0.0013	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	99%		61-167%
460-00-4	Bromofluorobenzene (S)	145%		61-167%

ND = Not detected MDL = Method Detection Limit
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J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	VMP15-29-073014(28-30')	Date Sampled:	07/30/14
Lab Sample ID:	MC32497-1	Date Received:	07/31/14
Matrix:	SO - Soil	Percent Solids:	94.9
Method:	SW846 8015		
Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AB85243.D	1	08/07/14	AF	n/a	n/a	GAB4535
Run #2							

Run #	Initial Weight	Final Volume	Methanol Aliquot
Run #1	4.07 g	10.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (VOA)	ND	13	1.9	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
	2,3,4-Trifluorotoluene	96%		61-116%		

ND = Not detected MDL = Method Detection Limit
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J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	VMP15-29-073014(28-30')DUP	Date Sampled:	07/30/14
Lab Sample ID:	MC32497-2	Date Received:	07/31/14
Matrix:	SO - Soil	Percent Solids:	95.6
Method:	SW846 8260C		
Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M67514.D	1	08/12/14	KD	n/a	n/a	MSM2388
Run #2							

Run #	Initial Weight	Final Volume
Run #1	4.80 g	5.0 ml
Run #2		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	0.011	0.0031	mg/kg	
107-02-8	Acrolein	ND	0.027	0.0096	mg/kg	
107-13-1	Acrylonitrile	ND	0.027	0.0030	mg/kg	
71-43-2	Benzene	0.0058	0.00054	0.00037	mg/kg	
108-86-1	Bromobenzene	ND	0.0054	0.00027	mg/kg	
74-97-5	Bromochloromethane	ND	0.0054	0.00038	mg/kg	
75-27-4	Bromodichloromethane	ND	0.0022	0.00023	mg/kg	
75-25-2	Bromoform	ND	0.0022	0.00039	mg/kg	
74-83-9	Bromomethane	ND	0.0022	0.00066	mg/kg	
78-93-3	2-Butanone (MEK)	ND	0.011	0.0033	mg/kg	
104-51-8	n-Butylbenzene	ND	0.0054	0.00026	mg/kg	
135-98-8	sec-Butylbenzene	ND	0.0054	0.00081	mg/kg	
98-06-6	tert-Butylbenzene	ND	0.0054	0.00023	mg/kg	
75-15-0	Carbon disulfide	0.00050	0.0054	0.00014	mg/kg	J
56-23-5	Carbon tetrachloride	ND	0.0022	0.00024	mg/kg	
108-90-7	Chlorobenzene	ND	0.0022	0.00017	mg/kg	
75-00-3	Chloroethane	ND	0.0054	0.00082	mg/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	0.0054	0.0014	mg/kg	
67-66-3	Chloroform	ND	0.0022	0.00018	mg/kg	
74-87-3	Chloromethane	ND	0.0054	0.00061	mg/kg	
95-49-8	o-Chlorotoluene	ND	0.0054	0.00021	mg/kg	
106-43-4	p-Chlorotoluene	ND	0.0054	0.00029	mg/kg	
124-48-1	Dibromochloromethane	ND	0.0022	0.00035	mg/kg	
95-50-1	1,2-Dichlorobenzene	ND	0.0022	0.00023	mg/kg	
541-73-1	1,3-Dichlorobenzene	ND	0.0022	0.00033	mg/kg	
106-46-7	1,4-Dichlorobenzene	ND	0.0022	0.00038	mg/kg	
75-71-8	Dichlorodifluoromethane	ND	0.0022	0.00088	mg/kg	
75-34-3	1,1-Dichloroethane	ND	0.0022	0.00029	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.0022	0.00035	mg/kg	
75-35-4	1,1-Dichloroethene	ND	0.0022	0.00045	mg/kg	
156-59-2	cis-1,2-Dichloroethene	ND	0.0022	0.00049	mg/kg	
156-60-5	trans-1,2-Dichloroethene	ND	0.0022	0.00046	mg/kg	

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B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	VMP15-29-073014(28-30')DUP	Date Sampled:	07/30/14
Lab Sample ID:	MC32497-2	Date Received:	07/31/14
Matrix:	SO - Soil	Percent Solids:	95.6
Method:	SW846 8260C		
Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	0.0022	0.00046	mg/kg	
142-28-9	1,3-Dichloropropane	ND	0.0054	0.00036	mg/kg	
594-20-7	2,2-Dichloropropane	ND	0.0054	0.00061	mg/kg	
563-58-6	1,1-Dichloropropene	ND	0.0054	0.00029	mg/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	0.0022	0.00025	mg/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	0.0022	0.00029	mg/kg	
123-91-1	1,4-Dioxane	ND	0.027	0.022	mg/kg	
97-63-2	Ethyl methacrylate	ND	0.0054	0.00039	mg/kg	
100-41-4	Ethylbenzene	ND	0.0022	0.00075	mg/kg	
87-68-3	Hexachlorobutadiene	ND	0.0054	0.00063	mg/kg	
591-78-6	2-Hexanone	ND	0.011	0.00083	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0054	0.00018	mg/kg	
99-87-6	p-Isopropyltoluene	ND	0.0054	0.00019	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.0022	0.00020	mg/kg	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	0.0054	0.00059	mg/kg	
74-95-3	Methylene bromide	ND	0.0054	0.00050	mg/kg	
75-09-2	Methylene chloride	ND	0.0022	0.00058	mg/kg	
91-20-3	Naphthalene	ND	0.0054	0.00043	mg/kg	
103-65-1	n-Propylbenzene	ND	0.0054	0.00017	mg/kg	
100-42-5	Styrene	ND	0.0054	0.00019	mg/kg	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.0054	0.00044	mg/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.0022	0.00043	mg/kg	
127-18-4	Tetrachloroethene	ND	0.0022	0.00034	mg/kg	
108-88-3	Toluene	ND	0.0054	0.00022	mg/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	0.0054	0.00047	mg/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	0.0054	0.00056	mg/kg	
71-55-6	1,1,1-Trichloroethane	ND	0.0022	0.00024	mg/kg	
79-00-5	1,1,2-Trichloroethane	ND	0.0022	0.00062	mg/kg	
79-01-6	Trichloroethene	ND	0.0022	0.00027	mg/kg	
75-69-4	Trichlorofluoromethane	ND	0.0022	0.00043	mg/kg	
96-18-4	1,2,3-Trichloropropane	ND	0.0054	0.00031	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0054	0.0016	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0054	0.0017	mg/kg	
108-05-4	Vinyl Acetate	ND	0.0054	0.0017	mg/kg	
75-01-4	Vinyl chloride	ND	0.0022	0.00099	mg/kg	
	m,p-Xylene	ND	0.0022	0.00048	mg/kg	
95-47-6	o-Xylene	ND	0.0022	0.00031	mg/kg	
1330-20-7	Xylene (total)	ND	0.0022	0.00024	mg/kg	

ND = Not detected MDL = Method Detection Limit

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J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	VMP15-29-073014(28-30')DUP	Date Sampled:	07/30/14
Lab Sample ID:	MC32497-2	Date Received:	07/31/14
Matrix:	SO - Soil	Percent Solids:	95.6
Method:	SW846 8260C		
Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		70-130%
2037-26-5	Toluene-D8	90%		70-130%
460-00-4	4-Bromofluorobenzene	86%		70-130%

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

ND = Not detected MDL = Method Detection Limit
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Report of Analysis

Page 1 of 2

Client Sample ID:	VMP15-29-073014(28-30')DUP	Date Sampled:	07/30/14
Lab Sample ID:	MC32497-2	Date Received:	07/31/14
Matrix:	SO - Soil	Percent Solids:	95.6
Method:	SW846 8270D SW846 3546		
Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X04144.D	1	08/04/14	WK	08/01/14	OP39211	MSX136
Run #2							

Run #	Initial Weight	Final Volume
Run #1	20.4 g	1.0 ml
Run #2		

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	0.51	0.064	mg/kg	
95-57-8	2-Chlorophenol	ND	0.26	0.012	mg/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	0.51	0.013	mg/kg	
120-83-2	2,4-Dichlorophenol	ND	0.51	0.015	mg/kg	
105-67-9	2,4-Dimethylphenol	ND	0.51	0.084	mg/kg	
51-28-5	2,4-Dinitrophenol	ND	1.0	0.13	mg/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	0.51	0.064	mg/kg	
95-48-7	2-Methylphenol	ND	0.51	0.020	mg/kg	
	3&4-Methylphenol	ND	0.51	0.025	mg/kg	
88-75-5	2-Nitrophenol	ND	0.51	0.014	mg/kg	
100-02-7	4-Nitrophenol	ND	1.0	0.096	mg/kg	
87-86-5	Pentachlorophenol	ND	0.51	0.036	mg/kg	
108-95-2	Phenol	ND	0.26	0.015	mg/kg	
95-95-4	2,4,5-Trichlorophenol	ND	0.51	0.013	mg/kg	
88-06-2	2,4,6-Trichlorophenol	ND	0.51	0.013	mg/kg	
62-53-3	Aniline	ND	0.51	0.026	mg/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	0.26	0.013	mg/kg	
85-68-7	Butyl benzyl phthalate	ND	0.26	0.010	mg/kg	
100-51-6	Benzyl Alcohol	ND	0.51	0.026	mg/kg	
91-58-7	2-Chloronaphthalene	ND	0.26	0.014	mg/kg	
106-47-8	4-Chloroaniline	ND	0.51	0.013	mg/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	0.26	0.012	mg/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	0.26	0.016	mg/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	0.26	0.018	mg/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	0.26	0.016	mg/kg	
122-66-7	1,2-Diphenylhydrazine	ND	0.26	0.012	mg/kg	
121-14-2	2,4-Dinitrotoluene	ND	0.51	0.034	mg/kg	
606-20-2	2,6-Dinitrotoluene	ND	0.51	0.013	mg/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	0.26	0.026	mg/kg	
132-64-9	Dibenzofuran	ND	0.10	0.014	mg/kg	
84-74-2	Di-n-butyl phthalate	ND	0.26	0.027	mg/kg	
117-84-0	Di-n-octyl phthalate	ND	0.26	0.0080	mg/kg	

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J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	VMP15-29-073014(28-30')DUP	Date Sampled:	07/30/14
Lab Sample ID:	MC32497-2	Date Received:	07/31/14
Matrix:	SO - Soil	Percent Solids:	95.6
Method:	SW846 8270D SW846 3546		
Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL		

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
84-66-2	Diethyl phthalate	ND	0.26	0.013	mg/kg	
131-11-3	Dimethyl phthalate	ND	0.26	0.015	mg/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	0.26	0.0095	mg/kg	
118-74-1	Hexachlorobenzene	ND	0.26	0.016	mg/kg	
77-47-4	Hexachlorocyclopentadiene	ND	0.51	0.13	mg/kg	
67-72-1	Hexachloroethane	ND	0.26	0.012	mg/kg	
78-59-1	Isophorone	ND	0.26	0.012	mg/kg	
88-74-4	2-Nitroaniline	ND	0.51	0.013	mg/kg	
99-09-2	3-Nitroaniline	ND	0.51	0.028	mg/kg	
100-01-6	4-Nitroaniline	ND	0.51	0.013	mg/kg	
98-95-3	Nitrobenzene	ND	0.26	0.014	mg/kg	
62-75-9	n-Nitrosodimethylamine	ND	0.26	0.012	mg/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	0.26	0.015	mg/kg	
86-30-6	N-Nitrosodiphenylamine	ND	0.26	0.016	mg/kg	
110-86-1	Pyridine	ND	0.51	0.026	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	65%		30-130%
4165-62-2	Phenol-d5	71%		30-130%
118-79-6	2,4,6-Tribromophenol	102%		30-130%
4165-60-0	Nitrobenzene-d5	73%		30-130%
321-60-8	2-Fluorobiphenyl	74%		30-130%
1718-51-0	Terphenyl-d14	104%		30-130%

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

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

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

Report of Analysis

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Client Sample ID:	VMP15-29-073014(28-30')DUP	Date Sampled:	07/30/14
Lab Sample ID:	MC32497-2	Date Received:	07/31/14
Matrix:	SO - Soil	Percent Solids:	95.6
Method:	SW846 8270D BY SIM SW846 3546		
Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I91099.D	1	08/08/14	MR	08/04/14	OP39255	MSI3392
Run #2							

Run #	Initial Weight	Final Volume
Run #1	20.6 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.0051	0.00088	mg/kg	
208-96-8	Acenaphthylene	ND	0.0051	0.00077	mg/kg	
120-12-7	Anthracene	ND	0.0051	0.0011	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.0051	0.0023	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.0051	0.0020	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.0051	0.0022	mg/kg	
191-24-2	Benzo(g,h,i)perylene	ND	0.0051	0.0014	mg/kg	
207-08-9	Benzo(k)fluoranthene	ND	0.0051	0.0016	mg/kg	
218-01-9	Chrysene	ND	0.0051	0.0014	mg/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	0.0051	0.0015	mg/kg	
206-44-0	Fluoranthene	ND	0.0051	0.0015	mg/kg	
86-73-7	Fluorene	ND	0.0051	0.0010	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.0051	0.0013	mg/kg	
90-12-0	1-Methylnaphthalene	ND	0.010	0.0011	mg/kg	
91-57-6	2-Methylnaphthalene	ND	0.010	0.00095	mg/kg	
85-01-8	Phenanthrene	ND	0.0051	0.0011	mg/kg	
129-00-0	Pyrene	ND	0.0051	0.0016	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	79%		30-130%
321-60-8	2-Fluorobiphenyl	77%		30-130%
1718-51-0	Terphenyl-d14	103%		30-130%

ND = Not detected MDL = Method Detection Limit

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N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID:	VMP15-29-073014(28-30')DUP	Date Sampled:	07/30/14
Lab Sample ID:	MC32497-2	Date Received:	07/31/14
Matrix:	SO - Soil	Percent Solids:	95.6
Method:	SW846 8011 SW846 3550B		
Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BK39972.D	1	08/07/14	NK	08/05/14	OP39257	GBK1299
Run #2							

	Initial Weight	Final Volume
Run #1	15.4 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	0.0051	0.0015	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.0051	0.0013	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	106%		61-167%
460-00-4	Bromofluorobenzene (S)	147%		61-167%

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 N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	VMP15-29-073014(28-30')DUP	Date Sampled:	07/30/14
Lab Sample ID:	MC32497-2	Date Received:	07/31/14
Matrix:	SO - Soil	Percent Solids:	95.6
Method:	SW846 8015		
Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AB85244.D	1	08/07/14	AF	n/a	n/a	GAB4535
Run #2							

Run #	Initial Weight	Final Volume	Methanol Aliquot
Run #1	4.12 g	10.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (VOA)	ND	13	1.9	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
	2,3,4-Trifluorotoluene	94%		61-116%		

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

Page 1 of 3

Client Sample ID:	TB-073014-HCL	Date Sampled:	07/30/14
Lab Sample ID:	MC32497-3	Date Received:	07/31/14
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L86225.D	1	08/11/14	GK	n/a	n/a	MSL3863
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	2.5	ug/l	
107-02-8	Acrolein	ND	25	6.0	ug/l	
107-13-1	Acrylonitrile	ND	5.0	2.1	ug/l	
71-43-2	Benzene	ND	0.50	0.32	ug/l	
108-86-1	Bromobenzene	ND	5.0	0.35	ug/l	
74-97-5	Bromochloromethane	ND	5.0	0.57	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.34	ug/l	
75-25-2	Bromoform	ND	1.0	0.61	ug/l	
74-83-9	Bromomethane	ND	2.0	1.8	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.5	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	1.1	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	0.42	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	0.39	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.46	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.53	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.43	ug/l	
75-00-3	Chloroethane	ND	2.0	0.53	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	3.3	ug/l	
67-66-3	Chloroform	ND	1.0	0.41	ug/l	
74-87-3	Chloromethane	ND	2.0	1.1	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	0.38	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	0.45	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.38	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.56	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.36	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.71	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.36	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.50	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.61	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.84	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.51	ug/l	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 2 of 3

Client Sample ID:	TB-073014-HCL	Date Sampled:	07/30/14
Lab Sample ID:	MC32497-3	Date Received:	07/31/14
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2.0	0.50	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	0.89	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	0.70	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	0.47	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.42	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	11	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	0.50	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.38	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	1.7	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.6	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	0.35	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	0.37	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	0.99	ug/l	
74-95-3	Methylene bromide	ND	5.0	0.52	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.28	ug/l	
91-20-3	Naphthalene	ND	5.0	0.69	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	0.49	ug/l	
100-42-5	Styrene	ND	5.0	0.85	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.43	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.40	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.59	ug/l	
108-88-3	Toluene	ND	1.0	0.33	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	0.68	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.46	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.45	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.47	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.55	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.81	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.32	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.38	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	0.71	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.58	ug/l	
	m,p-Xylene	ND	1.0	0.93	ug/l	
95-47-6	o-Xylene	ND	1.0	0.36	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.36	ug/l	

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

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

Report of Analysis

Page 3 of 3

Client Sample ID:	TB-073014-HCL	Date Sampled:	07/30/14
Lab Sample ID:	MC32497-3	Date Received:	07/31/14
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	85%		70-130%
2037-26-5	Toluene-D8	90%		70-130%
460-00-4	4-Bromofluorobenzene	101%		70-130%

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

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

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

Report of Analysis

Page 1 of 1

Client Sample ID:	TB-073014-ST	Date Sampled:	07/30/14
Lab Sample ID:	MC32497-4	Date Received:	07/31/14
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8011 SW846 8011		
Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BK39943.D	1	08/05/14	NK	08/04/14	OP39247	GBK1298
Run #2							

Run #	Initial Volume	Final Volume
Run #1	36.7 ml	2.0 ml
Run #2		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.014	0.0058	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.014	0.0058	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	87%		36-173%
460-00-4	Bromofluorobenzene (S)	101%		36-173%

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

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

Misc. Forms

5

Custody Documents and Other Forms

Includes the following where applicable:

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

LAB (LOCATION)
☐ EXXCO
☐ CALSURGIE
☐ OTHER
 Lab Vendor #

Account Lab: 205 Technology Cir. W
 Marlborough, MA 01752 (508-481-6200)
 Lab Vendor #

Shell Oil Products Chain Of Custody Record

URS

Please Check Appropriate Box:
☐ ENV. SERVICES
☐ MOTIVA RETAIL
☐ MOTIVA BOSCH
☐ SHELL PIPELINE
☐ SHELL RETAIL
☐ CONSULTANT
☐ LURES
☐ OTHER

Print Bill To Contact Name:
 Bob Bilman
 PO #

INCIDENT # (ENV SERVICES)
 9 7 2 1 8 4 0
 SAP #
 3 4 0 0 6 1

CHECK IF NO INCIDENT # APPLIES
 DATE: 7/30/2014
 PAGE: 1 of 1

URS COMPANY:
 URS CORPORATION
 ADDRESS:
 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300; ST. LOUIS, MO 63110
 PROJECT CONTACT (Person or PO):
 Elizabeth Kurik, Bob Bilman
 TELEPHONE:
 314-429-0100 FAX:
 314-429-0462
 E-MAIL:
 bob.bilman@urs.com, elizabeth.kurik@urs.com

STANDARD (10 DAY) ☐ 5 DAYS ☐ 2 DAYS ☐ 1 HOUR ☐ RESULTS NEEDED
 LA - WQOB REPORT FORMAT ☐ UST AGENCY: ☐

DELIVERABLES: ☐ LEVEL 1 ☐ LEVEL 2 ☐ LEVEL 3 ☐ LEVEL 4 ☐ OTHER (SPECIFY) EDD

TEMPERATURE ON RECEIPT °C: Cooler #1: Cooler #2: Cooler #3:

SPECIAL INSTRUCTIONS OR NOTES:
 * Please include "J" values on Reports.
 * Please provide sample receipt upon login.

☐ SHELL CONTRACT RATE APPLIES
☐ STATE REIMBURSEMENT RATE APPLIES
☐ EDD NOT NEEDED
☐ RECEIPT VERIFICATION REQUESTED
☐ PROVIDE LDD DISK

LAB USE ONLY	Field Sample Identification	SAMPLING		MATRIX	PRESERVATIVE						NO. OF CONT.	VOC 8260B SL+TICS	VOC 8011 SL	SVOC 8270C SL+TICS	PAH 8270LL	Percent Moisture	TPH-GRC	PID (ppm)	FIELD NOTES:
		DATE	TIME		HCL	HCLG	PERC	ACID	OTHER										
1	VMP15-29-073014 (28-37)	8/8/2014	1100	S					2	5	7	X	X	X	X	X	X	11.1	
2	VMP15-29-073014 (28-30) Dup	8/8/2014	0:00	S					2	5	7	X	X	X	X	X	X	11.1	
3	TB-073014 HCL			W	2						2	X							
4	TB-073014 ST			W					2	2	2	X							

Container PID Readings or Laboratory Notes
 15D, 10H4, 1C2

Received by (Signature): *[Signature]* Date: 7/30/14 Time: 1745
 Received by (Signature): *[Signature]* Date: 7-31-14 Time: 830
 Received by (Signature): *[Signature]* Date: Time:

6/2/08 Revision

5.1
5

1.4°C

MC32497: Chain of Custody
 Page 1 of 2



Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC32497

Client: URS

Immediate Client Services Action Required: No

Date / Time Received: 7/31/2014

Delivery Method:

Client Service Action Required at Login: No

Project: 900 SOUTH CENTRAL

No. Coolers: 1

Airbill #'s:

Cooler Security

Y or N

1. Custody Seals Present: ☒ Y ☐ N
2. Custody Seals Intact: ☒ Y ☐ N

3. COC Present:

4. Smpl Dates/Time OK

Y or N

- ☒ Y ☐ N
☒ Y ☐ N

Cooler Temperature

Y or N

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

Quality Control Preservation

Y or N N/A

1. Trip Blank present / cooler: ☒ Y ☐ N ☐ N/A
2. Trip Blank listed on COC: ☒ Y ☐ N ☐ N/A
3. Samples preserved properly: ☒ Y ☐ N ☐ N/A
4. VOCs headspace free: ☒ Y ☐ N ☐ N/A

Sample Integrity - Documentation

Y or N

1. Sample labels present on bottles: ☒ Y ☐ N
2. Container labeling complete: ☒ Y ☐ N
3. Sample container label / COC agree: ☒ Y ☐ N

Sample Integrity - Condition

Y or N

1. Sample recvd within HT: ☒ Y ☐ N
2. All containers accounted for: ☒ Y ☐ N
3. Condition of sample: Intact

Sample Integrity - Instructions

Y or N N/A

1. Analysis requested is clear: ☒ Y ☐ N
2. Bottles received for unspecified tests: ☐ Y ☒ N
3. Sufficient volume recvd for analysis: ☒ Y ☐ N
4. Compositing instructions clear: ☐ Y ☐ N ☒ N/A
5. Filtering instructions clear: ☐ Y ☐ N ☒ N/A

Comments

Accutest Laboratories
V:508.481.6200

495 Technology Center West, Bldg One
F: 508.481.7753

Marlborough, MA
www.accutest.com

MC32497: Chain of Custody
Page 2 of 2

Internal Sample Tracking Chronicle

Shell Oil

Job No: MC32497
 URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL
 Project No: 21562973.18000

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
MC32497-1 Collected: 30-JUL-14 11:00 By: VMP15-29-073014(28-30') Received: 31-JUL-14 By:						
MC32497-1	SM21 2540 B MOD.	04-AUG-14	BF			%SOL
MC32497-1	SW846 8270D	04-AUG-14 12:44	WK	01-AUG-14	AZ	AB8270SL+
MC32497-1	SW846 8011	07-AUG-14 12:01	NK	05-AUG-14	NE	V8011SL
MC32497-1	SW846 8015	07-AUG-14 17:45	AF			V8015GRO
MC32497-1	SW846 8270D BY SIM	08-AUG-14 10:26	MR	04-AUG-14	NE	B8270SIMSL
MC32497-1	SW846 8260C	12-AUG-14 12:07	KD			V8260SL+
MC32497-2 Collected: 30-JUL-14 11:00 By: VMP15-29-073014(28-30')DUP Received: 31-JUL-14 By:						
MC32497-2	SM21 2540 B MOD.	04-AUG-14	BF			%SOL
MC32497-2	SW846 8270D	04-AUG-14 13:04	WK	01-AUG-14	AZ	AB8270SL+
MC32497-2	SW846 8011	07-AUG-14 12:40	NK	05-AUG-14	NE	V8011SL
MC32497-2	SW846 8015	07-AUG-14 18:22	AF			V8015GRO
MC32497-2	SW846 8270D BY SIM	08-AUG-14 10:49	MR	04-AUG-14	NE	B8270SIMSL
MC32497-2	SW846 8260C	12-AUG-14 12:37	KD			V8260SL+
MC32497-3 Collected: 30-JUL-14 00:00 By: TB-073014-HCL Received: 31-JUL-14 By:						
MC32497-3	SW846 8260C	11-AUG-14 12:34	GK			V8260SL+
MC32497-4 Collected: 30-JUL-14 00:00 By: TB-073014-ST Received: 31-JUL-14 By:						
MC32497-4	SW846 8011	05-AUG-14 12:11	NK	04-AUG-14	MT	V8011SL

Accutest Internal Chain of Custody

Page 1 of 2

Job Number: MC32497
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL
 Received: 07/31/14

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
MC32497-1.1	Walk In Ref #9	Nicole Estey	08/01/14 16:15	Retrieve from Storage
MC32497-1.1	Nicole Estey	Walk In Ref #9	08/01/14 21:44	Return to Storage
MC32497-1.2	Walk In Ref #9	Aysia Wood	08/04/14 15:49	Retrieve from Storage
MC32497-1.2	Aysia Wood	Walk In Ref #9	08/04/14 20:23	Return to Storage
MC32497-1.2	Walk In Ref #9	Alireza Zeighami	08/05/14 07:53	Retrieve from Storage
MC32497-1.2	Alireza Zeighami	Walk In Ref #9	08/05/14 12:08	Return to Storage
MC32497-1.3	VOC Ref #10	Krysten Dufort	08/12/14 11:02	Retrieve from Storage
MC32497-1.3	Krysten Dufort	GCMSM	08/12/14 11:02	Load on Instrument
MC32497-1.3	GCMSM	Krysten Dufort	08/13/14 09:24	Unload from Instrument
MC32497-1.3	Krysten Dufort	VOC Ref #10	08/13/14 09:24	Return to Storage
MC32497-1.7	VOC Ref #10	Krysten Dufort	08/01/14 15:25	Retrieve from Storage
MC32497-1.7	Krysten Dufort	VOC Ref #10	08/04/14 16:09	Return to Storage
MC32497-1.7	VOC Ref #10	Anthony Franciosa	08/07/14 07:53	Retrieve from Storage
MC32497-1.7	Anthony Franciosa	GCAB	08/07/14 07:53	Load on Instrument
MC32497-1.7	GCAB	Anthony Franciosa	08/08/14 09:08	Unload from Instrument
MC32497-1.7	Anthony Franciosa	VOC Ref #10	08/08/14 09:08	Return to Storage
MC32497-2.1	Walk In Ref #9	Nicole Estey	08/01/14 16:15	Retrieve from Storage
MC32497-2.1	Nicole Estey	Walk In Ref #9	08/01/14 21:44	Return to Storage
MC32497-2.1	Walk In Ref #9	Mehdi Abdolrahim	08/04/14 10:03	Retrieve from Storage
MC32497-2.1	Mehdi Abdolrahim	Walk In Ref #9	08/04/14 11:36	Return to Storage
MC32497-2.2	Walk In Ref #9	Aysia Wood	08/04/14 15:49	Retrieve from Storage
MC32497-2.2	Aysia Wood	Walk In Ref #9	08/04/14 20:23	Return to Storage
MC32497-2.2	Walk In Ref #9	Alireza Zeighami	08/05/14 07:53	Retrieve from Storage
MC32497-2.2	Alireza Zeighami	Walk In Ref #9	08/05/14 12:08	Return to Storage
MC32497-2.3	VOC Ref #10	Krysten Dufort	08/12/14 11:02	Retrieve from Storage
MC32497-2.3	Krysten Dufort	GCMSM	08/12/14 11:02	Load on Instrument
MC32497-2.3	GCMSM	Krysten Dufort	08/13/14 09:24	Unload from Instrument
MC32497-2.3	Krysten Dufort	VOC Ref #10	08/13/14 09:24	Return to Storage
MC32497-2.7	VOC Ref #10	Krysten Dufort	08/01/14 15:25	Retrieve from Storage
MC32497-2.7	Krysten Dufort	VOC Ref #10	08/04/14 16:09	Return to Storage
MC32497-2.7	VOC Ref #10	Anthony Franciosa	08/07/14 07:53	Retrieve from Storage
MC32497-2.7	Anthony Franciosa	GCAB	08/07/14 07:53	Load on Instrument
MC32497-2.7	GCAB	Anthony Franciosa	08/08/14 09:08	Unload from Instrument
MC32497-2.7	Anthony Franciosa	VOC Ref #10	08/08/14 09:08	Return to Storage
MC32497-3.2	VOC Ref #1	Gary Krasinski	08/11/14 12:08	Retrieve from Storage
MC32497-3.2	Gary Krasinski	GCMSL	08/11/14 12:08	Load on Instrument

Accutest Internal Chain of Custody

Page 2 of 2

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Received: 07/31/14

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
MC32497-3.2	GCMSL	Gary Krasinski	08/12/14 09:41	Unload from Instrument
MC32497-3.2	Gary Krasinski	VOC Ref #1	08/12/14 09:41	Return to Storage
MC32497-4.2	VOC Ref #1	Marc Tahtamoni	08/04/14 14:37	Retrieve from Storage
MC32497-4.2	Marc Tahtamoni		08/06/14 14:22	Depleted

5.3

5

GC/MS Volatiles

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QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Page 1 of 3

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSL3863-MB	L86223.D	1	08/11/14	GK	n/a	n/a	MSL3863

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32497-3

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	2.5	ug/l	
107-02-8	Acrolein	ND	25	6.0	ug/l	
107-13-1	Acrylonitrile	ND	5.0	2.1	ug/l	
71-43-2	Benzene	ND	0.50	0.32	ug/l	
108-86-1	Bromobenzene	ND	5.0	0.35	ug/l	
74-97-5	Bromochloromethane	ND	5.0	0.57	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.34	ug/l	
75-25-2	Bromoform	ND	1.0	0.61	ug/l	
74-83-9	Bromomethane	ND	2.0	1.8	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.5	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	1.1	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	0.42	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	0.39	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.46	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.53	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.43	ug/l	
75-00-3	Chloroethane	ND	2.0	0.53	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	3.3	ug/l	
67-66-3	Chloroform	ND	1.0	0.41	ug/l	
74-87-3	Chloromethane	ND	2.0	1.1	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	0.38	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	0.45	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.38	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.56	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.36	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.71	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.36	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.50	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.61	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.84	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	0.50	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	0.89	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	0.70	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	0.47	ug/l	

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Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSL3863-MB	L86223.D	1	08/11/14	GK	n/a	n/a	MSL3863

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32497-3

CAS No.	Compound	Result	RL	MDL	Units	Q
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.42	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	11	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	0.50	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.38	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	1.7	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.6	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	0.35	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	0.37	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	0.99	ug/l	
74-95-3	Methylene bromide	ND	5.0	0.52	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.28	ug/l	
91-20-3	Naphthalene	ND	5.0	0.69	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	0.49	ug/l	
100-42-5	Styrene	ND	5.0	0.85	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.43	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.40	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.59	ug/l	
108-88-3	Toluene	ND	1.0	0.33	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	0.68	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.46	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.45	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.47	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.55	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.81	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.32	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.38	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	0.71	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.58	ug/l	
	m,p-Xylene	ND	1.0	0.93	ug/l	
95-47-6	o-Xylene	ND	1.0	0.36	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.36	ug/l	

6.1.1

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Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSL3863-MB	L86223.D	1	08/11/14	GK	n/a	n/a	MSL3863

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32497-3

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	99% 70-130%

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

6.1.1

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Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM2388-MB	M67512.D	1	08/12/14	KD	n/a	n/a	MSM2388

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32497-1, MC32497-2

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	2.8	ug/kg	
107-02-8	Acrolein	ND	25	8.8	ug/kg	
107-13-1	Acrylonitrile	ND	25	2.7	ug/kg	
71-43-2	Benzene	ND	0.50	0.34	ug/kg	
108-86-1	Bromobenzene	ND	5.0	0.25	ug/kg	
74-97-5	Bromochloromethane	ND	5.0	0.35	ug/kg	
75-27-4	Bromodichloromethane	ND	2.0	0.21	ug/kg	
75-25-2	Bromoform	ND	2.0	0.35	ug/kg	
74-83-9	Bromomethane	ND	2.0	0.60	ug/kg	
78-93-3	2-Butanone (MEK)	ND	10	3.1	ug/kg	
104-51-8	n-Butylbenzene	ND	5.0	0.24	ug/kg	
135-98-8	sec-Butylbenzene	ND	5.0	0.75	ug/kg	
98-06-6	tert-Butylbenzene	ND	5.0	0.21	ug/kg	
75-15-0	Carbon disulfide	ND	5.0	0.13	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.0	0.22	ug/kg	
108-90-7	Chlorobenzene	ND	2.0	0.16	ug/kg	
75-00-3	Chloroethane	ND	5.0	0.76	ug/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	1.3	ug/kg	
67-66-3	Chloroform	ND	2.0	0.17	ug/kg	
74-87-3	Chloromethane	ND	5.0	0.56	ug/kg	
95-49-8	o-Chlorotoluene	ND	5.0	0.19	ug/kg	
106-43-4	p-Chlorotoluene	ND	5.0	0.27	ug/kg	
124-48-1	Dibromochloromethane	ND	2.0	0.32	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	2.0	0.21	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	2.0	0.30	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	2.0	0.35	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.81	ug/kg	
75-34-3	1,1-Dichloroethane	ND	2.0	0.27	ug/kg	
107-06-2	1,2-Dichloroethane	ND	2.0	0.32	ug/kg	
75-35-4	1,1-Dichloroethene	ND	2.0	0.41	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	2.0	0.45	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	2.0	0.42	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.0	0.42	ug/kg	
142-28-9	1,3-Dichloropropane	ND	5.0	0.33	ug/kg	
594-20-7	2,2-Dichloropropane	ND	5.0	0.56	ug/kg	
563-58-6	1,1-Dichloropropene	ND	5.0	0.26	ug/kg	

6.1.2

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Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM2388-MB	M67512.D	1	08/12/14	KD	n/a	n/a	MSM2388

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32497-1, MC32497-2

CAS No.	Compound	Result	RL	MDL	Units	Q
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	0.23	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	0.26	ug/kg	
123-91-1	1,4-Dioxane	ND	25	20	ug/kg	
97-63-2	Ethyl methacrylate	ND	5.0	0.36	ug/kg	
100-41-4	Ethylbenzene	ND	2.0	0.69	ug/kg	
87-68-3	Hexachlorobutadiene	ND	5.0	0.57	ug/kg	
591-78-6	2-Hexanone	ND	10	0.76	ug/kg	
98-82-8	Isopropylbenzene	ND	5.0	0.17	ug/kg	
99-87-6	p-Isopropyltoluene	ND	5.0	0.17	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	2.0	0.18	ug/kg	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	0.54	ug/kg	
74-95-3	Methylene bromide	ND	5.0	0.46	ug/kg	
75-09-2	Methylene chloride	ND	2.0	0.53	ug/kg	
91-20-3	Naphthalene	ND	5.0	0.40	ug/kg	
103-65-1	n-Propylbenzene	ND	5.0	0.15	ug/kg	
100-42-5	Styrene	ND	5.0	0.17	ug/kg	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	0.40	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	0.39	ug/kg	
127-18-4	Tetrachloroethene	ND	2.0	0.31	ug/kg	
108-88-3	Toluene	ND	5.0	0.21	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	0.43	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	0.51	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.0	0.22	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.0	0.57	ug/kg	
79-01-6	Trichloroethene	ND	2.0	0.24	ug/kg	
75-69-4	Trichlorofluoromethane	ND	2.0	0.40	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	1.4	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	1.5	ug/kg	
108-05-4	Vinyl Acetate	ND	5.0	1.5	ug/kg	
75-01-4	Vinyl chloride	ND	2.0	0.91	ug/kg	
	m,p-Xylene	ND	2.0	0.44	ug/kg	
95-47-6	o-Xylene	ND	2.0	0.28	ug/kg	
1330-20-7	Xylene (total)	ND	2.0	0.22	ug/kg	

6.1.2

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Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM2388-MB	M67512.D	1	08/12/14	KD	n/a	n/a	MSM2388

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32497-1, MC32497-2

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

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

6.1.2

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Blank Spike Summary

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Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSL3863-BS	L86220.D	1	08/11/14	GK	n/a	n/a	MSL3863

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32497-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	50	45.6	91	70-130
107-02-8	Acrolein	250	166	66* a	70-130
107-13-1	Acrylonitrile	50	45.6	91	70-130
71-43-2	Benzene	50	47.6	95	70-130
108-86-1	Bromobenzene	50	49.7	99	70-130
74-97-5	Bromochloromethane	50	50.9	102	70-130
75-27-4	Bromodichloromethane	50	49.6	99	70-130
75-25-2	Bromoform	50	49.7	99	70-130
74-83-9	Bromomethane	50	55.5	111	70-130
78-93-3	2-Butanone (MEK)	50	41.6	83	70-130
104-51-8	n-Butylbenzene	50	50.2	100	70-130
135-98-8	sec-Butylbenzene	50	49.4	99	70-130
98-06-6	tert-Butylbenzene	50	50.8	102	70-130
75-15-0	Carbon disulfide	50	47.6	95	70-130
56-23-5	Carbon tetrachloride	50	42.9	86	70-130
108-90-7	Chlorobenzene	50	45.6	91	70-130
75-00-3	Chloroethane	50	52.1	104	70-130
110-75-8	2-Chloroethyl vinyl ether	50	45.4	91	70-130
67-66-3	Chloroform	50	44.2	88	70-130
74-87-3	Chloromethane	50	46.1	92	70-130
95-49-8	o-Chlorotoluene	50	51.2	102	70-130
106-43-4	p-Chlorotoluene	50	50.4	101	70-130
124-48-1	Dibromochloromethane	50	50.3	101	70-130
95-50-1	1,2-Dichlorobenzene	50	50.1	100	70-130
541-73-1	1,3-Dichlorobenzene	50	47.9	96	70-130
106-46-7	1,4-Dichlorobenzene	50	45.2	90	70-130
75-71-8	Dichlorodifluoromethane	50	31.7	63* a	70-130
75-34-3	1,1-Dichloroethane	50	46.1	92	70-130
107-06-2	1,2-Dichloroethane	50	46.1	92	70-130
75-35-4	1,1-Dichloroethene	50	43.0	86	70-130
156-59-2	cis-1,2-Dichloroethene	50	46.3	93	70-130
156-60-5	trans-1,2-Dichloroethene	50	43.7	87	70-130
78-87-5	1,2-Dichloropropane	50	47.1	94	70-130
142-28-9	1,3-Dichloropropane	50	48.2	96	70-130
594-20-7	2,2-Dichloropropane	50	49.2	98	70-130
563-58-6	1,1-Dichloropropene	50	44.6	89	70-130

* = Outside of Control Limits.

