

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 <u>nicholas.eldred@urs.com</u> (314/743-7753).

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

Michael Currier Environmental Scientist

Manne -

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,

Killy Butte

Kelly Buettner Project Manager

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Eurofins Air Toxics, Inc.

180 Blue Ravine Road, Suite B Folsom, CA 95630 T | 916-985-1000 F | 916-985-1020 www.airtoxics.com

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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		1
DATE COMPLETED:	05/19/2014	CONTACT:	Kelly Buettner

FRACTION #

CERTIFIED BY:

<u>NAME</u>

<u>TEST</u>

RECEIPT FINAL <u>VAC./PRES. 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

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DATE: 05/19/14

Technical Director

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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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	Rot. 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

Client Sample ID: VMP-55-20-050514 Lab ID#: 1405098A-05A

EPA METHOD TO-15 GC/MS

File Name: Dil. Factor:	14051519 127		of Collection: 5/5/ of Analysis: 5/15/	
Compound	Rpt. 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
rans-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
	2000	101 20100104	10000	Not Detected



Client Sample ID: VMP-55-20-050514 Lab ID#: 1405098A-05A EPA METHOD TO-15 GC/MS

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

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%Recovery	Limits
103	70-130
99	70-130
102	70-130
	103 99

Method

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

Lab ID#: 1405098A-06A

EPA METHOD TO-15 GC/MS

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File Name: Dil. Factor:	14051520 138	Date of Collection: 5/5/14 Date of Analysis: 5/15/14		
Compound	Røt. 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
rans-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
Fetrahydrofuran	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
,2-Dichloroethane	690	Not Detected	2800	Not Detected
leptane	690	Not Detected	2800	Not Detected
richloroethene	690	Not Detected	3700	Not Detected
,2-Dichloropropane	690	Not Detected	3200	Not Detected
,4-Dioxane	2800	Not Detected	9900	Not Detected
Bromodichloromethane	690	Not Detected	4600	Not Detected
is-1,3-Dichloropropene	690	Not Detected	3100	Not Detected
-Methyl-2-pentanone	690	Not Detected	2800	Not Detected
oluene	690	Not Detected	2600	Not Detected
ans-1,3-Dichloropropene	690	Not Detected	3100	Not Detected
,1,2-Trichloroethane	690	Not Detected	3800	Not Detected
etrachloroethene	690	Not Detected	4700	
-Hexanone	2800	Not Detected	11000	Not Detected



Client Sample ID: VMP-55-20-050514-Dup Lab ID#: 1405098A-06A EPA METHOD TO-15 GC/MS

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File Name: Dil. Factor:	14051520 138	Date of Collection: 5/5/14 Date of Analysis: 5/15/14 (
Compound	Rot. 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
p-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

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

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Air Toxics

Client Sample ID: Lab Blank Lab ID#: 1405098A-07A EPA METHOD TO-15 GC/MS

File Name: Dil. Factor:	14051507c 1.00		of Collection: NA of Analysis: 5/15/	14 12:21 PM
	Rpt. Limit	Amount	Rpt. Limit	Amount
Compound	(ppbv)	(ppbv)	(ug/m3)	(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
Aethyl tert-butyl ether	5.0	Not Detected	18	Not Detected
rans-1,2-Dichloroethene	5.0	Not Detected	20	Not Detected
lexane	5.0	Not Detected	18	Not Detected
,1-Dichloroethane	5.0	Not Detected	20	Not Detected
-Butanone (Methyl Ethyl Ketone)	20	Not Detected	59	Not Detected
is-1,2-Dichloroethene	5.0	Not Detected	20	Not Detected
etrahydrofuran	5.0	Not Detected	15	Not Detected
Chloroform	5.0	Not Detected	24	Not Detected
,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
,2,4-Trimethylpentane	5.0	Not Detected	23	Not Detected
Benzene	5.0	Not Detected	16	Not Detected
,2-Dichloroethane	5.0	Not Detected	20	Not Detected
leptane	5.0	Not Detected	20	Not Detected
richloroethene	5.0	Not Detected	27	Not Detected
,2-Dichloropropane	5.0	Not Detected	23	Not Detected
,4-Dioxane	20	Not Detected	72	Not Detected
romodichloromethane	5.0	Not Detected	34	Not Detected
is-1,3-Dichloropropene	5.0	Not Detected	23	Not Detected
-Methyl-2-pentanone	5.0	Not Detected	20	Not Detected
oluene	5.0	Not Detected	19	Not Detected
ans-1,3-Dichloropropene	5.0	Not Detected	23	Not Detected
1,2-Trichloroethane	5.0	Not Detected	23	Not Detected
etrachloroethene	5.0	Not Detected	34	
-Hexanone	20	Not Detected	34 82	Not Detected

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Air Toxics

Client Sample ID: Lab Blank Lab ID#: 1405098A-07A EPA METHOD TO-15 GC/MS

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File Name: Dil. Factor:	14051507c 1.00			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

		Method	
Surrogates	%Recovery	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

EPA METHOD TO-15 GC/MS				
File Name: Dil. Factor:	14051502 1.00		Date of Collection: NA 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		92 100		
Foluene		91		
rans-1,3-Dichloropropene		91		
1,1,2-Trichloroethane		90		
Fetrachloroethene				
2-Hexanone		95		
- TEADUNE		95		

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Air Toxics

Client Sample ID: CCV Lab ID#: 1405098A-08A EPA METHOD TO-15 GC/MS

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ile Name: 1405 ⁻ Dil. Factor:	1502Date of Collection: NA1.00Date of Analysis: 5/15/14 10:10 AM
Compound	%Recovery
Dibromochloromethane	89
,2-Dibromoethane (EDB)	92
Chlorobenzene	92
Ethyl Benzene	98
n,p-Xylene	101
p-Xylene	104
Styrene	101
Bromoform	94
Cumene	102
I,1,2,2-Tetrachloroethane	90
Propylbenzene	100
1-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
sopentane	92

Container Type: NA - Not Applicable

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



Client Sample ID: LCS Lab ID#: 1405098A-09A EPA METHOD TO-15 GC/MS

File Name: Dil. Factor:	14051503 Date of Collect 1.00 Date of Analys	ion: NA is: 5/15/14 10:44 AM
		Method
Compound	%Recovery	Limits
Freon 12	93	70-130
Freon 114	102	70-130
Chloromethane	90	70-130
Vinyl Chloride	91	
1,3-Butadiene	90	70-130 70-130
Bromomethane	96	
Chloroethane	77	70-130
Freon 11	95	70-130
Ethanol	93	70-130
Freon 113	110	70-130
1,1-Dichloroethene		70-130
Acetone	105	70-130
2-Propanol	96 104	70-130
Carbon Disulfide	101	70-130
3-Chloropropene	83	70-130
	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	
4-Methyl-2-pentanone		70-130
Foluene	110	70-130
rans-1,3-Dichloropropene	96	70-130
1,1,2-Trichloroethane	94	70-130
	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

7

File Name: 14051 Dil. Factor:		ion: NA is: 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

%Recovery	Limits	
94	70-130	
100	70-130	
106	70-130	
	94 100	

Air Toxics

Client Sample ID: LCSD Lab ID#: 1405098A-09AA EPA METHOD TO-15 GC/MS

File Name: Dil. Factor:	14051504 1.00	Date of Collection: NA 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
1-Methyl-2-pentanone		107	70-130
Foluene		96	70-130
rans-1,3-Dichloropropene		93	70-130
I,1,2-Trichloroethane		95	70-130
Fetrachloroethene		102	70-130
2-Hexanone		105	70-130

Air Toxics

Client Sample ID: LCSD Lab ID#: 1405098A-09AA EPA METHOD TO-15 GC/MS

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File Name: Dil. Factor:	14051504 1.00	Date of Collect Date of Analys	is: 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

		Method
Surrogates	%Recovery	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 Butte

Kelly Buettner Project Manager

A Eurofins Lancaster Laboratories Company

Eurofins Alr Toxics, Inc.

180 Blue Ravine Road, Suite B Folsom, CA 95630 T | 916-985-1000 F | 916-985-1020 www.airtoxics.com

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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	contract.	Keny Ductifici

FRACTION #	NAME	TEST	RECEIPT <u>VAC./PRES.</u>	FINAL <u>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

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DATE: 05/20/14

Technical Director

CERTIFIED BY:

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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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.

Requirement	ASTM D-1946	ATL Modifications
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 $>/= 95\%$ 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 X's 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

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

Client Sample ID: VMP-55-20-050514

Lab ID#: 1405098B-05A

	Rpt. Limit	Amount	
Compound	(%)	(%)	
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

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



Client Sample ID: VMP-55-20-050514 Lab ID#: 1405098B-05A NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

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File Name: Dil. Factor:	10051211 2.54		ection: 5/5/14 11:42:00 AM ysis: 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

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File Name: Dil. Factor:	10051212 2.77		ection: 5/5/14 11:42:00 AM ysis: 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

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File Name: Dil. Factor:	10051204a 1.00	Date of Colle Date of Anal	ection: NA ysis: 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



Client Sample ID: Lab Blank Lab ID#: 1405098B-07B NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946 File Name: Date of Collection: NA Dil. Factor: 10051203c Date of Collection: NA Dil. Factor: 1.00 Date of Analysis: 5/12/14 08:15 AM Compound (%) (%)

0.050

Not Detected

Helium

Container Type: NA - Not Applicable

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Air Toxics

Client Sample ID: LCS Lab ID#: 1405098B-08A NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946 File Name: 10051202 **Date of Collection: NA** Dil. Factor: 1.00 Date of Analysis: 5/12/14 07:48 AM Method Compound %Recovery 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

99

85-115

Container Type: NA - Not Applicable

Helium

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Air Toxics

Client Sample ID: LCSD Lab ID#: 1405098B-08AA NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946 **Date of Collection: NA** 10051218 File Name: Date of Analysis: 5/12/14 03:10 PM Dil. Factor: 1.00 Method %Recovery Limits Compound 85-115 101 Oxygen 85-115 100 Nitrogen 85-115 101

Carbon Monoxide 99 85-115 Methane 100 85-115 Carbon Dioxide 85-115 97 Ethane 85-115 100 Ethene 85-115 100 Helium

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,

Killy Butte

Kelly Buettner Project Manager

A Eurofins Lancaster Laboratories Company

Eurofins Air Toxics, Inc.

180 Blue Ravine Road, Suite B Folsom, CA 95630

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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 Payabl URS Corporation P.O. BOX 20397 Austin, TX 7872	0	с.
PHONE:	314-743-4179	P.O. #	282676		
FAX:		PROJECT #			
DATE RECEIVED:	08/15/2014		21562973.04003	Roxana SoilVa	por
DATE COMPLETE	ED: 08/27/2014	CONTACT:	Kelly Buettner		
FRACTION #	NAME	TEST		RECEIPT VAC./PRES.	FINAL <u>PRESSURE</u>
05A 06A	VMP-15-21.5-081414 VMP-15-25.5-081414	TO-15		9.8 "Hg	14.7 psi
07A	VMP-15-29-081414 VMP-15-29-081414	TO-15 TO-15		9.4 "Hg 9 "Hg	15.1 psi 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 16B	CCV	TO-15		NA	NA
17A	CCV LCS	TO-15		NA	NA
17A 17AA	LCS LCSD	TO-15		NA	NA
17B	LCS	TO-15		NA	NA
	200	TO-15		NA	NA

Continued on next page

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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: DATE COMPLETED:	08/15/2014 08/27/2014	CONTACT:	Kelly Buettner

			RECEIPT	FINAL
FRACTION #	NAME	TEST	VAC./PRES.	<u>PRESSURE</u>
17BB	LCSD	TO-15	NA	NA

CERTIFIED BY:

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DATE: 08/27/14

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Technical Director

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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> > Page 3 of 60

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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.

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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

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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

File Name: Dil. Factor:	14081923 2.97		of Collection: 8/1 of Analysis: 8/19/	
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
	15	Not Detected	61	Not Detected
Heptane Trichloroethene	15	Not Detected	80	Not Detected
	15	Not Detected	69	Not Detected
1,2-Dichloropropane 1,4-Dioxane	59	Not Detected	210	Not Detected
Bromodichloromethane	15	Not Detected	100	Not Detected
	15	Not Detected	67	Not Detected
cis-1,3-Dichloropropene	15	Not Detected	61	Not Detected
4-Methyl-2-pentanone	15	Not Detected	56	Not Detected
Toluene	15	Not Detected	67	Not Detected
trans-1,3-Dichloropropene	15	Not Detected	81	Not Detected
1,1,2-Trichloroethane		Not Detected	100	Not Detected
Tetrachloroethene	15			Not Detected
2-Hexanone	59	Not Detected	240	NOL Delected

Air Toxics

Client Sample ID: VMP-15-21.5-081414 Lab ID#: 1408263A-05A EPA METHOD TO-15 GC/MS

File Name: Dil. Factor:	14081923 2.97	Date of Collection: 8/14/14 1:11:00 P 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
sopentane	59	14 J	180	41 J

J = Estimated value.

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



Client Sample ID: VMP-15-25.5-081414 Lab ID#: 1408263A-06A EPA METHOD TO-15 GC/MS

File Name: Dil. Factor:	14081924 2.95		of Collection: 8/1 of Analysis: 8/19/	
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
rans-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
	15	460	51	1600
Cyclohexane	15	Not Detected	93	Not Detected
Carbon Tetrachloride	15	2800	69	13000
2,2,4-Trimethylpentane	15	2800 12 J	47	37 J
Benzene	15	Not Detected	60	Not Detected
1,2-Dichloroethane	15	9.6 J	60	39 J
Heptane		9.6 J Not Detected	79	Not Detected
Trichloroethene	15		68	Not Detected
1,2-Dichloropropane	15	Not Detected		Not Detected
1,4-Dioxane	59	Not Detected	210	
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

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File Name: Dil. Factor:	14081924 2.95		ate of Collection: 8/14/14 1:40:00 PM ate 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.

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



Client Sample ID: VMP-15-29-081414 Lab ID#: 1408263A-07A EPA METHOD TO-15 GC/MS

File Name: Dil. Factor:	14081925 2.89		of Collection: 8/1 of Analysis: 8/19	
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
	14	Not Detected	50	Not Detected
Methylene Chloride	14	Not Detected	52	Not Detected
Methyl tert-butyl ether	14	Not Detected	57	Not Detected
trans-1,2-Dichloroethene	14	Not Detected	51	Not Detected
	14	Not Detected	58	Not Detected
1,1-Dichloroethane		Not Detected	170	Not Detected
2-Butanone (Methyl Ethyl Ketone)	58	Not Detected	57	Not Detected
cis-1,2-Dichloroethene	14		43	Not Detected
Tetrahydrofuran	14	Not Detected	43 70	Not Detected
Chloroform	14	Not Detected Not Detected	70 79	Not Detected
1,1,1-Trichloroethane	14			180
Cyclohexane	14	52	50	
Carbon Tetrachloride	14	Not Detected	91	Not Detected
2,2,4-Trimethylpentane	14	1400	68	6700
Benzene	14	35	46	110 Not Detected
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

Client Sample ID: VMP-15-29-081414 Lab ID#: 1408263A-07A <u>EPA METHOD TO-15 GC/MS</u>

File Name: Dil. Factor:	14081925 2.89	Date of Collection: 8/14/14 2:05:00 PI 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
sopentane	58	830	170	2400

J = Estimated value.

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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

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Client Sample ID: VMP-55-20-081314 Lab ID#: 1408263A-10A EPA METHOD TO-15 GC/MS

File Name: Dil. Factor:	14081930 52.2	Date of Collection: 8/13/14 3:04:00 PM 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
	260	Not Detected	1000	Not Detected
1,1-Dichloroethene	1000	Not Detected	2500	Not Detected
Acetone	1000	Not Detected	2600	Not Detected
2-Propanol	260	Not Detected	810	Not Detected
	1000	Not Detected	3300	Not Detected
3-Chloropropene			910	Not Detected
Methylene Chloride	260	Not Detected Not Detected	940	Not Detected
Methyl tert-butyl ether	260		1000	Not Detected
trans-1,2-Dichloroethene	260	Not Detected	920	360 J
Hexane	260	100 J		Not Detected
1,1-Dichloroethane	260	Not Detected	1000	
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

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Air Toxics

Client Sample ID: VMP-55-20-081314 Lab ID#: 1408263A-10A EPA METHOD TO-15 GC/MS

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File Name: Dil. Factor:	14081930 52.2	Date of Collection: 8/13/14 3:04:00 PM 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.