Blank Spike Summary

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Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSL3863-BS	L86220.D	1	08/11/14	GK	n/a	n/a	MSL3863

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32497-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
10061-01-5	cis-1,3-Dichloropropene	50	50.4	101	70-130
10061-02-6	trans-1,3-Dichloropropene	50	53.8	108	70-130
123-91-1	1,4-Dioxane	125	130	104	70-130
97-63-2	Ethyl methacrylate	50	49.2	98	77-137
100-41-4	Ethylbenzene	50	51.0	102	70-130
87-68-3	Hexachlorobutadiene	50	46.1	92	70-130
591-78-6	2-Hexanone	50	41.4	83	70-130
98-82-8	Isopropylbenzene	50	52.2	104	70-130
99-87-6	p-Isopropyltoluene	50	47.9	96	70-130
1634-04-4	Methyl Tert Butyl Ether	50	51.3	103	70-130
108-10-1	4-Methyl-2-pentanone (MIBK)	50	47.8	96	70-130
74-95-3	Methylene bromide	50	47.1	94	70-130
75-09-2	Methylene chloride	50	45.6	91	70-130
91-20-3	Naphthalene	50	44.5	89	70-130
103-65-1	n-Propylbenzene	50	52.0	104	70-130
100-42-5	Styrene	50	52.6	105	70-130
630-20-6	1,1,1,2-Tetrachloroethane	50	46.7	93	70-130
79-34-5	1,1,2,2-Tetrachloroethane	50	44.3	89	70-130
127-18-4	Tetrachloroethene	50	46.0	92	70-130
108-88-3	Toluene	50	50.3	101	70-130
87-61-6	1,2,3-Trichlorobenzene	50	48.5	97	70-130
120-82-1	1,2,4-Trichlorobenzene	50	49.6	99	70-130
71-55-6	1,1,1-Trichloroethane	50	46.0	92	70-130
79-00-5	1,1,2-Trichloroethane	50	46.7	93	70-130
79-01-6	Trichloroethene	50	44.8	90	70-130
75-69-4	Trichlorofluoromethane	50	41.7	83	70-130
96-18-4	1,2,3-Trichloropropane	50	46.6	93	70-130
95-63-6	1,2,4-Trimethylbenzene	50	55.2	110	70-130
108-67-8	1,3,5-Trimethylbenzene	50	51.8	104	70-130
108-05-4	Vinyl Acetate	50	39.8	80	70-130
75-01-4	Vinyl chloride	50	44.4	89	70-130
	m,p-Xylene	100	106	106	70-130
95-47-6	o-Xylene	50	46.3	93	70-130
1330-20-7	Xylene (total)	150	152	101	70-130

* = Outside of Control Limits.

Blank Spike Summary

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Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSL3863-BS	L86220.D	1	08/11/14	GK	n/a	n/a	MSL3863

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32497-3

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	78%	70-130%
2037-26-5	Toluene-D8	89%	70-130%
460-00-4	4-Bromofluorobenzene	89%	70-130%

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

* = Outside of Control Limits.

Blank Spike Summary

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Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM2388-BS	M67509.D	1	08/12/14	KD	n/a	n/a	MSM2388

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32497-1, MC32497-2

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
67-64-1	Acetone	50	45.4	91	70-130
107-02-8	Acrolein	250	156	62* a	70-130
107-13-1	Acrylonitrile	50	55.1	110	70-130
71-43-2	Benzene	50	55.4	111	70-130
108-86-1	Bromobenzene	50	56.8	114	70-130
74-97-5	Bromochloromethane	50	57.2	114	70-130
75-27-4	Bromodichloromethane	50	61.2	122	70-130
75-25-2	Bromoform	50	53.2	106	70-130
74-83-9	Bromomethane	50	49.2	98	70-130
78-93-3	2-Butanone (MEK)	50	47.5	95	70-130
104-51-8	n-Butylbenzene	50	54.3	109	70-130
135-98-8	sec-Butylbenzene	50	54.8	110	70-130
98-06-6	tert-Butylbenzene	50	55.9	112	70-130
75-15-0	Carbon disulfide	50	53.9	108	70-130
56-23-5	Carbon tetrachloride	50	52.5	105	70-130
108-90-7	Chlorobenzene	50	54.8	110	70-130
75-00-3	Chloroethane	50	58.0	116	70-130
110-75-8	2-Chloroethyl vinyl ether	50	52.6	105	10-160
67-66-3	Chloroform	50	56.6	113	70-130
74-87-3	Chloromethane	50	49.0	98	70-130
95-49-8	o-Chlorotoluene	50	56.7	113	70-130
106-43-4	p-Chlorotoluene	50	55.9	112	70-130
124-48-1	Dibromochloromethane	50	56.6	113	70-130
95-50-1	1,2-Dichlorobenzene	50	57.5	115	70-130
541-73-1	1,3-Dichlorobenzene	50	56.2	112	70-130
106-46-7	1,4-Dichlorobenzene	50	55.8	112	70-130
75-71-8	Dichlorodifluoromethane	50	51.8	104	70-130
75-34-3	1,1-Dichloroethane	50	58.5	117	70-130
107-06-2	1,2-Dichloroethane	50	57.5	115	70-130
75-35-4	1,1-Dichloroethene	50	53.3	107	70-130
156-59-2	cis-1,2-Dichloroethene	50	55.9	112	70-130
156-60-5	trans-1,2-Dichloroethene	50	53.3	107	70-130
78-87-5	1,2-Dichloropropane	50	58.1	116	70-130
142-28-9	1,3-Dichloropropane	50	54.7	109	70-130
594-20-7	2,2-Dichloropropane	50	55.6	111	70-130
563-58-6	1,1-Dichloropropene	50	51.3	103	70-130

* = Outside of Control Limits.

Blank Spike Summary

Page 2 of 3

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM2388-BS	M67509.D	1	08/12/14	KD	n/a	n/a	MSM2388

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32497-1, MC32497-2

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
10061-01-5	cis-1,3-Dichloropropene	50	57.9	116	70-130
10061-02-6	trans-1,3-Dichloropropene	50	61.6	123	70-130
123-91-1	1,4-Dioxane	125	155	124	70-130
97-63-2	Ethyl methacrylate	50	56.5	113	76-141
100-41-4	Ethylbenzene	50	53.9	108	70-130
87-68-3	Hexachlorobutadiene	50	50.6	101	70-130
591-78-6	2-Hexanone	50	41.4	83	70-130
98-82-8	Isopropylbenzene	50	57.8	116	70-130
99-87-6	p-Isopropyltoluene	50	54.8	110	70-130
1634-04-4	Methyl Tert Butyl Ether	50	58.0	116	70-130
108-10-1	4-Methyl-2-pentanone (MIBK)	50	51.9	104	70-130
74-95-3	Methylene bromide	50	55.9	112	70-130
75-09-2	Methylene chloride	50	56.6	113	70-130
91-20-3	Naphthalene	50	56.6	113	70-130
103-65-1	n-Propylbenzene	50	56.2	112	70-130
100-42-5	Styrene	50	55.2	110	70-130
630-20-6	1,1,1,2-Tetrachloroethane	50	55.2	110	70-130
79-34-5	1,1,2,2-Tetrachloroethane	50	55.1	110	70-130
127-18-4	Tetrachloroethene	50	50.3	101	70-130
108-88-3	Toluene	50	56.1	112	70-130
87-61-6	1,2,3-Trichlorobenzene	50	56.0	112	70-130
120-82-1	1,2,4-Trichlorobenzene	50	55.7	111	70-130
71-55-6	1,1,1-Trichloroethane	50	54.8	110	70-130
79-00-5	1,1,2-Trichloroethane	50	56.7	113	70-130
79-01-6	Trichloroethene	50	53.4	107	70-130
75-69-4	Trichlorofluoromethane	50	46.9	94	70-130
96-18-4	1,2,3-Trichloropropane	50	53.8	108	70-130
95-63-6	1,2,4-Trimethylbenzene	50	57.7	115	70-130
108-67-8	1,3,5-Trimethylbenzene	50	54.3	109	70-130
108-05-4	Vinyl Acetate	50	44.6	89	70-130
75-01-4	Vinyl chloride	50	49.1	98	70-130
	m,p-Xylene	100	108	108	70-130
95-47-6	o-Xylene	50	55.5	111	70-130
1330-20-7	Xylene (total)	150	163	109	70-130

* = Outside of Control Limits.

Blank Spike Summary

Page 3 of 3

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM2388-BS	M67509.D	1	08/12/14	KD	n/a	n/a	MSM2388

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32497-1, MC32497-2

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

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

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 3

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC32562-1MS	L86233.D	1	08/11/14	GK	n/a	n/a	MSL3863
MC32562-1MSD	L86234.D	1	08/11/14	GK	n/a	n/a	MSL3863
MC32562-1	L86227.D	1	08/11/14	GK	n/a	n/a	MSL3863

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32497-3

CAS No.	Compound	MC32562-1 ug/l	Spike Q	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND	50	22.0	44* a	50	21.2	42* a	4	70-130/30
107-02-8	Acrolein	ND	250	190	76	250	187	75	2	70-130/30
107-13-1	Acrylonitrile	ND	50	47.3	95	50	48.2	96	2	70-130/30
71-43-2	Benzene	ND	50	50.7	101	50	51.7	103	2	70-130/30
108-86-1	Bromobenzene	ND	50	50.2	100	50	51.3	103	2	70-130/30
74-97-5	Bromochloromethane	ND	50	52.3	105	50	51.6	103	1	70-130/30
75-27-4	Bromodichloromethane	ND	50	51.1	102	50	51.0	102	0	70-130/30
75-25-2	Bromoform	ND	50	50.6	101	50	51.4	103	2	70-130/30
74-83-9	Bromomethane	ND	50	38.2	76	50	50.4	101	28	70-130/30
78-93-3	2-Butanone (MEK)	ND	50	34.6	69* a	50	36.4	73	5	70-130/30
104-51-8	n-Butylbenzene	ND	50	53.2	106	50	55.5	111	4	70-130/30
135-98-8	sec-Butylbenzene	ND	50	51.8	104	50	53.8	108	4	70-130/30
98-06-6	tert-Butylbenzene	ND	50	52.6	105	50	54.8	110	4	70-130/30
75-15-0	Carbon disulfide	ND	50	52.6	105	50	54.1	108	3	70-130/30
56-23-5	Carbon tetrachloride	ND	50	47.2	94	50	48.2	96	2	70-130/30
108-90-7	Chlorobenzene	ND	50	47.2	94	50	48.3	97	2	70-130/30
75-00-3	Chloroethane	ND	50	58.8	118	50	59.1	118	1	70-130/30
110-75-8	2-Chloroethyl vinyl ether	ND	50	48.7	97	50	52.6	105	8	70-130/30
67-66-3	Chloroform	ND	50	47.1	94	50	47.1	94	0	70-130/30
74-87-3	Chloromethane	ND	50	51.8	104	50	49.3	99	5	70-130/30
95-49-8	o-Chlorotoluene	ND	50	52.2	104	50	54.2	108	4	70-130/30
106-43-4	p-Chlorotoluene	ND	50	51.7	103	50	53.0	106	2	70-130/30
124-48-1	Dibromochloromethane	ND	50	51.1	102	50	52.3	105	2	70-130/30
95-50-1	1,2-Dichlorobenzene	ND	50	51.5	103	50	52.9	106	3	70-130/30
541-73-1	1,3-Dichlorobenzene	ND	50	49.1	98	50	50.5	101	3	70-130/30
106-46-7	1,4-Dichlorobenzene	ND	50	46.1	92	50	47.3	95	3	70-130/30
75-71-8	Dichlorodifluoromethane	ND	50	34.4	69* a	50	34.9	70	1	70-130/30
75-34-3	1,1-Dichloroethane	ND	50	49.5	99	50	50.0	100	1	70-130/30
107-06-2	1,2-Dichloroethane	ND	50	48.5	97	50	48.3	97	0	70-130/30
75-35-4	1,1-Dichloroethene	ND	50	48.0	96	50	49.2	98	2	70-130/30
156-59-2	cis-1,2-Dichloroethene	ND	50	49.6	99	50	50.5	101	2	70-130/30
156-60-5	trans-1,2-Dichloroethene	ND	50	48.1	96	50	49.5	99	3	70-130/30
78-87-5	1,2-Dichloropropane	ND	50	50.3	101	50	50.6	101	1	70-130/30
142-28-9	1,3-Dichloropropane	ND	50	49.0	98	50	50.6	101	3	70-130/30
594-20-7	2,2-Dichloropropane	ND	50	56.0	112	50	56.0	112	0	70-130/30
563-58-6	1,1-Dichloropropene	ND	50	49.7	99	50	49.8	100	0	70-130/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 2 of 3

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC32562-1MS	L86233.D	1	08/11/14	GK	n/a	n/a	MSL3863
MC32562-1MSD	L86234.D	1	08/11/14	GK	n/a	n/a	MSL3863
MC32562-1	L86227.D	1	08/11/14	GK	n/a	n/a	MSL3863

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32497-3

CAS No.	Compound	MC32562-1 ug/l	Spike Q	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
10061-01-5	cis-1,3-Dichloropropene	ND	50	52.1	104	50	52.8	106	1	70-130/30
10061-02-6	trans-1,3-Dichloropropene	ND	50	56.1	112	50	56.3	113	0	70-130/30
123-91-1	1,4-Dioxane	ND	125	142	114	125	131	105	8	70-130/30
97-63-2	Ethyl methacrylate	ND	50	53.6	107	50	53.7	107	0	72-139/30
100-41-4	Ethylbenzene	ND	50	53.3	107	50	55.4	111	4	70-130/30
87-68-3	Hexachlorobutadiene	ND	50	47.7	95	50	50.0	100	5	70-130/30
591-78-6	2-Hexanone	ND	50	32.5	65* a	50	33.2	66* a	2	70-130/30
98-82-8	Isopropylbenzene	ND	50	54.2	108	50	56.5	113	4	70-130/30
99-87-6	p-Isopropyltoluene	ND	50	50.6	101	50	52.0	104	3	70-130/30
1634-04-4	Methyl Tert Butyl Ether	ND	50	54.5	109	50	55.7	111	2	70-130/30
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	50	51.6	103	50	51.8	104	0	70-130/30
74-95-3	Methylene bromide	ND	50	49.0	98	50	49.3	99	1	70-130/30
75-09-2	Methylene chloride	ND	50	49.4	99	50	49.0	98	1	70-130/30
91-20-3	Naphthalene	ND	50	45.5	91	50	48.1	96	6	70-130/30
103-65-1	n-Propylbenzene	ND	50	54.0	108	50	56.0	112	4	70-130/30
100-42-5	Styrene	ND	50	53.5	107	50	54.9	110	3	70-130/30
630-20-6	1,1,1,2-Tetrachloroethane	ND	50	47.7	95	50	48.5	97	2	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	ND	50	46.7	93	50	46.7	93	0	70-130/30
127-18-4	Tetrachloroethene	ND	50	48.5	97	50	50.5	101	4	70-130/30
108-88-3	Toluene	ND	50	53.6	107	50	54.0	108	1	70-130/30
87-61-6	1,2,3-Trichlorobenzene	ND	50	50.5	101	50	52.2	104	3	70-130/30
120-82-1	1,2,4-Trichlorobenzene	ND	50	51.0	102	50	52.8	106	3	70-130/30
71-55-6	1,1,1-Trichloroethane	ND	50	50.8	102	50	51.4	103	1	70-130/30
79-00-5	1,1,2-Trichloroethane	ND	50	49.2	98	50	48.7	97	1	70-130/30
79-01-6	Trichloroethene	ND	50	48.2	96	50	48.5	97	1	70-130/30
75-69-4	Trichlorofluoromethane	ND	50	46.2	92	50	46.0	92	0	70-130/30
96-18-4	1,2,3-Trichloropropane	ND	50	48.2	96	50	49.6	99	3	70-130/30
95-63-6	1,2,4-Trimethylbenzene	ND	50	57.4	115	50	58.8	118	2	70-130/30
108-67-8	1,3,5-Trimethylbenzene	ND	50	53.4	107	50	54.9	110	3	70-130/30
108-05-4	Vinyl Acetate	ND	50	44.8	90	50	43.5	87	3	70-130/30
75-01-4	Vinyl chloride	ND	50	48.9	98	50	48.8	98	0	70-130/30
	m,p-Xylene	ND	100	110	110	100	114	114	4	70-130/30
95-47-6	o-Xylene	ND	50	48.4	97	50	50.0	100	3	70-130/30
1330-20-7	Xylene (total)	ND	150	158	105	150	164	109	4	70-130/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 3 of 3

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC32562-1MS	L86233.D	1	08/11/14	GK	n/a	n/a	MSL3863
MC32562-1MSD	L86234.D	1	08/11/14	GK	n/a	n/a	MSL3863
MC32562-1	L86227.D	1	08/11/14	GK	n/a	n/a	MSL3863

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32497-3

CAS No.	Surrogate Recoveries	MS	MSD	MC32562-1	Limits
1868-53-7	Dibromofluoromethane	81%	80%	86%	70-130%
2037-26-5	Toluene-D8	91%	90%	90%	70-130%
460-00-4	4-Bromofluorobenzene	87%	88%	103%	70-130%

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

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 3

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC32521-1MS	M67519.D	1	08/12/14	KD	n/a	n/a	MSM2388
MC32521-1MSD	M67520.D	1	08/12/14	KD	n/a	n/a	MSM2388
MC32521-1	M67515.D	1	08/12/14	KD	n/a	n/a	MSM2388

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32497-1, MC32497-2

CAS No.	Compound	MC32521-1 ug/kg	Spike Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND		56.4	39.4	70	59	33.6	57* a	16	70-130/30
107-02-8	Acrolein	ND		282	131	46* a	295	185	63* a	34* b	70-130/30
107-13-1	Acrylonitrile	ND		56.4	64.2	114	59	50.6	86	24	70-130/30
71-43-2	Benzene	4.0		56.4	37.8	60* a	59	39.2	60* a	4	70-130/30
108-86-1	Bromobenzene	ND		56.4	40.0	71	59	36.2	61* a	10	70-130/30
74-97-5	Bromochloromethane	ND		56.4	44.6	79	59	44.0	75	1	70-130/30
75-27-4	Bromodichloromethane	ND		56.4	45.5	81	59	44.0	75	3	70-130/30
75-25-2	Bromoform	ND		56.4	55.2	98	59	43.5	74	24	70-130/30
74-83-9	Bromomethane	ND		56.4	50.3	89	59	53.2	90	6	70-130/30
78-93-3	2-Butanone (MEK)	ND		56.4	51.3	91	59	38.4	65* a	29	70-130/30
104-51-8	n-Butylbenzene	ND		56.4	33.3	59* a	59	29.9	51* a	11	70-130/30
135-98-8	sec-Butylbenzene	ND		56.4	34.0	60* a	59	31.6	54* a	7	70-130/30
98-06-6	tert-Butylbenzene	ND		56.4	35.0	62* a	59	32.8	56* a	6	70-130/30
75-15-0	Carbon disulfide	0.79	J	56.4	34.9	60* a	59	37.6	62* a	7	70-130/30
56-23-5	Carbon tetrachloride	ND		56.4	33.9	60* a	59	34.9	59* a	3	70-130/30
108-90-7	Chlorobenzene	ND		56.4	36.2	64* a	59	35.6	60* a	2	70-130/30
75-00-3	Chloroethane	ND		56.4	59.1	105	59	63.3	107	7	70-130/30
110-75-8	2-Chloroethyl vinyl ether	ND		56.4	ND	0* a	59	ND	0* a	nc	10-160/30
67-66-3	Chloroform	ND		56.4	39.1	69* a	59	40.3	68* a	3	70-130/30
74-87-3	Chloromethane	ND		56.4	48.5	86	59	51.7	88	6	70-130/30
95-49-8	o-Chlorotoluene	ND		56.4	36.2	64* a	59	33.8	57* a	7	70-130/30
106-43-4	p-Chlorotoluene	ND		56.4	35.7	63* a	59	33.7	57* a	6	70-130/30
124-48-1	Dibromochloromethane	ND		56.4	45.2	80	59	41.9	71	8	70-130/30
95-50-1	1,2-Dichlorobenzene	ND		56.4	43.9	78	59	35.2	60* a	22	70-130/30
541-73-1	1,3-Dichlorobenzene	ND		56.4	37.5	67* a	59	32.8	56* a	13	70-130/30
106-46-7	1,4-Dichlorobenzene	ND		56.4	38.4	68* a	59	32.9	56* a	15	70-130/30
75-71-8	Dichlorodifluoromethane	ND		56.4	53.3	95	59	57.1	97	7	70-130/30
75-34-3	1,1-Dichloroethane	ND		56.4	39.3	70	59	40.7	69* a	4	70-130/30
107-06-2	1,2-Dichloroethane	ND		56.4	45.6	81	59	43.9	74	4	70-130/30
75-35-4	1,1-Dichloroethene	ND		56.4	34.4	61* a	59	36.9	63* a	7	70-130/30
156-59-2	cis-1,2-Dichloroethene	ND		56.4	38.0	67* a	59	39.3	67* a	3	70-130/30
156-60-5	trans-1,2-Dichloroethene	ND		56.4	35.0	62* a	59	37.0	63* a	6	70-130/30
78-87-5	1,2-Dichloropropane	ND		56.4	40.8	72	59	40.6	69* a	0	70-130/30
142-28-9	1,3-Dichloropropane	ND		56.4	45.3	80	59	43.1	73	5	70-130/30
594-20-7	2,2-Dichloropropane	ND		56.4	36.7	65* a	59	37.6	64* a	2	70-130/30
563-58-6	1,1-Dichloropropene	ND		56.4	32.6	58* a	59	34.4	58* a	5	70-130/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 2 of 3

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC32521-1MS	M67519.D	1	08/12/14	KD	n/a	n/a	MSM2388
MC32521-1MSD	M67520.D	1	08/12/14	KD	n/a	n/a	MSM2388
MC32521-1	M67515.D	1	08/12/14	KD	n/a	n/a	MSM2388

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32497-1, MC32497-2

CAS No.	Compound	MC32521-1 ug/kg	Spike Q	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD	
10061-01-5	cis-1,3-Dichloropropene	ND		56.4	41.9	74	59	41.3	70	1	70-130/30
10061-02-6	trans-1,3-Dichloropropene	ND		56.4	49.7	88	59	46.0	78	8	70-130/30
123-91-1	1,4-Dioxane	ND		141	229	162* a	147	169	115	30	70-130/30
97-63-2	Ethyl methacrylate	ND		56.4	60.3	107	59	49.1	83	20	41-160/30
100-41-4	Ethylbenzene	ND		56.4	34.0	60* a	59	34.6	59* a	2	70-130/30
87-68-3	Hexachlorobutadiene	ND		56.4	34.0	60* a	59	26.8	45* a	24	70-130/30
591-78-6	2-Hexanone	ND		56.4	55.1	98	59	36.9	63* a	40* b	70-130/30
98-82-8	Isopropylbenzene	ND		56.4	35.5	63* a	59	35.2	60* a	1	70-130/30
99-87-6	p-Isopropyltoluene	ND		56.4	33.8	60* a	59	30.8	52* a	9	70-130/30
1634-04-4	Methyl Tert Butyl Ether	ND		56.4	50.8	90	59	47.5	81	7	70-130/30
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		56.4	73.4	130	59	53.5	91	31* b	70-130/30
74-95-3	Methylene bromide	ND		56.4	47.0	83	59	45.5	77	3	70-130/30
75-09-2	Methylene chloride	ND		56.4	39.6	70	59	41.0	70	3	70-130/30
91-20-3	Naphthalene	ND		56.4	63.7	113	59	45.8	78	33* b	70-130/30
103-65-1	n-Propylbenzene	ND		56.4	34.7	62* a	59	33.5	57* a	4	70-130/30
100-42-5	Styrene	ND		56.4	38.1	68* a	59	36.6	62* a	4	70-130/30
630-20-6	1,1,1,2-Tetrachloroethane	ND		56.4	38.2	68* a	59	36.7	62* a	4	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	ND		56.4	65.9	117	59	48.8	83	30	70-130/30
127-18-4	Tetrachloroethene	ND		56.4	31.2	55* a	59	32.2	55* a	3	70-130/30
108-88-3	Toluene	ND		56.4	36.9	65* a	59	37.2	63* a	1	70-130/30
87-61-6	1,2,3-Trichlorobenzene	ND		56.4	46.1	82	59	34.0	58* a	30	70-130/30
120-82-1	1,2,4-Trichlorobenzene	ND		56.4	40.3	71	59	30.6	52* a	27	70-130/30
71-55-6	1,1,1-Trichloroethane	ND		56.4	35.6	63* a	59	37.2	63* a	4	70-130/30
79-00-5	1,1,2-Trichloroethane	ND		56.4	52.3	93	59	45.7	78	13	70-130/30
79-01-6	Trichloroethene	ND		56.4	34.9	62* a	59	35.4	60* a	1	70-130/30
75-69-4	Trichlorofluoromethane	ND		56.4	47.7	85	59	51.3	87	7	70-130/30
96-18-4	1,2,3-Trichloropropane	ND		56.4	65.4	116	59	48.0	81	31* b	70-130/30
95-63-6	1,2,4-Trimethylbenzene	ND		56.4	36.3	64* a	59	33.9	58* a	7	70-130/30
108-67-8	1,3,5-Trimethylbenzene	ND		56.4	33.7	60* a	59	31.7	54* a	6	70-130/30
108-05-4	Vinyl Acetate	ND		56.4	29.5	52* a	59	25.0	42* a	17	70-130/30
75-01-4	Vinyl chloride	ND		56.4	50.5	90	59	54.1	92	7	70-130/30
	m,p-Xylene	ND		113	68.4	61* a	118	68.3	58* a	0	70-130/30
95-47-6	o-Xylene	ND		56.4	35.7	63* a	59	35.0	59* a	2	70-130/30
1330-20-7	Xylene (total)	ND		169	104	61* a	177	103	58* a	1	70-130/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 3 of 3

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC32521-1MS	M67519.D	1	08/12/14	KD	n/a	n/a	MSM2388
MC32521-1MSD	M67520.D	1	08/12/14	KD	n/a	n/a	MSM2388
MC32521-1	M67515.D	1	08/12/14	KD	n/a	n/a	MSM2388

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32497-1, MC32497-2

CAS No.	Surrogate Recoveries	MS	MSD	MC32521-1	Limits
1868-53-7	Dibromofluoromethane	98%	98%	102%	70-130%
2037-26-5	Toluene-D8	89%	88%	89%	70-130%
460-00-4	4-Bromofluorobenzene	88%	88%	87%	70-130%

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

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

* = Outside of Control Limits.

Volatile Internal Standard Area Summary

Page 1 of 1

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Check Std: MSL3863-CC3863

Injection Date: 08/11/14

Lab File ID: L86219.D

Injection Time: 09:26

Instrument ID: GCMSL

Method: SW846 8260C

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	209494	8.11	328736	8.93	212467	12.12	189873	14.66	61915	5.85
Upper Limit ^a	418988	8.61	657472	9.43	424934	12.62	379746	15.16	123830	6.35
Lower Limit ^b	104747	7.61	164368	8.43	106234	11.62	94937	14.16	30958	5.35

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
MSL3863-BS	213035	8.11	327772	8.93	210155	12.12	186778	14.66	60902	5.86
MSL3863-MB	195713	8.12	301741	8.93	177493	12.12	132569	14.66	58032	5.91
ZZZZZZ	180669	8.12	284405	8.93	174482	12.13	129671	14.67	52795	5.90
MC32497-3	173002	8.11	270718	8.93	164595	12.12	121600	14.66	51751	5.90
ZZZZZZ	170666	8.12	267852	8.93	164353	12.12	120140	14.66	51944	5.91
MC32562-1	169937	8.11	269739	8.93	164898	12.12	119872	14.66	48211	5.90
ZZZZZZ	169871	8.12	269240	8.93	166080	12.12	124821	14.66	57171	5.89
ZZZZZZ	180445	8.12	285967	8.93	187116	12.12	175971	14.66	60012	5.88
ZZZZZZ	198205	8.12	308958	8.93	186174	12.12	139564	14.66	67566	5.90
ZZZZZZ	172789	8.12	273141	8.93	168856	12.12	122831	14.66	57347	5.90
ZZZZZZ	175761	8.12	286060	8.93	183035	12.12	146070	14.66	56331	5.90
MC32562-1MS	201974	8.11	316848	8.93	208608	12.12	189215	14.66	61632	5.85
MC32562-1MSD	208348	8.11	323792	8.93	209252	12.12	188577	14.66	66861	5.85
ZZZZZZ	171842	8.12	267929	8.93	158644	12.12	117173	14.66	52700	5.90
ZZZZZZ	162040	8.12	250564	8.93	151722	12.12	112394	14.66	51968	5.91
ZZZZZZ	173842	8.12	275706	8.93	167250	12.12	122669	14.66	53550	5.89
ZZZZZZ	166689	8.12	267325	8.93	164335	12.12	119951	14.66	55914	5.89
ZZZZZZ	161471	8.12	258597	8.93	162295	12.12	118522	14.66	50681	5.90
ZZZZZZ	162316	8.12	255871	8.93	161216	12.12	117978	14.66	48562	5.91
ZZZZZZ	161703	8.12	258400	8.93	165151	12.12	121956	14.66	61518	5.89
ZZZZZZ	159659	8.12	255309	8.93	160021	12.12	118246	14.66	54810	5.90

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

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

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

Volatile Internal Standard Area Summary

Page 1 of 1

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Check Std: MSM2388-CC2378

Injection Date: 08/12/14

Lab File ID: M67509.D

Injection Time: 10:09

Instrument ID: GCMSM

Method: SW846 8260C

	IS 1		IS 2		IS 3		IS 4		IS 5	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	287799	9.35	471287	10.23	198271	13.50	249889	16.07	95403	6.84
Upper Limit ^a	575598	9.85	942574	10.73	396542	14.00	499778	16.57	190806	7.34
Lower Limit ^b	143900	8.85	235644	9.73	99136	13.00	124945	15.57	47702	6.34

Lab	IS 1		IS 2		IS 3		IS 4		IS 5	
Sample ID	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
MSM2388-BS	287799	9.35	471287	10.23	198271	13.50	249889	16.07	95403	6.84
MSM2388-MB	249706	9.35	394306	10.22	166750	13.51	222180	16.07	88218	6.84
MC32497-1	288020	9.35	467298	10.23	203258	13.50	273791	16.07	161691	6.85
MC32497-2	280295	9.35	456371	10.23	196409	13.50	272496	16.07	163686	6.85
MC32521-1	275320	9.35	457329	10.23	195518	13.50	270230	16.07	153521	6.85
ZZZZZZ	261533	9.35	430548	10.22	187264	13.51	254986	16.07	149101	6.84
ZZZZZZ	265470	9.35	429936	10.22	188806	13.50	251613	16.07	149707	6.85
ZZZZZZ	262874	9.35	431210	10.22	178193	13.51	223771	16.07	161284	6.84
MC32521-1MS	300481	9.35	498393	10.23	220745	13.50	286803	16.07	170757	6.85
MC32521-1MSD	306944	9.35	512436	10.23	221077	13.50	288417	16.07	178617	6.85
ZZZZZZ	204338	9.35	324449	10.23	141236	13.50	189618	16.07	81425	6.84
ZZZZZZ	289128	9.35	456368	10.23	193512	13.51	258862	16.07	92050	6.85
ZZZZZZ	282615	9.35	449010	10.23	187142	13.50	246977	16.07	91357	6.84
ZZZZZZ	272802	9.35	439962	10.23	182088	13.50	236009	16.07	101190	6.84
ZZZZZZ	273222	9.35	437060	10.23	183747	13.51	238326	16.07	107369	6.85
ZZZZZZ	289038	9.35	463133	10.23	191150	13.50	245933	16.07	88150	6.86
ZZZZZZ	264981	9.35	423077	10.22	176187	13.50	237185	16.07	86026	6.85
ZZZZZZ	274116	9.35	442403	10.23	188760	13.51	246916	16.07	94912	6.84
ZZZZZZ	264176	9.35	420716	10.23	175498	13.51	233637	16.07	85340	6.85
ZZZZZZ	273059	9.35	442340	10.23	185565	13.51	244440	16.07	97349	6.85

IS 1 = Pentafluorobenzene

IS 2 = 1,4-Difluorobenzene

IS 3 = Chlorobenzene-D5

IS 4 = 1,4-Dichlorobenzene-d4

IS 5 = Tert Butyl Alcohol-D9

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

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

Volatile Surrogate Recovery Summary

Page 1 of 1

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Method: SW846 8260C

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
MC32497-3	L86225.D	85	90	101
MC32562-1MS	L86233.D	81	91	87
MC32562-1MSD	L86234.D	80	90	88
MSL3863-BS	L86220.D	78	89	89
MSL3863-MB	L86223.D	83	89	99

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

6.5.1

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Volatile Surrogate Recovery Summary

Page 1 of 1

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Method: SW846 8260C

Matrix: SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
MC32497-1	M67513.D	99	89	87
MC32497-2	M67514.D	100	90	86
MC32521-1MS	M67519.D	98	89	88
MC32521-1MSD	M67520.D	98	88	88
MSM2388-BS	M67509.D	91	88	87
MSM2388-MB	M67512.D	91	91	86

Surrogate Compounds

Recovery Limits

S1 = Dibromofluoromethane
S2 = Toluene-D8
S3 = 4-Bromofluorobenzene

70-130%
70-130%
70-130%

6.5.2

6

GC/MS Semi-volatiles

QC Data Summaries

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Includes the following where applicable:

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

Method Blank Summary

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Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP39211-MB	X04130.D	1	08/04/14	WK	08/01/14	OP39211	MSX136

The QC reported here applies to the following samples:

Method: SW846 8270D

MC32497-1, MC32497-2

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	490	61	ug/kg	
95-57-8	2-Chlorophenol	ND	240	11	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	490	12	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	490	14	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	490	79	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	970	120	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	490	61	ug/kg	
95-48-7	2-Methylphenol	ND	490	19	ug/kg	
	3&4-Methylphenol	ND	490	24	ug/kg	
88-75-5	2-Nitrophenol	ND	490	13	ug/kg	
100-02-7	4-Nitrophenol	ND	970	91	ug/kg	
87-86-5	Pentachlorophenol	ND	490	34	ug/kg	
108-95-2	Phenol	ND	240	14	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	490	12	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	490	12	ug/kg	
62-53-3	Aniline	ND	490	24	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	240	12	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	240	9.9	ug/kg	
100-51-6	Benzyl Alcohol	ND	490	24	ug/kg	
91-58-7	2-Chloronaphthalene	ND	240	13	ug/kg	
106-47-8	4-Chloroaniline	ND	490	12	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	240	11	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	240	15	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	240	17	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	240	15	ug/kg	
122-66-7	1,2-Diphenylhydrazine	ND	240	11	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	490	32	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	490	12	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	240	24	ug/kg	
132-64-9	Dibenzofuran	ND	97	13	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	240	26	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	240	7.6	ug/kg	
84-66-2	Diethyl phthalate	ND	240	12	ug/kg	
131-11-3	Dimethyl phthalate	ND	240	14	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	240	9.0	ug/kg	
118-74-1	Hexachlorobenzene	ND	240	15	ug/kg	

7.1.1

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Method Blank Summary

Page 2 of 2

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP39211-MB	X04130.D	1	08/04/14	WK	08/01/14	OP39211	MSX136

The QC reported here applies to the following samples:

Method: SW846 8270D

MC32497-1, MC32497-2

CAS No.	Compound	Result	RL	MDL	Units	Q
77-47-4	Hexachlorocyclopentadiene	ND	490	120	ug/kg	
67-72-1	Hexachloroethane	ND	240	12	ug/kg	
78-59-1	Isophorone	ND	240	11	ug/kg	
88-74-4	2-Nitroaniline	ND	490	12	ug/kg	
99-09-2	3-Nitroaniline	ND	490	27	ug/kg	
100-01-6	4-Nitroaniline	ND	490	12	ug/kg	
98-95-3	Nitrobenzene	ND	240	13	ug/kg	
62-75-9	n-Nitrosodimethylamine	ND	240	12	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	240	14	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	240	15	ug/kg	
110-86-1	Pyridine	ND	490	24	ug/kg	

CAS No.	Surrogate Recoveries	Limits
367-12-4	2-Fluorophenol	70% 30-130%
4165-62-2	Phenol-d5	80% 30-130%
118-79-6	2,4,6-Tribromophenol	81% 30-130%
4165-60-0	Nitrobenzene-d5	77% 30-130%
321-60-8	2-Fluorobiphenyl	72% 30-130%
1718-51-0	Terphenyl-d14	87% 30-130%

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

Method Blank Summary

Page 1 of 1

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP39255-MB	I91093.D	1	08/08/14	MR	08/04/14	OP39255	MSI3392

The QC reported here applies to the following samples:

Method: SW846 8270D BY SIM

MC32497-1, MC32497-2

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	4.9	0.85	ug/kg	
208-96-8	Acenaphthylene	ND	4.9	0.74	ug/kg	
120-12-7	Anthracene	ND	4.9	1.1	ug/kg	
56-55-3	Benzo(a)anthracene	ND	4.9	2.2	ug/kg	
50-32-8	Benzo(a)pyrene	ND	4.9	1.9	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	4.9	2.2	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	4.9	1.3	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	4.9	1.5	ug/kg	
218-01-9	Chrysene	ND	4.9	1.3	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	4.9	1.4	ug/kg	
206-44-0	Fluoranthene	ND	4.9	1.4	ug/kg	
86-73-7	Fluorene	ND	4.9	0.96	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	4.9	1.2	ug/kg	
90-12-0	1-Methylnaphthalene	ND	9.8	1.1	ug/kg	
91-57-6	2-Methylnaphthalene	ND	9.8	0.91	ug/kg	
85-01-8	Phenanthrene	ND	4.9	1.0	ug/kg	
129-00-0	Pyrene	ND	4.9	1.5	ug/kg	

CAS No.	Surrogate Recoveries	Limits
367-12-4	2-Fluorophenol	37% 15-110%
4165-62-2	Phenol-d5	36% 15-110%
118-79-6	2,4,6-Tribromophenol	34% 15-110%
4165-60-0	Nitrobenzene-d5	75% 30-130%
321-60-8	2-Fluorobiphenyl	70% 30-130%
1718-51-0	Terphenyl-d14	96% 30-130%

Blank Spike Summary

Page 1 of 1

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP39255-BS	I91094.D	1	08/08/14	MR	08/04/14	OP39255	MSI3392

The QC reported here applies to the following samples:

Method: SW846 8270D BY SIM

MC32497-1, MC32497-2

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	2490	2040	82	40-140
208-96-8	Acenaphthylene	2490	1850	74	40-140
120-12-7	Anthracene	2490	2160	87	40-140
56-55-3	Benzo(a)anthracene	2490	2750	111	40-140
50-32-8	Benzo(a)pyrene	2490	2370	95	40-140
205-99-2	Benzo(b)fluoranthene	2490	2980	120	40-140
191-24-2	Benzo(g,h,i)perylene	2490	2480	100	40-140
207-08-9	Benzo(k)fluoranthene	2490	2270	91	40-140
218-01-9	Chrysene	2490	2290	92	40-140
53-70-3	Dibenzo(a,h)anthracene	2490	2650	107	40-140
206-44-0	Fluoranthene	2490	2510	101	40-140
86-73-7	Fluorene	2490	2050	82	40-140
193-39-5	Indeno(1,2,3-cd)pyrene	2490	2580	104	40-140
90-12-0	1-Methylnaphthalene	2490	1960	79	40-140
91-57-6	2-Methylnaphthalene	2490	2000	80	40-140
85-01-8	Phenanthrene	2490	2150	86	40-140
129-00-0	Pyrene	2490	2490	100	40-140

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	37%	15-110%
4165-62-2	Phenol-d5	36%	15-110%
118-79-6	2,4,6-Tribromophenol	42%	15-110%
4165-60-0	Nitrobenzene-d5	76%	30-130%
321-60-8	2-Fluorobiphenyl	73%	30-130%
1718-51-0	Terphenyl-d14	93%	30-130%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Page 1 of 2

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP39211-BS	X04131.D	1	08/04/14	WK	08/01/14	OP39211	MSX136
OP39211-BSD	X04132.D	1	08/04/14	WK	08/01/14	OP39211	MSX136

The QC reported here applies to the following samples:

Method: SW846 8270D

MC32497-1, MC32497-2

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic acid	2460	1230	50	840	35	38* a	30-130/30
95-57-8	2-Chlorophenol	2460	1790	73	1750	73	2	30-130/30
59-50-7	4-Chloro-3-methyl phenol	2460	2060	84	2140	89	4	30-130/30
120-83-2	2,4-Dichlorophenol	2460	1940	79	1950	81	1	30-130/30
105-67-9	2,4-Dimethylphenol	2460	1940	79	1960	82	1	30-130/30
51-28-5	2,4-Dinitrophenol	2460	1360	55	1370	57	1	30-130/30
534-52-1	4,6-Dinitro-o-cresol	2460	1980	81	2160	90	9	30-130/30
95-48-7	2-Methylphenol	2460	1680	68	1730	72	3	30-130/30
	3&4-Methylphenol	4910	3690	75	3870	81	5	30-130/30
88-75-5	2-Nitrophenol	2460	1850	75	1840	77	1	30-130/30
100-02-7	4-Nitrophenol	2460	1930	79	1520	63	24	30-130/30
87-86-5	Pentachlorophenol	2460	1700	69	1880	78	10	30-130/30
108-95-2	Phenol	2460	1820	74	1850	77	2	30-130/30
95-95-4	2,4,5-Trichlorophenol	2460	2020	82	2160	90	7	30-130/30
88-06-2	2,4,6-Trichlorophenol	2460	1930	79	2030	85	5	30-130/30
62-53-3	Aniline	2460	1330	54	1320	55	1	40-140/30
101-55-3	4-Bromophenyl phenyl ether	2460	2490	101	2600	108	4	40-140/30
85-68-7	Butyl benzyl phthalate	2460	2330	95	2480	103	6	40-140/30
100-51-6	Benzyl Alcohol	2460	833	34* a	919	38* a	10	40-140/30
91-58-7	2-Chloronaphthalene	2460	2080	85	2130	89	2	40-140/30
106-47-8	4-Chloroaniline	2460	1870	76	1930	81	3	40-140/30
111-91-1	bis(2-Chloroethoxy)methane	2460	1990	81	2010	84	1	40-140/30
111-44-4	bis(2-Chloroethyl)ether	2460	1920	78	1850	77	4	40-140/30
108-60-1	bis(2-Chloroisopropyl)ether	2460	1930	79	1830	76	5	40-140/30
7005-72-3	4-Chlorophenyl phenyl ether	2460	2270	92	2400	100	6	40-140/30
122-66-7	1,2-Diphenylhydrazine	2460	2410	98	2550	106	6	40-140/30
121-14-2	2,4-Dinitrotoluene	2460	2510	102	2660	111	6	40-140/30
606-20-2	2,6-Dinitrotoluene	2460	2490	101	2600	108	4	40-140/30
91-94-1	3,3'-Dichlorobenzidine	2460	2380	97	2790	116	16	40-140/30
132-64-9	Dibenzofuran	2460	1960	80	2060	86	5	40-140/30
84-74-2	Di-n-butyl phthalate	2460	2220	90	2390	100	7	40-140/30
117-84-0	Di-n-octyl phthalate	2460	2650	108	2870	120	8	40-140/30
84-66-2	Diethyl phthalate	2460	2340	95	2510	105	7	40-140/30
131-11-3	Dimethyl phthalate	2460	2360	96	2500	104	6	40-140/30
117-81-7	bis(2-Ethylhexyl)phthalate	2460	2500	102	2700	113	8	40-140/30
118-74-1	Hexachlorobenzene	2460	2520	103	2720	113	8	40-140/30

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

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Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP39211-BS	X04131.D	1	08/04/14	WK	08/01/14	OP39211	MSX136
OP39211-BSD	X04132.D	1	08/04/14	WK	08/01/14	OP39211	MSX136

The QC reported here applies to the following samples:

Method: SW846 8270D

MC32497-1, MC32497-2

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
77-47-4	Hexachlorocyclopentadiene	2460	1370	56	1340	56	2	40-140/30
67-72-1	Hexachloroethane	2460	1830	75	1680	70	9	40-140/30
78-59-1	Isophorone	2460	1930	79	1980	83	3	40-140/30
88-74-4	2-Nitroaniline	2460	2390	97	2500	104	4	40-140/30
99-09-2	3-Nitroaniline	2460	2240	91	2410	101	7	40-140/30
100-01-6	4-Nitroaniline	2460	2100	86	2340	98	11	40-140/30
98-95-3	Nitrobenzene	2460	2020	82	2000	83	1	40-140/30
62-75-9	n-Nitrosodimethylamine	2460	1490	61	1490	62	0	40-140/30
621-64-7	N-Nitroso-di-n-propylamine	2460	2130	87	2100	88	1	40-140/30
86-30-6	N-Nitrosodiphenylamine	2460	2070	84	2180	91	5	40-140/30
110-86-1	Pyridine	2460	1190	48	1170	49	2	40-140/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
367-12-4	2-Fluorophenol	63%	62%	30-130%
4165-62-2	Phenol-d5	71%	74%	30-130%
118-79-6	2,4,6-Tribromophenol	84%	94%	30-130%
4165-60-0	Nitrobenzene-d5	75%	76%	30-130%
321-60-8	2-Fluorobiphenyl	72%	76%	30-130%
1718-51-0	Terphenyl-d14	84%	90%	30-130%

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

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 2

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP39211-MS	X04133.D	1	08/04/14	WK	08/01/14	OP39211	MSX136
OP39211-MSD	X04134.D	1	08/04/14	WK	08/01/14	OP39211	MSX136
MC32521-1	X04135.D	1	08/04/14	WK	08/01/14	OP39211	MSX136

The QC reported here applies to the following samples:

Method: SW846 8270D

MC32497-1, MC32497-2

CAS No.	Compound	MC32521-1 ug/kg	Spike Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic acid	ND		2820	217	8* a	2820	380	13* a	55* b	30-130/30
95-57-8	2-Chlorophenol	ND		2820	2270	80	2820	2340	83	3	30-130/30
59-50-7	4-Chloro-3-methyl phenol	ND		2820	2430	86	2820	2620	93	8	30-130/30
120-83-2	2,4-Dichlorophenol	ND		2820	2330	83	2820	2480	88	6	30-130/30
105-67-9	2,4-Dimethylphenol	ND		2820	2420	86	2820	2460	87	2	30-130/30
51-28-5	2,4-Dinitrophenol	ND		2820	1040	37	2820	1340	47	25	30-130/30
534-52-1	4,6-Dinitro-o-cresol	ND		2820	2060	73	2820	2370	84	14	30-130/30
95-48-7	2-Methylphenol	ND		2820	2160	77	2820	2210	78	2	30-130/30
	3&4-Methylphenol	ND		5640	4760	84	5650	4800	85	1	30-130/30
88-75-5	2-Nitrophenol	ND		2820	2280	81	2820	2360	84	3	30-130/30
100-02-7	4-Nitrophenol	ND		2820	1580	56	2820	1900	67	18	30-130/30
87-86-5	Pentachlorophenol	ND		2820	1970	70	2820	2170	77	10	30-130/30
108-95-2	Phenol	ND		2820	2310	82	2820	2390	85	3	30-130/30
95-95-4	2,4,5-Trichlorophenol	ND		2820	2390	85	2820	2670	95	11	30-130/30
88-06-2	2,4,6-Trichlorophenol	ND		2820	2390	85	2820	2510	89	5	30-130/30
62-53-3	Aniline	ND		2820	1650	58	2820	1700	60	3	40-140/30
101-55-3	4-Bromophenyl phenyl ether	ND		2820	2970	105	2820	3100	110	4	40-140/30
85-68-7	Butyl benzyl phthalate	ND		2820	2800	99	2820	2950	104	5	40-140/30
100-51-6	Benzyl Alcohol	ND		2820	1140	40	2820	1150	41	1	40-140/30
91-58-7	2-Chloronaphthalene	ND		2820	2600	92	2820	2610	92	0	40-140/30
106-47-8	4-Chloroaniline	ND		2820	2220	79	2820	2340	83	5	40-140/30
111-91-1	bis(2-Chloroethoxy)methane	ND		2820	2430	86	2820	2510	89	3	40-140/30
111-44-4	bis(2-Chloroethyl)ether	ND		2820	2460	87	2820	2500	89	2	40-140/30
108-60-1	bis(2-Chloroisopropyl)ether	ND		2820	2410	85	2820	2420	86	0	40-140/30
7005-72-3	4-Chlorophenyl phenyl ether	ND		2820	2770	98	2820	2930	104	6	40-140/30
122-66-7	1,2-Diphenylhydrazine	ND		2820	2870	102	2820	3010	107	5	40-140/30
121-14-2	2,4-Dinitrotoluene	ND		2820	2880	102	2820	3150	112	9	40-140/30
606-20-2	2,6-Dinitrotoluene	ND		2820	2890	102	2820	3060	108	6	40-140/30
91-94-1	3,3'-Dichlorobenzidine	ND		2820	2890	102	2820	3190	113	10	40-140/30
132-64-9	Dibenzofuran	ND		2820	2410	85	2820	2480	88	3	40-140/30
84-74-2	Di-n-butyl phthalate	ND		2820	2520	89	2820	2780	98	10	40-140/30
117-84-0	Di-n-octyl phthalate	ND		2820	2980	106	2820	3360	119	12	40-140/30
84-66-2	Diethyl phthalate	ND		2820	2730	97	2820	2970	105	8	40-140/30
131-11-3	Dimethyl phthalate	ND		2820	2800	99	2820	2940	104	5	40-140/30
117-81-7	bis(2-Ethylhexyl)phthalate	ND		2820	2990	106	2820	3190	113	6	40-140/30
118-74-1	Hexachlorobenzene	ND		2820	3040	108	2820	3190	113	5	40-140/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

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Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP39211-MS	X04133.D	1	08/04/14	WK	08/01/14	OP39211	MSX136
OP39211-MSD	X04134.D	1	08/04/14	WK	08/01/14	OP39211	MSX136
MC32521-1	X04135.D	1	08/04/14	WK	08/01/14	OP39211	MSX136

The QC reported here applies to the following samples:

Method: SW846 8270D

MC32497-1, MC32497-2

CAS No.	Compound	MC32521-1 ug/kg	Spike Q ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
77-47-4	Hexachlorocyclopentadiene	ND	2820	1680	60	2820	1630	58	3	40-140/30
67-72-1	Hexachloroethane	ND	2820	2320	82	2820	2350	83	1	40-140/30
78-59-1	Isophorone	ND	2820	2340	83	2820	2420	86	3	40-140/30
88-74-4	2-Nitroaniline	ND	2820	2800	99	2820	3040	108	8	40-140/30
99-09-2	3-Nitroaniline	ND	2820	2650	94	2820	2820	100	6	40-140/30
100-01-6	4-Nitroaniline	ND	2820	2480	88	2820	2740	97	10	40-140/30
98-95-3	Nitrobenzene	ND	2820	2540	90	2820	2600	92	2	40-140/30
62-75-9	n-Nitrosodimethylamine	ND	2820	1960	69	2820	1950	69	1	40-140/30
621-64-7	N-Nitroso-di-n-propylamine	ND	2820	2640	94	2820	2710	96	3	40-140/30
86-30-6	N-Nitrosodiphenylamine	ND	2820	2450	87	2820	2620	93	7	40-140/30
110-86-1	Pyridine	ND	2820	1570	56	2820	1570	56	0	40-140/30

CAS No.	Surrogate Recoveries	MS	MSD	MC32521-1	Limits
367-12-4	2-Fluorophenol	69%	70%	65%	30-130%
4165-62-2	Phenol-d5	76%	78%	72%	30-130%
118-79-6	2,4,6-Tribromophenol	89%	95%	81%	30-130%
4165-60-0	Nitrobenzene-d5	81%	81%	74%	30-130%
321-60-8	2-Fluorobiphenyl	80%	79%	70%	30-130%
1718-51-0	Terphenyl-d14	89%	91%	82%	30-130%

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

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP39255-MS	I91101.D	5	08/08/14	MR	08/04/14	OP39255	MSI3392
OP39255-MSD	I91102.D	5	08/08/14	MR	08/04/14	OP39255	MSI3392
MC32549-1	I91103.D	5	08/08/14	MR	08/04/14	OP39255	MSI3392

The QC reported here applies to the following samples:

Method: SW846 8270D BY SIM

MC32497-1, MC32497-2

CAS No.	Compound	MC32549-1 ug/kg	Spike Q	ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	73.9		3050	2920	93	3060	3040	97	4	40-140/30
208-96-8	Acenaphthylene	34.5		3050	2640	86	3060	2770	90	5	40-140/30
120-12-7	Anthracene	24.0	J	3050	2990	97	3060	3160	103	6	40-140/30
56-55-3	Benzo(a)anthracene	ND		3050	3440	113	3060	3640	119	6	40-140/30
50-32-8	Benzo(a)pyrene	ND		3050	2990	98	3060	3140	103	5	40-140/30
205-99-2	Benzo(b)fluoranthene	ND		3050	3830	126	3060	4000	131	4	40-140/30
191-24-2	Benzo(g,h,i)perylene	ND		3050	3200	105	3060	3340	109	4	40-140/30
207-08-9	Benzo(k)fluoranthene	ND		3050	3020	99	3060	3190	104	5	40-140/30
218-01-9	Chrysene	ND		3050	2940	97	3060	3150	103	7	40-140/30
53-70-3	Dibenzo(a,h)anthracene	ND		3050	3400	112	3060	3560	117	5	40-140/30
206-44-0	Fluoranthene	23.7	J	3050	3490	114	3060	3690	120	6	40-140/30
86-73-7	Fluorene	94.7		3050	2970	94	3060	3100	98	4	40-140/30
193-39-5	Indeno(1,2,3-cd)pyrene	ND		3050	3320	109	3060	3490	114	5	40-140/30
90-12-0	1-Methylnaphthalene	6650		3050	6800	5* a	3060	7340	23* a	8	40-140/30
91-57-6	2-Methylnaphthalene	12100		3050	10300	-59* a	3060	11200	-29* a	8	40-140/30
85-01-8	Phenanthrene	112		3050	3150	100	3060	3300	104	5	40-140/30
129-00-0	Pyrene	31.9		3050	3400	111	3060	3620	117	6	40-140/30

CAS No.	Surrogate Recoveries	MS	MSD	MC32549-1	Limits
367-12-4	2-Fluorophenol	31%	32%		15-110%
4165-62-2	Phenol-d5	37%	38%		15-110%
118-79-6	2,4,6-Tribromophenol	41%	43%		15-110%
4165-60-0	Nitrobenzene-d5	71%	80%	80%	30-130%
321-60-8	2-Fluorobiphenyl	81%	85%	86%	30-130%
1718-51-0	Terphenyl-d14	95%	101%	101%	30-130%

(a) Outside control limits due to high level in sample relative to spike amount.

* = Outside of Control Limits.

Semivolatile Internal Standard Area Summary

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Job Number: MC32497
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Check Std:	MSI3392-CC3386	Injection Date:	08/08/14
Lab File ID:	I91092.D	Injection Time:	08:08
Instrument ID:	GCMSI	Method:	SW846 8270D BY SIM

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	511280	4.17	1099682	5.23	564987	6.76	944981	8.16	621193	10.93	1588995	12.43
Upper Limit ^a	1022560	4.67	2199364	5.73	1129974	7.26	1889962	8.66	1242386	11.43	3177990	12.93
Lower Limit ^b	255640	3.67	549841	4.73	282494	6.26	472491	7.66	310597	10.43	794498	11.93

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP39255-MB	642747	4.17	1409110	5.22	712875	6.76	1152340	8.16	726483	10.93	1838594	12.43
OP39255-BS	640486	4.17	1382468	5.23	690720	6.76	1110255	8.16	713723	10.93	1743358	12.43
MC32497-1	637271	4.17	1407726	5.22	712496	6.76	1131219	8.16	689913	10.93	1726250	12.43
MC32497-2	553045	4.17	1213971	5.22	610689	6.76	974670	8.16	590785	10.93	1474503	12.42
ZZZZZZ	608545	4.17	1326787	5.23	671521	6.76	1081142	8.16	696628	10.93	1783504	12.43
OP39255-MS	508820	4.18	1098216	5.23	556813	6.76	901496	8.16	579829	10.93	1459164	12.43
OP39255-MSD	505056	4.18	1086017	5.23	555177	6.76	892975	8.16	572096	10.93	1457065	12.43
MC32549-1	506820	4.18	1089212	5.23	565469	6.76	901944	8.16	571243	10.93	1460953	12.42
OP39280-MB	597422	4.17	1300626	5.22	648785	6.76	1026827	8.16	672554	10.93	1704803	12.43
OP39280-BS	593393	4.17	1272944	5.23	621749	6.76	989964	8.16	654811	10.93	1655784	12.43
OP39280-MS	537251	4.17	1161892	5.23	570701	6.76	908648	8.16	587658	10.93	1504148	12.43
OP39280-MSD	603048	4.17	1307056	5.23	639628	6.76	1027093	8.16	662804	10.93	1687516	12.43
MC32300-23	581325	4.17	1265301	5.23	637052	6.76	1017012	8.16	648564	10.93	1678393	12.43
ZZZZZZ	605624	4.17	1319849	5.22	659451	6.76	1046431	8.16	661496	10.93	1715659	12.43
ZZZZZZ	561533	4.17	1207991	5.22	602540	6.76	968663	8.16	610833	10.93	1582934	12.42

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

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

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

7.5.1
7

Semivolatle Internal Standard Area Summary

Page 1 of 1

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Check Std: MSX136-CC106

Injection Date: 08/04/14

Lab File ID: X04129.D

Injection Time: 07:53

Instrument ID: GCMSX

Method: SW846 8270D

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	269102	3.38	1034275	4.42	567950	5.93	930188	7.20	810477	9.59	656948	11.14
Upper Limit ^a	538204	3.88	2068550	4.92	1135900	6.43	1860376	7.70	1620954	10.09	1313896	11.64
Lower Limit ^b	134551	2.88	517138	3.92	283975	5.43	465094	6.70	405239	9.09	328474	10.64

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP39211-MB	329202	3.38	1284213	4.42	697000	5.93	1034735	7.20	766975	9.59	560078	11.14
OP39211-BS	306224	3.38	1142232	4.42	632064	5.93	1004364	7.20	821561	9.59	653074	11.14
OP39211-BSD	286801	3.38	1067731	4.42	588614	5.93	930796	7.20	791546	9.59	632709	11.14
OP39211-MS	333747	3.38	1266255	4.42	673571	5.93	1045985	7.20	775406	9.59	618318	11.14
OP39211-MSD	306924	3.38	1163682	4.42	642556	5.93	1021511	7.20	811608	9.59	637169	11.14
MC32521-1	305760	3.38	1173204	4.41	646738	5.92	1009317	7.19	745436	9.59	553839	11.13
ZZZZZZ	293924	3.38	1104211	4.41	620527	5.93	952435	7.20	748352	9.59	590352	11.14
ZZZZZZ	291038	3.38	1091651	4.42	603738	5.93	909086	7.20	649808	9.59	514449	11.14
ZZZZZZ	275553	3.38	1023638	4.41	563019	5.93	863454	7.20	695729	9.59	564240	11.13
ZZZZZZ	288914	3.38	1064126	4.42	580151	5.93	833741	7.20	612759	9.61	483544	11.16
ZZZZZZ	308045	3.38	1119775	4.42	603497	5.93	895300	7.20	640264	9.59	511642	11.14
ZZZZZZ	331523	3.38	1225425	4.42	650792	5.93	952491	7.20	667966	9.59	570416	11.14
ZZZZZZ	288811	3.38	1043149	4.42	558433	5.93	845411	7.20	662283	9.59	547993	11.14
MC32497-1	281645	3.38	1055631	4.42	586165	5.93	908461	7.20	681316	9.59	525367	11.14
MC32497-2	304527	3.38	1139635	4.42	611412	5.93	920986	7.20	666799	9.59	529101	11.13
ZZZZZZ	292153	3.38	1081748	4.41	600734	5.93	928351	7.20	686018	9.59	522901	11.13
ZZZZZZ	277392	3.38	1013364	4.42	560833	5.93	869099	7.20	674421	9.59	533920	11.14
ZZZZZZ	283827	3.38	1045649	4.41	562693	5.92	839179	7.20	654623	9.59	563418	11.14
ZZZZZZ	334405	3.38	1213208	4.41	635275	5.93	911034	7.20	635882	9.59	529539	11.15
ZZZZZZ	261811	3.38	976136	4.42	550000	5.93	851585	7.20	671423	9.59	566863	11.14
ZZZZZZ	291432	3.38	1048347	4.41	558869	5.93	818933	7.20	646682	9.59	551021	11.14
OP39205-MB	294698	3.38	1088705	4.42	586862	5.93	895526	7.20	697813	9.59	529536	11.14
OP39205-BS	296747	3.38	1096072	4.42	590440	5.93	903850	7.20	726981	9.59	600437	11.14
ZZZZZZ	302990	3.38	1112739	4.41	614020	5.92	932369	7.20	707451	9.59	532223	11.14
ZZZZZZ	315073	3.38	1174079	4.41	626324	5.92	920105	7.20	707333	9.59	539944	11.13

IS 1 = 1,4-Dichlorobenzene-d4

IS 2 = Naphthalene-d8

IS 3 = Acenaphthene-D10

IS 4 = Phenanthrene-d10

IS 5 = Chrysene-d12

IS 6 = Perylene-d12

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

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

Semivolatile Surrogate Recovery Summary

Page 1 of 1

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Method: SW846 8270D

Matrix: SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4	S5	S6
MC32497-1	X04143.D	74	78	95	81	77	96
MC32497-2	X04144.D	65	71	102	73	74	104
OP39211-BS	X04131.D	63	71	84	75	72	84
OP39211-BSD	X04132.D	62	74	94	76	76	90
OP39211-MB	X04130.D	70	80	81	77	72	87
OP39211-MS	X04133.D	69	76	89	81	80	89
OP39211-MSD	X04134.D	70	78	95	81	79	91

Surrogate Compounds	Recovery Limits
------------------------	--------------------

S1 = 2-Fluorophenol	30-130%
S2 = Phenol-d5	30-130%
S3 = 2,4,6-Tribromophenol	30-130%
S4 = Nitrobenzene-d5	30-130%
S5 = 2-Fluorobiphenyl	30-130%
S6 = Terphenyl-d14	30-130%

7.6.1

7

Semivolatile Surrogate Recovery Summary

Page 1 of 1

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Method: SW846 8270D BY SIM

Matrix: SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
MC32497-1	I91098.D	71	69	95
MC32497-2	I91099.D	79	77	103
OP39255-BS	I91094.D	76	73	93
OP39255-MB	I91093.D	75	70	96
OP39255-MS	I91101.D	71	81	95
OP39255-MSD	I91102.D	80	85	101

Surrogate Compounds	Recovery Limits
------------------------	--------------------

S1 = Nitrobenzene-d5	30-130%
S2 = 2-Fluorobiphenyl	30-130%
S3 = Terphenyl-d14	30-130%

7.6.2

7

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

Page 1 of 1

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP39247-MB	BK39938.D	1	08/05/14	NK	08/04/14	OP39247	GBK1298

The QC reported here applies to the following samples:

Method: SW846 8011

MC32497-4

CAS No.	Compound	Result	RL	MDL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.015	0.0061	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.015	0.0061	ug/l	

CAS No.	Surrogate Recoveries	Limits
460-00-4	Bromofluorobenzene (S)	115% 36-173%
460-00-4	Bromofluorobenzene (S)	107% 36-173%

8.1.1

8

Method Blank Summary

Page 1 of 1

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP39257-MB	BK39961.D	1	08/07/14	NK	08/05/14	OP39257	GBK1299

The QC reported here applies to the following samples:

Method: SW846 8011

MC32497-1, MC32497-2

CAS No.	Compound	Result	RL	MDL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.5	0.72	ug/kg	
106-93-4	1,2-Dibromoethane	ND	2.5	0.60	ug/kg	

CAS No.	Surrogate Recoveries	Limits
460-00-4	Bromofluorobenzene (S)	158% 61-167%
460-00-4	Bromofluorobenzene (S)	163% 61-167%

8.1.2

8

Method Blank Summary

Page 1 of 1

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GAB4535-MB	AB85228.D	1	08/07/14	AF	n/a	n/a	GAB4535

The QC reported here applies to the following samples:

Method: SW846 8015

MC32497-1, MC32497-2

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (VOA)	ND	5.0	0.74	mg/kg	

CAS No.	Surrogate Recoveries	Limits
	2,3,4-Trifluorotoluene	95% 61-116%

8.1.3

8

Blank Spike Summary

Page 1 of 1

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP39247-BS	BK39939.D	1	08/05/14	NK	08/04/14	OP39247	GBK1298

The QC reported here applies to the following samples:

Method: SW846 8011

MC32497-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
96-12-8	1,2-Dibromo-3-chloropropane	0.071	0.085	120	60-140
106-93-4	1,2-Dibromoethane	0.071	0.083	117	60-140

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	Bromofluorobenzene (S)	110%	36-173%
460-00-4	Bromofluorobenzene (S)	118%	36-173%

* = Outside of Control Limits.

Blank Spike Summary

Page 1 of 1

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP39257-BS	BK39962.D	1	08/07/14	NK	08/05/14	OP39257	GBK1299

The QC reported here applies to the following samples:

Method: SW846 8011

MC32497-1, MC32497-2

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
96-12-8	1,2-Dibromo-3-chloropropane	33.1	37.1	112	59-142
106-93-4	1,2-Dibromoethane	33.1	28.4	86	56-140

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	Bromofluorobenzene (S)	135%	61-167%
460-00-4	Bromofluorobenzene (S)	123%	61-167%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Page 1 of 1

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GAB4535-BSP	AB85229.D	1	08/07/14	AF	n/a	n/a	GAB4535
GAB4535-BSD	AB85230.D	1	08/07/14	AF	n/a	n/a	GAB4535

The QC reported here applies to the following samples:

Method: SW846 8015

MC32497-1, MC32497-2

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	BSD mg/kg	BSD %	RPD	Limits Rec/RPD
	TPH-GRO (VOA)	32.5	32.0	98	31.9	98	0	66-126/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
	2,3,4-Trifluorotoluene	98%	97%	61-116%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP39247-MS	BK39940.D	1	08/05/14	NK	08/04/14	OP39247	GBK1298
OP39247-MSD	BK39941.D	1	08/05/14	NK	08/04/14	OP39247	GBK1298
MC32300-19	BK39942.D	1	08/05/14	NK	08/04/14	OP39247	GBK1298

The QC reported here applies to the following samples:

Method: SW846 8011

MC32497-4

CAS No.	Compound	MC32300-19 Spike ug/l	Q	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
96-12-8	1,2-Dibromo-3-chloropropane	ND		0.071	0.087	123	0.071	0.084	4	64-141/29
106-93-4	1,2-Dibromoethane	ND		0.071	0.082	115	0.071	0.078	5	63-163/27

CAS No.	Surrogate Recoveries	MS	MSD	MC32300-19 Limits
460-00-4	Bromofluorobenzene (S)	89%	88%	92% 36-173%
460-00-4	Bromofluorobenzene (S)	100%	104%	106% 36-173%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP39257-MS	BK39963.D	1	08/07/14	NK	08/05/14	OP39257	GBK1299
OP39257-MSD	BK39964.D	1	08/07/14	NK	08/05/14	OP39257	GBK1299
MC32521-1	BK39965.D	1	08/07/14	NK	08/05/14	OP39257	GBK1299

The QC reported here applies to the following samples:

Method: SW846 8011

MC32497-1, MC32497-2

CAS No.	Compound	MC32521-1 ug/kg	Spike Q	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
96-12-8	1,2-Dibromo-3-chloropropane	ND	37.4	58.5	156	37.7	57.7	153	1	40-156/27
106-93-4	1,2-Dibromoethane	ND	37.4	46.9	125	37.7	48.5	129	3	48-141/27

CAS No.	Surrogate Recoveries	MS	MSD	MC32521-1	Limits
460-00-4	Bromofluorobenzene (S)	159%	162%	155%	61-167%
460-00-4	Bromofluorobenzene (S)	152%	158%	155%	61-167%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC32521-1MS	AB85233.D	1	08/07/14	AF	n/a	n/a	GAB4535
MC32521-1MSD	AB85234.D	1	08/07/14	AF	n/a	n/a	GAB4535
MC32521-1	AB85232.D	1	08/07/14	AF	n/a	n/a	GAB4535

The QC reported here applies to the following samples:

Method: SW846 8015

MC32497-1, MC32497-2

CAS No.	Compound	MC32521-1 mg/kg	Spike Q	MS mg/kg	MS %	Spike mg/kg	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (VOA)	ND	94.1	94.9	101	94.1	95.1	101	0	41-150/20

CAS No.	Surrogate Recoveries	MS	MSD	MC32521-1	Limits
	2,3,4-Trifluorotoluene	101%	100%	98%	61-116%

* = Outside of Control Limits.

Volatile Surrogate Recovery Summary

Page 1 of 1

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Method: SW846 8011

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 ^a	S1 ^b
MC32497-4	BK39943.D	87	101
OP39247-BS	BK39939.D	110	118
OP39247-MB	BK39938.D	115	107
OP39247-MS	BK39940.D	89	100
OP39247-MSD	BK39941.D	88	104

Surrogate Compounds	Recovery Limits
------------------------	--------------------

S1 = Bromofluorobenzene (S)	36-173%
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(a) Recovery from GC signal #2

(b) Recovery from GC signal #1

8.5.1
8

Volatile Surrogate Recovery Summary

Page 1 of 1

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, 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
MC32497-1	BK39970.D	99	145
MC32497-2	BK39972.D	106	147
OP39257-BS	BK39962.D	135	123
OP39257-MB	BK39961.D	158	163
OP39257-MS	BK39963.D	159	152
OP39257-MSD	BK39964.D	162	158

Surrogate Compounds	Recovery Limits
------------------------	--------------------

S1 = Bromofluorobenzene (S)	61-167%
-----------------------------	---------

(a) Recovery from GC signal #2

(b) Recovery from GC signal #1

8.5.2
8

Volatile Surrogate Recovery Summary

Page 1 of 1

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Method: SW846 8015

Matrix: SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 ^a
MC32497-1	AB85243.D	96
MC32497-2	AB85244.D	94
GAB4535-BSD	AB85230.D	97
GAB4535-BSP	AB85229.D	98
GAB4535-MB	AB85228.D	95
MC32521-1MS	AB85233.D	101
MC32521-1MSD	AB85234.D	100

Surrogate Compounds	Recovery Limits
S1 = 2,3,4-Trifluorotoluene	61-116%

(a) Recovery from GC signal #1

8.5.3
8

GC Surrogate Retention Time Summary

Page 1 of 1

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Check Std:	GBK1298-ICC1298	Injection Date:	08/05/14
Lab File ID:	BK39934.D	Injection Time:	09:17
Instrument ID:	GCBK	Method:	SW846 8011

S1 ^a	S1 ^b
RT	RT

Check Std	4.36	4.38
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Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 ^a RT	S1 ^b RT
OP39247-MB	BK39938.D	08/05/14	10:34	4.36	4.38
OP39247-BS	BK39939.D	08/05/14	10:54	4.36	4.38
OP39247-MS	BK39940.D	08/05/14	11:13	4.36	4.38
OP39247-MSD	BK39941.D	08/05/14	11:32	4.36	4.38
MC32300-19	BK39942.D	08/05/14	11:52	4.36	4.38
MC32497-4	BK39943.D	08/05/14	12:11	4.36	4.37
ZZZZZZ	BK39944.D	08/05/14	12:30	4.36	4.38
ZZZZZZ	BK39945.D	08/05/14	12:49	4.36	4.38
ZZZZZZ	BK39946.D	08/05/14	13:09	4.36	4.38
ZZZZZZ	BK39947.D	08/05/14	13:28	4.36	4.38

Surrogate Compounds

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #2

(b) Retention time from GC signal #1

8.6.1
8

GC Surrogate Retention Time Summary

Page 1 of 1

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Check Std:	GBK1299-CC1299	Injection Date:	08/07/14
Lab File ID:	BK39960.D	Injection Time:	08:31
Instrument ID:	GCBK	Method:	SW846 8011

S1 ^a	S1 ^b
RT	RT

Check Std	4.27	4.29
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Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 ^a RT	S1 ^b RT
OP39257-MB	BK39961.D	08/07/14	09:07	4.27	4.28
OP39257-BS	BK39962.D	08/07/14	09:26	4.27	4.28
OP39257-MS	BK39963.D	08/07/14	09:46	4.27	4.28
OP39257-MSD	BK39964.D	08/07/14	10:05	4.27	4.28
MC32521-1	BK39965.D	08/07/14	10:24	4.27	4.28
ZZZZZZ	BK39966.D	08/07/14	10:44	4.27	4.28
ZZZZZZ	BK39967.D	08/07/14	11:03	4.26	4.28
ZZZZZZ	BK39968.D	08/07/14	11:22	4.27	4.28
ZZZZZZ	BK39969.D	08/07/14	11:42	4.27	4.28
MC32497-1	BK39970.D	08/07/14	12:01	4.27	4.28

Surrogate
Compounds

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #2

(b) Retention time from GC signal #1

8.6.2
8

GC Surrogate Retention Time Summary

Page 1 of 1

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Check Std:	GBK1299-CC1299	Injection Date:	08/07/14
Lab File ID:	BK39971.D	Injection Time:	12:21
Instrument ID:	GCBK	Method:	SW846 8011

S1 ^a	S1 ^b
RT	RT

Check Std	4.27	4.28
-----------	------	------

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 ^a RT	S1 ^b RT
MC32497-2	BK39972.D	08/07/14	12:40	4.27	4.28
ZZZZZZ	BK39973.D	08/07/14	12:59	4.27	4.30
ZZZZZZ	BK39974.D	08/07/14	13:19	4.27	4.28
ZZZZZZ	BK39975.D	08/07/14	13:38	4.27	4.28
ZZZZZZ	BK39976.D	08/07/14	13:58	4.27	4.28
ZZZZZZ	BK39977.D	08/07/14	14:17	4.27	4.28
ZZZZZZ	BK39978.D	08/07/14	14:36	4.27	4.28
ZZZZZZ	BK39979.D	08/07/14	14:56	4.27	4.28
ZZZZZZ	BK39980.D	08/07/14	15:15	4.27	4.28
ZZZZZZ	BK39981.D	08/07/14	15:34	4.27	4.28

Surrogate
Compounds

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #2

(b) Retention time from GC signal #1

8.6.3

8

GC Surrogate Retention Time Summary

Page 1 of 1

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Check Std:	GAB4536-CC4488	Injection Date:	08/07/14
Lab File ID:	AB85227A.D	Injection Time:	07:43
Instrument ID:	GCAB	Method:	SW846 8015

S1 ^a

RT

Check Std	20.33
-----------	-------

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 ^a RT
GAB4535-MB	AB85228.D	08/07/14	08:21	20.33
GAB4536-MB	AB85228A.D	08/07/14	08:21	20.33
GAB4536-BSP	AB85229A.D	08/07/14	08:59	20.32
GAB4535-BSP	AB85229.D	08/07/14	08:59	20.32
GAB4535-BSD	AB85230.D	08/07/14	09:37	20.32
GAB4536-BSD	AB85230A.D	08/07/14	09:37	20.32
MC32468-3	AB85231.D	08/07/14	10:15	20.33
MC32521-1	AB85232.D	08/07/14	10:53	20.33
MC32521-1MS	AB85233.D	08/07/14	11:30	20.32
MC32521-1MSD	AB85234.D	08/07/14	12:08	20.32
MC32468-3MS	AB85235.D	08/07/14	12:45	20.32
MC32468-3MSD	AB85236.D	08/07/14	13:23	20.33

Surrogate
Compounds

S1 = 2,3,4-Trifluorotoluene

(a) Retention time from GC signal #1

8.6.4

8

GC Surrogate Retention Time Summary

Page 1 of 1

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Check Std:	GAB4535-CC4488	Injection Date:	08/07/14
Lab File ID:	AB85227.D	Injection Time:	07:43
Instrument ID:	GCAB	Method:	SW846 8015

S1 ^a
RT

Check Std	20.33
-----------	-------

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 ^a RT
GAB4535-MB	AB85228.D	08/07/14	08:21	20.33
GAB4536-MB	AB85228A.D	08/07/14	08:21	20.33
GAB4536-BSP	AB85229A.D	08/07/14	08:59	20.32
GAB4535-BSP	AB85229.D	08/07/14	08:59	20.32
GAB4535-BSD	AB85230.D	08/07/14	09:37	20.32
GAB4536-BSD	AB85230A.D	08/07/14	09:37	20.32
MC32468-3	AB85231.D	08/07/14	10:15	20.33
MC32521-1	AB85232.D	08/07/14	10:53	20.33
MC32521-1MS	AB85233.D	08/07/14	11:30	20.32
MC32521-1MSD	AB85234.D	08/07/14	12:08	20.32
MC32468-3MS	AB85235.D	08/07/14	12:45	20.32
MC32468-3MSD	AB85236.D	08/07/14	13:23	20.33

Surrogate Compounds

S1 = 2,3,4-Trifluorotoluene

(a) Retention time from GC signal #1

8.6.5
8

GC Surrogate Retention Time Summary

Page 1 of 1

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Check Std: GAB4536-CC4488

Injection Date: 08/07/14

Lab File ID: AB85237A.D

Injection Time: 14:01

Instrument ID: GCAB

Method: SW846 8015

S1^a

RT

Check Std

20.32

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 ^a RT
ZZZZZZ	AB85238.D	08/07/14	14:38	20.33
ZZZZZZ	AB85239.D	08/07/14	15:16	20.33
ZZZZZZ	AB85240.D	08/07/14	15:54	20.33
ZZZZZZ	AB85241.D	08/07/14	16:31	20.32
ZZZZZZ	AB85242.D	08/07/14	17:08	20.33
MC32497-1	AB85243.D	08/07/14	17:45	20.33
MC32497-2	AB85244.D	08/07/14	18:22	20.33
ZZZZZZ	AB85245.D	08/07/14	19:00	20.32
ZZZZZZ	AB85246.D	08/07/14	19:38	20.33
ZZZZZZ	AB85247.D	08/07/14	20:16	20.33

Surrogate
Compounds

S1 = 2,3,4-Trifluorotoluene

(a) Retention time from GC signal #1

8.6.6

8

GC Surrogate Retention Time Summary

Page 1 of 1

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Check Std:	GAB4535-CC4488	Injection Date:	08/07/14
Lab File ID:	AB85237.D	Injection Time:	14:01
Instrument ID:	GCAB	Method:	SW846 8015

S1 ^a

RT

Check Std	20.32
-----------	-------

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 ^a RT
ZZZZZZ	AB85238.D	08/07/14	14:38	20.33
ZZZZZZ	AB85239.D	08/07/14	15:16	20.33
ZZZZZZ	AB85240.D	08/07/14	15:54	20.33
ZZZZZZ	AB85241.D	08/07/14	16:31	20.32
ZZZZZZ	AB85242.D	08/07/14	17:08	20.33
MC32497-1	AB85243.D	08/07/14	17:45	20.33
MC32497-2	AB85244.D	08/07/14	18:22	20.33
ZZZZZZ	AB85245.D	08/07/14	19:00	20.32
ZZZZZZ	AB85246.D	08/07/14	19:38	20.33
ZZZZZZ	AB85247.D	08/07/14	20:16	20.33

Surrogate Compounds

S1 = 2,3,4-Trifluorotoluene

(a) Retention time from GC signal #1

8.6.7
8

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Percent Solids Raw Data Summary

Percent Solids Raw Data Summary

Page 1 of 1

Job Number: MC32497

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample: MC32497-1 Analyzed: 04-AUG-14 by BF Method: SM21 2540 B MOD.
ClientID: VMP15-29-073014(28-30')

Wet Weight (Total)	36.286	g
Tare Weight	24.654	g
Dry Weight (Total)	35.698	g
Solids, Percent	94.9	%

Sample: MC32497-2 Analyzed: 04-AUG-14 by BF Method: SM21 2540 B MOD.
ClientID: VMP15-29-073014(28-30')DUP

Wet Weight (Total)	37.2	g
Tare Weight	26.651	g
Dry Weight (Total)	36.735	g
Solids, Percent	95.6	%

9.1
9



08/18/14

Technical Report for

Shell Oil

URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL
21562973.18000

Accutest Job Number: MC32521

Sampling Date: 07/31/14

Report to:

URS Corporation

Melissa.mansker@urs.com

ATTN: Melissa Mansker

Total number of pages in report: **116**



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

Reza Fand
Lab Director

Client Service contact: Matthew Morrell 508-481-6200

Certifications: MA (M-MA136, SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579)
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DoD ELAP (L-A-B L2235)

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Test results relate only to samples analyzed.