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: Dil. Factor:	14081907d 1.00		of Collection: NA 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
	5.0	Not Detected	20	Not Detected
cis-1,2-Dichloroethene	5.0	Not Detected	15	Not Detected
Tetrahydrofuran Chloroform	5.0	Not Detected	24	Not Detected
	5.0	Not Detected	27	Not Detected
1,1,1-Trichloroethane	5.0	Not Detected	17	Not Detected
Cyclohexane	5.0	Not Detected	31	Not Detected
Carbon Tetrachloride	5.0	Not Detected	23	Not Detected
2,2,4-Trimethylpentane	5.0	Not Detected	16	Not Detected
Benzene	5.0	Not Detected	20	Not Detected
1,2-Dichloroethane	5.0	Not Detected	20	Not Detected
Heptane	5.0	Not Detected	20	Not Detected
Trichloroethene		Not Detected	23	Not Detected
1,2-Dichloropropane	5.0	Not Detected	72	Not Detected
1,4-Dioxane	20	Not Detected	34	Not Detected
Bromodichloromethane	5.0			
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

File Name: Dil. Factor:	14081907d 1.00		of Collection: NA 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
I,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
sopentane	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

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Air Toxics

Client Sample ID: Lab Blank Lab ID#: 1408263A-15B EPA METHOD TO-15 GC/MS

File Name: Dil. Factor:	14082009d 1.00		of Collection: NA of Analysis: 8/20	
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
	5.0	Not Detected	20	Not Detected
1,1-Dichloroethene	20	Not Detected	48	Not Detected
Acetone	20	Not Detected	49	Not Detected
2-Propanol	5.0	Not Detected	16	Not Detected
Carbon Disulfide	20	Not Detected	63	Not Detected
3-Chloropropene	5.0	Not Detected	17	Not Detected
Methylene Chloride		Not Detected	18	Not Detected
Methyl tert-butyl ether	5.0	Not Detected	20	Not Detected
trans-1,2-Dichloroethene	5.0	Not Detected	18	Not Detected
Hexane	5.0	Not Detected	20	Not Detected
1,1-Dichloroethane	5.0			
2-Butanone (Methyl Ethyl Ketone)	20	Not Detected	59	Not Detected Not Detected
cis-1,2-Dichloroethene	5.0	Not Detected	20	
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

File Name: Dil. Factor:	14082009d 1.00		of Collection: NA 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

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Air Toxics

Client Sample ID: CCV Lab ID#: 1408263A-16A EPA METHOD TO-15 GC/MS

File Name: Dil. Factor:	14081902 1.00	Date of Collection: NA Date of Analysis: 8/19/14 08:46 AM
Compound		%Recovery
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
		84
1,2-Dichloropropane		92
1,4-Dioxane Bromodichloromethane		81
		89
cis-1,3-Dichloropropene		90
4-Methyl-2-pentanone		90
Toluene		88
trans-1,3-Dichloropropene		93
1,1,2-Trichloroethane		
Tetrachloroethene		91
2-Hexanone		83

Air Toxics

Client Sample ID: CCV Lab ID#: 1408263A-16A EPA METHOD TO-15 GC/MS

File Name: Dil. Factor:	14081902 1.00	Date of Collection: NA 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
sopentane		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: Dil. Factor:	14082002 1.00		Collection: NA 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	
		74	
2-Propanol Carbon Disulfide		84	
3-Chloropropene		88	
		70	
Methylene Chloride		84	
Methyl tert-butyl ether		92	
trans-1,2-Dichloroethene		80	
Hexane		80	
1,1-Dichloroethane		92	
2-Butanone (Methyl Ethyl Ketone)			
cis-1,2-Dichloroethene		79 81	
Tetrahydrofuran			
Chloroform		80 82	
1,1,1-Trichloroethane			
Cyclohexane		87	
Carbon Tetrachloride		82	
2,2,4-Trimethylpentane		82	
Benzene		84	8
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: Dil. Factor:	14082002 1.00	Date of Collection: NA
	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

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Air Toxics

Client Sample ID: LCS Lab ID#: 1408263A-17A EPA METHOD TO-15 GC/MS

File Name: Dil. Factor:	14081903 1.00	Date of Collec	tion: NA sis: 8/19/14 09:16 AM
	1.00		Method
Compound		%Recovery	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
		76	70-130
1,2-Dichloropropane 1,4-Dioxane		86	70-130
Bromodichloromethane		78	70-130
		82	70-130
cis-1,3-Dichloropropene		82	70-130
4-Methyl-2-pentanone		80	70-130
		75	70-130
trans-1,3-Dichloropropene		80	70-130
1,1,2-Trichloroethane		84	70-130
Tetrachloroethene			70-130
2-Hexanone		71	70-130

Client Sample ID: LCS Lab ID#: 1408263A-17A EPA METHOD TO-15 GC/MS

File Name: Dil. Factor:	14081903 1.00	Date of Collec Date of Analys	tion: NA is: 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
sopentane		72	60-140

Q = Exceeds Quality Control limits.

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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

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Air Toxics

Client Sample ID: LCSD Lab ID#: 1408263A-17AA EPA METHOD TO-15 GC/MS

File Name: 14081904 Dil. Factor: 1.00	Date of Collection: NA Date of Analysis: 8/19/14 09:34 AM		
Dil. Factor: 1.00	Date of Analys	Method	
Compound	%Recovery	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	
	80	70-130	
Cyclohexane	73	70-130	
Carbon Tetrachloride	75	70-130	
2,2,4-Trimethylpentane	76	70-130	
Benzene	70	70-130	
1,2-Dichloroethane	82	70-130	
Heptane	71	70-130	
Trichloroethene	76	70-130	
1,2-Dichloropropane		70-130	
1,4-Dioxane	85 78	70-130	
Bromodichloromethane		70-130	
cis-1,3-Dichloropropene	82		
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	

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Air Toxics

Client Sample ID: LCSD Lab ID#: 1408263A-17AA EPA METHOD TO-15 GC/MS

File Name: Dil. Factor:	14081904 1.00	Date of Collec Date of Analys	tion: NA sis: 8/19/14 09:34 AM
Compound		%Recovery	Method Limits
Dibromochloromethane		84	70-130
1,2-Dibromoethane (EDB)		81	70-130
Chlorobenzene	20	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
sopentane		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

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Air Toxics

Client Sample ID: LCS Lab ID#: 1408263A-17B EPA METHOD TO-15 GC/MS

File Name: Dil. Factor:		e of Collection: NA e of Analysis: 8/20/14 09:53 AM
Compound	%Recovery	Method Limits
	76	70-130
Freon 12	82	70-130
Freon 114	74	70-130
Chloromethane	74	70-130
Vinyl Chloride	79 75	70-130
1,3-Butadiene		70-130
Bromomethane	74	70-130
Chloroethane	72	
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
•	79	70-130
Trichloroethene	84	70-130
1,2-Dichloropropane	94	70-130
1,4-Dioxane Bramadiahlaramathana	85	70-130
Bromodichloromethane		70-130
cis-1,3-Dichloropropene	88	70-130
4-Methyl-2-pentanone	84	70-130
Toluene	88	
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: Dil. Factor:	14082003 1.00		ollection: NA nalysis: 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

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Air Toxics

Client Sample ID: LCSD Lab ID#: 1408263A-17BB EPA METHOD TO-15 GC/MS

File Name: Dil. Factor:	14082004 1.00	Date of Collec Date of Analys	tion: NA sis: 8/20/14 10:30 AM
			Method
Compound		%Recovery	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
		85	70-130
2,2,4-Trimethylpentane Benzene		86	70-130
1,2-Dichloroethane		82	70-130
		90	70-130
Heptane Trichloroethene		81	70-130
		85	70-130
1,2-Dichloropropane		93	70-130
1,4-Dioxane Bromodichloromethane		87	70-130
		90	70-130
cis-1,3-Dichloropropene		90 94	70-130
4-Methyl-2-pentanone		94 90	70-130
Toluene			70-130
trans-1,3-Dichloropropene		78 92	70-130
1,1,2-Trichloroethane			
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: Dil. Factor:	14082004 1.00	Date of Collection: NA 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,

Killy Butte

Kelly Buettner Project Manager

A Eurofins Lancaster Laboratories Company

Eurofins Air Toxics, Inc.

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WORK ORDER #: 1408263B

Work Order Summary

CLIENT:	Ms. Elizabeth Kunkel URS Corporation 1001 Highlands Plaza Dr. West Suite 300 St. Louis, MO 63110	BILL TO:	Accounts Paya URS Corporati P.O. BOX 2039 Austin, TX 78	on 970	
PHONE: FAX: DATE RECEIVED DATE COMPLETI	00/15/2014	P.O. # PROJECT # CONTACT:	282676 21562973.0400 Kelly Buettner)3 Roxana SoilVa	apor
FRACTION #	NAME	<u>TEST</u>		RECEIPT <u>VAC./PRES.</u>	FINAL <u>PRESSURE</u>
05A 06A 07A	VMP-15-21.5-081414 VMP-15-25.5-081414 VMP-15-29-081414	Modified AST Modified AST Modified AST	M D-1946	9.8 "Hg 9.4 "Hg 9 "Hg	14.7 psi 15.1 psi 15.1 psi
10A	VMP-55-20-081314	Modified AST	M D-1946	6.9 "Hg	14.8 psi
15A 15B 16A 16AA	Lab Blank Lab Blank LCS LCSD	Modified ASTI Modified ASTI Modified ASTI Modified ASTI	M D-1946 M D-1946	NA NA NA NA	NA NA NA NA

CERTIFIED BY:

ayes

DATE: 08/29/14

Technical Director

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 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.

Requirement	ASTM D-1946	ATL Modifications
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 $>/= 95\%$ 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 X's the RL.

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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

rl-File was requantified for the purpose of reissue

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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

	Rpt. Limit	Amount
Compound	(%)	(%)
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

	Rpt. Limit	Amount	
Compound	(%)	(%)	
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

Rpt. Limit	Amount
(%)	(%)
0.29	1.5
0.29	86
0.00029	0.13
0.029	12
	0.29 0.29 0.00029



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



Client Sample ID: VMP-15-21.5-081414 Lab ID#: 1408263B-05A NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name: Dil. Factor:	9082105 2.97		ection: 8/14/14 1:11:00 PM ysis: 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

Air Toxics

Client Sample ID: VMP-15-25.5-081414 Lab ID#: 1408263B-06A NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name: Dil. Factor: Compound	9082106 2.95		ection: 8/14/14 1:40:00 PM ysis: 8/21/14 09:59 AM
	Rpt. Limit (%)	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.

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Air Toxics

Client Sample ID: VMP-15-29-081414 Lab ID#: 1408263B-07A NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name: Dil. Factor:	9082107 2.89		ection: 8/14/14 2:05:00 PM ysis: 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



1

Air Toxics

Client Sample ID: VMP-55-20-081314 Lab ID#: 1408263B-10A NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name: Dil. Factor: Compound	9082114 2.61		ection: 8/13/14 3:04:00 PM ysis: 8/21/14 02:40 PM
		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

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Air Toxics

Client Sample ID: Lab Blank Lab ID#: 1408263B-15A NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

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File Name: Dil. Factor: Compound	9082104a 1.00	Date of Colle Date of Analy	ction: NA /sis: 8/21/14 09:04 AM
	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



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:	9082103ba 1.00	Date of Collect Date of Analy	ction: NA sis: 8/21/14 08:32 AM
Compound		Rpt. Limit (%)	Amount (%)
Helium		0.050	Not Detected



Client Sample ID: LCS Lab ID#: 1408263B-16A NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

٦

File Name: Dil. Factor:	9082102 1.00		te of Collection: NA te 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	5	100	85-115	
Ethene		102	85-115	
Helium		102	85-115	



Ethane

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 Method Compound %Recovery Limits Oxygen 99 85-115 Nitrogen 93 85-115 Carbon Monoxide 105 85-115 Methane 95 85-115 Carbon Dioxide

100

99

102

101

4

85-115

85-115

85-115

85-115

Ethene			
Helium			



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,

Killy Butte

Kelly Buettner Project Manager

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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	BILL TO:	Accounts Payable URS Corporation P.O. BOX 203970 Austin, TX 78720)	
PHONE:	314-743-4179	P.O. #	282676		
FAX: DATE RECEIVED: DATE COMPLETE	08/15/2014 D: 08/29/2014	PROJECT # CONTACT:	21562973.04003 R Kelly Buettner	₹oxana Soil Va	apor
FRACTION #	NAME	<u>TEST</u>	V	RECEIPT /AC./PRES.	FINAL <u>PRESSURE</u>
04A	VMP-15-5-081414	TO-15		9.4 "Hg	14.8 psi

16A 17A 18A 18AA	Lab Blank CCV LCS LCSD	TO-15 TO-15 TO-15 TO-15	NA NA NA	NA NA NA NA
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CERTIFIED BY:

layes 6

DATE: 08/29/14

Technical Director

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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Page 2 of 50

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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

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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

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Air Toxics

Client Sample ID: VMP-15-5-081414 Lab ID#: 1408264A-04A EPA METHOD TO-15 GC/MS FULL SCAN

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File Name: Dil. Factor:	17082110 2.92		of Collection: 8/1 of Analysis: 8/21/	
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
/inyl Chloride	1.5	Not Detected	3.7	Not Detected
1,3-Bùtadiene	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
	1.5	Not Detected	5.8	Not Detected
1,1-Dichloroethene	1.5	12 J	35	28 J
Acetone	5.8	0.61 J	14	1.5 J
2-Propanol	5.8	0.54 J	18	1.7 J
Carbon Disulfide	5.8	Not Detected	18	Not Detected
3-Chloropropene	15	Not Detected	51	Not Detected
Methylene Chloride	1.5	Not Detected	5.3	Not Detected
Methyl tert-butyl ether	1.5	Not Detected	5.8	Not Detected
trans-1,2-Dichloroethene		Not Detected	5.0	Not Detected
Hexane	1.5	Not Detected	5.9	Not Detected
1,1-Dichloroethane	1.5			5.6 J
2-Butanone (Methyl Ethyl Ketone)	5.8	1.9 J	17	
cis-1,2-Dichloroethene	1.5	Not Detected	5.8	Not Detected
Tetrahydrofuran	1,5	Not Detected	4.3	Not Detected 6.6 J
Chloroform	1.5	1.4 J	7.1	
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



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Air Toxics

Client Sample ID: VMP-15-5-081414 Lab ID#: 1408264A-04A EPA METHOD TO-15 GC/MS FULL SCAN

File Name: Díl. Factor:	17082110 2.92			4/14 12:51:00 PN /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
-lexachlorobutadiene	5.8	Not Detected	62	Not Detected
Butane	5.8	Not Detected	14	Not Detected
sopentane	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

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Air Toxics

Client Sample ID: Lab Blank Lab ID#: 1408264A-16A EPA METHOD TO-15 GC/MS FULL SCAN

1

File Name: Dil. Factor:	17082105c 1.00		of Collection: NA of Analysis: 8/2 ⁻	
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 U.
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

Client Sample ID: Lab Blank Lab ID#: 1408264A-16A <u>EPA METHOD TO-15 GC/MS FULL SCAN</u>

File Name: Dil. Factor:	17082105c 1.00	Date of Collect Date of Analysi		/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
sopentane	2.0	Not Detected	5.9	Not Detected

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

J = Estimated value.

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

Client Sample ID: CCV Lab ID#: 1408264A-17A EPA METHOD TO-15 GC/MS FULL SCAN

File Name: Dil. Factor:	17082102 1.00	Date of Collection: NA 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
2-HEARIUNE		

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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.