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Sample Summary

Shell Oil

Job No: MC32521

URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL
Project No: 21562973.18000

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
MC32521-1	07/31/14	11:30	08/01/14	SO	Soil	VMP15-25.5-073114(24-28')
MC32521-1D	07/31/14	11:30	08/01/14	SO	Soil Dup/MSD	VMP15-25.5-073114(24-28')
MC32521-1S	07/31/14	11:30	08/01/14	SO	Soil Matrix Spike	VMP15-25.5-073114(24-28')
MC32521-2	07/31/14	12:30	08/01/14	AQ	Equipment Blank	EQB-073114 (24-28')
MC32521-3	07/31/14	00:00	08/01/14	AQ	Trip Blank Water	TB-073114-HCL
MC32521-4	07/31/14	00:00	08/01/14	AQ	Trip Blank Water	TB-073114-ST

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



SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Shell Oil

Job No MC32521

Site: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Ave

Report Date 8/15/2014 11:57:05 AM

2 Sample(s) and 2 Trip Blank(s) were collected on 07/31/2014 and were received at Accutest on 08/01/2014 properly preserved, at 2.2 Deg. C and intact. These Samples received an Accutest job number of MC32521. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Sample Summary Section of this report. 1-Chlorohexane, Benzenethiol, Dibenz(a,h)acridine, Indene, and Quinoline were searched in the library search and reported only if detections were found.

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

Volatiles by GCMS By Method SW846 8260C

Matrix AQ

Batch ID: MSU962

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC32529-5MS, MC32529-5MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- MSU962-BS Recovery(s) for 1,4-Dioxane, Dichlorodifluoromethane are outside control limits. Blank Spike meets program technical requirements.
- MSU962-BSD Recovery(s) for 1,4-Dioxane, Dichlorodifluoromethane, trans-1,3-Dichloropropene are outside control limits. Blank Spike meets program technical requirements.
- MC32529-5MS Recovery(s) for 1,1,1-Trichloroethane is outside control limits. Outside control limits due to high level in sample relative to spike amount.
- MC32529-5MSD Recovery(s) for 2-Chloroethyl vinyl ether, Acetone, Dichlorodifluoromethane are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- RPD(s) for MSD for 1,4-Dioxane are outside control limits for sample MC32529-5MSD. High RPD due to possible matrix interference and/or sample non-homogeneity.
- RPD of MSU962-BSD for 2-Chloroethyl vinyl ether: Outside control limits. Individual spike recoveries within acceptance limits.
- RPD of MSU962-BSD for trans-1,3-Dichloropropene: Outside control limits. Blank Spike meets program technical requirements.
- MC32529-5MS Recovery(s) for 2-Butanone (MEK), 2-Chloroethyl vinyl ether, 2-Hexanone, Acetone, Dichlorodifluoromethane are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Initial calibration verification MSU957-ICV957 for 1,4-dioxane 30% Difference (response bias high). Associated samples are non-detect for this compound.

Matrix AQ

Batch ID: MSU964

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC32593-2AMS, MC32593-2AMSD were used as the QC samples indicated.
- MSU964-BS Recovery(s) for 1,4-Dioxane, Chloroethane are outside control limits. Associated samples are non-detect for this compound.
- MSU964-BS Recovery(s) for Acrolein are outside control limits. Blank Spike meets program technical requirements.
- MC32593-2AMS/MSD Recovery(s) for 2-Chloroethyl vinyl ether, 2-Hexanone, Acetone, Acrolein, Chloroethane are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Continuing calibration check MSU964-CC957 for 1,4-dioxane 40% Difference (response bias high). Associated samples are non-detect for this compound.

Matrix SO

Batch ID: MSM2388

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC32521-IMS, MC32521-1MSD were used as the QC samples indicated.

Volatiles by GCMS By Method SW846 8260C

Matrix SO	Batch ID: MSM2388
------------------	--------------------------

- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for Acrolein are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for 1,1,1,2-Tetrachloroethane, 1,1,1-Trichloroethane, 1,1-Dichloroethene, 1,1-Dichloropropene, 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 1,4-Dioxane, 2,2-Dichloropropane, 2-Chloroethyl vinyl ether, Acrolein, Benzene, Carbon disulfide, Carbon tetrachloride, Chlorobenzene, Chloroform, cis-1,2-Dichloroethene, Ethylbenzene, Hexachlorobutadiene, Isopropylbenzene, m,p-Xylene, n-Butylbenzene, n-Propylbenzene, o-Chlorotoluene, o-Xylene, p-Chlorotoluene, p-Isopropyltoluene, sec-Butylbenzene, Styrene, tert-Butylbenzene, Tetrachloroethene, Toluene, trans-1,2-Dichloroethene, Trichloroethene, Vinyl Acetate, Xylene (total) are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 1,1,1,2-Tetrachloroethane, 1,1,1-Trichloroethane, 1,1-Dichloroethane, 1,1-Dichloroethene, 1,1-Dichloropropene, 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, 1,2,4-Trimethylbenzene, 1,2-Dichlorobenzene, 1,2-Dichloropropane, 1,3,5-Trimethylbenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2,2-Dichloropropane, 2-Butanone (MEK), 2-Chloroethyl vinyl ether, Acetone, Benzene, Bromobenzene, Carbon disulfide, Carbon tetrachloride, Chlorobenzene, Chloroform, cis-1,2-Dichloroethene, Ethylbenzene, Hexachlorobutadiene, Isopropylbenzene, m,p-Xylene, n-Butylbenzene, n-Propylbenzene, o-Chlorotoluene, o-Xylene, p-Chlorotoluene, p-Isopropyltoluene, sec-Butylbenzene, Styrene, tert-Butylbenzene, Tetrachloroethene, Toluene, trans-1,2-Dichloroethene, Trichloroethene, Vinyl Acetate, Xylene (total), 2-Hexanone, Acrolein are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- RPD(s) for MSD for 1,2,3-Trichloropropane, 2-Hexanone, 4-Methyl-2-pentanone (MIBK), Acrolein, Naphthalene are outside control limits for sample MC32521-1MSD. High RPD due to possible matrix interference and/or sample non-homogeneity.

Extractables by GCMS By Method SW846 8270D

Matrix AQ	Batch ID: OP39228
------------------	--------------------------

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC32300-13MS, MC32300-13MSD were used as the QC samples indicated.
- Sample(s) MC32521-2 have compound(s) reported with a "B" qualifier, indicating analyte is found in the associated method blank.
- Blank Spike Recovery(s) for Di-n-octyl phthalate, Hexachlorocyclopentadiene are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for 4-Nitrophenol, Aniline, n-Nitrosodimethylamine, Phenol, Pyridine are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 4-Nitrophenol, Phenol, Pyridine are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- RPD(s) for MSD for 2,4,5-Trichlorophenol, 2-Chloronaphthalene, bis(2-Chloroisopropyl)ether, Hexachlorocyclopentadiene are outside control limits for sample OP39228-MSD. High RPD due to possible matrix interference and/or sample heterogeneity.
- OP39228-MS/MSD for Hexachlorocyclopentadiene: Outside control limits. Blank Spike meets program technical requirements.

Matrix SO	Batch ID: OP39211
------------------	--------------------------

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC32521-1MS, MC32521-1MSD were used as the QC samples indicated.
- OP39211-BS/BSD Recovery(s) for Benzyl Alcohol are outside control limits. Blank Spike meets program technical requirements.
- OP39211-MS/MSD Recovery(s) for Benzoic acid are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- RPD(s) for MSD for Benzoic acid are outside control limits for sample OP39211-MSD. High RPD due to possible matrix interference and/or sample heterogeneity.
- RPD of OP39211-BSD for Benzoic acid: Outside control limits. Blank Spike meets program technical requirements.

Extractables by GCMS By Method SW846 8270D BY SIM

Matrix AQ	Batch ID: OP39229
------------------	--------------------------

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC32300-14MS, MC32300-14MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Matrix SO	Batch ID: OP39212
------------------	--------------------------

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC32521-1MS, MC32521-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Volatiles by GC By Method SW846 8011

Matrix AQ	Batch ID: OP39247
------------------	--------------------------

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC32300-19MS, MC32300-19MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Matrix SO	Batch ID: OP39257
------------------	--------------------------

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC32521-1MS, MC32521-1MSD were used as the QC samples indicated.
- Continuing calibration check standard GBK1299-CC1299, signal #1, file BK39971 for 1,2-Dibromo-3-chloropropane exceed 15% Dev. 1,2-Dibromo-3-chloropropane was reported from signal #2 in associated samples.

Volatiles by GC By Method SW846 8015

Matrix SO	Batch ID: GAB4535
------------------	--------------------------

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC32521-1MS, MC32521-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Calibration check standard GAB4536-CC4488 not associated with this job

Wet Chemistry By Method SM21 2540 B MOD.

Matrix SO	Batch ID: GN47846
------------------	--------------------------

- Sample(s) MC32521-1DUP were used as the QC samples for Solids, Percent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety. The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC32521).

Summary of Hits

Page 1 of 1

Job Number: MC32521

Account: Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Collected: 07/31/14

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
--------------------------	------------------	-----------------	----	-----	-------	--------

MC32521-1 VMP15-25.5-073114(24-28')

Benzene	0.0040	0.00055	0.00037	mg/kg	SW846 8260C
Carbon disulfide	0.00079 J	0.0055	0.00014	mg/kg	SW846 8260C
Benzo(g,h,i)perylene	0.0018 J	0.0056	0.0015	mg/kg	SW846 8270D BY SIM
Phenanthrene	0.0015 J	0.0056	0.0012	mg/kg	SW846 8270D BY SIM

MC32521-2 EQB-073114 (24-28')

Toluene	4.1	1.0	0.33	ug/l	SW846 8260C
Di-n-butyl phthalate	0.60 JB	5.2	0.18	ug/l	SW846 8270D
Diethyl phthalate	0.62 J	5.2	0.21	ug/l	SW846 8270D
bis(2-Ethylhexyl)phthalate	3.0	2.1	0.34	ug/l	SW846 8270D

MC32521-3 TB-073114-HCL

No hits reported in this sample.

MC32521-4 TB-073114-ST

No hits reported in this sample.

Sample Results

Report of Analysis

Report of Analysis

Page 1 of 3

Client Sample ID:	VMP15-25.5-073114(24-28')	Date Sampled:	07/31/14
Lab Sample ID:	MC32521-1	Date Received:	08/01/14
Matrix:	SO - Soil	Percent Solids:	87.8
Method:	SW846 8260C		
Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M67515.D	1	08/12/14	KD	n/a	n/a	MSM2388
Run #2							

Run #	Initial Weight	Final Volume
Run #1	5.17 g	5.0 ml
Run #2		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	0.011	0.0031	mg/kg	
107-02-8	Acrolein	ND	0.028	0.0097	mg/kg	
107-13-1	Acrylonitrile	ND	0.028	0.0030	mg/kg	
71-43-2	Benzene	0.0040	0.00055	0.00037	mg/kg	
108-86-1	Bromobenzene	ND	0.0055	0.00028	mg/kg	
74-97-5	Bromochloromethane	ND	0.0055	0.00038	mg/kg	
75-27-4	Bromodichloromethane	ND	0.0022	0.00023	mg/kg	
75-25-2	Bromoform	ND	0.0022	0.00039	mg/kg	
74-83-9	Bromomethane	ND	0.0022	0.00066	mg/kg	
78-93-3	2-Butanone (MEK)	ND	0.011	0.0034	mg/kg	
104-51-8	n-Butylbenzene	ND	0.0055	0.00027	mg/kg	
135-98-8	sec-Butylbenzene	ND	0.0055	0.00082	mg/kg	
98-06-6	tert-Butylbenzene	ND	0.0055	0.00023	mg/kg	
75-15-0	Carbon disulfide	0.00079	0.0055	0.00014	mg/kg	J
56-23-5	Carbon tetrachloride	ND	0.0022	0.00024	mg/kg	
108-90-7	Chlorobenzene	ND	0.0022	0.00017	mg/kg	
75-00-3	Chloroethane	ND	0.0055	0.00083	mg/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	0.0055	0.0014	mg/kg	
67-66-3	Chloroform	ND	0.0022	0.00019	mg/kg	
74-87-3	Chloromethane	ND	0.0055	0.00062	mg/kg	
95-49-8	o-Chlorotoluene	ND	0.0055	0.00021	mg/kg	
106-43-4	p-Chlorotoluene	ND	0.0055	0.00029	mg/kg	
124-48-1	Dibromochloromethane	ND	0.0022	0.00036	mg/kg	
95-50-1	1,2-Dichlorobenzene	ND	0.0022	0.00023	mg/kg	
541-73-1	1,3-Dichlorobenzene	ND	0.0022	0.00033	mg/kg	
106-46-7	1,4-Dichlorobenzene	ND	0.0022	0.00038	mg/kg	
75-71-8	Dichlorodifluoromethane	ND	0.0022	0.00089	mg/kg	
75-34-3	1,1-Dichloroethane	ND	0.0022	0.00029	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.0022	0.00035	mg/kg	
75-35-4	1,1-Dichloroethene	ND	0.0022	0.00046	mg/kg	
156-59-2	cis-1,2-Dichloroethene	ND	0.0022	0.00050	mg/kg	
156-60-5	trans-1,2-Dichloroethene	ND	0.0022	0.00046	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

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Client Sample ID:	VMP15-25.5-073114(24-28')	Date Sampled:	07/31/14
Lab Sample ID:	MC32521-1	Date Received:	08/01/14
Matrix:	SO - Soil	Percent Solids:	87.8
Method:	SW846 8260C		
Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	0.0022	0.00046	mg/kg	
142-28-9	1,3-Dichloropropane	ND	0.0055	0.00036	mg/kg	
594-20-7	2,2-Dichloropropane	ND	0.0055	0.00062	mg/kg	
563-58-6	1,1-Dichloropropene	ND	0.0055	0.00029	mg/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	0.0022	0.00025	mg/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	0.0022	0.00029	mg/kg	
123-91-1	1,4-Dioxane	ND	0.028	0.022	mg/kg	
97-63-2	Ethyl methacrylate	ND	0.0055	0.00039	mg/kg	
100-41-4	Ethylbenzene	ND	0.0022	0.00076	mg/kg	
87-68-3	Hexachlorobutadiene	ND	0.0055	0.00063	mg/kg	
591-78-6	2-Hexanone	ND	0.011	0.00083	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0055	0.00018	mg/kg	
99-87-6	p-Isopropyltoluene	ND	0.0055	0.00019	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.0022	0.00020	mg/kg	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	0.0055	0.00059	mg/kg	
74-95-3	Methylene bromide	ND	0.0055	0.00050	mg/kg	
75-09-2	Methylene chloride	ND	0.0022	0.00059	mg/kg	
91-20-3	Naphthalene	ND	0.0055	0.00044	mg/kg	
103-65-1	n-Propylbenzene	ND	0.0055	0.00017	mg/kg	
100-42-5	Styrene	ND	0.0055	0.00019	mg/kg	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.0055	0.00044	mg/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.0022	0.00043	mg/kg	
127-18-4	Tetrachloroethene	ND	0.0022	0.00035	mg/kg	
108-88-3	Toluene	ND	0.0055	0.00023	mg/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	0.0055	0.00047	mg/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	0.0055	0.00056	mg/kg	
71-55-6	1,1,1-Trichloroethane	ND	0.0022	0.00024	mg/kg	
79-00-5	1,1,2-Trichloroethane	ND	0.0022	0.00063	mg/kg	
79-01-6	Trichloroethene	ND	0.0022	0.00027	mg/kg	
75-69-4	Trichlorofluoromethane	ND	0.0022	0.00044	mg/kg	
96-18-4	1,2,3-Trichloropropane	ND	0.0055	0.00032	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0055	0.0016	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0055	0.0017	mg/kg	
108-05-4	Vinyl Acetate	ND	0.0055	0.0017	mg/kg	
75-01-4	Vinyl chloride	ND	0.0022	0.0010	mg/kg	
	m,p-Xylene	ND	0.0022	0.00048	mg/kg	
95-47-6	o-Xylene	ND	0.0022	0.00031	mg/kg	
1330-20-7	Xylene (total)	ND	0.0022	0.00024	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

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Client Sample ID:	VMP15-25.5-073114(24-28')	Date Sampled:	07/31/14
Lab Sample ID:	MC32521-1	Date Received:	08/01/14
Matrix:	SO - Soil	Percent Solids:	87.8
Method:	SW846 8260C		
Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		70-130%
2037-26-5	Toluene-D8	89%		70-130%
460-00-4	4-Bromofluorobenzene	87%		70-130%

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

ND = Not detected MDL = Method Detection Limit
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Report of Analysis

Page 1 of 2

Client Sample ID:	VMP15-25.5-073114(24-28')	Date Sampled:	07/31/14
Lab Sample ID:	MC32521-1	Date Received:	08/01/14
Matrix:	SO - Soil	Percent Solids:	87.8
Method:	SW846 8270D SW846 3546		
Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X04135.D	1	08/04/14	WK	08/01/14	OP39211	MSX136
Run #2							

Run #	Initial Weight	Final Volume
Run #1	20.2 g	1.0 ml
Run #2		

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	0.56	0.070	mg/kg	
95-57-8	2-Chlorophenol	ND	0.28	0.013	mg/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	0.56	0.014	mg/kg	
120-83-2	2,4-Dichlorophenol	ND	0.56	0.016	mg/kg	
105-67-9	2,4-Dimethylphenol	ND	0.56	0.092	mg/kg	
51-28-5	2,4-Dinitrophenol	ND	1.1	0.14	mg/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	0.56	0.070	mg/kg	
95-48-7	2-Methylphenol	ND	0.56	0.022	mg/kg	
	3&4-Methylphenol	ND	0.56	0.027	mg/kg	
88-75-5	2-Nitrophenol	ND	0.56	0.015	mg/kg	
100-02-7	4-Nitrophenol	ND	1.1	0.11	mg/kg	
87-86-5	Pentachlorophenol	ND	0.56	0.040	mg/kg	
108-95-2	Phenol	ND	0.28	0.016	mg/kg	
95-95-4	2,4,5-Trichlorophenol	ND	0.56	0.014	mg/kg	
88-06-2	2,4,6-Trichlorophenol	ND	0.56	0.014	mg/kg	
62-53-3	Aniline	ND	0.56	0.028	mg/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	0.28	0.014	mg/kg	
85-68-7	Butyl benzyl phthalate	ND	0.28	0.011	mg/kg	
100-51-6	Benzyl Alcohol	ND	0.56	0.028	mg/kg	
91-58-7	2-Chloronaphthalene	ND	0.28	0.015	mg/kg	
106-47-8	4-Chloroaniline	ND	0.56	0.014	mg/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	0.28	0.013	mg/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	0.28	0.017	mg/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	0.28	0.020	mg/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	0.28	0.017	mg/kg	
122-66-7	1,2-Diphenylhydrazine	ND	0.28	0.013	mg/kg	
121-14-2	2,4-Dinitrotoluene	ND	0.56	0.038	mg/kg	
606-20-2	2,6-Dinitrotoluene	ND	0.56	0.014	mg/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	0.28	0.028	mg/kg	
132-64-9	Dibenzofuran	ND	0.11	0.016	mg/kg	
84-74-2	Di-n-butyl phthalate	ND	0.28	0.030	mg/kg	
117-84-0	Di-n-octyl phthalate	ND	0.28	0.0088	mg/kg	

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B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 2 of 2

Client Sample ID:	VMP15-25.5-073114(24-28')	Date Sampled:	07/31/14
Lab Sample ID:	MC32521-1	Date Received:	08/01/14
Matrix:	SO - Soil	Percent Solids:	87.8
Method:	SW846 8270D SW846 3546		
Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL		

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
84-66-2	Diethyl phthalate	ND	0.28	0.014	mg/kg	
131-11-3	Dimethyl phthalate	ND	0.28	0.016	mg/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	0.28	0.010	mg/kg	
118-74-1	Hexachlorobenzene	ND	0.28	0.018	mg/kg	
77-47-4	Hexachlorocyclopentadiene	ND	0.56	0.14	mg/kg	
67-72-1	Hexachloroethane	ND	0.28	0.014	mg/kg	
78-59-1	Isophorone	ND	0.28	0.013	mg/kg	
88-74-4	2-Nitroaniline	ND	0.56	0.014	mg/kg	
99-09-2	3-Nitroaniline	ND	0.56	0.031	mg/kg	
100-01-6	4-Nitroaniline	ND	0.56	0.014	mg/kg	
98-95-3	Nitrobenzene	ND	0.28	0.015	mg/kg	
62-75-9	n-Nitrosodimethylamine	ND	0.28	0.013	mg/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	0.28	0.016	mg/kg	
86-30-6	N-Nitrosodiphenylamine	ND	0.28	0.017	mg/kg	
110-86-1	Pyridine	ND	0.56	0.028	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	65%		30-130%
4165-62-2	Phenol-d5	72%		30-130%
118-79-6	2,4,6-Tribromophenol	81%		30-130%
4165-60-0	Nitrobenzene-d5	74%		30-130%
321-60-8	2-Fluorobiphenyl	70%		30-130%
1718-51-0	Terphenyl-d14	82%		30-130%

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

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 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	VMP15-25.5-073114(24-28')	Date Sampled:	07/31/14
Lab Sample ID:	MC32521-1	Date Received:	08/01/14
Matrix:	SO - Soil	Percent Solids:	87.8
Method:	SW846 8270D BY SIM SW846 3546		
Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I90992.D	1	08/04/14	MR	08/01/14	OP39212	MSI3396
Run #2							

Run #	Initial Weight	Final Volume
Run #1	20.2 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.0056	0.00097	mg/kg	
208-96-8	Acenaphthylene	ND	0.0056	0.00086	mg/kg	
120-12-7	Anthracene	ND	0.0056	0.0012	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.0056	0.0026	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.0056	0.0022	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.0056	0.0025	mg/kg	
191-24-2	Benzo(g,h,i)perylene	0.0018	0.0056	0.0015	mg/kg	J
207-08-9	Benzo(k)fluoranthene	ND	0.0056	0.0017	mg/kg	
218-01-9	Chrysene	ND	0.0056	0.0015	mg/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	0.0056	0.0016	mg/kg	
206-44-0	Fluoranthene	ND	0.0056	0.0017	mg/kg	
86-73-7	Fluorene	ND	0.0056	0.0011	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.0056	0.0014	mg/kg	
90-12-0	1-Methylnaphthalene	ND	0.011	0.0012	mg/kg	
91-57-6	2-Methylnaphthalene	ND	0.011	0.0010	mg/kg	
85-01-8	Phenanthrene	0.0015	0.0056	0.0012	mg/kg	J
129-00-0	Pyrene	ND	0.0056	0.0017	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	35%		15-110%
4165-62-2	Phenol-d5	33%		15-110%
118-79-6	2,4,6-Tribromophenol	38%		15-110%
4165-60-0	Nitrobenzene-d5	77%		30-130%
321-60-8	2-Fluorobiphenyl	66%		30-130%
1718-51-0	Terphenyl-d14	86%		30-130%

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 N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID:	VMP15-25.5-073114(24-28')	Date Sampled:	07/31/14
Lab Sample ID:	MC32521-1	Date Received:	08/01/14
Matrix:	SO - Soil	Percent Solids:	87.8
Method:	SW846 8011 SW846 3550B		
Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BK39965.D	1	08/07/14	NK	08/05/14	OP39257	GBK1299
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	0.0028	0.00082	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.0028	0.00068	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
460-00-4	Bromofluorobenzene (S)	155%		61-167%		
460-00-4	Bromofluorobenzene (S)	155%		61-167%		

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 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID:	VMP15-25.5-073114(24-28')	Date Sampled:	07/31/14
Lab Sample ID:	MC32521-1	Date Received:	08/01/14
Matrix:	SO - Soil	Percent Solids:	87.8
Method:	SW846 8015		
Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AB85232.D	1	08/07/14	AF	n/a	n/a	GAB4535
Run #2							

Run #	Initial Weight	Final Volume	Methanol Aliquot
Run #1	4.13 g	10.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (VOA)	ND	14	2.1	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	2,3,4-Trifluorotoluene	98%		61-116%

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

Page 1 of 3

Client Sample ID:	EQB-073114 (24-28')	Date Sampled:	07/31/14
Lab Sample ID:	MC32521-2	Date Received:	08/01/14
Matrix:	AQ - Equipment Blank	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U21700.D	1	08/11/14	GK	n/a	n/a	MSU962
Run #2							

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

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	2.5	ug/l	
107-02-8	Acrolein	ND	25	6.0	ug/l	
107-13-1	Acrylonitrile	ND	5.0	2.1	ug/l	
71-43-2	Benzene	ND	0.50	0.32	ug/l	
108-86-1	Bromobenzene	ND	5.0	0.35	ug/l	
74-97-5	Bromochloromethane	ND	5.0	0.57	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.34	ug/l	
75-25-2	Bromoform	ND	1.0	0.61	ug/l	
74-83-9	Bromomethane	ND	2.0	1.8	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.5	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	1.1	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	0.42	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	0.39	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.46	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.53	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.43	ug/l	
75-00-3	Chloroethane	ND	2.0	0.53	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	3.3	ug/l	
67-66-3	Chloroform	ND	1.0	0.41	ug/l	
74-87-3	Chloromethane	ND	2.0	1.1	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	0.38	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	0.45	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.38	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.56	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.36	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.71	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.36	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.50	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.61	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.84	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.51	ug/l	

ND = Not detected MDL = Method Detection Limit

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J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 2 of 3

Client Sample ID:	EQB-073114 (24-28')	Date Sampled:	07/31/14
Lab Sample ID:	MC32521-2	Date Received:	08/01/14
Matrix:	AQ - Equipment Blank	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2.0	0.50	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	0.89	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	0.70	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	0.47	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.42	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	11	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	0.50	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.38	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	1.7	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.6	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	0.35	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	0.37	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	0.99	ug/l	
74-95-3	Methylene bromide	ND	5.0	0.52	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.28	ug/l	
91-20-3	Naphthalene	ND	5.0	0.69	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	0.49	ug/l	
100-42-5	Styrene	ND	5.0	0.85	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.43	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.40	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.59	ug/l	
108-88-3	Toluene	4.1	1.0	0.33	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	0.68	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.46	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.45	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.47	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.55	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.81	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.32	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.38	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	0.71	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.58	ug/l	
	m,p-Xylene	ND	1.0	0.93	ug/l	
95-47-6	o-Xylene	ND	1.0	0.36	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.36	ug/l	

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

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

Report of Analysis

Page 3 of 3

Client Sample ID:	EQB-073114 (24-28')	Date Sampled:	07/31/14
Lab Sample ID:	MC32521-2	Date Received:	08/01/14
Matrix:	AQ - Equipment Blank	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	121%		70-130%
2037-26-5	Toluene-D8	116%		70-130%
460-00-4	4-Bromofluorobenzene	115%		70-130%

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

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Report of Analysis

Page 1 of 2

Client Sample ID:	EQB-073114 (24-28')	Date Sampled:	07/31/14
Lab Sample ID:	MC32521-2	Date Received:	08/01/14
Matrix:	AQ - Equipment Blank	Percent Solids:	n/a
Method:	SW846 8270D SW846 3510C		
Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F75169.D	1	08/06/14	WK	08/02/14	OP39228	MSF3308
Run #2							

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

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	10	2.6	ug/l	
95-57-8	2-Chlorophenol	ND	5.2	0.32	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	0.85	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	0.41	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	0.58	ug/l	
51-28-5	2,4-Dinitrophenol	ND	21	2.6	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	2.0	ug/l	
95-48-7	2-Methylphenol	ND	10	0.23	ug/l	
	3&4-Methylphenol	ND	10	0.48	ug/l	
88-75-5	2-Nitrophenol	ND	10	3.0	ug/l	
100-02-7	4-Nitrophenol	ND	21	0.55	ug/l	
87-86-5	Pentachlorophenol	ND	10	1.2	ug/l	
108-95-2	Phenol	ND	5.2	0.31	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	10	0.38	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	0.18	ug/l	
62-53-3	Aniline	ND	10	0.66	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.2	0.49	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.2	0.55	ug/l	
100-51-6	Benzyl Alcohol	ND	10	2.3	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.2	0.32	ug/l	
106-47-8	4-Chloroaniline	ND	10	0.57	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.2	0.30	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.2	0.36	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.2	0.34	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.2	0.26	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.2	0.25	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	0.47	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	10	0.31	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.2	0.28	ug/l	
132-64-9	Dibenzofuran	ND	2.1	0.27	ug/l	
84-74-2	Di-n-butyl phthalate	0.60	5.2	0.18	ug/l	JB
117-84-0	Di-n-octyl phthalate	ND	5.2	0.29	ug/l	

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Report of Analysis

Page 2 of 2

Client Sample ID:	EQB-073114 (24-28')	Date Sampled:	07/31/14
Lab Sample ID:	MC32521-2	Date Received:	08/01/14
Matrix:	AQ - Equipment Blank	Percent Solids:	n/a
Method:	SW846 8270D SW846 3510C		
Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL		

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
84-66-2	Diethyl phthalate	0.62	5.2	0.21	ug/l	J
131-11-3	Dimethyl phthalate	ND	5.2	0.35	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	3.0	2.1	0.34	ug/l	
118-74-1	Hexachlorobenzene	ND	5.2	0.30	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	1.3	ug/l	
67-72-1	Hexachloroethane	ND	5.2	0.31	ug/l	
78-59-1	Isophorone	ND	5.2	0.46	ug/l	
88-74-4	2-Nitroaniline	ND	10	0.41	ug/l	
99-09-2	3-Nitroaniline	ND	10	1.4	ug/l	
100-01-6	4-Nitroaniline	ND	10	2.2	ug/l	
98-95-3	Nitrobenzene	ND	5.2	0.40	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.2	1.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.2	0.42	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.2	0.20	ug/l	
110-86-1	Pyridine	ND	10	0.53	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	36%		15-110%
4165-62-2	Phenol-d5	22%		15-110%
118-79-6	2,4,6-Tribromophenol	73%		15-110%
4165-60-0	Nitrobenzene-d5	57%		30-130%
321-60-8	2-Fluorobiphenyl	67%		30-130%
1718-51-0	Terphenyl-d14	89%		30-130%

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

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Report of Analysis

Page 1 of 1

Client Sample ID:	EQB-073114 (24-28')	Date Sampled:	07/31/14
Lab Sample ID:	MC32521-2	Date Received:	08/01/14
Matrix:	AQ - Equipment Blank	Percent Solids:	n/a
Method:	SW846 8270D BY SIM SW846 3510C		
Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I91100.D	1	08/08/14	MR	08/02/14	OP39229	MSI3392
Run #2							

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

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.10	0.071	ug/l	
208-96-8	Acenaphthylene	ND	0.10	0.051	ug/l	
120-12-7	Anthracene	ND	0.10	0.095	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.052	0.020	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	0.030	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.052	0.033	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	0.028	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	0.040	ug/l	
218-01-9	Chrysene	ND	0.10	0.025	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	0.033	ug/l	
206-44-0	Fluoranthene	ND	0.10	0.042	ug/l	
86-73-7	Fluorene	ND	0.10	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	0.032	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.21	0.051	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.21	0.076	ug/l	
85-01-8	Phenanthrene	ND	0.052	0.013	ug/l	
129-00-0	Pyrene	ND	0.10	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	75%		30-130%
321-60-8	2-Fluorobiphenyl	68%		30-130%
1718-51-0	Terphenyl-d14	101%		30-130%

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Report of Analysis

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Client Sample ID:	EQB-073114 (24-28')	Date Sampled:	07/31/14
Lab Sample ID:	MC32521-2	Date Received:	08/01/14
Matrix:	AQ - Equipment Blank	Percent Solids:	n/a
Method:	SW846 8011 SW846 8011		
Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BK39944.D	1	08/05/14	NK	08/04/14	OP39247	GBK1298
Run #2							

	Initial Volume	Final Volume
Run #1	36.4 ml	2.0 ml
Run #2		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.014	0.0059	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.014	0.0059	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	94%		36-173%
460-00-4	Bromofluorobenzene (S)	105%		36-173%

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Report of Analysis

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Client Sample ID:	TB-073114-HCL	Date Sampled:	07/31/14
Lab Sample ID:	MC32521-3	Date Received:	08/01/14
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U21739.D	1	08/12/14	GK	n/a	n/a	MSU964
Run #2							

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

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	2.5	ug/l	
107-02-8	Acrolein	ND	25	6.0	ug/l	
107-13-1	Acrylonitrile	ND	5.0	2.1	ug/l	
71-43-2	Benzene	ND	0.50	0.32	ug/l	
108-86-1	Bromobenzene	ND	5.0	0.35	ug/l	
74-97-5	Bromochloromethane	ND	5.0	0.57	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.34	ug/l	
75-25-2	Bromoform	ND	1.0	0.61	ug/l	
74-83-9	Bromomethane	ND	2.0	1.8	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.5	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	1.1	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	0.42	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	0.39	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.46	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.53	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.43	ug/l	
75-00-3	Chloroethane	ND	2.0	0.53	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	3.3	ug/l	
67-66-3	Chloroform	ND	1.0	0.41	ug/l	
74-87-3	Chloromethane	ND	2.0	1.1	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	0.38	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	0.45	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.38	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.56	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.36	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.71	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.36	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.50	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.61	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.84	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.51	ug/l	

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Report of Analysis

Page 2 of 3

Client Sample ID:	TB-073114-HCL	Date Sampled:	07/31/14
Lab Sample ID:	MC32521-3	Date Received:	08/01/14
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2.0	0.50	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	0.89	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	0.70	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	0.47	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.42	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	11	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	0.50	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.38	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	1.7	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.6	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	0.35	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	0.37	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	0.99	ug/l	
74-95-3	Methylene bromide	ND	5.0	0.52	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.28	ug/l	
91-20-3	Naphthalene	ND	5.0	0.69	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	0.49	ug/l	
100-42-5	Styrene	ND	5.0	0.85	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.43	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.40	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.59	ug/l	
108-88-3	Toluene	ND	1.0	0.33	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	0.68	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.46	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.45	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.47	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.55	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.81	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.32	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.38	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	0.71	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.58	ug/l	
	m,p-Xylene	ND	1.0	0.93	ug/l	
95-47-6	o-Xylene	ND	1.0	0.36	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.36	ug/l	

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Report of Analysis

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Client Sample ID:	TB-073114-HCL	Date Sampled:	07/31/14
Lab Sample ID:	MC32521-3	Date Received:	08/01/14
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	121%		70-130%
2037-26-5	Toluene-D8	107%		70-130%
460-00-4	4-Bromofluorobenzene	112%		70-130%

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

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N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID:	TB-073114-ST	Date Sampled:	07/31/14
Lab Sample ID:	MC32521-4	Date Received:	08/01/14
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8011 SW846 8011		
Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BK39945.D	1	08/05/14	NK	08/04/14	OP39247	GBK1298
Run #2							

Run #	Initial Volume	Final Volume
Run #1	36.1 ml	2.0 ml
Run #2		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.015	0.0059	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.015	0.0059	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	99%		36-173%
460-00-4	Bromofluorobenzene (S)	113%		36-173%

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

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

Misc. Forms

5

Custody Documents and Other Forms

Includes the following where applicable:

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

LAB (LOCATION)
☐ KENCO
☐ CALSIENTY
☐ OTHER (Marlborough, MA 01752 (508-461-5700))
☐ LAB
 Lab Vendor #



Shell Oil Products Chain Of Custody Record

URS

Please Check Appropriate Box: ☐ ENV. SERVICES ☐ MOTIVA RETAIL ☐ MOTIVA SMOCH ☐ SHELL PIPELINE ☐ CONSULTANT ☐ URS ☐ OTHER		Print Bill To Contact Name: Bob Biltman PO # SAP #		INCIDENT # (ENV SERVICES) 9 7 2 1 6 4 0 DATE: 7/31/2014 PAGE: 1 of 1																																																																																											
BILLING COMPANY: URS CORPORATION ADDRESS: 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300; ST. LOUIS, MO 63110 PRODUCT CONTACT # (Name or PO# Report #): Elizabeth Kunkel, Bob Biltman TEL: 314-429-0100 FAX: 314-429-0462 E-MAIL: bob.biltman@urs.com, elizabeth.kunkel@urs.com		BILL ADDRESS: Street and City: 900 South Central Ave; ROXANA ZIP: 62572-1000 PHONE NO.: E-MAIL: CONTRACT PROJECT NO.: 21552973.18000		SAMPLE NUMBER (Print, Not Stamp) MC32521																																																																																											
IS BULK SAMPLE? (YES/NO) ☒ YES ☐ NO DELIVERABLES: ☒ STANDARD (10 DAY) ☐ 3 DAYS ☐ 7 DAYS ☐ 14 DAYS ☐ 24 HOURS ☐ RESULTS NEEDED ON WEEKEND SPECIAL INSTRUCTIONS OR NOTES: * Please include "J" values on Reports. * Please provide sample receipt upon login.		REQUESTED ANALYSIS <table border="1"> <thead> <tr> <th>Field Sample Identification</th> <th>SAMPLING DATE</th> <th>TIME</th> <th>MATRIX</th> <th>PRESERVATIVE</th> <th>NO. OF CONT.</th> <th>VOC 8260B SL+TICS</th> <th>VOC 9011 SL</th> <th>SVOC 8270C SL+TICS</th> <th>PAH 8270LL</th> <th>Percent Moisture</th> <th>TPH-GRO</th> <th>PID (ppm)</th> <th>FIELD NOTES:</th> </tr> </thead> <tbody> <tr> <td>VMP15-25.5-073114 (24-28)</td> <td>7/31/2014</td> <td>1130</td> <td>S</td> <td></td> <td>2 5 7</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>2.4</td> <td rowspan="5"> Container PID Readings or Laboratory Notes 19C, 1EI, 1A, 10H5 2.2% </td> </tr> <tr> <td>VMP15-25.5-073114 (24-28) MS</td> <td>7/31/2014</td> <td>1130</td> <td>S</td> <td></td> <td>2 5 7</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>2.4</td> </tr> <tr> <td>VMP15-25.5-073114 (24-28) MSD</td> <td>7/31/2014</td> <td>1130</td> <td>S</td> <td></td> <td>2 5 7</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>2.4</td> </tr> <tr> <td>EQB-073114 (24-28)</td> <td>7/31/2014</td> <td>1230</td> <td>W</td> <td>2</td> <td>2 2 6</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>TB-073114 HDL</td> <td></td> <td></td> <td>W</td> <td>2</td> <td></td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>TB-073114 ST</td> <td></td> <td></td> <td>W</td> <td></td> <td>2</td> <td></td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>				Field Sample Identification	SAMPLING DATE	TIME	MATRIX	PRESERVATIVE	NO. OF CONT.	VOC 8260B SL+TICS	VOC 9011 SL	SVOC 8270C SL+TICS	PAH 8270LL	Percent Moisture	TPH-GRO	PID (ppm)	FIELD NOTES:	VMP15-25.5-073114 (24-28)	7/31/2014	1130	S		2 5 7	X	X	X	X	X	X	2.4	Container PID Readings or Laboratory Notes 19C, 1EI, 1A, 10H5 2.2%	VMP15-25.5-073114 (24-28) MS	7/31/2014	1130	S		2 5 7	X	X	X	X	X	2.4	VMP15-25.5-073114 (24-28) MSD	7/31/2014	1130	S		2 5 7	X	X	X	X	X	2.4	EQB-073114 (24-28)	7/31/2014	1230	W	2	2 2 6	X	X	X	X			TB-073114 HDL			W	2		X						TB-073114 ST			W		2		X						
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Received by (Signature): 		Received by (Signature): 		Date: 7/31/14 Time: 1730 Date: 8/1/14 Time: 9:00																																																																																											

5.1
5



Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC32521

Client: URS

Immediate Client Services Action Required: No

Date / Time Received: 8/1/2014

Delivery Method:

Client Service Action Required at Login: No

Project: 900 SOUTH CENTRAL

No. Coolers:

1

Airbill #'s:

Cooler Security

Y or N

1. Custody Seals Present: ☒ ☐
2. Custody Seals Intact: ☒ ☐

3. COC Present: ☒ ☐
4. Smpl Dates/Time OK: ☒ ☐

Cooler Temperature

Y or N

1. Temp criteria achieved: ☒ ☐
2. Cooler temp verification: Infrared gun
3. Cooler media: Ice (bag)

Quality Control Preservation

Y or N

N/A

1. Trip Blank present / cooler: ☒ ☐ ☐
2. Trip Blank listed on COC: ☒ ☐ ☐
3. Samples preserved properly: ☒ ☐ ☐
4. VOCs headspace free: ☒ ☐ ☐

Sample Integrity - Documentation

Y or N

1. Sample labels present on bottles: ☒ ☐
2. Container labeling complete: ☒ ☐
3. Sample container label / COC agree: ☒ ☐

Sample Integrity - Condition

Y or N

1. Sample recvd within HT: ☒ ☐
2. All containers accounted for: ☒ ☐
3. Condition of sample: Intact

Sample Integrity - Instructions

Y or N N/A

1. Analysis requested is clear: ☒ ☐
2. Bottles received for unspecified tests: ☐ ☒
3. Sufficient volume recvd for analysis: ☒ ☐
4. Compositing instructions clear: ☐ ☐ ☒
5. Filtering instructions clear: ☐ ☐ ☒

Comments

Accutest Laboratories
V: 508.481.6200

495 Technology Center West, Bldg One
F: 508.481.7753

Marlborough, MA
www.accutest.com

MC32521: Chain of Custody
Page 2 of 2

Internal Sample Tracking Chronicle

Shell Oil

Job No: MC32521

URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL
 Project No: 21562973.18000

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
MC32521-1 Collected: 31-JUL-14 11:30 By: VMP15-25.5-073114(24-28')						
Received: 01-AUG-14 By:						
MC32521-1 SM21 2540 B MOD.		04-AUG-14	BF			%SOL
MC32521-1 SW846 8270D		04-AUG-14 10:01	WK	01-AUG-14 AZ		AB8270SL +
MC32521-1 SW846 8270D BY SIM		04-AUG-14 14:18	MR	01-AUG-14 AZ		B8270SIMSL
MC32521-1 SW846 8011		07-AUG-14 10:24	NK	05-AUG-14 NE		V8011SL
MC32521-1 SW846 8015		07-AUG-14 10:53	AF			V8015GRO
MC32521-1 SW846 8260C		12-AUG-14 13:07	KD			V8260SL +
MC32521-2 Collected: 31-JUL-14 12:30 By: EQB-073114 (24-28')						
Received: 01-AUG-14 By:						
MC32521-2 SW846 8011		05-AUG-14 12:30	NK	04-AUG-14 MT		V8011SL
MC32521-2 SW846 8270D		06-AUG-14 14:35	WK	02-AUG-14 FC		AB8270SL +
MC32521-2 SW846 8270D BY SIM		08-AUG-14 11:14	MR	02-AUG-14 SC		B8270SIMSL
MC32521-2 SW846 8260C		11-AUG-14 19:34	GK			V8260SL +
MC32521-3 Collected: 31-JUL-14 00:00 By: TB-073114-HCL						
Received: 01-AUG-14 By:						
MC32521-3 SW846 8260C		12-AUG-14 13:20	GK			V8260SL +
MC32521-4 Collected: 31-JUL-14 00:00 By: TB-073114-ST						
Received: 01-AUG-14 By:						
MC32521-4 SW846 8011		05-AUG-14 12:49	NK	04-AUG-14 MT		V8011SL

Accutest Internal Chain of Custody

Page 1 of 2

Job Number: MC32521
 Account: SHELLWIC Shell Oil
 Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL
 Received: 08/01/14

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
MC32521-1.2	Walk In Ref #5	Nicole Estey	08/01/14 16:21	Retrieve from Storage
MC32521-1.2	Nicole Estey	Walk In Ref #5	08/01/14 21:44	Return to Storage
MC32521-1.2	Walk In Ref #5	Mehdi Abdolrahim	08/04/14 10:05	Retrieve from Storage
MC32521-1.2	Mehdi Abdolrahim	Walk In Ref #5	08/04/14 11:37	Return to Storage
MC32521-1.2	Walk In Ref #5	Alireza Zeighami	08/05/14 07:52	Retrieve from Storage
MC32521-1.2	Alireza Zeighami	Walk In Ref #5	08/05/14 12:08	Return to Storage
MC32521-1.7	VOC Ref #10	Krysten Dufort	08/12/14 11:02	Retrieve from Storage
MC32521-1.7	Krysten Dufort	GCMSM	08/12/14 11:02	Load on Instrument
MC32521-1.7	GCMSM	Krysten Dufort	08/13/14 09:24	Unload from Instrument
MC32521-1.7	Krysten Dufort	VOC Ref #10	08/13/14 09:24	Return to Storage
MC32521-1.8	VOC Ref #10	Krysten Dufort	08/12/14 11:02	Retrieve from Storage
MC32521-1.8	Krysten Dufort	GCMSM	08/12/14 11:02	Load on Instrument
MC32521-1.8	GCMSM	Krysten Dufort	08/13/14 09:24	Unload from Instrument
MC32521-1.8	Krysten Dufort	VOC Ref #10	08/13/14 09:24	Return to Storage
MC32521-1.9	VOC Ref #10	Krysten Dufort	08/12/14 11:02	Retrieve from Storage
MC32521-1.9	Krysten Dufort	GCMSM	08/12/14 11:02	Load on Instrument
MC32521-1.9	GCMSM	Krysten Dufort	08/13/14 09:24	Unload from Instrument
MC32521-1.9	Krysten Dufort	VOC Ref #10	08/13/14 09:24	Return to Storage
MC32521-1.13	VOC Ref #10	Krysten Dufort	08/04/14 16:31	Retrieve from Storage
MC32521-1.13	Krysten Dufort	VOC Ref #10	08/05/14 10:11	Return to Storage
MC32521-1.20	VOC Ref #10	Anthony Franciosa	08/07/14 07:53	Retrieve from Storage
MC32521-1.20	Anthony Franciosa	GCAB	08/07/14 07:53	Load on Instrument
MC32521-1.20	GCAB	Anthony Franciosa	08/08/14 09:08	Unload from Instrument
MC32521-1.20	Anthony Franciosa	VOC Ref #10	08/08/14 09:08	Return to Storage
MC32521-2.1	Walk In Ref #22	Alireza Zeighami	08/02/14 09:50	Retrieve from Storage
MC32521-2.1	Alireza Zeighami		08/02/14 14:19	Depleted
MC32521-2.4	VOC Ref #1	Gary Krasinski	08/11/14 10:34	Retrieve from Storage
MC32521-2.4	Gary Krasinski	GCMSU	08/11/14 10:34	Load on Instrument
MC32521-2.4	GCMSU	Gary Krasinski	08/12/14 09:41	Unload from Instrument
MC32521-2.4	Gary Krasinski	VOC Ref #1	08/12/14 09:41	Return to Storage
MC32521-2.5	VOC Ref #1	Marc Tahtamoni	08/04/14 14:37	Retrieve from Storage
MC32521-2.5	Marc Tahtamoni		08/06/14 14:22	Depleted
MC32521-3.1	VOC Ref #1	Gary Krasinski	08/11/14 10:34	Retrieve from Storage
MC32521-3.1	Gary Krasinski	GCMSU	08/11/14 10:34	Load on Instrument
MC32521-3.1	GCMSU	Gary Krasinski	08/12/14 09:41	Unload from Instrument

Accutest Internal Chain of Custody

Page 2 of 2

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Received: 08/01/14

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
MC32521-3.1	Gary Krasinski	VOC Ref #1	08/12/14 09:41	Return to Storage
MC32521-3.2	VOC Ref #1	Gary Krasinski	08/12/14 11:36	Retrieve from Storage
MC32521-3.2	Gary Krasinski	GCMSU	08/12/14 11:36	Load on Instrument
MC32521-3.2	GCMSU	Gary Krasinski	08/13/14 08:47	Unload from Instrument
MC32521-3.2	Gary Krasinski	VOC Ref #1	08/13/14 08:47	Return to Storage
MC32521-4.2	VOC Ref #1	Marc Tahtamoni	08/04/14 14:37	Retrieve from Storage
MC32521-4.2	Marc Tahtamoni		08/06/14 14:22	Depleted

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GC/MS Volatiles

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QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Page 1 of 3

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSU962-MB	U21680.D	1	08/11/14	GK	n/a	n/a	MSU962

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32521-2

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	2.5	ug/l	
107-02-8	Acrolein	ND	25	6.0	ug/l	
107-13-1	Acrylonitrile	ND	5.0	2.1	ug/l	
71-43-2	Benzene	ND	0.50	0.32	ug/l	
108-86-1	Bromobenzene	ND	5.0	0.35	ug/l	
74-97-5	Bromochloromethane	ND	5.0	0.57	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.34	ug/l	
75-25-2	Bromoform	ND	1.0	0.61	ug/l	
74-83-9	Bromomethane	ND	2.0	1.8	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.5	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	1.1	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	0.42	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	0.39	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.46	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.53	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.43	ug/l	
75-00-3	Chloroethane	ND	2.0	0.53	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	3.3	ug/l	
67-66-3	Chloroform	ND	1.0	0.41	ug/l	
74-87-3	Chloromethane	ND	2.0	1.1	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	0.38	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	0.45	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.38	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.56	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.36	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.71	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.36	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.50	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.61	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.84	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	0.50	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	0.89	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	0.70	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	0.47	ug/l	

6.1.1

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Method Blank Summary

Page 2 of 3

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSU962-MB	U21680.D	1	08/11/14	GK	n/a	n/a	MSU962

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32521-2

CAS No.	Compound	Result	RL	MDL	Units	Q
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.42	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	11	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	0.50	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.38	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	1.7	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.6	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	0.35	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	0.37	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	0.99	ug/l	
74-95-3	Methylene bromide	ND	5.0	0.52	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.28	ug/l	
91-20-3	Naphthalene	ND	5.0	0.69	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	0.49	ug/l	
100-42-5	Styrene	ND	5.0	0.85	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.43	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.40	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.59	ug/l	
108-88-3	Toluene	ND	1.0	0.33	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	0.68	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.46	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.45	ug/l	
79-01-6	Trichloroethene	ND	0.40	0.40	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.55	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.81	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.32	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.38	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	0.71	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.58	ug/l	
	m,p-Xylene	ND	1.0	0.93	ug/l	
95-47-6	o-Xylene	ND	1.0	0.36	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.36	ug/l	

6.1.1

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Method Blank Summary

Page 3 of 3

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSU962-MB	U21680.D	1	08/11/14	GK	n/a	n/a	MSU962

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32521-2

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	119% 70-130%
2037-26-5	Toluene-D8	105% 70-130%
460-00-4	4-Bromofluorobenzene	111% 70-130%

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

6.1.1

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Method Blank Summary

Page 1 of 3

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSU964-MB	U21735.D	1	08/12/14	GK	n/a	n/a	MSU964

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32521-3

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	2.5	ug/l	
107-02-8	Acrolein	ND	25	6.0	ug/l	
107-13-1	Acrylonitrile	ND	5.0	2.1	ug/l	
71-43-2	Benzene	ND	0.50	0.32	ug/l	
108-86-1	Bromobenzene	ND	5.0	0.35	ug/l	
74-97-5	Bromochloromethane	ND	5.0	0.57	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.34	ug/l	
75-25-2	Bromoform	ND	1.0	0.61	ug/l	
74-83-9	Bromomethane	ND	2.0	1.8	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.5	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	1.1	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	0.42	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	0.39	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.46	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.53	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.43	ug/l	
75-00-3	Chloroethane	ND	2.0	0.53	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	3.3	ug/l	
67-66-3	Chloroform	ND	1.0	0.41	ug/l	
74-87-3	Chloromethane	ND	2.0	1.1	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	0.38	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	0.45	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.38	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.56	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.36	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.71	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.36	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.50	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.61	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.84	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	0.50	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	0.89	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	0.70	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	0.47	ug/l	

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Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSU964-MB	U21735.D	1	08/12/14	GK	n/a	n/a	MSU964

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32521-3

CAS No.	Compound	Result	RL	MDL	Units	Q
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.42	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.50	ug/l	
123-91-1	1,4-Dioxane	ND	25	11	ug/l	
97-63-2	Ethyl methacrylate	ND	5.0	0.50	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.38	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	1.7	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.6	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	0.35	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	0.37	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	0.99	ug/l	
74-95-3	Methylene bromide	ND	5.0	0.52	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.28	ug/l	
91-20-3	Naphthalene	ND	5.0	0.69	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	0.49	ug/l	
100-42-5	Styrene	ND	5.0	0.85	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.43	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.40	ug/l	
127-18-4	Tetrachloroethene	ND	0.50	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.33	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	0.68	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.46	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.45	ug/l	
79-01-6	Trichloroethene	ND	0.50	0.47	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.55	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.81	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.32	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.38	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	0.71	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.58	ug/l	
	m,p-Xylene	ND	1.0	0.93	ug/l	
95-47-6	o-Xylene	ND	1.0	0.36	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.36	ug/l	

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Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSU964-MB	U21735.D	1	08/12/14	GK	n/a	n/a	MSU964

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32521-3

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	113% 70-130%
2037-26-5	Toluene-D8	113% 70-130%
460-00-4	4-Bromofluorobenzene	113% 70-130%

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

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Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM2388-MB	M67512.D	1	08/12/14	KD	n/a	n/a	MSM2388

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32521-1

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	2.8	ug/kg	
107-02-8	Acrolein	ND	25	8.8	ug/kg	
107-13-1	Acrylonitrile	ND	25	2.7	ug/kg	
71-43-2	Benzene	ND	0.50	0.34	ug/kg	
108-86-1	Bromobenzene	ND	5.0	0.25	ug/kg	
74-97-5	Bromochloromethane	ND	5.0	0.35	ug/kg	
75-27-4	Bromodichloromethane	ND	2.0	0.21	ug/kg	
75-25-2	Bromoform	ND	2.0	0.35	ug/kg	
74-83-9	Bromomethane	ND	2.0	0.60	ug/kg	
78-93-3	2-Butanone (MEK)	ND	10	3.1	ug/kg	
104-51-8	n-Butylbenzene	ND	5.0	0.24	ug/kg	
135-98-8	sec-Butylbenzene	ND	5.0	0.75	ug/kg	
98-06-6	tert-Butylbenzene	ND	5.0	0.21	ug/kg	
75-15-0	Carbon disulfide	ND	5.0	0.13	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.0	0.22	ug/kg	
108-90-7	Chlorobenzene	ND	2.0	0.16	ug/kg	
75-00-3	Chloroethane	ND	5.0	0.76	ug/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	1.3	ug/kg	
67-66-3	Chloroform	ND	2.0	0.17	ug/kg	
74-87-3	Chloromethane	ND	5.0	0.56	ug/kg	
95-49-8	o-Chlorotoluene	ND	5.0	0.19	ug/kg	
106-43-4	p-Chlorotoluene	ND	5.0	0.27	ug/kg	
124-48-1	Dibromochloromethane	ND	2.0	0.32	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	2.0	0.21	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	2.0	0.30	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	2.0	0.35	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.81	ug/kg	
75-34-3	1,1-Dichloroethane	ND	2.0	0.27	ug/kg	
107-06-2	1,2-Dichloroethane	ND	2.0	0.32	ug/kg	
75-35-4	1,1-Dichloroethene	ND	2.0	0.41	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	2.0	0.45	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	2.0	0.42	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.0	0.42	ug/kg	
142-28-9	1,3-Dichloropropane	ND	5.0	0.33	ug/kg	
594-20-7	2,2-Dichloropropane	ND	5.0	0.56	ug/kg	
563-58-6	1,1-Dichloropropene	ND	5.0	0.26	ug/kg	

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Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM2388-MB	M67512.D	1	08/12/14	KD	n/a	n/a	MSM2388

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32521-1

CAS No.	Compound	Result	RL	MDL	Units	Q
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	0.23	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	0.26	ug/kg	
123-91-1	1,4-Dioxane	ND	25	20	ug/kg	
97-63-2	Ethyl methacrylate	ND	5.0	0.36	ug/kg	
100-41-4	Ethylbenzene	ND	2.0	0.69	ug/kg	
87-68-3	Hexachlorobutadiene	ND	5.0	0.57	ug/kg	
591-78-6	2-Hexanone	ND	10	0.76	ug/kg	
98-82-8	Isopropylbenzene	ND	5.0	0.17	ug/kg	
99-87-6	p-Isopropyltoluene	ND	5.0	0.17	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	2.0	0.18	ug/kg	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	0.54	ug/kg	
74-95-3	Methylene bromide	ND	5.0	0.46	ug/kg	
75-09-2	Methylene chloride	ND	2.0	0.53	ug/kg	
91-20-3	Naphthalene	ND	5.0	0.40	ug/kg	
103-65-1	n-Propylbenzene	ND	5.0	0.15	ug/kg	
100-42-5	Styrene	ND	5.0	0.17	ug/kg	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	0.40	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	0.39	ug/kg	
127-18-4	Tetrachloroethene	ND	2.0	0.31	ug/kg	
108-88-3	Toluene	ND	5.0	0.21	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	0.43	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	0.51	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.0	0.22	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.0	0.57	ug/kg	
79-01-6	Trichloroethene	ND	2.0	0.24	ug/kg	
75-69-4	Trichlorofluoromethane	ND	2.0	0.40	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	1.4	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	1.5	ug/kg	
108-05-4	Vinyl Acetate	ND	5.0	1.5	ug/kg	
75-01-4	Vinyl chloride	ND	2.0	0.91	ug/kg	
	m,p-Xylene	ND	2.0	0.44	ug/kg	
95-47-6	o-Xylene	ND	2.0	0.28	ug/kg	
1330-20-7	Xylene (total)	ND	2.0	0.22	ug/kg	

6.1.3

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Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM2388-MB	M67512.D	1	08/12/14	KD	n/a	n/a	MSM2388

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32521-1

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

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

6.1.3

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Blank Spike Summary

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Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSU964-BS	U21732.D	1	08/12/14	GK	n/a	n/a	MSU964

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32521-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	50	45.1	90	70-130
107-02-8	Acrolein	250	167	67* a	70-130
107-13-1	Acrylonitrile	50	50.3	101	70-130
71-43-2	Benzene	50	51.7	103	70-130
108-86-1	Bromobenzene	50	55.7	111	70-130
74-97-5	Bromochloromethane	50	50.4	101	70-130
75-27-4	Bromodichloromethane	50	53.1	106	70-130
75-25-2	Bromoform	50	46.7	93	70-130
74-83-9	Bromomethane	50	53.8	108	70-130
78-93-3	2-Butanone (MEK)	50	44.6	89	70-130
104-51-8	n-Butylbenzene	50	58.2	116	70-130
135-98-8	sec-Butylbenzene	50	61.1	122	70-130
98-06-6	tert-Butylbenzene	50	51.0	102	70-130
75-15-0	Carbon disulfide	50	54.3	109	70-130
56-23-5	Carbon tetrachloride	50	47.8	96	70-130
108-90-7	Chlorobenzene	50	52.3	105	70-130
75-00-3	Chloroethane	50	65.5	131* b	70-130
110-75-8	2-Chloroethyl vinyl ether	50	61.4	123	70-130
67-66-3	Chloroform	50	50.0	100	70-130
74-87-3	Chloromethane	50	51.4	103	70-130
95-49-8	o-Chlorotoluene	50	56.8	114	70-130
106-43-4	p-Chlorotoluene	50	55.3	111	70-130
124-48-1	Dibromochloromethane	50	50.8	102	70-130
95-50-1	1,2-Dichlorobenzene	50	55.2	110	70-130
541-73-1	1,3-Dichlorobenzene	50	55.4	111	70-130
106-46-7	1,4-Dichlorobenzene	50	54.4	109	70-130
75-71-8	Dichlorodifluoromethane	50	53.4	107	70-130
75-34-3	1,1-Dichloroethane	50	52.8	106	70-130
107-06-2	1,2-Dichloroethane	50	45.9	92	70-130
75-35-4	1,1-Dichloroethene	50	51.9	104	70-130
156-59-2	cis-1,2-Dichloroethene	50	49.7	99	70-130
156-60-5	trans-1,2-Dichloroethene	50	50.8	102	70-130
78-87-5	1,2-Dichloropropane	50	54.7	109	70-130
142-28-9	1,3-Dichloropropane	50	55.0	110	70-130
594-20-7	2,2-Dichloropropane	50	54.5	109	70-130
563-58-6	1,1-Dichloropropene	50	49.4	99	70-130

* = Outside of Control Limits.

Blank Spike Summary

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Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSU964-BS	U21732.D	1	08/12/14	GK	n/a	n/a	MSU964

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32521-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
10061-01-5	cis-1,3-Dichloropropene	50	58.2	116	70-130
10061-02-6	trans-1,3-Dichloropropene	50	63.8	128	70-130
123-91-1	1,4-Dioxane	125	186	149* b	70-130
97-63-2	Ethyl methacrylate	50	56.6	113	77-137
100-41-4	Ethylbenzene	50	51.8	104	70-130
87-68-3	Hexachlorobutadiene	50	55.1	110	70-130
591-78-6	2-Hexanone	50	43.6	87	70-130
98-82-8	Isopropylbenzene	50	61.4	123	70-130
99-87-6	p-Isopropyltoluene	50	58.5	117	70-130
1634-04-4	Methyl Tert Butyl Ether	50	49.9	100	70-130
108-10-1	4-Methyl-2-pentanone (MIBK)	50	49.7	99	70-130
74-95-3	Methylene bromide	50	49.3	99	70-130
75-09-2	Methylene chloride	50	51.8	104	70-130
91-20-3	Naphthalene	50	57.9	116	70-130
103-65-1	n-Propylbenzene	50	60.0	120	70-130
100-42-5	Styrene	50	51.3	103	70-130
630-20-6	1,1,1,2-Tetrachloroethane	50	46.9	94	70-130
79-34-5	1,1,2,2-Tetrachloroethane	50	58.2	116	70-130
127-18-4	Tetrachloroethene	50	51.7	103	70-130
108-88-3	Toluene	50	56.4	113	70-130
87-61-6	1,2,3-Trichlorobenzene	50	56.1	112	70-130
120-82-1	1,2,4-Trichlorobenzene	50	55.8	112	70-130
71-55-6	1,1,1-Trichloroethane	50	49.9	100	70-130
79-00-5	1,1,2-Trichloroethane	50	58.0	116	70-130
79-01-6	Trichloroethene	50	49.2	98	70-130
75-69-4	Trichlorofluoromethane	50	45.8	92	70-130
96-18-4	1,2,3-Trichloropropane	50	53.4	107	70-130
95-63-6	1,2,4-Trimethylbenzene	50	59.1	118	70-130
108-67-8	1,3,5-Trimethylbenzene	50	57.9	116	70-130
108-05-4	Vinyl Acetate	50	41.7	83	70-130
75-01-4	Vinyl chloride	50	53.2	106	70-130
	m,p-Xylene	100	103	103	70-130
95-47-6	o-Xylene	50	49.5	99	70-130
1330-20-7	Xylene (total)	150	152	101	70-130

* = Outside of Control Limits.

Blank Spike Summary

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Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSU964-BS	U21732.D	1	08/12/14	GK	n/a	n/a	MSU964

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32521-3

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	111%	70-130%
2037-26-5	Toluene-D8	120%	70-130%
460-00-4	4-Bromofluorobenzene	117%	70-130%

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

* = Outside of Control Limits.

Blank Spike Summary

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Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM2388-BS	M67509.D	1	08/12/14	KD	n/a	n/a	MSM2388

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32521-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
67-64-1	Acetone	50	45.4	91	70-130
107-02-8	Acrolein	250	156	62* a	70-130
107-13-1	Acrylonitrile	50	55.1	110	70-130
71-43-2	Benzene	50	55.4	111	70-130
108-86-1	Bromobenzene	50	56.8	114	70-130
74-97-5	Bromochloromethane	50	57.2	114	70-130
75-27-4	Bromodichloromethane	50	61.2	122	70-130
75-25-2	Bromoform	50	53.2	106	70-130
74-83-9	Bromomethane	50	49.2	98	70-130
78-93-3	2-Butanone (MEK)	50	47.5	95	70-130
104-51-8	n-Butylbenzene	50	54.3	109	70-130
135-98-8	sec-Butylbenzene	50	54.8	110	70-130
98-06-6	tert-Butylbenzene	50	55.9	112	70-130
75-15-0	Carbon disulfide	50	53.9	108	70-130
56-23-5	Carbon tetrachloride	50	52.5	105	70-130
108-90-7	Chlorobenzene	50	54.8	110	70-130
75-00-3	Chloroethane	50	58.0	116	70-130
110-75-8	2-Chloroethyl vinyl ether	50	52.6	105	10-160
67-66-3	Chloroform	50	56.6	113	70-130
74-87-3	Chloromethane	50	49.0	98	70-130
95-49-8	o-Chlorotoluene	50	56.7	113	70-130
106-43-4	p-Chlorotoluene	50	55.9	112	70-130
124-48-1	Dibromochloromethane	50	56.6	113	70-130
95-50-1	1,2-Dichlorobenzene	50	57.5	115	70-130
541-73-1	1,3-Dichlorobenzene	50	56.2	112	70-130
106-46-7	1,4-Dichlorobenzene	50	55.8	112	70-130
75-71-8	Dichlorodifluoromethane	50	51.8	104	70-130
75-34-3	1,1-Dichloroethane	50	58.5	117	70-130
107-06-2	1,2-Dichloroethane	50	57.5	115	70-130
75-35-4	1,1-Dichloroethene	50	53.3	107	70-130
156-59-2	cis-1,2-Dichloroethene	50	55.9	112	70-130
156-60-5	trans-1,2-Dichloroethene	50	53.3	107	70-130
78-87-5	1,2-Dichloropropane	50	58.1	116	70-130
142-28-9	1,3-Dichloropropane	50	54.7	109	70-130
594-20-7	2,2-Dichloropropane	50	55.6	111	70-130
563-58-6	1,1-Dichloropropene	50	51.3	103	70-130

* = Outside of Control Limits.

Blank Spike Summary

Page 2 of 3

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM2388-BS	M67509.D	1	08/12/14	KD	n/a	n/a	MSM2388

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32521-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
10061-01-5	cis-1,3-Dichloropropene	50	57.9	116	70-130
10061-02-6	trans-1,3-Dichloropropene	50	61.6	123	70-130
123-91-1	1,4-Dioxane	125	155	124	70-130
97-63-2	Ethyl methacrylate	50	56.5	113	76-141
100-41-4	Ethylbenzene	50	53.9	108	70-130
87-68-3	Hexachlorobutadiene	50	50.6	101	70-130
591-78-6	2-Hexanone	50	41.4	83	70-130
98-82-8	Isopropylbenzene	50	57.8	116	70-130
99-87-6	p-Isopropyltoluene	50	54.8	110	70-130
1634-04-4	Methyl Tert Butyl Ether	50	58.0	116	70-130
108-10-1	4-Methyl-2-pentanone (MIBK)	50	51.9	104	70-130
74-95-3	Methylene bromide	50	55.9	112	70-130
75-09-2	Methylene chloride	50	56.6	113	70-130
91-20-3	Naphthalene	50	56.6	113	70-130
103-65-1	n-Propylbenzene	50	56.2	112	70-130
100-42-5	Styrene	50	55.2	110	70-130
630-20-6	1,1,1,2-Tetrachloroethane	50	55.2	110	70-130
79-34-5	1,1,2,2-Tetrachloroethane	50	55.1	110	70-130
127-18-4	Tetrachloroethene	50	50.3	101	70-130
108-88-3	Toluene	50	56.1	112	70-130
87-61-6	1,2,3-Trichlorobenzene	50	56.0	112	70-130
120-82-1	1,2,4-Trichlorobenzene	50	55.7	111	70-130
71-55-6	1,1,1-Trichloroethane	50	54.8	110	70-130
79-00-5	1,1,2-Trichloroethane	50	56.7	113	70-130
79-01-6	Trichloroethene	50	53.4	107	70-130
75-69-4	Trichlorofluoromethane	50	46.9	94	70-130
96-18-4	1,2,3-Trichloropropane	50	53.8	108	70-130
95-63-6	1,2,4-Trimethylbenzene	50	57.7	115	70-130
108-67-8	1,3,5-Trimethylbenzene	50	54.3	109	70-130
108-05-4	Vinyl Acetate	50	44.6	89	70-130
75-01-4	Vinyl chloride	50	49.1	98	70-130
	m,p-Xylene	100	108	108	70-130
95-47-6	o-Xylene	50	55.5	111	70-130
1330-20-7	Xylene (total)	150	163	109	70-130

* = Outside of Control Limits.

Blank Spike Summary

Page 3 of 3

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSM2388-BS	M67509.D	1	08/12/14	KD	n/a	n/a	MSM2388

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32521-1

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

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

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Page 1 of 3

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSU962-BS	U21677.D	1	08/11/14	GK	n/a	n/a	MSU962
MSU962-BSD	U21678.D	1	08/11/14	GK	n/a	n/a	MSU962

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32521-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	50	45.7	91	50.1	100	9	70-130/25
107-02-8	Acrolein	250	273	109	294	118	7	70-130/25
107-13-1	Acrylonitrile	50	57.6	115	57.3	115	1	70-130/25
71-43-2	Benzene	50	50.2	100	51.4	103	2	70-130/25
108-86-1	Bromobenzene	50	49.1	98	54.6	109	11	70-130/25
74-97-5	Bromochloromethane	50	48.6	97	51.3	103	5	70-130/25
75-27-4	Bromodichloromethane	50	51.5	103	54.4	109	5	70-130/25
75-25-2	Bromoform	50	46.5	93	47.8	96	3	70-130/25
74-83-9	Bromomethane	50	44.5	89	49.1	98	10	70-130/25
78-93-3	2-Butanone (MEK)	50	47.1	94	54.0	108	14	70-130/25
104-51-8	n-Butylbenzene	50	54.8	110	57.1	114	4	70-130/25
135-98-8	sec-Butylbenzene	50	56.1	112	58.5	117	4	70-130/25
98-06-6	tert-Butylbenzene	50	48.6	97	49.3	99	1	70-130/25
75-15-0	Carbon disulfide	50	51.6	103	53.2	106	3	70-130/25
56-23-5	Carbon tetrachloride	50	44.8	90	45.4	91	1	70-130/25
108-90-7	Chlorobenzene	50	48.3	97	51.4	103	6	70-130/25
75-00-3	Chloroethane	50	57.1	114	63.0	126	10	70-130/25
110-75-8	2-Chloroethyl vinyl ether	50	45.0	90	64.7	129	36* a	70-130/25
67-66-3	Chloroform	50	49.9	100	51.2	102	3	70-130/25
74-87-3	Chloromethane	50	44.6	89	48.6	97	9	70-130/25
95-49-8	o-Chlorotoluene	50	52.1	104	55.8	112	7	70-130/25
106-43-4	p-Chlorotoluene	50	49.7	99	54.7	109	10	70-130/25
124-48-1	Dibromochloromethane	50	47.4	95	50.6	101	7	70-130/25
95-50-1	1,2-Dichlorobenzene	50	53.3	107	56.0	112	5	70-130/25
541-73-1	1,3-Dichlorobenzene	50	51.2	102	54.8	110	7	70-130/25
106-46-7	1,4-Dichlorobenzene	50	51.6	103	54.5	109	5	70-130/25
75-71-8	Dichlorodifluoromethane	50	27.3	55* b	28.3	57* b	4	70-130/25
75-34-3	1,1-Dichloroethane	50	51.5	103	53.9	108	5	70-130/25
107-06-2	1,2-Dichloroethane	50	46.2	92	47.4	95	3	70-130/25
75-35-4	1,1-Dichloroethene	50	49.5	99	50.7	101	2	70-130/25
156-59-2	cis-1,2-Dichloroethene	50	47.9	96	50.7	101	6	70-130/25
156-60-5	trans-1,2-Dichloroethene	50	46.8	94	49.7	99	6	70-130/25
78-87-5	1,2-Dichloropropane	50	51.5	103	55.5	111	7	70-130/25
142-28-9	1,3-Dichloropropane	50	48.2	96	55.3	111	14	70-130/25
594-20-7	2,2-Dichloropropane	50	52.6	105	54.3	109	3	70-130/25
563-58-6	1,1-Dichloropropene	50	48.1	96	47.3	95	2	70-130/25

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

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Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSU962-BS	U21677.D	1	08/11/14	GK	n/a	n/a	MSU962
MSU962-BSD	U21678.D	1	08/11/14	GK	n/a	n/a	MSU962

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32521-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
10061-01-5	cis-1,3-Dichloropropene	50	50.7	101	58.8	118	15	70-130/25
10061-02-6	trans-1,3-Dichloropropene	50	49.5	99	65.5	131* b	28* b	70-130/25
123-91-1	1,4-Dioxane	125	178	142* b	177	142* b	1	70-130/25
97-63-2	Ethyl methacrylate	50	45.6	91	57.3	115	23	77-137/25
100-41-4	Ethylbenzene	50	49.4	99	50.3	101	2	70-130/25
87-68-3	Hexachlorobutadiene	50	50.2	100	51.2	102	2	70-130/25
591-78-6	2-Hexanone	50	42.7	85	50.2	100	16	70-130/25
98-82-8	Isopropylbenzene	50	56.8	114	59.0	118	4	70-130/25
99-87-6	p-Isopropyltoluene	50	53.2	106	55.7	111	5	70-130/25
1634-04-4	Methyl Tert Butyl Ether	50	49.1	98	51.9	104	6	70-130/25
108-10-1	4-Methyl-2-pentanone (MIBK)	50	50.3	101	57.0	114	12	70-130/25
74-95-3	Methylene bromide	50	48.6	97	51.5	103	6	70-130/25
75-09-2	Methylene chloride	50	50.0	100	52.3	105	4	70-130/25
91-20-3	Naphthalene	50	59.1	118	59.2	118	0	70-130/25
103-65-1	n-Propylbenzene	50	55.6	111	58.4	117	5	70-130/25
100-42-5	Styrene	50	47.3	95	50.1	100	6	70-130/25
630-20-6	1,1,1,2-Tetrachloroethane	50	47.0	94	45.0	90	4	70-130/25
79-34-5	1,1,2,2-Tetrachloroethane	50	56.4	113	60.7	121	7	70-130/25
127-18-4	Tetrachloroethene	50	49.2	98	48.3	97	2	70-130/25
108-88-3	Toluene	50	49.4	99	55.0	110	11	70-130/25
87-61-6	1,2,3-Trichlorobenzene	50	53.6	107	55.5	111	3	70-130/25
120-82-1	1,2,4-Trichlorobenzene	50	53.5	107	55.3	111	3	70-130/25
71-55-6	1,1,1-Trichloroethane	50	47.1	94	47.6	95	1	70-130/25
79-00-5	1,1,2-Trichloroethane	50	48.4	97	59.6	119	21	70-130/25
79-01-6	Trichloroethene	50	48.8	98	48.2	96	1	70-130/25
75-69-4	Trichlorofluoromethane	50	40.9	82	43.2	86	5	70-130/25
96-18-4	1,2,3-Trichloropropane	50	55.1	110	58.9	118	7	70-130/25
95-63-6	1,2,4-Trimethylbenzene	50	54.5	109	57.9	116	6	70-130/25
108-67-8	1,3,5-Trimethylbenzene	50	52.9	106	55.6	111	5	70-130/25
108-05-4	Vinyl Acetate	50	45.4	91	49.5	99	9	70-130/25
75-01-4	Vinyl chloride	50	42.7	85	47.3	95	10	70-130/25
	m,p-Xylene	100	96.7	97	98.7	99	2	70-130/25
95-47-6	o-Xylene	50	48.7	97	48.0	96	1	70-130/25
1330-20-7	Xylene (total)	150	145	97	147	98	1	70-130/25

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

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Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSU962-BS	U21677.D	1	08/11/14	GK	n/a	n/a	MSU962
MSU962-BSD	U21678.D	1	08/11/14	GK	n/a	n/a	MSU962

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32521-2

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	114%	112%	70-130%
2037-26-5	Toluene-D8	112%	119%	70-130%
460-00-4	4-Bromofluorobenzene	110%	118%	70-130%

- (a) Outside control limits. Individual spike recoveries within acceptance limits.
(b) Outside control limits. Blank Spike meets program technical requirements.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 3