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

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Air Toxics

Client Sample ID: LCS Lab ID#: 1408264A-18A EPA METHOD TO-15 GC/MS FULL SCAN

1

File Name: Dil. Factor:	17082103 1.00	Date of Collec Date of Analys	tion: NA sis: 8/21/14 07:58 AM
			Method
Compound		%Recovery	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
		83	70-130
Cyclohexane Carbon Tetrachloride		96	70-130
		76	70-130
2,2,4-Trimethylpentane		84	70-130
Benzene 1,2-Dichloroethane		98	70-130
		89	70-130
Heptane	8	81	70-130
Trichloroethene		78	70-130
1,2-Dichloropropane		93	70-130
1,4-Dioxane		95	70-130
Bromodichloromethane			70-130
cis-1,3-Dichloropropene		84	70-130
4-Methyl-2-pentanone		81	
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

Client Sample ID: LCS Lab ID#: 1408264A-18A <u>EPA METHOD TO-15 GC/MS FULL SCAN</u>

File Name: Dil. Factor:	17082103 1.00	Date of Collec Date of Analys	tion: NA sis: 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.

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

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Air Toxics

Client Sample ID: LCSD Lab ID#: 1408264A-18AA EPA METHOD TO-15 GC/MS FULL SCAN

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File Name: Dil. Factor:	17082104 1.00		
			Method
Compound		%Recovery	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
		78	70-130
Methylene Chloride		84	70-130
Methyl tert-butyl ether		70	70-130
trans-1,2-Dichloroethene		75	70-130
		79	70-130
1,1-Dichloroethane			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	
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

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Client Sample ID: LCSD Lab ID#: 1408264A-18AA <u>EPA METHOD TO-15 GC/MS FULL SCAN</u>

File Name: Dil. Factor:	17082104 1.00	Date of Collec Date of Analys	tion: NA sis: 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,

Killy Butte

Kelly Buettner Project Manager

A Eurofins Lancaster Laboratories Company

Eurofins Air Toxics, Inc.

180 Blue Ravine Road, Suite B Folsom, CA 95630 T | 916-985-1000 F | 916-985-1020 www.airtoxics.com

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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	BILL TO:	Accounts Payable Austin URS Corporation P.O. BOX 203970 Austin, TX 78720-1088
PHONE:	314-743-4179	P.O. #	282676
FAX: DATE RECEIVED: DATE COMPLETED:	08/15/2014 08/29/2014	PROJECT # CONTACT:	21562973.04003 Roxana Soil Vapor Kelly Buettner
FRACTION # NAM	ME	<u>TEST</u>	RECEIPT FINAL VAC./PRES. PRESSURE

04A

VMP-15-5-081414

Modified ASTM D-1946 9.4 "Hg

14.8 psi

16A 16B 17A	Lab Blank Lab Blank LCS	Modified ASTM D-1946 Modified ASTM D-1946 Modified ASTM D-1946	NA NA NA	NA NA NA
17A 17AA	LCSD	Modified ASTM D-1946 Modified ASTM D-1946	NA	NA
	DCDD	Modified ASTM D-1946	NA	NA

CERTIFIED BY:

layes

DATE: <u>08/29/14</u>

Technical Director

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 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.

Requirement	ASTM D-1946	ATL Modifications
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 >/= 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 X's 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



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

Client Sample ID: VMP-15-5-081414

Lab ID#: 1408264B-04A

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



Client Sample ID: VMP-15-5-081414 Lab ID#: 1408264B-04A NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name: Dil. Factor:	10082609 2.92		ection: 8/14/14 12:51:00 PM ysis: 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



Client Sample ID: Lab Blank Lab ID#: 1408264B-16A NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946 **Date of Collection: NA** File Name: 10082605a Date of Analysis: 8/26/14 03:32 PM Dil. Factor: 1.00 **Rpt.** Limit Amount (%) Compound (%) 0.014 J 0.10 Oxygen 0.049 J 0.10 Nitrogen Not Detected 0.010 Carbon Monoxide 0.00010 Not Detected Methane Not Detected Carbon Dioxide 0.010 0.0010 Not Detected Ethane Not Detected

0.0010

J = Estimated value.

Ethene



Client Sample ID: Lab Blank Lab ID#: 1408264B-16B <u>NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946</u>

File Name: Dil. Factor:	10082604ca 1.00	Date of Collec Date of Analy	ction: NA sis: 8/26/14 03:05 PM
Compound		Rpt. Limit (%)	Amount (%)
Helium		0.050	Not Detected



Client Sample ID: LCS Lab ID#: 1408264B-17A NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

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File Name: Dil. Factor:	10082603 1.00	Date of Collection: NA 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



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 Method Compound %Recovery 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

99

85-115

Container Type: NA - Not Applicable

Helium

e-Hardcopy 2.0 **Automated Report**

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



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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.

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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Sample Summary

Shell Oil

Job No: MC32497 Boxana II

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

Sample Number	Collected Date	Time By	Received	Matr Code		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

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	Matrix AQ	Batch ID:	MSL3863
	All samples were analy	yzed within the recommended method	l holding time.
-	Sample(s) MC32562-	IMS, MC32562-1MSD were used as	the QC samples indicated.
-	All method blanks for	this hotals mast worth 1 10 10 to	

- 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.

MSM2388

Matrix SO

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.

Batch ID:

- 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-Dichloroethan 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.

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

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Extractables by GCMS By Method SW846 8270D

Γ	Matrix SO	Batch ID:	OP39211	
	All samples were extracted within	the recommended method	1 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.
- 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	
All samples were extracted within	a the recommended metho	od holding time.	

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC32549-1MS, 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 A	Q	Batch ID:	OP39247
All samples were ex	xtracted within t	he recommended metho	d 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.
- Sample(s) MC32521-1MS, 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
Matrix SO	Batch ID.	(JAB4555

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.
- Calibration check standard GAB4536-CC4488 not associated with this job



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Wet Chemistry By Method SM21 2540 B MOD.

Matrix SO	Batch ID:
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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).

GN47846

Thursday, August 14, 2014

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Summary of Hits Job Number: MC32497 Account: Shell Oil URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL Project: Collected: 07/30/14

Lab Sample ID Cl Analyte	lient Sample ID	Result/ Qual	RL	MDL	Units	Method			
MC32497-1 V	VMP15-29-073014(28-30')								
Benzene Carbon disulfide Toluene Indeno(1,2,3-cd)pyr	rene	0.0072 0.0015 J 0.00056 J 0.0014 J	0.00053 0.0053 0.0053 0.0051	0.00036 0.00014 0.00022 0.0013	mg/kg mg/kg mg/kg mg/kg	SW846 8260C SW846 8260C SW846 8260C SW846 8270D BY SIM			
MC32497-2 V	MP15-29-073014	(28-30')DUP							
Benzene Carbon disulfide		0.0058 0.00050 J	0.00054 0.0054	0.00037 0.00014	mg/kg mg/kg	SW846 8260C SW846 8260C			
MC32497-3 T	B-073014-HCL								
No hits reported in	this sample.								

MC32497-4 TB-073014-ST

No hits reported in this sample.

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Section 4



Sample Results

Report of Analysis



Accutest LabLink@152068 16:40 15-Aug-2014

Client Sam Lab Samp Matrix: Method:	le ID: MC32497-1 SO - Soil SW846 8260C	MC32497-1 Date Sampled: 07/30/14 SO - Soil Date Received: 07/31/14							
Project:	URSMOSTL: Rox	ana VMP-15 H	Replacement,	900 Sout	h Centra	l Avenue, Rox	ana, IL		
Run #1 Run #2	File IDDFM67513.D1	Analyzed 08/12/14	By KD	Prep Date n/a		Prep Batch n/a	Analytical Batch MSM2388		
	Initial Weight Final Vol	lume							
Run #1 Run #2	4.93 g 5.0 ml								
VOA Spec	ial 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					
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					
135-98-8	sec-Butylbenzene	ND	0.0053	0.00080					
98-06-6	tert-Butylbenzene	ND	0.0053	0.00023					
75-15-0	Carbon disulfide	0.0015	0.0053	0.00014		J			
56-23-5	Carbon tetrachloride	ND	0.0021	0.00023					
108-90-7	Chlorobenzene	ND	0.0021	0.00017					
75-00-3	Chloroethane	ND	0.0053	0.00081					
110-75-8	2-Chloroethyl vinyl ether	ND	0.0053	0.0013	mg/kg				
67-66-3	Chloroform	ND	0.0021	0.00018					
74-87-3	Chloromethane	ND	0.0053	0.00060					
95-49-8	o-Chlorotoluene	ND	0.0053	0.00021					
106-43-4	p-Chlorotoluene	ND	0.0053	0.00028					
124-48-1	Dibromochloromethane	ND	0.0021	0.00034					
95-50-1	1,2-Dichlorobenzene	ND	0.0021	0.00023					
541-73-1	1,3-Dichlorobenzene	ND	0.0021	0.00032					
106-46-7	1,4-Dichlorobenzene	ND	0.0021	0.00037					
75-71-8	Dichlorodifluoromethane	ND	0.0021	0.00086					
75-34-3	1,1-Dichloroethane	ND	0.0021	0.00029					
107-06-2	1,2-Dichloroethane	ND	0.0021	0.00034					
75-35-4	1,1-Dichloroethene	ND	0.0021	0.00044					
156-59-2	cis-1,2-Dichloroethene	ND	0.0021	0.00048					
156-60-5	trans-1,2-Dichloroethene	ND	0.0021	0.00045	тд/кд				