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC32529-5MS	U21693.D	1	08/11/14	GK	n/a	n/a	MSU962
MC32529-5MSD	U21694.D	1	08/11/14	GK	n/a	n/a	MSU962
MC32529-5	U21688.D	1	08/11/14	GK	n/a	n/a	MSU962

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32521-2

CAS No.	Compound	MC32529-5 ug/l	Spike Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND		50	20.0	40* a	50	25.0	50* a	22	70-130/30
107-02-8	Acrolein	ND		250	201	80	250	243	97	19	70-130/30
107-13-1	Acrylonitrile	ND		50	50.7	101	50	57.1	114	12	70-130/30
71-43-2	Benzene	ND		50	53.1	106	50	53.1	106	0	70-130/30
108-86-1	Bromobenzene	ND		50	50.3	101	50	51.4	103	2	70-130/30
74-97-5	Bromochloromethane	ND		50	50.7	101	50	52.9	106	4	70-130/30
75-27-4	Bromodichloromethane	ND		50	52.0	104	50	52.2	104	0	70-130/30
75-25-2	Bromoform	ND		50	42.4	85	50	46.8	94	10	70-130/30
74-83-9	Bromomethane	ND		50	47.7	95	50	50.3	101	5	70-130/30
78-93-3	2-Butanone (MEK)	ND		50	33.3	67* a	50	37.3	75	11	70-130/30
104-51-8	n-Butylbenzene	ND		50	53.9	108	50	54.9	110	2	70-130/30
135-98-8	sec-Butylbenzene	ND		50	56.6	113	50	56.3	113	1	70-130/30
98-06-6	tert-Butylbenzene	ND		50	49.7	99	50	47.6	95	4	70-130/30
75-15-0	Carbon disulfide	ND		50	49.4	99	50	50.6	101	2	70-130/30
56-23-5	Carbon tetrachloride	ND		50	47.5	95	50	49.6	99	4	70-130/30
108-90-7	Chlorobenzene	ND		50	49.8	100	50	51.0	102	2	70-130/30
75-00-3	Chloroethane	ND		50	59.9	120	50	63.4	127	6	70-130/30
110-75-8	2-Chloroethyl vinyl ether	ND		50	4.9	10* a	50	4.9	10* a	0	70-130/30
67-66-3	Chloroform	ND		50	52.8	106	50	54.4	109	3	70-130/30
74-87-3	Chloromethane	ND		50	47.2	94	50	50.5	101	7	70-130/30
95-49-8	o-Chlorotoluene	ND		50	53.8	108	50	53.4	107	1	70-130/30
106-43-4	p-Chlorotoluene	ND		50	50.8	102	50	51.6	103	2	70-130/30
124-48-1	Dibromochloromethane	ND		50	45.8	92	50	47.4	95	3	70-130/30
95-50-1	1,2-Dichlorobenzene	ND		50	52.9	106	50	53.3	107	1	70-130/30
541-73-1	1,3-Dichlorobenzene	ND		50	51.7	103	50	52.4	105	1	70-130/30
106-46-7	1,4-Dichlorobenzene	ND		50	51.9	104	50	52.8	106	2	70-130/30
75-71-8	Dichlorodifluoromethane	ND		50	25.1	50* a	50	28.1	56* a	11	70-130/30
75-34-3	1,1-Dichloroethane	3.0		50	57.5	109	50	59.7	113	4	70-130/30
107-06-2	1,2-Dichloroethane	ND		50	46.1	92	50	47.1	94	2	70-130/30
75-35-4	1,1-Dichloroethene	9.7		50	60.8	102	50	64.8	110	6	70-130/30
156-59-2	cis-1,2-Dichloroethene	ND		50	51.5	103	50	54.0	108	5	70-130/30
156-60-5	trans-1,2-Dichloroethene	ND		50	51.8	104	50	53.7	107	4	70-130/30
78-87-5	1,2-Dichloropropane	ND		50	54.2	108	50	55.3	111	2	70-130/30
142-28-9	1,3-Dichloropropane	ND		50	49.2	98	50	53.9	108	9	70-130/30
594-20-7	2,2-Dichloropropane	ND		50	55.9	112	50	57.5	115	3	70-130/30
563-58-6	1,1-Dichloropropene	ND		50	50.8	102	50	50.7	101	0	70-130/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 2 of 3

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC32529-5MS	U21693.D	1	08/11/14	GK	n/a	n/a	MSU962
MC32529-5MSD	U21694.D	1	08/11/14	GK	n/a	n/a	MSU962
MC32529-5	U21688.D	1	08/11/14	GK	n/a	n/a	MSU962

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32521-2

CAS No.	Compound	MC32529-5 ug/l	Spike Q	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
10061-01-5	cis-1,3-Dichloropropene	ND	50	52.1	104	50	55.2	110	6	70-130/30
10061-02-6	trans-1,3-Dichloropropene	ND	50	49.9	100	50	59.6	119	18	70-130/30
123-91-1	1,4-Dioxane	ND	125	109	87	125	152	122	33* b	70-130/30
97-63-2	Ethyl methacrylate	ND	50	46.4	93	50	55.4	111	18	72-139/30
100-41-4	Ethylbenzene	ND	50	51.1	102	50	51.1	102	0	70-130/30
87-68-3	Hexachlorobutadiene	ND	50	45.7	91	50	49.9	100	9	70-130/30
591-78-6	2-Hexanone	ND	50	30.0	60* a	50	35.6	71	17	70-130/30
98-82-8	Isopropylbenzene	ND	50	59.2	118	50	57.1	114	4	70-130/30
99-87-6	p-Isopropyltoluene	ND	50	53.1	106	50	53.9	108	1	70-130/30
1634-04-4	Methyl Tert Butyl Ether	ND	50	50.2	100	50	54.1	108	7	70-130/30
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	50	48.0	96	50	56.7	113	17	70-130/30
74-95-3	Methylene bromide	ND	50	47.7	95	50	50.6	101	6	70-130/30
75-09-2	Methylene chloride	ND	50	52.7	105	50	55.7	111	6	70-130/30
91-20-3	Naphthalene	ND	50	51.2	102	50	57.1	114	11	70-130/30
103-65-1	n-Propylbenzene	ND	50	57.3	115	50	56.2	112	2	70-130/30
100-42-5	Styrene	ND	50	47.2	94	50	49.3	99	4	70-130/30
630-20-6	1,1,1,2-Tetrachloroethane	ND	50	48.0	96	50	47.2	94	2	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	ND	50	56.4	113	50	60.4	121	7	70-130/30
127-18-4	Tetrachloroethene	ND	50	50.6	101	50	49.5	99	2	70-130/30
108-88-3	Toluene	ND	50	52.5	105	50	55.2	110	5	70-130/30
87-61-6	1,2,3-Trichlorobenzene	ND	50	46.7	93	50	52.2	104	11	70-130/30
120-82-1	1,2,4-Trichlorobenzene	ND	50	47.9	96	50	52.1	104	8	70-130/30
71-55-6	1,1,1-Trichloroethane	109	50	140	62* c	50	146	74	4	70-130/30
79-00-5	1,1,2-Trichloroethane	ND	50	49.7	99	50	56.7	113	13	70-130/30
79-01-6	Trichloroethene	ND	50	51.3	103	50	49.9	100	3	70-130/30
75-69-4	Trichlorofluoromethane	ND	50	43.2	86	50	44.6	89	3	70-130/30
96-18-4	1,2,3-Trichloropropane	ND	50	51.4	103	50	55.6	111	8	70-130/30
95-63-6	1,2,4-Trimethylbenzene	ND	50	54.2	108	50	55.1	110	2	70-130/30
108-67-8	1,3,5-Trimethylbenzene	ND	50	53.3	107	50	53.4	107	0	70-130/30
108-05-4	Vinyl Acetate	ND	50	44.6	89	50	46.3	93	4	70-130/30
75-01-4	Vinyl chloride	ND	50	46.2	92	50	49.1	98	6	70-130/30
	m,p-Xylene	ND	100	99.8	100	100	101	101	1	70-130/30
95-47-6	o-Xylene	ND	50	50.0	100	50	49.9	100	0	70-130/30
1330-20-7	Xylene (total)	ND	150	150	100	150	151	101	1	70-130/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

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Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC32529-5MS	U21693.D	1	08/11/14	GK	n/a	n/a	MSU962
MC32529-5MSD	U21694.D	1	08/11/14	GK	n/a	n/a	MSU962
MC32529-5	U21688.D	1	08/11/14	GK	n/a	n/a	MSU962

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32521-2

CAS No.	Surrogate Recoveries	MS	MSD	MC32529-5	Limits
1868-53-7	Dibromofluoromethane	115%	120%	115%	70-130%
2037-26-5	Toluene-D8	112%	119%	111%	70-130%
460-00-4	4-Bromofluorobenzene	110%	116%	110%	70-130%

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

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 3

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC32521-1MS	M67519.D	1	08/12/14	KD	n/a	n/a	MSM2388
MC32521-1MSD	M67520.D	1	08/12/14	KD	n/a	n/a	MSM2388
MC32521-1	M67515.D	1	08/12/14	KD	n/a	n/a	MSM2388

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32521-1

CAS No.	Compound	MC32521-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND		56.4	39.4	70	59	33.6	57* a	16	70-130/30
107-02-8	Acrolein	ND		282	131	46* a	295	185	63* a	34* b	70-130/30
107-13-1	Acrylonitrile	ND		56.4	64.2	114	59	50.6	86	24	70-130/30
71-43-2	Benzene	4.0		56.4	37.8	60* a	59	39.2	60* a	4	70-130/30
108-86-1	Bromobenzene	ND		56.4	40.0	71	59	36.2	61* a	10	70-130/30
74-97-5	Bromochloromethane	ND		56.4	44.6	79	59	44.0	75	1	70-130/30
75-27-4	Bromodichloromethane	ND		56.4	45.5	81	59	44.0	75	3	70-130/30
75-25-2	Bromoform	ND		56.4	55.2	98	59	43.5	74	24	70-130/30
74-83-9	Bromomethane	ND		56.4	50.3	89	59	53.2	90	6	70-130/30
78-93-3	2-Butanone (MEK)	ND		56.4	51.3	91	59	38.4	65* a	29	70-130/30
104-51-8	n-Butylbenzene	ND		56.4	33.3	59* a	59	29.9	51* a	11	70-130/30
135-98-8	sec-Butylbenzene	ND		56.4	34.0	60* a	59	31.6	54* a	7	70-130/30
98-06-6	tert-Butylbenzene	ND		56.4	35.0	62* a	59	32.8	56* a	6	70-130/30
75-15-0	Carbon disulfide	0.79	J	56.4	34.9	60* a	59	37.6	62* a	7	70-130/30
56-23-5	Carbon tetrachloride	ND		56.4	33.9	60* a	59	34.9	59* a	3	70-130/30
108-90-7	Chlorobenzene	ND		56.4	36.2	64* a	59	35.6	60* a	2	70-130/30
75-00-3	Chloroethane	ND		56.4	59.1	105	59	63.3	107	7	70-130/30
110-75-8	2-Chloroethyl vinyl ether	ND		56.4	ND	0* a	59	ND	0* a	nc	10-160/30
67-66-3	Chloroform	ND		56.4	39.1	69* a	59	40.3	68* a	3	70-130/30
74-87-3	Chloromethane	ND		56.4	48.5	86	59	51.7	88	6	70-130/30
95-49-8	o-Chlorotoluene	ND		56.4	36.2	64* a	59	33.8	57* a	7	70-130/30
106-43-4	p-Chlorotoluene	ND		56.4	35.7	63* a	59	33.7	57* a	6	70-130/30
124-48-1	Dibromochloromethane	ND		56.4	45.2	80	59	41.9	71	8	70-130/30
95-50-1	1,2-Dichlorobenzene	ND		56.4	43.9	78	59	35.2	60* a	22	70-130/30
541-73-1	1,3-Dichlorobenzene	ND		56.4	37.5	67* a	59	32.8	56* a	13	70-130/30
106-46-7	1,4-Dichlorobenzene	ND		56.4	38.4	68* a	59	32.9	56* a	15	70-130/30
75-71-8	Dichlorodifluoromethane	ND		56.4	53.3	95	59	57.1	97	7	70-130/30
75-34-3	1,1-Dichloroethane	ND		56.4	39.3	70	59	40.7	69* a	4	70-130/30
107-06-2	1,2-Dichloroethane	ND		56.4	45.6	81	59	43.9	74	4	70-130/30
75-35-4	1,1-Dichloroethene	ND		56.4	34.4	61* a	59	36.9	63* a	7	70-130/30
156-59-2	cis-1,2-Dichloroethene	ND		56.4	38.0	67* a	59	39.3	67* a	3	70-130/30
156-60-5	trans-1,2-Dichloroethene	ND		56.4	35.0	62* a	59	37.0	63* a	6	70-130/30
78-87-5	1,2-Dichloropropane	ND		56.4	40.8	72	59	40.6	69* a	0	70-130/30
142-28-9	1,3-Dichloropropane	ND		56.4	45.3	80	59	43.1	73	5	70-130/30
594-20-7	2,2-Dichloropropane	ND		56.4	36.7	65* a	59	37.6	64* a	2	70-130/30
563-58-6	1,1-Dichloropropene	ND		56.4	32.6	58* a	59	34.4	58* a	5	70-130/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

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Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC32521-1MS	M67519.D	1	08/12/14	KD	n/a	n/a	MSM2388
MC32521-1MSD	M67520.D	1	08/12/14	KD	n/a	n/a	MSM2388
MC32521-1	M67515.D	1	08/12/14	KD	n/a	n/a	MSM2388

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32521-1

CAS No.	Compound	MC32521-1 ug/kg	Spike Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
10061-01-5	cis-1,3-Dichloropropene	ND		56.4	41.9	74	59	41.3	70	1	70-130/30
10061-02-6	trans-1,3-Dichloropropene	ND		56.4	49.7	88	59	46.0	78	8	70-130/30
123-91-1	1,4-Dioxane	ND		141	229	162* a	147	169	115	30	70-130/30
97-63-2	Ethyl methacrylate	ND		56.4	60.3	107	59	49.1	83	20	41-160/30
100-41-4	Ethylbenzene	ND		56.4	34.0	60* a	59	34.6	59* a	2	70-130/30
87-68-3	Hexachlorobutadiene	ND		56.4	34.0	60* a	59	26.8	45* a	24	70-130/30
591-78-6	2-Hexanone	ND		56.4	55.1	98	59	36.9	63* a	40* b	70-130/30
98-82-8	Isopropylbenzene	ND		56.4	35.5	63* a	59	35.2	60* a	1	70-130/30
99-87-6	p-Isopropyltoluene	ND		56.4	33.8	60* a	59	30.8	52* a	9	70-130/30
1634-04-4	Methyl Tert Butyl Ether	ND		56.4	50.8	90	59	47.5	81	7	70-130/30
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		56.4	73.4	130	59	53.5	91	31* b	70-130/30
74-95-3	Methylene bromide	ND		56.4	47.0	83	59	45.5	77	3	70-130/30
75-09-2	Methylene chloride	ND		56.4	39.6	70	59	41.0	70	3	70-130/30
91-20-3	Naphthalene	ND		56.4	63.7	113	59	45.8	78	33* b	70-130/30
103-65-1	n-Propylbenzene	ND		56.4	34.7	62* a	59	33.5	57* a	4	70-130/30
100-42-5	Styrene	ND		56.4	38.1	68* a	59	36.6	62* a	4	70-130/30
630-20-6	1,1,1,2-Tetrachloroethane	ND		56.4	38.2	68* a	59	36.7	62* a	4	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	ND		56.4	65.9	117	59	48.8	83	30	70-130/30
127-18-4	Tetrachloroethene	ND		56.4	31.2	55* a	59	32.2	55* a	3	70-130/30
108-88-3	Toluene	ND		56.4	36.9	65* a	59	37.2	63* a	1	70-130/30
87-61-6	1,2,3-Trichlorobenzene	ND		56.4	46.1	82	59	34.0	58* a	30	70-130/30
120-82-1	1,2,4-Trichlorobenzene	ND		56.4	40.3	71	59	30.6	52* a	27	70-130/30
71-55-6	1,1,1-Trichloroethane	ND		56.4	35.6	63* a	59	37.2	63* a	4	70-130/30
79-00-5	1,1,2-Trichloroethane	ND		56.4	52.3	93	59	45.7	78	13	70-130/30
79-01-6	Trichloroethene	ND		56.4	34.9	62* a	59	35.4	60* a	1	70-130/30
75-69-4	Trichlorofluoromethane	ND		56.4	47.7	85	59	51.3	87	7	70-130/30
96-18-4	1,2,3-Trichloropropane	ND		56.4	65.4	116	59	48.0	81	31* b	70-130/30
95-63-6	1,2,4-Trimethylbenzene	ND		56.4	36.3	64* a	59	33.9	58* a	7	70-130/30
108-67-8	1,3,5-Trimethylbenzene	ND		56.4	33.7	60* a	59	31.7	54* a	6	70-130/30
108-05-4	Vinyl Acetate	ND		56.4	29.5	52* a	59	25.0	42* a	17	70-130/30
75-01-4	Vinyl chloride	ND		56.4	50.5	90	59	54.1	92	7	70-130/30
	m,p-Xylene	ND		113	68.4	61* a	118	68.3	58* a	0	70-130/30
95-47-6	o-Xylene	ND		56.4	35.7	63* a	59	35.0	59* a	2	70-130/30
1330-20-7	Xylene (total)	ND		169	104	61* a	177	103	58* a	1	70-130/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

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Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC32521-1MS	M67519.D	1	08/12/14	KD	n/a	n/a	MSM2388
MC32521-1MSD	M67520.D	1	08/12/14	KD	n/a	n/a	MSM2388
MC32521-1	M67515.D	1	08/12/14	KD	n/a	n/a	MSM2388

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32521-1

CAS No.	Surrogate Recoveries	MS	MSD	MC32521-1	Limits
1868-53-7	Dibromofluoromethane	98%	98%	102%	70-130%
2037-26-5	Toluene-D8	89%	88%	89%	70-130%
460-00-4	4-Bromofluorobenzene	88%	88%	87%	70-130%

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

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 3

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC32593-2AMS	U21746.D	1	08/12/14	GK	n/a	n/a	MSU964
MC32593-2AMSD	U21747.D	1	08/12/14	GK	n/a	n/a	MSU964
MC32593-2A	U21742.D	1	08/12/14	GK	n/a	n/a	MSU964

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32521-3

CAS No.	Compound	MC32593-2ASpike ug/l	Q	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	10 U	50	23.9	48* a	50	26.5	53* a	10	70-130/30
107-02-8	Acrolein	50 U	250	147	59* a	250	144	58* a	2	70-130/30
107-13-1	Acrylonitrile	10 U	50	52.9	106	50	53.5	107	1	70-130/30
71-43-2	Benzene	1.0 U	50	53.6	107	50	50.9	102	5	70-130/30
108-86-1	Bromobenzene	5.0 U	50	50.7	101	50	52.2	104	3	70-130/30
74-97-5	Bromochloromethane	5.0 U	50	51.7	103	50	49.3	99	5	70-130/30
75-27-4	Bromodichloromethane	2.0 U	50	52.3	105	50	51.5	103	2	70-130/30
75-25-2	Bromoform	2.0 U	50	43.3	87	50	42.3	85	2	70-130/30
74-83-9	Bromomethane	5.0 U	50	51.6	103	50	52.6	105	2	70-130/30
78-93-3	2-Butanone (MEK)	10 U	50	35.9	72	50	36.3	73	1	70-130/30
104-51-8	n-Butylbenzene	5.0 U	50	51.7	103	50	51.1	102	1	70-130/30
135-98-8	sec-Butylbenzene	5.0 U	50	52.8	106	50	52.9	106	0	70-130/30
98-06-6	tert-Butylbenzene	5.0 U	50	46.2	92	50	46.2	92	0	70-130/30
75-15-0	Carbon disulfide	5.0 U	50	43.6	87	50	42.1	84	4	70-130/30
56-23-5	Carbon tetrachloride	2.0 U	50	44.2	88	50	43.5	87	2	70-130/30
108-90-7	Chlorobenzene	2.0 U	50	49.9	100	50	49.6	99	1	70-130/30
75-00-3	Chloroethane	5.0 U	50	66.3	133* a	50	65.2	130	2	70-130/30
110-75-8	2-Chloroethyl vinyl ether	10 U	50	4.4	9* a	50	4.5	9* a	2	70-130/30
67-66-3	Chloroform	2.0 U	50	52.9	106	50	49.9	100	6	70-130/30
74-87-3	Chloromethane	5.0 U	50	54.1	108	50	54.3	109	0	70-130/30
95-49-8	o-Chlorotoluene	5.0 U	50	52.9	106	50	53.4	107	1	70-130/30
106-43-4	p-Chlorotoluene	5.0 U	50	50.8	102	50	52.0	104	2	70-130/30
124-48-1	Dibromochloromethane	2.0 U	50	46.1	92	50	45.5	91	1	70-130/30
95-50-1	1,2-Dichlorobenzene	2.0 U	50	53.1	106	50	53.0	106	0	70-130/30
541-73-1	1,3-Dichlorobenzene	2.0 U	50	52.0	104	50	51.9	104	0	70-130/30
106-46-7	1,4-Dichlorobenzene	2.0 U	50	52.2	104	50	51.3	103	2	70-130/30
75-71-8	Dichlorodifluoromethane	5.0 U	50	50.4	101	50	48.9	98	3	70-130/30
75-34-3	1,1-Dichloroethane	3.9	50	59.1	110	50	56.0	104	5	70-130/30
107-06-2	1,2-Dichloroethane	2.0 U	50	47.6	95	50	44.9	90	6	70-130/30
75-35-4	1,1-Dichloroethene	2.0 U	50	51.7	103	50	50.0	100	3	70-130/30
156-59-2	cis-1,2-Dichloroethene	2.0 U	50	51.7	103	50	49.8	100	4	70-130/30
156-60-5	trans-1,2-Dichloroethene	2.0 U	50	51.1	102	50	49.7	99	3	70-130/30
78-87-5	1,2-Dichloropropane	2.0 U	50	54.0	108	50	53.9	108	0	70-130/30
142-28-9	1,3-Dichloropropane	5.0 U	50	51.7	103	50	53.3	107	3	70-130/30
594-20-7	2,2-Dichloropropane	5.0 U	50	52.5	105	50	51.0	102	3	70-130/30
563-58-6	1,1-Dichloropropene	5.0 U	50	49.1	98	50	45.7	91	7	70-130/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

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Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC32593-2AMS	U21746.D	1	08/12/14	GK	n/a	n/a	MSU964
MC32593-2AMSD	U21747.D	1	08/12/14	GK	n/a	n/a	MSU964
MC32593-2A	U21742.D	1	08/12/14	GK	n/a	n/a	MSU964

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32521-3

CAS No.	Compound	MC32593-2ASpike ug/l	Q	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
10061-01-5	cis-1,3-Dichloropropene	1.0 U	50	51.1	102	50	55.4	111	8	70-130/30
10061-02-6	trans-1,3-Dichloropropene	1.0 U	50	50.6	101	50	60.1	120	17	70-130/30
123-91-1	1,4-Dioxane	50 U	125	111	89	125	135	108	20	70-130/30
97-63-2	Ethyl methacrylate	5.0 U	50	47.4	95	50	54.6	109	14	72-139/30
100-41-4	Ethylbenzene	2.0 U	50	49.7	99	50	48.7	97	2	70-130/30
87-68-3	Hexachlorobutadiene	10 U	50	43.6	87	50	43.2	86	1	70-130/30
591-78-6	2-Hexanone	10 U	50	32.2	64* a	50	34.6	69* a	7	70-130/30
98-82-8	Isopropylbenzene	5.0 U	50	55.8	112	50	55.6	111	0	70-130/30
99-87-6	p-Isopropyltoluene	5.0 U	50	49.5	99	50	49.8	100	1	70-130/30
1634-04-4	Methyl Tert Butyl Ether	2.0 U	50	51.3	103	50	51.5	103	0	70-130/30
108-10-1	4-Methyl-2-pentanone (MIBK)	10 U	50	50.7	101	50	53.7	107	6	70-130/30
74-95-3	Methylene bromide	5.0 U	50	50.6	101	50	48.3	97	5	70-130/30
75-09-2	Methylene chloride	2.0 U	50	53.7	107	50	52.2	104	3	70-130/30
91-20-3	Naphthalene	5.0 U	50	52.7	105	50	53.6	107	2	70-130/30
103-65-1	n-Propylbenzene	5.0 U	50	54.9	110	50	55.7	111	1	70-130/30
100-42-5	Styrene	5.0 U	50	43.1	86	50	43.1	86	0	70-130/30
630-20-6	1,1,1,2-Tetrachloroethane	5.0 U	50	48.0	96	50	43.9	88	9	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	2.0 U	50	59.3	119	50	59.7	119	1	70-130/30
127-18-4	Tetrachloroethene	2.0 U	50	47.9	96	50	45.7	91	5	70-130/30
108-88-3	Toluene	2.0 U	50	51.3	103	50	54.0	108	5	70-130/30
87-61-6	1,2,3-Trichlorobenzene	5.0 U	50	48.4	97	50	49.2	98	2	70-130/30
120-82-1	1,2,4-Trichlorobenzene	5.0 U	50	48.4	97	50	49.4	99	2	70-130/30
71-55-6	1,1,1-Trichloroethane	4.8	50	52.2	95	50	51.2	93	2	70-130/30
79-00-5	1,1,2-Trichloroethane	2.0 U	50	51.5	103	50	58.1	116	12	70-130/30
79-01-6	Trichloroethene	2.0 U	50	50.6	101	50	46.6	93	8	70-130/30
75-69-4	Trichlorofluoromethane	2.0 U	50	44.2	88	50	43.6	87	1	70-130/30
96-18-4	1,2,3-Trichloropropane	5.0 U	50	54.3	109	50	55.5	111	2	70-130/30
95-63-6	1,2,4-Trimethylbenzene	5.0 U	50	51.0	102	50	51.2	102	0	70-130/30
108-67-8	1,3,5-Trimethylbenzene	5.0 U	50	48.1	96	50	48.4	97	1	70-130/30
108-05-4	Vinyl Acetate	5.0 U	50	45.2	90	50	41.9	84	8	70-130/30
75-01-4	Vinyl chloride	2.0 U	50	52.9	106	50	51.8	104	2	70-130/30
	m,p-Xylene	2.0 U	100	96.8	97	100	94.3	94	3	70-130/30
95-47-6	o-Xylene	2.0 U	50	48.8	98	50	45.8	92	6	70-130/30
1330-20-7	Xylene (total)	2.0 U	150	146	97	150	140	93	4	70-130/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 3 of 3

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC32593-2AMS	U21746.D	1	08/12/14	GK	n/a	n/a	MSU964
MC32593-2AMSD	U21747.D	1	08/12/14	GK	n/a	n/a	MSU964
MC32593-2A	U21742.D	1	08/12/14	GK	n/a	n/a	MSU964

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32521-3

CAS No.	Surrogate Recoveries	MS	MSD	MC32593-2ALimits
1868-53-7	Dibromofluoromethane	119%	112%	126% 70-130%
2037-26-5	Toluene-D8	112%	120%	107% 70-130%
460-00-4	4-Bromofluorobenzene	114%	120%	110% 70-130%

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

* = Outside of Control Limits.

Volatile Internal Standard Area Summary

Page 1 of 1

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Check Std:	MSM2388-CC2378	Injection Date:	08/12/14
Lab File ID:	M67509.D	Injection Time:	10:09
Instrument ID:	GCMSM	Method:	SW846 8260C

	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
	AREA		AREA		AREA		AREA		AREA	
Check Std	287799	9.35	471287	10.23	198271	13.50	249889	16.07	95403	6.84
Upper Limit ^a	575598	9.85	942574	10.73	396542	14.00	499778	16.57	190806	7.34
Lower Limit ^b	143900	8.85	235644	9.73	99136	13.00	124945	15.57	47702	6.34

Lab Sample ID	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
	AREA		AREA		AREA		AREA		AREA	
MSM2388-BS	287799	9.35	471287	10.23	198271	13.50	249889	16.07	95403	6.84
MSM2388-MB	249706	9.35	394306	10.22	166750	13.51	222180	16.07	88218	6.84
ZZZZZZ	288020	9.35	467298	10.23	203258	13.50	273791	16.07	161691	6.85
ZZZZZZ	280295	9.35	456371	10.23	196409	13.50	272496	16.07	163686	6.85
MC32521-1	275320	9.35	457329	10.23	195518	13.50	270230	16.07	153521	6.85
ZZZZZZ	261533	9.35	430548	10.22	187264	13.51	254986	16.07	149101	6.84
ZZZZZZ	265470	9.35	429936	10.22	188806	13.50	251613	16.07	149707	6.85
ZZZZZZ	262874	9.35	431210	10.22	178193	13.51	223771	16.07	161284	6.84
MC32521-1MS	300481	9.35	498393	10.23	220745	13.50	286803	16.07	170757	6.85
MC32521-1MSD	306944	9.35	512436	10.23	221077	13.50	288417	16.07	178617	6.85
ZZZZZZ	204338	9.35	324449	10.23	141236	13.50	189618	16.07	81425	6.84
ZZZZZZ	289128	9.35	456368	10.23	193512	13.51	258862	16.07	92050	6.85
ZZZZZZ	282615	9.35	449010	10.23	187142	13.50	246977	16.07	91357	6.84
ZZZZZZ	272802	9.35	439962	10.23	182088	13.50	236009	16.07	101190	6.84
ZZZZZZ	273222	9.35	437060	10.23	183747	13.51	238326	16.07	107369	6.85
ZZZZZZ	289038	9.35	463133	10.23	191150	13.50	245933	16.07	88150	6.86
ZZZZZZ	264981	9.35	423077	10.22	176187	13.50	237185	16.07	86026	6.85
ZZZZZZ	274116	9.35	442403	10.23	188760	13.51	246916	16.07	94912	6.84
ZZZZZZ	264176	9.35	420716	10.23	175498	13.51	233637	16.07	85340	6.85
ZZZZZZ	273059	9.35	442340	10.23	185565	13.51	244440	16.07	97349	6.85

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

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

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

Volatile Internal Standard Area Summary

Page 1 of 1

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Check Std: MSU962-CC957

Injection Date: 08/11/14

Lab File ID: U21676.D

Injection Time: 08:33

Instrument ID: GCMSU

Method: SW846 8260C

	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
	AREA		AREA		AREA		AREA		AREA	
Check Std	738932	8.97	1247773	9.84	463911	13.10	751644	15.66	334124	6.62
Upper Limit ^a	1477864	9.47	2495546	10.34	927822	13.60	1503288	16.16	668248	7.12
Lower Limit ^b	369466	8.47	623887	9.34	231956	12.60	375822	15.16	167062	6.12

Lab	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
Sample ID	AREA		AREA		AREA		AREA		AREA	
MSU962-BS	847507	8.97	1421245	9.84	508966	13.10	725338	15.66	403451	6.61
MSU962-BSD	828962	8.97	1389816	9.84	558492	13.10	741474	15.66	365390	6.61
MSU962-MB	779495	8.98	1238311	9.84	418332	13.10	687883	15.67	356820	6.61
ZZZZZZ	792767	8.97	1271106	9.84	425377	13.10	689208	15.67	290291	6.62
ZZZZZZ	743882	8.98	1260791	9.84	391925	13.10	641350	15.66	374325	6.63
ZZZZZZ	828923	8.98	1365888	9.84	532781	13.10	748738	15.66	354106	6.61
ZZZZZZ	894522	8.97	1468927	9.84	566031	13.10	799994	15.66	358765	6.59
ZZZZZZ	866627	8.98	1375710	9.85	460652	13.10	772474	15.67	366158	6.63
MC32529-5	824693	8.98	1306605	9.85	442750	13.10	715615	15.67	354447	6.63
ZZZZZZ	773073	8.98	1195501	9.85	403716	13.10	683238	15.67	366018	6.62
ZZZZZZ	742921	8.98	1178121	9.85	431579	13.10	650774	15.67	349126	6.62
ZZZZZZ	740007	8.98	1175574	9.84	395303	13.10	664245	15.67	310199	6.62
ZZZZZZ	755968	8.98	1203758	9.85	418353	13.10	641967	15.67	358346	6.62
MC32529-5MS	848675	8.96	1436680	9.83	527137	13.09	752842	15.66	319059	6.60
MC32529-5MSD	751001	8.97	1254610	9.84	498705	13.10	716327	15.66	324714	6.59
ZZZZZZ	739432	8.98	1156315	9.85	389193	13.10	653140	15.67	341279	6.62
ZZZZZZ	732843	8.98	1156700	9.85	396449	13.10	679175	15.67	343215	6.61
ZZZZZZ	703635	8.98	1130713	9.84	397473	13.10	638271	15.67	319441	6.61
ZZZZZZ	698423	8.98	1105920	9.85	389199	13.10	626290	15.67	312115	6.60
ZZZZZZ	710963	8.98	1134732	9.85	380242	13.10	651414	15.67	315626	6.60
MC32521-2	686808	8.98	1083432	9.85	405957	13.10	616560	15.67	285191	6.62
ZZZZZZ	728101	8.98	1156034	9.84	384926	13.10	651979	15.67	314070	6.62

IS 1 = Pentafluorobenzene

IS 2 = 1,4-Difluorobenzene

IS 3 = Chlorobenzene-D5

IS 4 = 1,4-Dichlorobenzene-d4

IS 5 = Tert Butyl Alcohol-D9

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

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

Volatile Internal Standard Area Summary

Page 1 of 1

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Check Std: MSU964-CC957

Injection Date: 08/12/14

Lab File ID: U21732.D

Injection Time: 10:09

Instrument ID: GCMSU

Method: SW846 8260C

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	971696	8.97	1580255	9.84	626725	13.10	844070	15.66	372781	6.60
Upper Limit ^a	1943392	9.47	3160510	10.34	1253450	13.60	1688140	16.16	745562	7.10
Lower Limit ^b	485848	8.47	790128	9.34	313363	12.60	422035	15.16	186391	6.10

Lab	IS 1		IS 2		IS 3		IS 4		IS 5	
Sample ID	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
MSU964-BS	971696	8.97	1580255	9.84	626725	13.10	844070	15.66	372781	6.60
MSU964-MB	880148	8.98	1373168	9.84	498721	13.10	793141	15.67	368133	6.61
ZZZZZZ	891179	8.98	1406478	9.85	477609	13.10	785838	15.67	326751	6.63
ZZZZZZ	856398	8.98	1357622	9.85	477254	13.10	737578	15.67	315519	6.61
ZZZZZZ	818836	8.98	1267918	9.85	423888	13.10	762580	15.67	339815	6.62
MC32521-3	818252	8.98	1275326	9.85	442772	13.10	762825	15.67	329437	6.61
ZZZZZZ	814558	8.98	1295143	9.85	456710	13.10	717939	15.67	295241	6.61
ZZZZZZ	789786	8.98	1276626	9.84	459564	13.10	707125	15.67	331160	6.61
MC32593-2A	732946	8.98	1146239	9.85	398880	13.10	706740	15.67	320556	6.61
MC32593-3A	790096	8.98	1264228	9.84	464847	13.10	696659	15.67	317363	6.61
ZZZZZZ	781023	8.98	1256863	9.85	419984	13.10	699690	15.67	304734	6.62
ZZZZZZ	762242	8.98	1215349	9.85	428364	13.10	684986	15.67	338274	6.63
MC32593-2AMS	796149	8.97	1340705	9.84	488934	13.10	700302	15.66	328936	6.62
MC32593-2AMSD807172		8.97	1344800	9.84	541224	13.10	728118	15.66	348109	6.63
MC32593-3AMS	802949	8.97	1356387	9.84	489797	13.10	710808	15.66	346186	6.62
MC32593-3AMSD821327		8.97	1385754	9.84	510132	13.09	725910	15.66	338164	6.62
ZZZZZZ	767882	8.98	1235142	9.84	425478	13.10	709044	15.66	347369	6.63
ZZZZZZ	786314	8.98	1249693	9.84	422130	13.10	711293	15.67	339285	6.62
ZZZZZZ	721001	8.98	1157270	9.85	403758	13.10	682954	15.67	345611	6.63
ZZZZZZ	770447	8.98	1276432	9.84	423141	13.10	681996	15.67	293157	6.62
ZZZZZZ	752004	8.98	1219553	9.85	412350	13.10	690110	15.67	338502	6.62
ZZZZZZ	777148	8.97	1299958	9.84	467791	13.10	663033	15.67	331601	6.61
ZZZZZZ	688142	8.98	1077805	9.85	370409	13.10	635136	15.67	326090	6.62
MSU964-ECC957	696632	8.97	1187257	9.84	445683	13.10	667704	15.66	311175	6.64

IS 1 = Pentafluorobenzene

IS 2 = 1,4-Difluorobenzene

IS 3 = Chlorobenzene-D5

IS 4 = 1,4-Dichlorobenzene-d4

IS 5 = Tert Butyl Alcohol-D9

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

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

Volatile Surrogate Recovery Summary

Page 1 of 1

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Method: SW846 8260C

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
MC32521-2	U21700.D	121	116	115
MC32521-3	U21739.D	121	107	112
MC32529-5MS	U21693.D	115	112	110
MC32529-5MSD	U21694.D	120	119	116
MC32593-2AMS	U21746.D	119	112	114
MC32593-2AMSDU	U21747.D	112	120	120
MSU962-BS	U21677.D	114	112	110
MSU962-BSD	U21678.D	112	119	118
MSU962-MB	U21680.D	119	105	111
MSU964-BS	U21732.D	111	120	117
MSU964-MB	U21735.D	113	113	113

Surrogate Compounds

Recovery Limits

S1 = Dibromofluoromethane

70-130%

S2 = Toluene-D8

70-130%

S3 = 4-Bromofluorobenzene

70-130%

6.6.1

6

Volatile Surrogate Recovery Summary

Page 1 of 1

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Method: SW846 8260C

Matrix: SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
MC32521-1	M67515.D	102	89	87
MC32521-1MS	M67519.D	98	89	88
MC32521-1MSD	M67520.D	98	88	88
MSM2388-BS	M67509.D	91	88	87
MSM2388-MB	M67512.D	91	91	86

Surrogate Compounds	Recovery Limits
------------------------	--------------------

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

6.6.2

6

GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Page 1 of 2

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP39211-MB	X04130.D	1	08/04/14	WK	08/01/14	OP39211	MSX136

The QC reported here applies to the following samples:

Method: SW846 8270D

MC32521-1

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	490	61	ug/kg	
95-57-8	2-Chlorophenol	ND	240	11	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	490	12	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	490	14	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	490	79	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	970	120	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	490	61	ug/kg	
95-48-7	2-Methylphenol	ND	490	19	ug/kg	
	3&4-Methylphenol	ND	490	24	ug/kg	
88-75-5	2-Nitrophenol	ND	490	13	ug/kg	
100-02-7	4-Nitrophenol	ND	970	91	ug/kg	
87-86-5	Pentachlorophenol	ND	490	34	ug/kg	
108-95-2	Phenol	ND	240	14	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	490	12	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	490	12	ug/kg	
62-53-3	Aniline	ND	490	24	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	240	12	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	240	9.9	ug/kg	
100-51-6	Benzyl Alcohol	ND	490	24	ug/kg	
91-58-7	2-Chloronaphthalene	ND	240	13	ug/kg	
106-47-8	4-Chloroaniline	ND	490	12	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	240	11	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	240	15	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	240	17	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	240	15	ug/kg	
122-66-7	1,2-Diphenylhydrazine	ND	240	11	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	490	32	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	490	12	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	240	24	ug/kg	
132-64-9	Dibenzofuran	ND	97	13	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	240	26	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	240	7.6	ug/kg	
84-66-2	Diethyl phthalate	ND	240	12	ug/kg	
131-11-3	Dimethyl phthalate	ND	240	14	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	240	9.0	ug/kg	
118-74-1	Hexachlorobenzene	ND	240	15	ug/kg	