Report of Analysis

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ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

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

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

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Report of Analysis Client Sample ID: VMP15-29-073014(28-30') Lab Sample ID: MC32497-1 Date Sampled: 07/30/14 Matrix: SO - Soil Date Received: 07/31/14 Method: SW846 8260C Percent Solids: 94.9 Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL											
Lab Sample ID:MC32497-1Matrix:SO - SoilMethod:SW846 8260C			eplacement	t, 900 Sout	Date Perc	Received: ent Solids:	07/31/14 94.9				
VOA Specia	al List										
CAS No.	Compound	Result	RL	MDL	Units	Q					
78-87-5	1,2-Dichloropropane	ND	0.0021	0.00045	ma/lta						
142-28-9	1,3-Dichloropropane	ND	0.0021	0.00045 0.00035							
594-20-7	2,2-Dichloropropane	ND	0.0053	0.00055							
563-58-6	1,1-Dichloropropene	ND	0.0053	0.00028							
10061-01-5	cis-1,3-Dichloropropene	ND	0.0021	0.00024							
10061-02-6	trans-1,3-Dichloropropene	ND	0.0021	0.00028							
23-91-1	1,4-Dioxane	ND	0.027	0.021	mg/kg						
97-63-2	Ethyl methacrylate	ND	0.0053	0.00038							
00-41-4	Ethylbenzene	ND	0.0021	0.00074							
7-68-3	Hexachlorobutadiene	ND	0.0053	0.00061	mg/kø						
91-78-6	2-Hexanone	ND	0.011	0.00081	mg/kg						
8-82-8	Isopropylbenzene	ND	0.0053	0.00018							
9-87-6	p-Isopropyltoluene	ND	0.0053	0.00019							
634-04-4	Methyl Tert Butyl Ether	ND	0.0021	0.00019							
08-10-1	4-Methyl-2-pentanone (MIBK)	ND	0.0053	0.00058							
4-95-3	Methylene bromide	ND	0.0053	0.00049							
5-09-2	Methylene chloride	ND	0.0021	0.00057							
1-20-3	Naphthalene	ND	0.0053	0.00042							
03-65-1	n-Propylbenzene	ND	0.0053	0.00016							
00-42-5	Styrene	ND	0.0053	0.00018							
30-20-6	1,1,1,2-Tetrachloroethane	ND	0.0053	0.00043	mg/kg						
9-34-5	1,1,2,2-Tetrachloroethane	ND	0.0021	0.00042	mg/kg						
27-18-4	Tetrachloroethene	ND	0.0021	0.00033							
08-88-3	Toluene	0.00056	0.0053	0.00022	mg/kg	J					
7-61-6	1,2,3-Trichlorobenzene	ND	0.0053	0.00046	mg/kg						
20-82-1	1,2,4-Trichlorobenzene	ND	0.0053	0.00055	mg/kg						
1-55-6	1,1,1-Trichloroethane	ND	0.0021	0.00023	mg/kg						
9-00-5	1,1,2-Trichloroethane	ND	0.0021	0.00061	mg/kg						
9-01-6	Trichloroethene	ND	0.0021	0.00026	mg/kg						
5-69-4	Trichlorofluoromethane	ND	0.0021	0.00042	mg/kg						
6-18-4	1,2,3-Trichloropropane	ND	0.0053	0.00031	mg/kg						
5-63-6	1,2,4-Trimethylbenzene	ND	0.0053		mg/kg						
08-67-8	1,3,5-Trimethylbenzene	ND	0.0053		mg/kg						
08-05-4	Vinyl Acetate	ND	0.0053		mg/kg						
5-01-4	Vinyl chloride	ND	0.0021	0.00097	mg/kg						
5 47 C	m,p-Xylene	ND	0.0021	0.00047	mg/kg						
5-47-6	o-Xylene	ND	0.0021	0.00030	mg/kg						
330-20-7	Xylene (total)	ND	0.0021	0.00023	mg/kg						

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



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Client Sam Lab Sample Matrix: Method: Project:	E ID: MC32497-1 SO - Soil SW846 8260C		eplacement, S	Date Sampled: 07/30/14 Date Received: 07/31/14 Percent Solids: 94.9 900 South Central Avenue, Roxana, IL
VOA Speci	al List			
CAS No.	Surrogate Recoveries	Run# 1	Run#2	Limits
1868-53-7 2037-26-5 460-00-4	Dibromofluoromethane Toluene-D8 4-Bromofluorobenzene	99% 89% 87%		70-130% 70-130% 70-130%
CAS No.	Tentatively Identified Cor	npounds	R.T.	Est. Conc. Units Q
	Total TIC, Volatile			0 mg/kg

Report of Analysis

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

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			Repo	ort of A	nalysis			Page 1 of
Client Sampl Lab Sample Matrix: Method: Project:	ID: MC324 SO - So SW846	oil 8270D SW	846 3546	Replaceme	nt, 900 So	Date Perc	Received: 07	7/30/14 7/31/14 4.9 cana, IL
	File ID K04143.D	DF 1	Analyzed 08/04/14	By WK	Prep D 08/01/		Prep Batch OP39211	Analytical Batch MSX136
	nitial Weight 20.3 g	Final Volu 1.0 ml	ime					
ABN Special	List							
CAS No.	Compound		Result	RL	MDL	Units	Q	
65-85-0	Benzoic acid		ND	0.52	0.065	mg/kg		
	2-Chlorophenol	1	ND	0.26	0.000	mg/kg		
	4-Chloro-3-met		ND	0.52	0.012	mg/kg		
	2,4-Dichloroph		ND	0.52	0.015	mg/kg		
	2,4-Dimethylph		ND	0.52	0.085	mg/kg		
	2,4-Dinitropher		ND	1.0	0.13	mg/kg		
	4,6-Dinitro-o-ci		ND	0.52	0.065	mg/kg		
	2-Methylphenol		ND	0.52	0.021	mg/kg		
	3&4-Methylphe		ND	0.52	0.025	mg/kg		
	2-Nitrophenol		ND	0.52	0.014	mg/kg		
	4-Nitrophenol		ND	1.0	0.097	mg/kg		
	Pentachlorophe	nol	ND	0.52	0.037	mg/kg		
	Phenol		ND	0.26	0.015	mg/kg		
95-95-4 2	2,4,5-Trichloro	phenol	ND	0.52	0.013	mg/kg		
38-06-2 2	2,4,6-Trichloro		ND	0.52	0.013	mg/kg		
62-53-3 A	Aniline	-	ND	0.52	0.026	mg/kg		
	4-Bromophenyl		ND	0.26	0.013	mg/kg		
	Butyl benzyl ph		ND	0.26	0.011	mg/kg		
	Benzyl Alcohol		ND	0.52	0.026	mg/kg		
	2-Chloronaphth		ND	0.26	0.014	mg/kg		
	4-Chloroaniline		ND	0.52	0.013	mg/kg		
	bis(2-Chloroeth			0.26	0.012	mg/kg		
	bis(2-Chloroeth		ND	0.26	0.016	mg/kg		
	bis(2-Chloroiso		ND	0.26	0.019	mg/kg		
005-72-3 4	1-Chlorophenyl	phenyl ether		0.26	0.016	mg/kg		
	1,2-Diphenylhy		ND	0.26	0.012	mg/kg		
	2,4-Dinitrotolue		ND	0.52	0.035	mg/kg		
	2,6-Dinitrotolue		ND	0.52	0.013	mg/kg		
	3,3'-Dichlorobe	enzidine	ND	0.26	0.026	mg/kg		
	Dibenzofuran	1.	ND	0.10	0.014	mg/kg		
	Di-n-butyl phtha		ND	0.26	0.028	mg/kg		
17-84-0 I	Di-n-octyl phtha	llate	ND	0.26	0.0081	mg/kg		

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N = Indicates presumptive evidence of a compound

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Client Samp Lab Sample Matrix: Method:					Date	Received: 0)7/30/14)7/31/14)4.9
Project:	URSMOSTL: Roxana		eplacement,	900 Sou			
ABN Specia	ll 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	Lim	its		
367-12-4	2-Fluorophenol	74%		30-1	30 %		
4165-62-2	Phenol-d5	78%		30-1	30 %		
118-79-6	2,4,6-Tribromophenol	95%		30-1	30%		
4165-60-0	Nitrobenzene-d5	81%		30-1	30%		
321-60-8	2-Fluorobiphenyl	77%		30-1	30 %		
1718-51-0	Terphenyl-d14	96%		30-1	30%		
CAS No.	Tentatively Identified Comp	ounds	R.T.	Est.	Conc.	Units Q	
	Total TIC, Semi-Volatile			0	1	mg/kg	

Report of Analysis

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MC32497

all	1 10 10 00						
Client Sam		3014(28-30')					
Lab Samp					Date		//30/14
Matrix:	SO - Soil						//31/14
Method:		BY SIM SW846					.9
Project:	URSMOSTL:	Roxana VMP-15 I	Replacement	, 900 Sout	th Centra	al Avenue, Rox	ana, IL
	File ID DF	Analyzed	By	Prep Da	ite	Prep Batch	Analytical Batcl
Run #1 Run #2	I91098.D 1	08/08/14	MR	08/04/14	1	OP39255	MSI3392
	Initial Weight Final	Volume					
Run #1 Run #2	20.6 g 1.0 m	1					
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			
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)anthracen	e 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		0.0051	0.0013	mg/kg	J	
90-12-0	1-Methylnaphthalene	ND	0.010	0.0011	mg/kg	ť	
91-57-6	2-Methylnaphthalene	ND	0.010	0.00095			
35-01-8	Phenanthrene	ND	0.0051	0.00033	mg/kg		
129-00-0	Pyrene	ND	0.0051	0.0016	mg/kg		
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limit	s		
165-60-0	Nitrobenzene-d5	71%		30-13	0%		A.
321-60-8	2-Fluorobiphenyl	69%		30-13			
718-51-0	Terphenyl-d14	95%		30-13			

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



4.1 4

			Repor	rt of Ana	alysis		Page 1 of 1
Client Sam Lab Sampl Matrix: Method: Project:	e ID: MC324 SO - So SW846	oil 5 8011 SW84	6 3550B	Replacement,	E P	Date Received: 0	7/30/14 7/31/14 4.9 cana, IL
Run #1 Run #2	File ID BK39970.D	DF 1	Analyzed 08/07/14	By NK	Prep Date 08/05/14	Prep Batch OP39257	Analytical Batch GBK1299
Run #1 Run #2	Initial Weight 15.4 g	Final Volu 50.0 ml	me				
VOA Spec	ial List						
CAS No.	Compound		Result	RL	MDL Un	its Q	
96-12-8 106-93-4	1,2-Dibromo- 1,2-Dibromoe	3-chloropropa ethane	ne ND ND	0.0051 0.0051		/kg /kg	
CAS No.	Surrogate Re	coveries	Run# 1	Run# 2	Limits		
460-00-4 460-00-4	Bromofluorob Bromofluorob		99% 145%		61-167% 61-167%		

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4.1

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

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

			Rep	ort of An	alysis			Page 1 of 1
Client Sar Lab Samp Matrix: Method: Project:	ole ID: MC3 SO - SW8	46 8015		Replacement,	900 Sot	Date Perc	-	
Run #1 Run #2	File ID AB85243.D	DF 1	Analyzed 08/07/14	By AF	Prep D n/a	Date	Prep Batch n/a	Analytical Batch GAB4535
Run #1 Run #2	Initial Weigh 4.07 g	t Final Vol 10.0 ml	ume	Methanol Ali 100 ul	quot			
CAS No.	Compound		Result	RL	MDL	Units	Q	
	TPH-GRO (VOA)	ND	13	1.9	mg/kg		
CAS No.	Surrogate R	ecoveries	Run# 1	Run#2	Lim	its		
	2,3,4-Trifluc	orotoluene	96%		61-1	16%		

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

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



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Client Sam Lab Sampl Matrix: Method: Project:	le ID: MC324 SO - So SW846	97-2 bil 8260C	(28-30')DUP ana VMP-15 R	eplacement,	900 Sout	Date Perc	Received: 07	7/30/14 7/31/14 5.6 rana, IL
Run #1 Run #2	File ID M67514.D	DF 1	Analyzed 08/12/14	By KD	Prep Da n/a	te	Prep Batch n/a	Analytical Batch MSM2388
Run #1 Run #2	Initial Weight 4.80 g	Final Vol 5.0 ml	lume					
VOA Spec	ial List							
CAS No.	Compound		Result	RL	MDL	Units	Q	
67-64-1 107-02-8 107-13-1 71-43-2 108-86-1 74-97-5 75-27-4 75-25-2 74-83-9 78-93-3 104-51-8	Acetone Acrolein Acrylonitrile Benzene Bromobenzene Bromochlorom Bromodichloro Bromoform Bromomethane 2-Butanone (M n-Butylbenzene	ethane omethane e IEK)	ND ND 0.0058 ND ND ND ND ND ND ND	0.011 0.027 0.027 0.00054 0.0054 0.0054 0.0022 0.0022 0.0022 0.0022 0.011 0.0054	0.0031 0.0096 0.0030 0.00037 0.00027 0.00038 0.00023 0.00039 0.00066 0.0033 0.00026	mg/kg mg/kg mg/kg mg/kg mg/kg		
135-98-8 98-06-6 75-15-0 56-23-5 108-90-7 75-00-3 110-75-8	sec-Butylbenze tert-Butylbenze Carbon disulfie Carbon tetrach Chlorobenzene Chloroethane 2-Chloroethyl	ene ene de loride e	ND ND 0.00050 ND ND ND ND	0.0054 0.0054 0.0054 0.0022 0.0022 0.0022 0.0054 0.0054	0.00081 0.00023 0.00014 0.00024 0.00017 0.00082 0.0014	mg/kg mg/kg mg/kg mg/kg mg/kg	J	
67-66-3 74-87-3 95-49-8 106-43-4 124-48-1 95-50-1	Chloroform Chloromethane o-Chlorotoluer p-Chlorotoluer Dibromochloro 1,2-Dichlorobe	ne ne omethane enzene	ND ND ND ND ND ND	0.0022 0.0054 0.0054 0.0054 0.0022 0.0022	0.00018 0.00061 0.00021 0.00029 0.00035 0.00023	mg/kg mg/kg mg/kg mg/kg mg/kg		
541-73-1 106-46-7 75-71-8 75-34-3 107-06-2 75-35-4 156-50-2	1,3-Dichlorobo 1,4-Dichlorobo Dichlorodifluo 1,1-Dichloroet 1,2-Dichloroet 1,1-Dichloroet cis-1,2-Dichlo	enzene promethane thane thane thene	ND ND ND ND ND ND ND	0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022	0.00033 0.00038 0.00088 0.00029 0.00035 0.00045 0.00049	mg/kg mg/kg mg/kg mg/kg mg/kg		
156-59-2 156-60-5	trans-1,2-Dichio		ND	0.0022	0.00049		0	