Method Blank Summary

Page 2 of 2

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP39211-MB	X04130.D	1	08/04/14	WK	08/01/14	OP39211	MSX136

The QC reported here applies to the following samples:

Method: SW846 8270D

MC32521-1

CAS No.	Compound	Result	RL	MDL	Units	Q
77-47-4	Hexachlorocyclopentadiene	ND	490	120	ug/kg	
67-72-1	Hexachloroethane	ND	240	12	ug/kg	
78-59-1	Isophorone	ND	240	11	ug/kg	
88-74-4	2-Nitroaniline	ND	490	12	ug/kg	
99-09-2	3-Nitroaniline	ND	490	27	ug/kg	
100-01-6	4-Nitroaniline	ND	490	12	ug/kg	
98-95-3	Nitrobenzene	ND	240	13	ug/kg	
62-75-9	n-Nitrosodimethylamine	ND	240	12	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	240	14	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	240	15	ug/kg	
110-86-1	Pyridine	ND	490	24	ug/kg	

CAS No.	Surrogate Recoveries	Limits
367-12-4	2-Fluorophenol	70% 30-130%
4165-62-2	Phenol-d5	80% 30-130%
118-79-6	2,4,6-Tribromophenol	81% 30-130%
4165-60-0	Nitrobenzene-d5	77% 30-130%
321-60-8	2-Fluorobiphenyl	72% 30-130%
1718-51-0	Terphenyl-d14	87% 30-130%

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

Method Blank Summary

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Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP39228-MB	F75162.D	1	08/06/14	WK	08/02/14	OP39228	MSF3308

The QC reported here applies to the following samples:

Method: SW846 8270D

MC32521-2

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	10	2.5	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	0.31	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	10	0.83	ug/l	
120-83-2	2,4-Dichlorophenol	ND	10	0.40	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	0.56	ug/l	
51-28-5	2,4-Dinitrophenol	ND	20	2.5	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	1.9	ug/l	
95-48-7	2-Methylphenol	ND	10	0.23	ug/l	
	3&4-Methylphenol	ND	10	0.47	ug/l	
88-75-5	2-Nitrophenol	ND	10	2.9	ug/l	
100-02-7	4-Nitrophenol	ND	20	0.53	ug/l	
87-86-5	Pentachlorophenol	ND	10	1.1	ug/l	
108-95-2	Phenol	ND	5.0	0.30	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	10	0.37	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	10	0.18	ug/l	
62-53-3	Aniline	ND	10	0.64	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	0.47	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	0.53	ug/l	
100-51-6	Benzyl Alcohol	ND	10	2.3	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	0.31	ug/l	
106-47-8	4-Chloroaniline	ND	10	0.56	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	0.29	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	0.35	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	0.33	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	0.25	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.0	0.24	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	0.46	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	10	0.30	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.0	0.27	ug/l	
132-64-9	Dibenzofuran	ND	2.0	0.26	ug/l	
84-74-2	Di-n-butyl phthalate	0.45	5.0	0.17	ug/l	J
117-84-0	Di-n-octyl phthalate	ND	5.0	0.28	ug/l	
84-66-2	Diethyl phthalate	ND	5.0	0.20	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	0.34	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	0.33	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	0.29	ug/l	

Method Blank Summary

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Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP39228-MB	F75162.D	1	08/06/14	WK	08/02/14	OP39228	MSF3308

The QC reported here applies to the following samples:

Method: SW846 8270D

MC32521-2

CAS No.	Compound	Result	RL	MDL	Units	Q
77-47-4	Hexachlorocyclopentadiene	ND	10	1.3	ug/l	
67-72-1	Hexachloroethane	ND	5.0	0.30	ug/l	
78-59-1	Isophorone	ND	5.0	0.45	ug/l	
88-74-4	2-Nitroaniline	ND	10	0.40	ug/l	
99-09-2	3-Nitroaniline	ND	10	1.4	ug/l	
100-01-6	4-Nitroaniline	ND	10	2.2	ug/l	
98-95-3	Nitrobenzene	ND	5.0	0.39	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	5.0	1.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	0.40	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	0.19	ug/l	
110-86-1	Pyridine	ND	10	0.52	ug/l	

CAS No.	Surrogate Recoveries	Limits
367-12-4	2-Fluorophenol	45% 15-110%
4165-62-2	Phenol-d5	28% 15-110%
118-79-6	2,4,6-Tribromophenol	81% 15-110%
4165-60-0	Nitrobenzene-d5	67% 30-130%
321-60-8	2-Fluorobiphenyl	63% 30-130%
1718-51-0	Terphenyl-d14	95% 30-130%

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

Method Blank Summary

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Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP39212-MB	190988.D	1	08/04/14	MR	08/01/14	OP39212	MSI3396

The QC reported here applies to the following samples:

Method: SW846 8270D BY SIM

MC32521-1

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	4.9	0.84	ug/kg	
208-96-8	Acenaphthylene	ND	4.9	0.74	ug/kg	
120-12-7	Anthracene	ND	4.9	1.1	ug/kg	
56-55-3	Benzo(a)anthracene	ND	4.9	2.2	ug/kg	
50-32-8	Benzo(a)pyrene	ND	4.9	1.9	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	4.9	2.1	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	4.9	1.3	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	4.9	1.5	ug/kg	
218-01-9	Chrysene	ND	4.9	1.3	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	4.9	1.4	ug/kg	
206-44-0	Fluoranthene	ND	4.9	1.4	ug/kg	
86-73-7	Fluorene	ND	4.9	0.96	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	4.9	1.2	ug/kg	
90-12-0	1-Methylnaphthalene	ND	9.7	1.1	ug/kg	
91-57-6	2-Methylnaphthalene	ND	9.7	0.90	ug/kg	
85-01-8	Phenanthrene	ND	4.9	1.0	ug/kg	
129-00-0	Pyrene	ND	4.9	1.5	ug/kg	

CAS No.	Surrogate Recoveries	Limits
367-12-4	2-Fluorophenol	38% 15-110%
4165-62-2	Phenol-d5	39% 15-110%
118-79-6	2,4,6-Tribromophenol	39% 15-110%
4165-60-0	Nitrobenzene-d5	74% 30-130%
321-60-8	2-Fluorobiphenyl	71% 30-130%
1718-51-0	Terphenyl-d14	88% 30-130%

Method Blank Summary

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Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP39229-MB	I91065.D	1	08/07/14	MR	08/02/14	OP39229	MSI3391

The QC reported here applies to the following samples:

Method: SW846 8270D BY SIM

MC32521-2

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.10	0.069	ug/l	
208-96-8	Acenaphthylene	ND	0.10	0.050	ug/l	
120-12-7	Anthracene	ND	0.10	0.092	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.050	0.020	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	0.029	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.050	0.032	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	0.027	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	0.039	ug/l	
218-01-9	Chrysene	ND	0.10	0.024	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	0.032	ug/l	
206-44-0	Fluoranthene	ND	0.10	0.041	ug/l	
86-73-7	Fluorene	ND	0.10	0.099	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	0.031	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.20	0.050	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.20	0.074	ug/l	
85-01-8	Phenanthrene	0.025	0.050	0.013	ug/l	J
129-00-0	Pyrene	ND	0.10	0.038	ug/l	

CAS No.	Surrogate Recoveries	Limits
4165-60-0	Nitrobenzene-d5	89% 30-130%
321-60-8	2-Fluorobiphenyl	66% 30-130%
1718-51-0	Terphenyl-d14	100% 30-130%

Blank Spike Summary

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Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP39228-BS	F75163.D	1	08/06/14	WK	08/02/14	OP39228	MSF3308

The QC reported here applies to the following samples:

Method: SW846 8270D

MC32521-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
65-85-0	Benzoic Acid	50	23.1	46	30-130
95-57-8	2-Chlorophenol	50	39.9	80	30-130
59-50-7	4-Chloro-3-methyl phenol	50	45.1	90	30-130
120-83-2	2,4-Dichlorophenol	50	38.6	77	30-130
105-67-9	2,4-Dimethylphenol	50	30.9	62	30-130
51-28-5	2,4-Dinitrophenol	50	40.8	82	30-130
534-52-1	4,6-Dinitro-o-cresol	50	49.7	99	30-130
95-48-7	2-Methylphenol	50	34.0	68	30-130
	3&4-Methylphenol	100	60.9	61	30-130
88-75-5	2-Nitrophenol	50	42.5	85	30-130
100-02-7	4-Nitrophenol	50	17.7	35	30-130
87-86-5	Pentachlorophenol	50	49.6	99	30-130
108-95-2	Phenol	50	16.1	32	30-130
95-95-4	2,4,5-Trichlorophenol	50	44.8	90	30-130
88-06-2	2,4,6-Trichlorophenol	50	42.2	84	30-130
62-53-3	Aniline	50	24.0	48	40-140
101-55-3	4-Bromophenyl phenyl ether	50	47.4	95	40-140
85-68-7	Butyl benzyl phthalate	50	62.5	125	40-140
100-51-6	Benzyl Alcohol	50	39.0	78	40-140
91-58-7	2-Chloronaphthalene	50	46.9	94	40-140
106-47-8	4-Chloroaniline	50	38.8	78	40-140
111-91-1	bis(2-Chloroethoxy)methane	50	35.6	71	40-140
111-44-4	bis(2-Chloroethyl)ether	50	46.9	94	40-140
108-60-1	bis(2-Chloroisopropyl)ether	50	65.0	130	40-140
7005-72-3	4-Chlorophenyl phenyl ether	50	42.6	85	40-140
122-66-7	1,2-Diphenylhydrazine	50	50.5	101	40-140
121-14-2	2,4-Dinitrotoluene	50	51.0	102	40-140
606-20-2	2,6-Dinitrotoluene	50	44.8	90	40-140
91-94-1	3,3'-Dichlorobenzidine	50	45.8	92	40-140
132-64-9	Dibenzofuran	50	44.5	89	40-140
84-74-2	Di-n-butyl phthalate	50	53.7	107	40-140
117-84-0	Di-n-octyl phthalate	50	71.5	143* a	40-140
84-66-2	Diethyl phthalate	50	50.2	100	40-140
131-11-3	Dimethyl phthalate	50	49.6	99	40-140
117-81-7	bis(2-Ethylhexyl)phthalate	50	61.2	122	40-140
118-74-1	Hexachlorobenzene	50	45.9	92	40-140

* = Outside of Control Limits.

Blank Spike Summary

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Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP39228-BS	F75163.D	1	08/06/14	WK	08/02/14	OP39228	MSF3308

The QC reported here applies to the following samples:

Method: SW846 8270D

MC32521-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
77-47-4	Hexachlorocyclopentadiene	50	16.7	33* a	40-140
67-72-1	Hexachloroethane	50	26.9	54	40-140
78-59-1	Isophorone	50	37.9	76	40-140
88-74-4	2-Nitroaniline	50	53.0	106	40-140
99-09-2	3-Nitroaniline	50	46.0	92	40-140
100-01-6	4-Nitroaniline	50	50.0	100	40-140
98-95-3	Nitrobenzene	50	35.9	72	40-140
62-75-9	n-Nitrosodimethylamine	50	25.8	52	40-140
621-64-7	N-Nitroso-di-n-propylamine	50	43.6	87	40-140
86-30-6	N-Nitrosodiphenylamine	50	46.7	93	40-140
110-86-1	Pyridine	50	22.9	46	40-140

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	53%	15-110%
4165-62-2	Phenol-d5	31%	15-110%
118-79-6	2,4,6-Tribromophenol	84%	15-110%
4165-60-0	Nitrobenzene-d5	68%	30-130%
321-60-8	2-Fluorobiphenyl	69%	30-130%
1718-51-0	Terphenyl-d14	89%	30-130%

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

* = Outside of Control Limits.

Blank Spike Summary

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Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP39212-BS	I90989.D	1	08/04/14	MR	08/01/14	OP39212	MSI3396

The QC reported here applies to the following samples:

Method: SW846 8270D BY SIM

MC32521-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	2460	2050	83	40-140
208-96-8	Acenaphthylene	2460	1890	77	40-140
120-12-7	Anthracene	2460	2220	90	40-140
56-55-3	Benzo(a)anthracene	2460	2700	110	40-140
50-32-8	Benzo(a)pyrene	2460	2380	97	40-140
205-99-2	Benzo(b)fluoranthene	2460	2800	114	40-140
191-24-2	Benzo(g,h,i)perylene	2460	2470	101	40-140
207-08-9	Benzo(k)fluoranthene	2460	2320	94	40-140
218-01-9	Chrysene	2460	2250	92	40-140
53-70-3	Dibenzo(a,h)anthracene	2460	2590	105	40-140
206-44-0	Fluoranthene	2460	2510	102	40-140
86-73-7	Fluorene	2460	2140	87	40-140
193-39-5	Indeno(1,2,3-cd)pyrene	2460	2530	103	40-140
90-12-0	1-Methylnaphthalene	2460	1870	76	40-140
91-57-6	2-Methylnaphthalene	2460	1900	77	40-140
85-01-8	Phenanthrene	2460	2180	89	40-140
129-00-0	Pyrene	2460	2440	99	40-140

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	36%	15-110%
4165-62-2	Phenol-d5	36%	15-110%
118-79-6	2,4,6-Tribromophenol	45%	15-110%
4165-60-0	Nitrobenzene-d5	73%	30-130%
321-60-8	2-Fluorobiphenyl	72%	30-130%
1718-51-0	Terphenyl-d14	89%	30-130%

* = Outside of Control Limits.

Blank Spike Summary

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Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP39229-BS	I91066.D	1	08/07/14	MR	08/02/14	OP39229	MSI3391

The QC reported here applies to the following samples:

Method: SW846 8270D BY SIM

MC32521-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
83-32-9	Acenaphthene	50	44.7	89	40-140
208-96-8	Acenaphthylene	50	40.5	81	40-140
120-12-7	Anthracene	50	46.7	93	40-140
56-55-3	Benzo(a)anthracene	50	60.8	122	40-140
50-32-8	Benzo(a)pyrene	50	53.2	106	40-140
205-99-2	Benzo(b)fluoranthene	50	64.5	129	40-140
191-24-2	Benzo(g,h,i)perylene	50	57.7	115	40-140
207-08-9	Benzo(k)fluoranthene	50	49.8	100	40-140
218-01-9	Chrysene	50	50.6	101	40-140
53-70-3	Dibenzo(a,h)anthracene	50	60.8	122	40-140
206-44-0	Fluoranthene	50	51.9	104	40-140
86-73-7	Fluorene	50	46.1	92	40-140
193-39-5	Indeno(1,2,3-cd)pyrene	50	59.3	119	40-140
90-12-0	1-Methylnaphthalene	50	40.6	81	40-140
91-57-6	2-Methylnaphthalene	50	40.8	82	40-140
85-01-8	Phenanthrene	50	47.2	94	40-140
129-00-0	Pyrene	50	52.0	104	40-140

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	88%	30-130%
321-60-8	2-Fluorobiphenyl	71%	30-130%
1718-51-0	Terphenyl-d14	98%	30-130%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

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Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP39211-BS	X04131.D	1	08/04/14	WK	08/01/14	OP39211	MSX136
OP39211-BSD	X04132.D	1	08/04/14	WK	08/01/14	OP39211	MSX136

The QC reported here applies to the following samples:

Method: SW846 8270D

MC32521-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic acid	2460	1230	50	840	35	38* a	30-130/30
95-57-8	2-Chlorophenol	2460	1790	73	1750	73	2	30-130/30
59-50-7	4-Chloro-3-methyl phenol	2460	2060	84	2140	89	4	30-130/30
120-83-2	2,4-Dichlorophenol	2460	1940	79	1950	81	1	30-130/30
105-67-9	2,4-Dimethylphenol	2460	1940	79	1960	82	1	30-130/30
51-28-5	2,4-Dinitrophenol	2460	1360	55	1370	57	1	30-130/30
534-52-1	4,6-Dinitro-o-cresol	2460	1980	81	2160	90	9	30-130/30
95-48-7	2-Methylphenol	2460	1680	68	1730	72	3	30-130/30
	3&4-Methylphenol	4910	3690	75	3870	81	5	30-130/30
88-75-5	2-Nitrophenol	2460	1850	75	1840	77	1	30-130/30
100-02-7	4-Nitrophenol	2460	1930	79	1520	63	24	30-130/30
87-86-5	Pentachlorophenol	2460	1700	69	1880	78	10	30-130/30
108-95-2	Phenol	2460	1820	74	1850	77	2	30-130/30
95-95-4	2,4,5-Trichlorophenol	2460	2020	82	2160	90	7	30-130/30
88-06-2	2,4,6-Trichlorophenol	2460	1930	79	2030	85	5	30-130/30
62-53-3	Aniline	2460	1330	54	1320	55	1	40-140/30
101-55-3	4-Bromophenyl phenyl ether	2460	2490	101	2600	108	4	40-140/30
85-68-7	Butyl benzyl phthalate	2460	2330	95	2480	103	6	40-140/30
100-51-6	Benzyl Alcohol	2460	833	34* a	919	38* a	10	40-140/30
91-58-7	2-Chloronaphthalene	2460	2080	85	2130	89	2	40-140/30
106-47-8	4-Chloroaniline	2460	1870	76	1930	81	3	40-140/30
111-91-1	bis(2-Chloroethoxy)methane	2460	1990	81	2010	84	1	40-140/30
111-44-4	bis(2-Chloroethyl)ether	2460	1920	78	1850	77	4	40-140/30
108-60-1	bis(2-Chloroisopropyl)ether	2460	1930	79	1830	76	5	40-140/30
7005-72-3	4-Chlorophenyl phenyl ether	2460	2270	92	2400	100	6	40-140/30
122-66-7	1,2-Diphenylhydrazine	2460	2410	98	2550	106	6	40-140/30
121-14-2	2,4-Dinitrotoluene	2460	2510	102	2660	111	6	40-140/30
606-20-2	2,6-Dinitrotoluene	2460	2490	101	2600	108	4	40-140/30
91-94-1	3,3'-Dichlorobenzidine	2460	2380	97	2790	116	16	40-140/30
132-64-9	Dibenzofuran	2460	1960	80	2060	86	5	40-140/30
84-74-2	Di-n-butyl phthalate	2460	2220	90	2390	100	7	40-140/30
117-84-0	Di-n-octyl phthalate	2460	2650	108	2870	120	8	40-140/30
84-66-2	Diethyl phthalate	2460	2340	95	2510	105	7	40-140/30
131-11-3	Dimethyl phthalate	2460	2360	96	2500	104	6	40-140/30
117-81-7	bis(2-Ethylhexyl)phthalate	2460	2500	102	2700	113	8	40-140/30
118-74-1	Hexachlorobenzene	2460	2520	103	2720	113	8	40-140/30

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

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Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP39211-BS	X04131.D	1	08/04/14	WK	08/01/14	OP39211	MSX136
OP39211-BSD	X04132.D	1	08/04/14	WK	08/01/14	OP39211	MSX136

The QC reported here applies to the following samples:

Method: SW846 8270D

MC32521-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
77-47-4	Hexachlorocyclopentadiene	2460	1370	56	1340	56	2	40-140/30
67-72-1	Hexachloroethane	2460	1830	75	1680	70	9	40-140/30
78-59-1	Isophorone	2460	1930	79	1980	83	3	40-140/30
88-74-4	2-Nitroaniline	2460	2390	97	2500	104	4	40-140/30
99-09-2	3-Nitroaniline	2460	2240	91	2410	101	7	40-140/30
100-01-6	4-Nitroaniline	2460	2100	86	2340	98	11	40-140/30
98-95-3	Nitrobenzene	2460	2020	82	2000	83	1	40-140/30
62-75-9	n-Nitrosodimethylamine	2460	1490	61	1490	62	0	40-140/30
621-64-7	N-Nitroso-di-n-propylamine	2460	2130	87	2100	88	1	40-140/30
86-30-6	N-Nitrosodiphenylamine	2460	2070	84	2180	91	5	40-140/30
110-86-1	Pyridine	2460	1190	48	1170	49	2	40-140/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
367-12-4	2-Fluorophenol	63%	62%	30-130%
4165-62-2	Phenol-d5	71%	74%	30-130%
118-79-6	2,4,6-Tribromophenol	84%	94%	30-130%
4165-60-0	Nitrobenzene-d5	75%	76%	30-130%
321-60-8	2-Fluorobiphenyl	72%	76%	30-130%
1718-51-0	Terphenyl-d14	84%	90%	30-130%

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

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 2

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP39211-MS	X04133.D	1	08/04/14	WK	08/01/14	OP39211	MSX136
OP39211-MSD	X04134.D	1	08/04/14	WK	08/01/14	OP39211	MSX136
MC32521-1	X04135.D	1	08/04/14	WK	08/01/14	OP39211	MSX136

The QC reported here applies to the following samples:

Method: SW846 8270D

MC32521-1

CAS No.	Compound	MC32521-1 ug/kg	Spike Q	ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic acid	ND		2820	217	8* a	2820	380	13* a	55* b	30-130/30
95-57-8	2-Chlorophenol	ND		2820	2270	80	2820	2340	83	3	30-130/30
59-50-7	4-Chloro-3-methyl phenol	ND		2820	2430	86	2820	2620	93	8	30-130/30
120-83-2	2,4-Dichlorophenol	ND		2820	2330	83	2820	2480	88	6	30-130/30
105-67-9	2,4-Dimethylphenol	ND		2820	2420	86	2820	2460	87	2	30-130/30
51-28-5	2,4-Dinitrophenol	ND		2820	1040	37	2820	1340	47	25	30-130/30
534-52-1	4,6-Dinitro-o-cresol	ND		2820	2060	73	2820	2370	84	14	30-130/30
95-48-7	2-Methylphenol	ND		2820	2160	77	2820	2210	78	2	30-130/30
	3&4-Methylphenol	ND		5640	4760	84	5650	4800	85	1	30-130/30
88-75-5	2-Nitrophenol	ND		2820	2280	81	2820	2360	84	3	30-130/30
100-02-7	4-Nitrophenol	ND		2820	1580	56	2820	1900	67	18	30-130/30
87-86-5	Pentachlorophenol	ND		2820	1970	70	2820	2170	77	10	30-130/30
108-95-2	Phenol	ND		2820	2310	82	2820	2390	85	3	30-130/30
95-95-4	2,4,5-Trichlorophenol	ND		2820	2390	85	2820	2670	95	11	30-130/30
88-06-2	2,4,6-Trichlorophenol	ND		2820	2390	85	2820	2510	89	5	30-130/30
62-53-3	Aniline	ND		2820	1650	58	2820	1700	60	3	40-140/30
101-55-3	4-Bromophenyl phenyl ether	ND		2820	2970	105	2820	3100	110	4	40-140/30
85-68-7	Butyl benzyl phthalate	ND		2820	2800	99	2820	2950	104	5	40-140/30
100-51-6	Benzyl Alcohol	ND		2820	1140	40	2820	1150	41	1	40-140/30
91-58-7	2-Chloronaphthalene	ND		2820	2600	92	2820	2610	92	0	40-140/30
106-47-8	4-Chloroaniline	ND		2820	2220	79	2820	2340	83	5	40-140/30
111-91-1	bis(2-Chloroethoxy)methane	ND		2820	2430	86	2820	2510	89	3	40-140/30
111-44-4	bis(2-Chloroethyl)ether	ND		2820	2460	87	2820	2500	89	2	40-140/30
108-60-1	bis(2-Chloroisopropyl)ether	ND		2820	2410	85	2820	2420	86	0	40-140/30
7005-72-3	4-Chlorophenyl phenyl ether	ND		2820	2770	98	2820	2930	104	6	40-140/30
122-66-7	1,2-Diphenylhydrazine	ND		2820	2870	102	2820	3010	107	5	40-140/30
121-14-2	2,4-Dinitrotoluene	ND		2820	2880	102	2820	3150	112	9	40-140/30
606-20-2	2,6-Dinitrotoluene	ND		2820	2890	102	2820	3060	108	6	40-140/30
91-94-1	3,3'-Dichlorobenzidine	ND		2820	2890	102	2820	3190	113	10	40-140/30
132-64-9	Dibenzofuran	ND		2820	2410	85	2820	2480	88	3	40-140/30
84-74-2	Di-n-butyl phthalate	ND		2820	2520	89	2820	2780	98	10	40-140/30
117-84-0	Di-n-octyl phthalate	ND		2820	2980	106	2820	3360	119	12	40-140/30
84-66-2	Diethyl phthalate	ND		2820	2730	97	2820	2970	105	8	40-140/30
131-11-3	Dimethyl phthalate	ND		2820	2800	99	2820	2940	104	5	40-140/30
117-81-7	bis(2-Ethylhexyl)phthalate	ND		2820	2990	106	2820	3190	113	6	40-140/30
118-74-1	Hexachlorobenzene	ND		2820	3040	108	2820	3190	113	5	40-140/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

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Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP39211-MS	X04133.D	1	08/04/14	WK	08/01/14	OP39211	MSX136
OP39211-MSD	X04134.D	1	08/04/14	WK	08/01/14	OP39211	MSX136
MC32521-1	X04135.D	1	08/04/14	WK	08/01/14	OP39211	MSX136

The QC reported here applies to the following samples:

Method: SW846 8270D

MC32521-1

CAS No.	Compound	MC32521-1 ug/kg	Spike Q ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
77-47-4	Hexachlorocyclopentadiene	ND	2820	1680	60	2820	1630	58	3	40-140/30
67-72-1	Hexachloroethane	ND	2820	2320	82	2820	2350	83	1	40-140/30
78-59-1	Isophorone	ND	2820	2340	83	2820	2420	86	3	40-140/30
88-74-4	2-Nitroaniline	ND	2820	2800	99	2820	3040	108	8	40-140/30
99-09-2	3-Nitroaniline	ND	2820	2650	94	2820	2820	100	6	40-140/30
100-01-6	4-Nitroaniline	ND	2820	2480	88	2820	2740	97	10	40-140/30
98-95-3	Nitrobenzene	ND	2820	2540	90	2820	2600	92	2	40-140/30
62-75-9	n-Nitrosodimethylamine	ND	2820	1960	69	2820	1950	69	1	40-140/30
621-64-7	N-Nitroso-di-n-propylamine	ND	2820	2640	94	2820	2710	96	3	40-140/30
86-30-6	N-Nitrosodiphenylamine	ND	2820	2450	87	2820	2620	93	7	40-140/30
110-86-1	Pyridine	ND	2820	1570	56	2820	1570	56	0	40-140/30

CAS No.	Surrogate Recoveries	MS	MSD	MC32521-1	Limits
367-12-4	2-Fluorophenol	69%	70%	65%	30-130%
4165-62-2	Phenol-d5	76%	78%	72%	30-130%
118-79-6	2,4,6-Tribromophenol	89%	95%	81%	30-130%
4165-60-0	Nitrobenzene-d5	81%	81%	74%	30-130%
321-60-8	2-Fluorobiphenyl	80%	79%	70%	30-130%
1718-51-0	Terphenyl-d14	89%	91%	82%	30-130%

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

(b) High RPD due to possible matrix interference and/or sample heterogeneity.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 2

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP39228-MS	F75164.D	1	08/06/14	WK	08/02/14	OP39228	MSF3308
OP39228-MSD	F75165.D	1	08/06/14	WK	08/02/14	OP39228	MSF3308
MC32300-13	F75166.D	1	08/06/14	WK	08/02/14	OP39228	MSF3308

The QC reported here applies to the following samples:

Method: SW846 8270D

MC32521-2

CAS No.	Compound	MC32300-13 Spike		MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD	
		ug/l	Q								ug/l
65-85-0	Benzoic Acid	ND		50	23.9	48	50	24.4	49	2	30-130/20
95-57-8	2-Chlorophenol	ND		50	31.2	62	50	36.2	72	15	30-130/20
59-50-7	4-Chloro-3-methyl phenol	ND		50	31.7	63	50	34.9	70	10	30-130/20
120-83-2	2,4-Dichlorophenol	ND		50	31.5	63	50	37.0	74	16	30-130/20
105-67-9	2,4-Dimethylphenol	ND		50	22.2	44	50	24.6	49	10	30-130/20
51-28-5	2,4-Dinitrophenol	ND		50	41.4	83	50	44.6	89	7	30-130/20
534-52-1	4,6-Dinitro-o-cresol	ND		50	47.8	96	50	51.5	103	7	30-130/20
95-48-7	2-Methylphenol	ND		50	26.1	52	50	29.9	60	14	30-130/20
	3&4-Methylphenol	ND		100	47.7	48	100	52.7	53	10	30-130/20
88-75-5	2-Nitrophenol	ND		50	35.0	70	50	40.9	82	16	30-130/20
100-02-7	4-Nitrophenol	ND		50	8.4	17* a	50	8.7	17* a	4	30-130/20
87-86-5	Pentachlorophenol	ND		50	48.1	96	50	52.1	104	8	30-130/20
108-95-2	Phenol	ND		50	12.3	25* a	50	13.0	26* a	6	30-130/20
95-95-4	2,4,5-Trichlorophenol	ND		50	38.4	77	50	47.7	95	22* b	30-130/20
88-06-2	2,4,6-Trichlorophenol	ND		50	36.7	73	50	44.4	89	19	30-130/20
62-53-3	Aniline	ND		50	19.2	38* a	50	22.5	45	16	40-140/20
101-55-3	4-Bromophenyl phenyl ether	ND		50	45.1	90	50	47.1	94	4	40-140/20
85-68-7	Butyl benzyl phthalate	ND		50	61.6	123	50	65.0	130	5	40-140/20
100-51-6	Benzyl Alcohol	ND		50	29.1	58	50	35.7	71	20	40-140/20
91-58-7	2-Chloronaphthalene	ND		50	39.7	79	50	49.6	99	22* b	40-140/20
106-47-8	4-Chloroaniline	ND		50	32.5	65	50	36.0	72	10	40-140/20
111-91-1	bis(2-Chloroethoxy)methane	ND		50	29.3	59	50	33.5	67	13	40-140/20
111-44-4	bis(2-Chloroethyl)ether	ND		50	38.2	76	50	42.3	85	10	40-140/20
108-60-1	bis(2-Chloroisopropyl)ether	ND		50	52.8	106	50	66.1	132	22* b	40-140/20
7005-72-3	4-Chlorophenyl phenyl ether	ND		50	39.3	79	50	41.9	84	6	40-140/20
122-66-7	1,2-Diphenylhydrazine	ND		50	43.7	87	50	45.9	92	5	40-140/20
121-14-2	2,4-Dinitrotoluene	ND		50	50.0	100	50	54.7	109	9	40-140/20
606-20-2	2,6-Dinitrotoluene	ND		50	43.1	86	50	46.5	93	8	40-140/20
91-94-1	3,3'-Dichlorobenzidine	ND		50	41.1	82	50	44.3	89	7	40-140/20
132-64-9	Dibenzofuran	ND		50	39.9	80	50	43.6	87	9	40-140/20
84-74-2	Di-n-butyl phthalate	1.2	JB	50	52.8	103	50	57.9	113	9	40-140/20
117-84-0	Di-n-octyl phthalate	ND		50	61.2	122	50	65.4	131	7	40-140/20
84-66-2	Diethyl phthalate	0.72	J	50	49.4	97	50	52.9	104	7	40-140/20
131-11-3	Dimethyl phthalate	ND		50	46.2	92	50	49.8	100	7	40-140/20
117-81-7	bis(2-Ethylhexyl)phthalate	ND		50	61.6	123	50	63.7	127	3	40-140/20
118-74-1	Hexachlorobenzene	ND		50	45.2	90	50	47.5	95	5	40-140/20

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 2 of 2

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP39228-MS	F75164.D	1	08/06/14	WK	08/02/14	OP39228	MSF3308
OP39228-MSD	F75165.D	1	08/06/14	WK	08/02/14	OP39228	MSF3308
MC32300-13	F75166.D	1	08/06/14	WK	08/02/14	OP39228	MSF3308

The QC reported here applies to the following samples:

Method: SW846 8270D

MC32521-2

CAS No.	Compound	MC32300-13 Spike ug/l	Q	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
77-47-4	Hexachlorocyclopentadiene	ND	50	12.9	26* c	50	16.1	32* c	22* b	40-140/20
67-72-1	Hexachloroethane	ND	50	20.1	40	50	22.2	44	10	40-140/20
78-59-1	Isophorone	ND	50	32.4	65	50	37.1	74	14	40-140/20
88-74-4	2-Nitroaniline	ND	50	51.1	102	50	52.4	105	3	40-140/20
99-09-2	3-Nitroaniline	ND	50	44.9	90	50	48.5	97	8	40-140/20
100-01-6	4-Nitroaniline	ND	50	49.6	99	50	52.8	106	6	40-140/20
98-95-3	Nitrobenzene	ND	50	30.2	60	50	36.2	72	18	40-140/20
62-75-9	n-Nitrosodimethylamine	ND	50	19.7	39* a	50	20.9	42	6	40-140/20
621-64-7	N-Nitroso-di-n-propylamine	ND	50	36.4	73	50	41.9	84	14	40-140/20
86-30-6	N-Nitrosodiphenylamine	ND	50	45.3	91	50	47.8	96	5	40-140/20
110-86-1	Pyridine	ND	50	18.0	36* a	50	18.3	37* a	2	40-140/20

CAS No.	Surrogate Recoveries	MS	MSD	MC32300-13 Limits	
367-12-4	2-Fluorophenol	36%	40%	45%	15-110%
4165-62-2	Phenol-d5	23%	25%	26%	15-110%
118-79-6	2,4,6-Tribromophenol	78%	86%	81%	15-110%
4165-60-0	Nitrobenzene-d5	55%	69%	70%	30-130%
321-60-8	2-Fluorobiphenyl	55%	76%	73%	30-130%
1718-51-0	Terphenyl-d14	85%	100%	90%	30-130%

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

(b) High RPD due to possible matrix interference and/or sample heterogeneity.

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

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP39212-MS	I90990.D	1	08/04/14	MR	08/01/14	OP39212	MSI3396
OP39212-MSD	I90991.D	1	08/04/14	MR	08/01/14	OP39212	MSI3396
MC32521-1	I90992.D	1	08/04/14	MR	08/01/14	OP39212	MSI3396

The QC reported here applies to the following samples:

Method: SW846 8270D BY SIM

MC32521-1

CAS No.	Compound	MC32521-1 ug/kg	Spike Q	ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND		2820	2450	87	2820	2530	90	3	40-140/30
208-96-8	Acenaphthylene	ND		2820	2260	80	2820	2340	83	3	40-140/30
120-12-7	Anthracene	ND		2820	2520	89	2820	2710	96	7	40-140/30
56-55-3	Benzo(a)anthracene	ND		2820	3080	109	2820	3370	119	9	40-140/30
50-32-8	Benzo(a)pyrene	ND		2820	2730	97	2820	2950	104	8	40-140/30
205-99-2	Benzo(b)fluoranthene	ND		2820	3400	120	2820	3710	131	9	40-140/30
191-24-2	Benzo(g,h,i)perylene	1.8	J	2820	2800	99	2820	3080	109	10	40-140/30
207-08-9	Benzo(k)fluoranthene	ND		2820	2480	88	2820	2670	95	7	40-140/30
218-01-9	Chrysene	ND		2820	2570	91	2820	2770	98	7	40-140/30
53-70-3	Dibenzo(a,h)anthracene	ND		2820	2920	103	2820	3200	113	9	40-140/30
206-44-0	Fluoranthene	ND		2820	2890	102	2820	3070	109	6	40-140/30
86-73-7	Fluorene	ND		2820	2480	88	2820	2650	94	7	40-140/30
193-39-5	Indeno(1,2,3-cd)pyrene	ND		2820	2870	102	2820	3150	112	9	40-140/30
90-12-0	1-Methylnaphthalene	ND		2820	2280	81	2820	2330	82	2	40-140/30
91-57-6	2-Methylnaphthalene	ND		2820	2320	82	2820	2370	84	2	40-140/30
85-01-8	Phenanthrene	1.5	J	2820	2480	88	2820	2650	94	7	40-140/30
129-00-0	Pyrene	ND		2820	2810	100	2820	3020	107	7	40-140/30

CAS No.	Surrogate Recoveries	MS	MSD	MC32521-1	Limits
367-12-4	2-Fluorophenol	38%	39%	35%	15-110%
4165-62-2	Phenol-d5	37%	39%	33%	15-110%
118-79-6	2,4,6-Tribromophenol	45%	48%	38%	15-110%
4165-60-0	Nitrobenzene-d5	78%	78%	77%	30-130%
321-60-8	2-Fluorobiphenyl	77%	77%	66%	30-130%
1718-51-0	Terphenyl-d14	90%	96%	86%	30-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP39229-MS	I91067.D	1	08/07/14	MR	08/02/14	OP39229	MSI3391
OP39229-MSD	I91068.D	1	08/07/14	MR	08/02/14	OP39229	MSI3391
MC32300-14	I91069.D	1	08/07/14	MR	08/02/14	OP39229	MSI3391

The QC reported here applies to the following samples:

Method: SW846 8270D BY SIM

MC32521-2

CAS No.	Compound	MC32300-14 Spike		MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD	
		ug/l	Q ug/l								
83-32-9	Acenaphthene	ND	50	40.2	80	50	43.1	86	7	40-140/20	
208-96-8	Acenaphthylene	ND	50	36.0	72	50	38.8	78	7	40-140/20	
120-12-7	Anthracene	ND	50	46.4	93	50	48.4	97	4	40-140/20	
56-55-3	Benzo(a)anthracene	ND	50	60.4	121	50	64.5	129	7	40-140/20	
50-32-8	Benzo(a)pyrene	ND	50	52.8	106	50	55.5	111	5	40-140/20	
205-99-2	Benzo(b)fluoranthene	ND	50	64.4	129	50	67.3	135	4	40-140/20	
191-24-2	Benzo(g,h,i)perylene	ND	50	57.6	115	50	60.4	121	5	40-140/20	
207-08-9	Benzo(k)fluoranthene	ND	50	49.6	99	50	52.7	105	6	40-140/20	
218-01-9	Chrysene	ND	50	50.5	101	50	53.4	107	6	40-140/20	
53-70-3	Dibenzo(a,h)anthracene	ND	50	60.7	121	50	64.0	128	5	40-140/20	
206-44-0	Fluoranthene	ND	50	51.5	103	50	54.9	110	6	40-140/20	
86-73-7	Fluorene	ND	50	43.4	87	50	45.8	92	5	40-140/20	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	50	59.2	118	50	62.4	125	5	40-140/20	
90-12-0	1-Methylnaphthalene	ND	50	34.3	69	50	38.4	77	11	40-140/20	
91-57-6	2-Methylnaphthalene	ND	50	34.6	69	50	38.7	77	11	40-140/20	
85-01-8	Phenanthrene	0.023	J	50	46.5	93	50	48.5	97	4	40-140/20
129-00-0	Pyrene	ND	50	51.5	103	50	54.7	109	6	40-140/20	

CAS No.	Surrogate Recoveries	MS	MSD	MC32300-14 Limits	
367-12-4	2-Fluorophenol	37%	43%	45%	15-110%
4165-62-2	Phenol-d5	25%	28%	30%	15-110%
118-79-6	2,4,6-Tribromophenol	83%	93%	82%	15-110%
4165-60-0	Nitrobenzene-d5	71%	84%	86%	30-130%
321-60-8	2-Fluorobiphenyl	58%	70%	72%	30-130%
1718-51-0	Terphenyl-d14	95%	106%	102%	30-130%

* = Outside of Control Limits.

Semivolatile Internal Standard Area Summary

Page 1 of 1

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Check Std:	MSF3308-CC3270	Injection Date:	08/06/14
Lab File ID:	F75161.D	Injection Time:	09:01
Instrument ID:	GCMSF	Method:	SW846 8270D

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	127423	2.97	472476	4.00	341336	5.48	588249	6.72	612982	8.99	518605	10.38
Upper Limit ^a	254846	3.47	944952	4.50	682672	5.98	1176498	7.22	1225964	9.49	1037210	10.88
Lower Limit ^b	63712	2.47	236238	3.50	170668	4.98	294125	6.22	306491	8.49	259303	9.88

Lab	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
Sample ID	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP39228-MB	121447	2.97	444842	3.99	274954	5.48	458897	6.71	508482	8.98	487435	10.38
OP39228-BS	127786	2.97	467257	3.99	342411	5.48	578437	6.72	614397	8.99	499649	10.38
OP39228-MS	132445	2.97	479113	4.00	295152	5.48	511636	6.72	549545	8.99	543705	10.38
OP39228-MSD	152476	2.97	534448	4.00	294211	5.48	516324	6.72	563369	8.99	552061	10.38
MC32300-13	154543	2.97	559433	3.99	335520	5.48	559155	6.71	550202	8.98	540632	10.38
ZZZZZZ	160561	2.97	582703	3.99	356910	5.48	609438	6.71	663942	8.98	628518	10.38
ZZZZZZ	155144	2.97	607929	3.99	370478	5.48	632067	6.71	687933	8.98	653533	10.38
MC32521-2	145161	2.97	529891	3.99	322866	5.47	537880	6.71	565803	8.98	575505	10.37
OP38681-MB	150102	2.97	548761	3.99	357480	5.48	608893	6.71	672395	8.98	643098	10.38
ZZZZZZ	141800	2.97	521332	3.99	309673	5.48	526941	6.71	585070	8.98	546152	10.38
ZZZZZZ	157057	2.97	570246	3.99	340821	5.48	550495	6.71	631937	8.98	585005	10.38
ZZZZZZ	168429	2.97	572470	3.99	361969	5.48	614830	6.71	667924	8.98	611779	10.38
ZZZZZZ	162750	2.97	600100	3.99	360744	5.48	612493	6.71	651570	8.98	591420	10.38
ZZZZZZ	154205	2.97	572525	3.99	352115	5.48	585220	6.71	618997	8.98	581723	10.38
ZZZZZZ	137265	2.97	517732	3.99	311652	5.47	532481	6.71	586133	8.98	562315	10.37
ZZZZZZ	163362	2.97	612863	3.99	370910	5.48	635991	6.71	693046	8.98	623319	10.38
OP38681-BS1	138684	2.97	509648	3.99	347066	5.48	555882	6.71	638775	8.98	612304	10.37
OP38681-BS2	158937	2.97	577973	3.99	362701	5.48	617314	6.71	654232	8.98	634575	10.37
OP38681-BS3	169220	2.97	618288	3.99	358722	5.48	616403	6.71	641780	8.99	670204	10.38
OP38681-BS4	142077	2.97	521798	3.99	319077	5.48	567678	6.71	625461	8.98	594117	10.38

IS 1 = 1,4-Dichlorobenzene-d4

IS 2 = Naphthalene-d8

IS 3 = Acenaphthene-D10

IS 4 = Phenanthrene-d10

IS 5 = Chrysene-d12

IS 6 = Perylene-d12

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

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

Semivolatile Internal Standard Area Summary

Page 1 of 2

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Check Std: MSI3388-CC3320

Injection Date: 08/04/14

Lab File ID: I90976.D

Injection Time: 08:11

Instrument ID: GCMSI

Method: SW846 8270D BY SIM

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	357805	4.27	755459	5.32	383295	6.86	649039	8.27	415122	11.04	1109159	12.55
Upper Limit ^a	715610	4.77	1510918	5.82	766590	7.36	1298078	8.77	830244	11.54	2218318	13.05
Lower Limit ^b	178903	3.77	377730	4.82	191648	6.36	324520	7.77	207561	10.54	554580	12.05

Lab	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
Sample ID	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP39074-MB	365839	4.27	778671	5.32	395362	6.86	653902	8.27	422260	11.04	1146594	12.55
OP39074-BS	348760	4.27	745810	5.32	375924	6.86	629851	8.27	407023	11.04	1095424	12.55
OP39074-BSD	363729	4.27	780758	5.32	396576	6.86	662198	8.27	435155	11.04	1149990	12.55
OP39074-MS	339098	4.27	728314	5.32	369444	6.86	614716	8.27	401305	11.04	1070789	12.55
OP39074-MSD	358001	4.27	769570	5.32	386172	6.86	644103	8.27	423640	11.04	1116209	12.55
MC32291-4F	352987	4.27	760115	5.32	381661	6.86	635856	8.27	408123	11.04	1103402	12.55
ZZZZZZ	358727	4.27	738097	5.32	383705	6.86	644205	8.27	412969	11.04	1121589	12.55
ZZZZZZ	356742	4.27	768513	5.32	387143	6.86	640858	8.27	410166	11.04	1116014	12.55
ZZZZZZ	356747	4.27	769118	5.32	387800	6.86	646100	8.27	418660	11.04	1139870	12.55
ZZZZZZ	347010	4.27	714646	5.32	373049	6.86	624200	8.27	405257	11.04	1105252	12.55
ZZZZZZ	350334	4.27	721479	5.32	377149	6.86	630970	8.27	414184	11.04	1121524	12.55
OP39212-MB	382944	4.27	832919	5.32	415203	6.86	700260	8.27	445795	11.04	1184508	12.55
OP39212-BS	399319	4.27	872951	5.32	433555	6.86	716011	8.27	449390	11.04	1168537	12.55
OP39212-MS	427276	4.27	911451	5.32	448198	6.86	723467	8.27	440706	11.04	1141262	12.55
OP39212-MSD	383507	4.27	841221	5.32	423006	6.86	708650	8.27	449522	11.04	1171068	12.55
MC32521-1	498434	4.27	963797	5.32	507621	6.86	794284	8.27	464696	11.04	1195273	12.55
OP39206-MB	375496	4.27	820093	5.32	405871	6.86	670457	8.27	430551	11.04	1155071	12.55
OP39206-BS	374012	4.27	815697	5.32	408105	6.86	679372	8.27	442247	11.04	1169438	12.55
ZZZZZZ	358430	4.27	795669	5.32	403872	6.86	687143	8.27	458421	11.04	1249616	12.55
ZZZZZZ	378633	4.27	832825	5.32	427044	6.86	717703	8.27	475467	11.04	1271787	12.55
ZZZZZZ	368029	4.27	810813	5.32	413626	6.86	690287	8.27	458828	11.04	1229496	12.55
OP39193-MB	378506	4.27	825036	5.32	414053	6.86	677498	8.27	447485	11.04	1187175	12.55
OP39193-BS	374946	4.27	825927	5.32	414199	6.86	691584	8.27	455298	11.04	1200532	12.55
ZZZZZZ	379977	4.27	834967	5.32	418731	6.86	694351	8.27	453629	11.04	1226901	12.55
ZZZZZZ	373164	4.27	809834	5.32	406126	6.86	666753	8.27	429384	11.04	1173306	12.55
ZZZZZZ	379489	4.27	827469	5.32	414091	6.86	673197	8.27	432718	11.04	1171580	12.55
ZZZZZZ	384929	4.27	846304	5.32	422343	6.86	693594	8.27	444584	11.04	1196353	12.55
ZZZZZZ	383326	4.27	832744	5.32	418639	6.86	683452	8.27	440310	11.04	1188460	12.55

IS 1 = 1,4-Dichlorobenzene-d4

IS 2 = Naphthalene-d8

IS 3 = Acenaphthene-D10

IS 4 = Phenanthrene-d10

IS 5 = Chrysene-d12

IS 6 = Perylene-d12

Semivolatile Internal Standard Area Summary

Page 2 of 2

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Check Std: MSI3388-CC3320

Injection Date: 08/04/14

Lab File ID: I90976.D

Injection Time: 08:11

Instrument ID: GCMSI

Method: SW846 8270D BY SIM

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

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

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

7.5.2

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Semivolatiles Internal Standard Area Summary

Page 1 of 2

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Check Std: MSI3396-CC3386

Injection Date: 08/04/14

Lab File ID: I90976B.D

Injection Time: 08:11

Instrument ID: GCMSI

Method: SW846 8270D BY SIM

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	351338	4.27	755459	5.32	383295	6.86	649039	8.27	415122	11.04	1109650	12.55
Upper Limit ^a	702676	4.77	1510918	5.82	766590	7.36	1298078	8.77	830244	11.54	2219300	13.05
Lower Limit ^b	175669	3.77	377730	4.82	191648	6.36	324520	7.77	207561	10.54	554825	12.05

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP39074-MB	365839	4.27	778671	5.32	395362	6.86	653902	8.27	422260	11.04	1146594	12.55
OP39074-BS	348760	4.27	745810	5.32	375924	6.86	629851	8.27	407023	11.04	1095424	12.55
OP39074-BSD	363729	4.27	780758	5.32	396576	6.86	662198	8.27	435155	11.04	1149990	12.55
OP39074-MS	339098	4.27	728314	5.32	369444	6.86	614716	8.27	401305	11.04	1070789	12.55
OP39074-MSD	358001	4.27	769570	5.32	386172	6.86	644103	8.27	423640	11.04	1116209	12.55
MC32291-4F	352987	4.27	760115	5.32	381661	6.86	635856	8.27	408123	11.04	1103402	12.55
ZZZZZZ	358727	4.27	738097	5.32	383705	6.86	644205	8.27	412969	11.04	1121589	12.55
ZZZZZZ	356742	4.27	768513	5.32	387143	6.86	640858	8.27	410166	11.04	1116014	12.55
ZZZZZZ	356747	4.27	769118	5.32	387800	6.86	646100	8.27	418660	11.04	1139870	12.55
ZZZZZZ	347010	4.27	714646	5.32	373049	6.86	624200	8.27	405257	11.04	1105252	12.55
ZZZZZZ	350334	4.27	721479	5.32	377149	6.86	630970	8.27	414184	11.04	1121524	12.55
OP39212-MB	382944	4.27	832919	5.32	415203	6.86	700260	8.27	445795	11.04	1184508	12.55
OP39212-BS	399319	4.27	872951	5.32	433555	6.86	716011	8.27	449390	11.04	1168537	12.55
OP39212-MS	427276	4.27	911451	5.32	448198	6.86	723467	8.27	440706	11.04	1141262	12.55
OP39212-MSD	383507	4.27	841221	5.32	423006	6.86	708650	8.27	449522	11.04	1171068	12.55
MC32521-1	498434	4.27	963797	5.32	507621	6.86	794284	8.27	464696	11.04	1195273	12.55
OP39206-MB	375496	4.27	820093	5.32	405871	6.86	670457	8.27	430551	11.04	1155071	12.55
OP39206-BS	374012	4.27	815697	5.32	408105	6.86	679372	8.27	442247	11.04	1169438	12.55
ZZZZZZ	358430	4.27	795669	5.32	403872	6.86	687143	8.27	458421	11.04	1249616	12.55
ZZZZZZ	378633	4.27	832825	5.32	427044	6.86	717703	8.27	475467	11.04	1271787	12.55
ZZZZZZ	368029	4.27	810813	5.32	413626	6.86	690287	8.27	458828	11.04	1229496	12.55
OP39193-MB	378506	4.27	825036	5.32	414053	6.86	677498	8.27	447485	11.04	1187175	12.55
OP39193-BS	374946	4.27	825927	5.32	414199	6.86	691584	8.27	455298	11.04	1200532	12.55
ZZZZZZ	379977	4.27	834967	5.32	418731	6.86	694351	8.27	453629	11.04	1226901	12.55
ZZZZZZ	373164	4.27	809834	5.32	406126	6.86	666753	8.27	429384	11.04	1173306	12.55
ZZZZZZ	379489	4.27	827469	5.32	414091	6.86	673197	8.27	432718	11.04	1171580	12.55
ZZZZZZ	384929	4.27	846304	5.32	422343	6.86	693594	8.27	444584	11.04	1196353	12.55
ZZZZZZ	383326	4.27	832744	5.32	418639	6.86	683452	8.27	440310	11.04	1188460	12.55

IS 1 = 1,4-Dichlorobenzene-d4

IS 2 = Naphthalene-d8

IS 3 = Acenaphthene-D10

IS 4 = Phenanthrene-d10

IS 5 = Chrysene-d12

IS 6 = Perylene-d12

Semivolatile Internal Standard Area Summary

Page 2 of 2

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Check Std:	MSI3396-CC3386	Injection Date:	08/04/14
Lab File ID:	I90976B.D	Injection Time:	08:11
Instrument ID:	GCMSI	Method:	SW846 8270D BY SIM

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

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

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

7.5.3

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Semivolatile Internal Standard Area Summary

Page 1 of 1

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Check Std: MSI3391-CC3386

Injection Date: 08/07/14

Lab File ID: I91064.D

Injection Time: 10:36

Instrument ID: GCMSI

Method: SW846 8270D BY SIM

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	423684	4.19	913022	5.25	475385	6.78	820697	8.18	572135	10.95	1505465	12.44
Upper Limit ^a	847368	4.69	1826044	5.75	950770	7.28	1641394	8.68	1144270	11.45	3010930	12.94
Lower Limit ^b	211842	3.69	456511	4.75	237693	6.28	410349	7.68	286068	10.45	752733	11.94

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP39229-MB	487241	4.19	1058495	5.25	549326	6.78	925824	8.18	641375	10.95	1729874	12.44
OP39229-BS	523249	4.19	1135749	5.25	590215	6.78	1007715	8.18	720018	10.95	1860378	12.45
OP39229-MS	517056	4.19	1132776	5.25	591655	6.78	1015872	8.18	731192	10.95	1887422	12.45
OP39229-MSD	514734	4.19	1132455	5.25	590498	6.78	1009905	8.18	711707	10.95	1851233	12.45
MC32300-14	527235	4.19	1155763	5.24	604071	6.78	1015843	8.18	708538	10.95	1889657	12.44
ZZZZZZ	525514	4.19	1141978	5.24	596901	6.78	1013170	8.18	708116	10.95	1885645	12.44
ZZZZZZ	522567	4.19	1141691	5.24	588879	6.78	992905	8.18	689076	10.95	1839075	12.44
OP39249-MB	507752	4.19	1100699	5.24	571213	6.78	956536	8.17	640214	10.95	1689912	12.44
OP39249-BS	575606	4.18	1259704	5.24	646816	6.78	1092110	8.18	732636	10.95	1839782	12.45
OP39249-MS	576098	4.19	1128704	5.25	640696	6.78	1070344	8.18	704821	10.95	1786245	12.45
OP39249-MSD	593384	4.19	1298459	5.25	672393	6.78	1129232	8.18	754387	10.95	1876825	12.45
MC32300-17	588215	4.19	1276070	5.24	629379	6.78	1102588	8.18	733559	10.95	1860836	12.44
ZZZZZZ	504916	4.19	1099901	5.24	563169	6.77	952744	8.17	632383	10.95	1639058	12.44
ZZZZZZ	524089	4.19	1131971	5.24	581060	6.77	965752	8.17	617551	10.95	1577568	12.44
ZZZZZZ	627015	4.19	1347511	5.24	678824	6.78	1112412	8.18	695964	10.95	1724400	12.45
ZZZZZZ	466367	4.19	1008664	5.24	517533	6.78	837387	8.18	524866	10.95	1387253	12.45
ZZZZZZ	547610	4.19	1194188	5.24	613285	6.78	1003782	8.18	613159	10.95	1511061	12.45
ZZZZZZ	586356	4.19	1293771	5.24	657857	6.78	1059795	8.18	659631	10.95	1611523	12.45
ZZZZZZ	576459	4.19	1245939	5.24	639500	6.78	1039999	8.18	644555	10.95	1572937	12.45
OP39266-MB	547047	4.19	1199232	5.24	623103	6.78	1023695	8.18	673062	10.95	1711177	12.45
OP39266-BS	549765	4.19	1222148	5.25	628926	6.78	1049439	8.18	706327	10.95	1766974	12.45
OP39266-MS	519799	4.19	1155507	5.25	598788	6.78	1010781	8.18	681858	10.96	1708959	12.45
OP39266-MSD	527705	4.19	1167330	5.25	606817	6.78	1015599	8.18	685445	10.95	1712585	12.45
MC32644-1	506953	4.18	1114599	5.24	587402	6.78	989516	8.18	683514	10.95	1768699	12.44
ZZZZZZ	487588	4.19	1079663	5.24	568720	6.78	956475	8.18	655170	10.94	1682796	12.45

IS 1 = 1,4-Dichlorobenzene-d4

IS 2 = Naphthalene-d8

IS 3 = Acenaphthene-D10

IS 4 = Phenanthrene-d10

IS 5 = Chrysene-d12

IS 6 = Perylene-d12

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

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

Semivolatile Internal Standard Area Summary

Page 1 of 1

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Check Std:	MSI3392-CC3386	Injection Date:	08/08/14
Lab File ID:	I91092.D	Injection Time:	08:08
Instrument ID:	GCMSI	Method:	SW846 8270D BY SIM

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	511280	4.17	1099682	5.23	564987	6.76	944981	8.16	621193	10.93	1588995	12.43
Upper Limit ^a	1022560	4.67	2199364	5.73	1129974	7.26	1889962	8.66	1242386	11.43	3177990	12.93
Lower Limit ^b	255640	3.67	549841	4.73	282494	6.26	472491	7.66	310597	10.43	794498	11.93

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP39255-MB	642747	4.17	1409110	5.22	712875	6.76	1152340	8.16	726483	10.93	1838594	12.43
OP39255-BS	640486	4.17	1382468	5.23	690720	6.76	1110255	8.16	713723	10.93	1743358	12.43
ZZZZZZ	637271	4.17	1407726	5.22	712496	6.76	1131219	8.16	689913	10.93	1726250	12.43
ZZZZZZ	553045	4.17	1213971	5.22	610689	6.76	974670	8.16	590785	10.93	1474503	12.42
MC32521-2	608545	4.17	1326787	5.23	671521	6.76	1081142	8.16	696628	10.93	1783504	12.43
OP39255-MS	508820	4.18	1098216	5.23	556813	6.76	901496	8.16	579829	10.93	1459164	12.43
OP39255-MSD	505056	4.18	1086017	5.23	555177	6.76	892975	8.16	572096	10.93	1457065	12.43
MC32549-1	506820	4.18	1089212	5.23	565469	6.76	901944	8.16	571243	10.93	1460953	12.42
OP39280-MB	597422	4.17	1300626	5.22	648785	6.76	1026827	8.16	672554	10.93	1704803	12.43
OP39280-BS	593393	4.17	1272944	5.23	621749	6.76	989964	8.16	654811	10.93	1655784	12.43
OP39280-MS	537251	4.17	1161892	5.23	570701	6.76	908648	8.16	587658	10.93	1504148	12.43
OP39280-MSD	603048	4.17	1307056	5.23	639628	6.76	1027093	8.16	662804	10.93	1687516	12.43
MC32300-23	581325	4.17	1265301	5.23	637052	6.76	1017012	8.16	648564	10.93	1678393	12.43
ZZZZZZ	605624	4.17	1319849	5.22	659451	6.76	1046431	8.16	661496	10.93	1715659	12.43
ZZZZZZ	561533	4.17	1207991	5.22	602540	6.76	968663	8.16	610833	10.93	1582934	12.42

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

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

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

Semivolatile Internal Standard Area Summary

Page 1 of 1

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Check Std: MSX136-CC106

Injection Date: 08/04/14

Lab File ID: X04129.D

Injection Time: 07:53

Instrument ID: GCMSX

Method: SW846 8270D

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	269102	3.38	1034275	4.42	567950	5.93	930188	7.20	810477	9.59	656948	11.14
Upper Limit ^a	538204	3.88	2068550	4.92	1135900	6.43	1860376	7.70	1620954	10.09	1313896	11.64
Lower Limit ^b	134551	2.88	517138	3.92	283975	5.43	465094	6.70	405239	9.09	328474	10.64

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP39211-MB	329202	3.38	1284213	4.42	697000	5.93	1034735	7.20	766975	9.59	560078	11.14
OP39211-BS	306224	3.38	1142232	4.42	632064	5.93	1004364	7.20	821561	9.59	653074	11.14
OP39211-BSD	286801	3.38	1067731	4.42	588614	5.93	930796	7.20	791546	9.59	632709	11.14
OP39211-MS	333747	3.38	1266255	4.42	673571	5.93	1045985	7.20	775406	9.59	618318	11.14
OP39211-MSD	306924	3.38	1163682	4.42	642556	5.93	1021511	7.20	811608	9.59	637169	11.14
MC32521-1	305760	3.38	1173204	4.41	646738	5.92	1009317	7.19	745436	9.59	553839	11.13
ZZZZZZ	293924	3.38	1104211	4.41	620527	5.93	952435	7.20	748352	9.59	590352	11.14
ZZZZZZ	291038	3.38	1091651	4.42	603738	5.93	909086	7.20	649808	9.59	514449	11.14
ZZZZZZ	275553	3.38	1023638	4.41	563019	5.93	863454	7.20	695729	9.59	564240	11.13
ZZZZZZ	288914	3.38	1064126	4.42	580151	5.93	833741	7.20	612759	9.61	483544	11.16
ZZZZZZ	308045	3.38	1119775	4.42	603497	5.93	895300	7.20	640264	9.59	511642	11.14
ZZZZZZ	331523	3.38	1225425	4.42	650792	5.93	952491	7.20	667966	9.59	570416	11.14
ZZZZZZ	288811	3.38	1043149	4.42	558433	5.93	845411	7.20	662283	9.59	547993	11.14
ZZZZZZ	281645	3.38	1055631	4.42	586165	5.93	908461	7.20	681316	9.59	525367	11.14
ZZZZZZ	304527	3.38	1139635	4.42	611412	5.93	920986	7.20	666799	9.59	529101	11.13
ZZZZZZ	292153	3.38	1081748	4.41	600734	5.93	928351	7.20	686018	9.59	522901	11.13
ZZZZZZ	277392	3.38	1013364	4.42	560833	5.93	869099	7.20	674421	9.59	533920	11.14
ZZZZZZ	283827	3.38	1045649	4.41	562693	5.92	839179	7.20	654623	9.59	563418	11.14
ZZZZZZ	334405	3.38	1213208	4.41	635275	5.93	911034	7.20	635882	9.59	529539	11.15
ZZZZZZ	261811	3.38	976136	4.42	550000	5.93	851585	7.20	671423	9.59	566863	11.14
ZZZZZZ	291432	3.38	1048347	4.41	558869	5.93	818933	7.20	646682	9.59	551021	11.14
OP39205-MB	294698	3.38	1088705	4.42	586862	5.93	895526	7.20	697813	9.59	529536	11.14
OP39205-BS	296747	3.38	1096072	4.42	590440	5.93	903850	7.20	726981	9.59	600437	11.14
ZZZZZZ	302990	3.38	1112739	4.41	614020	5.92	932369	7.20	707451	9.59	532223	11.14
ZZZZZZ	315073	3.38	1174079	4.41	626324	5.92	920105	7.20	707333	9.59	539944	11.13

IS 1 = 1,4-Dichlorobenzene-d4

IS 2 = Naphthalene-d8

IS 3 = Acenaphthene-D10

IS 4 = Phenanthrene-d10

IS 5 = Chrysene-d12

IS 6 = Perylene-d12

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

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

Semivolatile Surrogate Recovery Summary

Page 1 of 1

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Method: SW846 8270D

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4	S5	S6
MC32521-2	F75169.D	36	22	73	57	67	89
OP39228-BS	F75163.D	53	31	84	68	69	89
OP39228-MB	F75162.D	45	28	81	67	63	95
OP39228-MS	F75164.D	36	23	78	55	55	85
OP39228-MSD	F75165.D	40	25	86	69	76	100

Surrogate Compounds	Recovery Limits
------------------------	--------------------

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

7.6.1

7

Semivolatile Surrogate Recovery Summary

Page 1 of 1

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Method: SW846 8270D

Matrix: SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4	S5	S6
MC32521-1	X04135.D	65	72	81	74	70	82
OP39211-BS	X04131.D	63	71	84	75	72	84
OP39211-BSD	X04132.D	62	74	94	76	76	90
OP39211-MB	X04130.D	70	80	81	77	72	87
OP39211-MS	X04133.D	69	76	89	81	80	89
OP39211-MSD	X04134.D	70	78	95	81	79	91

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

7.6.2

7

Semivolatile Surrogate Recovery Summary

Page 1 of 1

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Method: SW846 8270D BY SIM

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
MC32521-2	I91100.D	75	68	101
OP39229-BS	I91066.D	88	71	98
OP39229-MB	I91065.D	89	66	100
OP39229-MS	I91067.D	71	58	95
OP39229-MSD	I91068.D	84	70	106

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

7.6.3

7

Semivolatile Surrogate Recovery Summary

Page 1 of 1

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Method: SW846 8270D BY SIM

Matrix: SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4	S5	S6
MC32521-1	I90992.D	35	33	38	77	66	86
OP39212-BS	I90989.D	36	36	45	73	72	89
OP39212-MB	I90988.D	38	39	39	74	71	88
OP39212-MS	I90990.D	38	37	45	78	77	90
OP39212-MSD	I90991.D	39	39	48	78	77	96

Surrogate Compounds

Recovery Limits

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

7.6.4

7

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

Page 1 of 1

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP39247-MB	BK39938.D	1	08/05/14	NK	08/04/14	OP39247	GBK1298

The QC reported here applies to the following samples:

Method: SW846 8011

MC32521-2, MC32521-4

CAS No.	Compound	Result	RL	MDL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.015	0.0061	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.015	0.0061	ug/l	

CAS No.	Surrogate Recoveries	Limits
460-00-4	Bromofluorobenzene (S)	115% 36-173%
460-00-4	Bromofluorobenzene (S)	107% 36-173%

8.1.1

8

Method Blank Summary

Page 1 of 1

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP39257-MB	BK39961.D	1	08/07/14	NK	08/05/14	OP39257	GBK1299

The QC reported here applies to the following samples:

Method: SW846 8011

MC32521-1

CAS No.	Compound	Result	RL	MDL	Units	Q
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.5	0.72	ug/kg	
106-93-4	1,2-Dibromoethane	ND	2.5	0.60	ug/kg	

CAS No.	Surrogate Recoveries	Limits
460-00-4	Bromofluorobenzene (S)	158% 61-167%
460-00-4	Bromofluorobenzene (S)	163% 61-167%

8.1.2

8

Method Blank Summary

Page 1 of 1

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GAB4535-MB	AB85228.D	1	08/07/14	AF	n/a	n/a	GAB4535

The QC reported here applies to the following samples:

Method: SW846 8015

MC32521-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (VOA)	ND	5.0	0.74	mg/kg	

CAS No.	Surrogate Recoveries	Limits
	2,3,4-Trifluorotoluene	95% 61-116%

8.1.3

8

Blank Spike Summary

Page 1 of 1

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP39247-BS	BK39939.D	1	08/05/14	NK	08/04/14	OP39247	GBK1298

The QC reported here applies to the following samples:

Method: SW846 8011

MC32521-2, MC32521-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
96-12-8	1,2-Dibromo-3-chloropropane	0.071	0.085	120	60-140
106-93-4	1,2-Dibromoethane	0.071	0.083	117	60-140

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	Bromofluorobenzene (S)	110%	36-173%
460-00-4	Bromofluorobenzene (S)	118%	36-173%

* = Outside of Control Limits.

Blank Spike Summary

Page 1 of 1

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP39257-BS	BK39962.D	1	08/07/14	NK	08/05/14	OP39257	GBK1299

The QC reported here applies to the following samples:

Method: SW846 8011

MC32521-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
96-12-8	1,2-Dibromo-3-chloropropane	33.1	37.1	112	59-142
106-93-4	1,2-Dibromoethane	33.1	28.4	86	56-140

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	Bromofluorobenzene (S)	135%	61-167%
460-00-4	Bromofluorobenzene (S)	123%	61-167%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Page 1 of 1

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GAB4535-BSP	AB85229.D	1	08/07/14	AF	n/a	n/a	GAB4535
GAB4535-BSD	AB85230.D	1	08/07/14	AF	n/a	n/a	GAB4535

The QC reported here applies to the following samples:

Method: SW846 8015

MC32521-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	BSD mg/kg	BSD %	RPD	Limits Rec/RPD
	TPH-GRO (VOA)	32.5	32.0	98	31.9	98	0	66-126/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
	2,3,4-Trifluorotoluene	98%	97%	61-116%

8.3.1

8

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP39247-MS	BK39940.D	1	08/05/14	NK	08/04/14	OP39247	GBK1298
OP39247-MSD	BK39941.D	1	08/05/14	NK	08/04/14	OP39247	GBK1298
MC32300-19	BK39942.D	1	08/05/14	NK	08/04/14	OP39247	GBK1298

The QC reported here applies to the following samples:

Method: SW846 8011

MC32521-2, MC32521-4

CAS No.	Compound	MC32300-19 Spike		MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
		ug/l	Q ug/l							
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.071	0.087	123	0.071	0.084	118	4	64-141/29
106-93-4	1,2-Dibromoethane	ND	0.071	0.082	115	0.071	0.078	110	5	63-163/27

CAS No.	Surrogate Recoveries	MS	MSD	MC32300-19 Limits	
460-00-4	Bromofluorobenzene (S)	89%	88%	92%	36-173%
460-00-4	Bromofluorobenzene (S)	100%	104%	106%	36-173%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP39257-MS	BK39963.D	1	08/07/14	NK	08/05/14	OP39257	GBK1299
OP39257-MSD	BK39964.D	1	08/07/14	NK	08/05/14	OP39257	GBK1299
MC32521-1	BK39965.D	1	08/07/14	NK	08/05/14	OP39257	GBK1299

The QC reported here applies to the following samples:

Method: SW846 8011

MC32521-1

CAS No.	Compound	MC32521-1 ug/kg	Spike Q ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
96-12-8	1,2-Dibromo-3-chloropropane	ND	37.4	58.5	156	37.7	57.7	153	1	40-156/27
106-93-4	1,2-Dibromoethane	ND	37.4	46.9	125	37.7	48.5	129	3	48-141/27

CAS No.	Surrogate Recoveries	MS	MSD	MC32521-1	Limits
460-00-4	Bromofluorobenzene (S)	159%	162%	155%	61-167%
460-00-4	Bromofluorobenzene (S)	152%	158%	155%	61-167%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC32521-1MS	AB85233.D	1	08/07/14	AF	n/a	n/a	GAB4535
MC32521-1MSD	AB85234.D	1	08/07/14	AF	n/a	n/a	GAB4535
MC32521-1	AB85232.D	1	08/07/14	AF	n/a	n/a	GAB4535

The QC reported here applies to the following samples:

Method: SW846 8015

MC32521-1

CAS No.	Compound	MC32521-1 mg/kg	Spike Q mg/kg	MS mg/kg	MS %	Spike mg/kg	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (VOA)	ND	94.1	94.9	101	94.1	95.1	101	0	41-150/20

CAS No.	Surrogate Recoveries	MS	MSD	MC32521-1	Limits
	2,3,4-Trifluorotoluene	101%	100%	98%	61-116%

* = Outside of Control Limits.

Volatile Surrogate Recovery Summary

Page 1 of 1

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Method: SW846 8011

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 ^a	S1 ^b
MC32521-2	BK39944.D	94	105
MC32521-4	BK39945.D	99	113
OP39247-BS	BK39939.D	110	118
OP39247-MB	BK39938.D	115	107
OP39247-MS	BK39940.D	89	100
OP39247-MSD	BK39941.D	88	104

Surrogate Compounds	Recovery Limits
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S1 = Bromofluorobenzene (S)	36-173%
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(a) Recovery from GC signal #2

(b) Recovery from GC signal #1

8.5.1

8

Volatile Surrogate Recovery Summary

Page 1 of 1

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, 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
MC32521-1	BK39965.D	155	155
OP39257-BS	BK39962.D	135	123
OP39257-MB	BK39961.D	158	163
OP39257-MS	BK39963.D	159	152
OP39257-MSD	BK39964.D	162	158

Surrogate
Compounds

Recovery
Limits

S1 = Bromofluorobenzene (S)

61-167%

(a) Recovery from GC signal #2

(b) Recovery from GC signal #1

8.5.2
8

Volatile Surrogate Recovery Summary

Page 1 of 1

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Method: SW846 8015

Matrix: SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 ^a
MC32521-1	AB85232.D	98
GAB4535-BSD	AB85230.D	97
GAB4535-BSP	AB85229.D	98
GAB4535-MB	AB85228.D	95
MC32521-1MS	AB85233.D	101
MC32521-1MSD	AB85234.D	100

Surrogate Compounds	Recovery Limits
------------------------	--------------------

S1 = 2,3,4-Trifluorotoluene	61-116%
-----------------------------	---------

(a) Recovery from GC signal #1

8.5.3

8

GC Surrogate Retention Time Summary

Page 1 of 1

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Check Std:	GBK1298-ICC1298	Injection Date:	08/05/14
Lab File ID:	BK39934.D	Injection Time:	09:17
Instrument ID:	GCBK	Method:	SW846 8011

S1 ^a	S1 ^b
RT	RT

Check Std	4.36	4.38
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Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 ^a RT	S1 ^b RT
OP39247-MB	BK39938.D	08/05/14	10:34	4.36	4.38
OP39247-BS	BK39939.D	08/05/14	10:54	4.36	4.38
OP39247-MS	BK39940.D	08/05/14	11:13	4.36	4.38
OP39247-MSD	BK39941.D	08/05/14	11:32	4.36	4.38
MC32300-19	BK39942.D	08/05/14	11:52	4.36	4.38
ZZZZZZ	BK39943.D	08/05/14	12:11	4.36	4.37
MC32521-2	BK39944.D	08/05/14	12:30	4.36	4.38
MC32521-4	BK39945.D	08/05/14	12:49	4.36	4.38
ZZZZZZ	BK39946.D	08/05/14	13:09	4.36	4.38
ZZZZZZ	BK39947.D	08/05/14	13:28	4.36	4.38

Surrogate Compounds

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #2

(b) Retention time from GC signal #1

8.6.1
8

GC Surrogate Retention Time Summary

Page 1 of 1

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Check Std:	GBK1299-CC1299	Injection Date:	08/07/14
Lab File ID:	BK39960.D	Injection Time:	08:31
Instrument ID:	GCBK	Method:	SW846 8011

	S1 ^a RT	S1 ^b RT
Check Std	4.27	4.29

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 ^a RT	S1 ^b RT
OP39257-MB	BK39961.D	08/07/14	09:07	4.27	4.28
OP39257-BS	BK39962.D	08/07/14	09:26	4.27	4.28
OP39257-MS	BK39963.D	08/07/14	09:46	4.27	4.28
OP39257-MSD	BK39964.D	08/07/14	10:05	4.27	4.28
MC32521-1	BK39965.D	08/07/14	10:24	4.27	4.28
ZZZZZZ	BK39966.D	08/07/14	10:44	4.27	4.28
ZZZZZZ	BK39967.D	08/07/14	11:03	4.26	4.28
ZZZZZZ	BK39968.D	08/07/14	11:22	4.27	4.28
ZZZZZZ	BK39969.D	08/07/14	11:42	4.27	4.28
ZZZZZZ	BK39970.D	08/07/14	12:01	4.27	4.28

Surrogate
Compounds

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #2

(b) Retention time from GC signal #1

8.6.2
8

GC Surrogate Retention Time Summary

Page 1 of 1

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Check Std:	GAB4536-CC4488	Injection Date:	08/07/14
Lab File ID:	AB85227A.D	Injection Time:	07:43
Instrument ID:	GCAB	Method:	SW846 8015

S1 ^a
RT

Check Std	20.33
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Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 ^a RT
GAB4535-MB	AB85228.D	08/07/14	08:21	20.33
GAB4536-MB	AB85228A.D	08/07/14	08:21	20.33
GAB4536-BSP	AB85229A.D	08/07/14	08:59	20.32
GAB4535-BSP	AB85229.D	08/07/14	08:59	20.32
GAB4535-BSD	AB85230.D	08/07/14	09:37	20.32
GAB4536-BSD	AB85230A.D	08/07/14	09:37	20.32
MC32468-3	AB85231.D	08/07/14	10:15	20.33
MC32521-1	AB85232.D	08/07/14	10:53	20.33
MC32521-1MS	AB85233.D	08/07/14	11:30	20.32
MC32521-1MSD	AB85234.D	08/07/14	12:08	20.32
MC32468-3MS	AB85235.D	08/07/14	12:45	20.32
MC32468-3MSD	AB85236.D	08/07/14	13:23	20.33

Surrogate
Compounds

S1 = 2,3,4-Trifluorotoluene

(a) Retention time from GC signal #1

8.6.3
8

GC Surrogate Retention Time Summary

Page 1 of 1

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Check Std: GAB4535-CC4488

Injection Date: 08/07/14

Lab File ID: AB85227.D

Injection Time: 07:43

Instrument ID: GCAB

Method: SW846 8015

S1 ^a

RT

Check Std	20.33
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Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 ^a RT
GAB4535-MB	AB85228.D	08/07/14	08:21	20.33
GAB4536-MB	AB85228A.D	08/07/14	08:21	20.33
GAB4536-BSP	AB85229A.D	08/07/14	08:59	20.32
GAB4535-BSP	AB85229.D	08/07/14	08:59	20.32
GAB4535-BSD	AB85230.D	08/07/14	09:37	20.32
GAB4536-BSD	AB85230A.D	08/07/14	09:37	20.32
MC32468-3	AB85231.D	08/07/14	10:15	20.33
MC32521-1	AB85232.D	08/07/14	10:53	20.33
MC32521-1MS	AB85233.D	08/07/14	11:30	20.32
MC32521-1MSD	AB85234.D	08/07/14	12:08	20.32
MC32468-3MS	AB85235.D	08/07/14	12:45	20.32
MC32468-3MSD	AB85236.D	08/07/14	13:23	20.33

Surrogate
Compounds

S1 = 2,3,4-Trifluorotoluene

(a) Retention time from GC signal #1

8.6.4

8

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Percent Solids Raw Data Summary

Percent Solids Raw Data Summary

Page 1 of 1

Job Number: MC32521

Account: SHELLWIC Shell Oil

Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Sample: MC32521-1 Analyzed: 04-AUG-14 by BF

Method: SM21 2540 B MOD.

ClientID: VMP15-25.5-073114(24-28')

Wet Weight (Total)	33.52	g
Tare Weight	18.966	g
Dry Weight (Total)	31.748	g
Solids, Percent	87.8	%

9.1
6
9