Report of Analysis

ND = Not detected MDL = Method Detection Limit

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Page 1 of 3

4.2

Client Sample ID: VMR15 20.072014/28.200DUD										
Client Samp Lab Sample Matrix: Method: Project:		·	eplacement	., 900 Sout	Date Perce	Sampled: Received: ent Solids: I Avenue, I	07/30/14 07/31/14 95.6 Roxana, IL			
VOA Specia	ll List									
CAS No.	Compound	Result	RL	MDL	Units	Q				
78-87-5	1,2-Dichloropropane	ND	0.0022	0.00046	ma/lea					
142-28-9	1,3-Dichloropropane	ND	0.0022	0.00046 0.00036						
94-20-7	2,2-Dichloropropane	ND	0.0054	0.00038						
63-58-6	1,1-Dichloropropene	ND	$-\frac{0.0034}{0.0054}$	0.00031						
0061-01-5	cis-1,3-Dichloropropene	ND	0.0034	0.00025						
0061-02-6	trans-1,3-Dichloropropene	ND	0.0022	0.00029						
23-91-1	1,4-Dioxane	ND	0.022	0.00023	mg/kg					
7-63-2	Ethyl methacrylate	ND	0.0054	0.00039						
00-41-4	Ethylbenzene	ND	0.0022	0.00035						
7-68-3	Hexachlorobutadiene	ND	0.0054	0.00073						
91-78-6	2-Hexanone	ND	0.011	0.00083						
8-82-8	Isopropylbenzene	ND	0.0054	0.00018						
9-87-6	p-Isopropyltoluene	ND	0.0054	0.00019						
634-04-4	Methyl Tert Butyl Ether	ND	0.0022	0.00020						
08-10-1	4-Methyl-2-pentanone (MIBK)		0.0054	0.00059						
4-95-3	Methylene bromide	ND	0.0054	0.00050						
5-09-2	Methylene chloride	ND	0.0022	0.00058						
1-20-3	Naphthalene	ND	0.0054	0.00043						
03-65-1	n-Propylbenzene	ND	0.0054	0.00017						
00-42-5	Styrene	ND	0.0054	0.00019						
30-20-6	1,1,1,2-Tetrachloroethane	ND	0.0054	0.00044						
9-34-5	1,1,2,2-Tetrachloroethane	ND	0.0022	0.00043						
27-18-4	Tetrachloroethene	ND	0.0022	0.00034						
08-88-3	Toluene	ND	0.0054	0.00022						
7-61-6	1,2,3-Trichlorobenzene	ND	0.0054	0.00047	mg/kg					
20-82-1	1,2,4-Trichlorobenzene	ND	0.0054	0.00056						
1-55-6	1,1,1-Trichloroethane	ND	0.0022	0.00024						
9-00-5	1,1,2-Trichloroethane	ND	0.0022	0.00062	mg/kø					
9-01-6	Trichloroethene	ND	0.0022	0.00027						
5-69-4	Trichlorofluoromethane	ND	0.0022	0.00043						
6-18-4	1,2,3-Trichloropropane	ND	0.0054	0.00031						
5-63-6	1,2,4-Trimethylbenzene	ND	0.0054	0.0016	mg/kg					
08-67-8	1,3,5-Trimethylbenzene	ND	0.0054	0.0017	mg/kg					
08-05-4	Vinyl Acetate	ND	0.0054	0.0017	mg/kg					
5-01-4	Vinyl chloride	ND	0.0022	0.00099						
	m,p-Xylene	ND	0.0022	0.00048						
5-47-6	o-Xylene	ND	0.0022	0.00031	mg/kø					
330-20-7	Xylene (total)	ND	0.0022	0.00024						

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RL = Reporting Limit

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4.2



Client Sam	-	28-30')DUP		Det. Generals 4 07/20/14
Lab Sample				Date Sampled: 07/30/14 Date Received: 07/31/14
Matrix:	SO - Soil			Percent Solids: 95.6
Method:	SW846 8260C		1	
Project:	URSMUSIL: Roxa	na VMP-15 Ke	eplacement, s	900 South Central Avenue, Roxana, IL
VOA Speci	al List			1
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 Con	npounds	R .T.	Est. Conc. Units Q
	Total TIC, Volatile			0 mg/kg

Report of Analysis

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4.2

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

J = Indicates an estimated value

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N = Indicates presumptive evidence of a compound



		Repo	ort of A	nalysis			Page 1 of
Client San Lab Samp Matrix: Method: Project:	le ID: MC32497-2 SO - Soil	/846 3546		ıt, 900 Soı	Date Perc	Received: 0' ent Solids: 9	7/30/14 7/31/14 5.6 cana, IL
Run #1 Run #2	File ID DF X04144.D 1	Analyzed 08/04/14	By WK	Ргер D 08/01/1		Prep Batch OP39211	Analytical Batch MSX136
Run #1 Run #2	Initial WeightFinal Volu20.4 g1.0 ml	ıme					
ABN Speci	ial 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	0.004	mg/kg		
59-50-7	4-Chloro-3-methyl phenol	ND	0.51	0.012	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 ethe	r 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		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		0.26	0.018	mg/kg		
7005-72-3	4-Chlorophenyl phenyl ethe		0.26	0.016	mg/kg		
22-66-7	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 Di a butul abthalata	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		

ND = Not detected MDL = Method Detection Limit

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N = Indicates presumptive evidence of a compound



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ACCUTEST.

MC32497

4.2 4

Lab Sample Matrix: Method: Project:	e ID: MC32497-2 SO - Soil SW846 8270D SW84 URSMOSTL: Roxana		eplacement,	900 Sou	Date Perce	Sampled: Received: ent Solids: Avenue,	07/30/14 07/31/14 95.6 Roxana, IL	
ABN Specia	al 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	Lim	its			
367-12-4	2-Fluorophenol	65%			30 %			
4165-62-2	Phenol-d5	71%			30%			
118-79-6	2,4,6-Tribromophenol	102%			30%			
4165-60-0	Nitrobenzene-d5	73%			30%			
321-60-8	2-Fluorobiphenyl	74%			30%			
1718-51-0	Terphenyl-d14	104%		30-1	30%			
CAS No.	Tentatively Identified Comp	ounds	R.T.	Est.	Conc. U	Units Q		
	Total TIC, Semi-Volatile			0	I	ng/kg		

Report of Analysis

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4.2 4

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

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 $B\,=\,Indicates$ analyte found in associated method blank

N = Indicates presumptive evidence of a compound

ACCUTEST. MC32497

011	1 10 10 10 1					Page 1 of
Client San		014(28-30')DUP				
Lab Samp					4	7/30/14
Matrix:	SO - Soil		0510			7/31/14
Method: Project:		BY SIM SW846		Per	cent Solids: 95	5.6
Froject:	UK5MU51L: F	Koxana VMP-15 I	Replacement	, 900 South Cent	ral Avenue, Rox	ana, IL
D (11	File ID DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1 Run #2	I91099.D 1	08/08/14	MR	08/04/14	OP39255	MSI3392
	~	Volume				
Run #1 Run #2	20.6 g 1.0 ml					
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		
91-24-2	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		
93-39-5	Indeno(1,2,3-cd)pyrene		0.0051	0.0013 mg/kg		
0-12-0	1-Methylnaphthalene	ND	0.010	0.0011 mg/kg		
1-57-6	2-Methylnaphthalene	ND	0.010	0.00095 mg/kg		
85-01-8	Phenanthrene	ND	0.0051	0.0011 mg/kg		
29-00-0	Pyrene	ND	0.0051	0.0016 mg/kg		
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
165-60-0	Nitrobenzene-d5	79%		30-130%		
21-60-8	2-Fluorobiphenyl	77%		30-130%		
718-51-0	Terphenyl-d14	103%		30-130%		

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4.2

ACCUTEST.

LABORATORIEL

MC32497

			Repo	rt of Ana	alysis		Page 1 of 1
Client Sam Lab Sampl Matrix: Method: Project:	e ID: MC32 SO - S SW84	oil 5 8011 SW846	3550B	Replacement	Dat	e Received: 07 cent Solids: 95	7/30/14 7/31/14 5.6 ana, IL
Run #1 Run #2	File ID BK39972.D		Analyzed 8/07/14	By NK	Prep Date 08/05/14	Prep Batch OP39257	Analytical Batch GBK1299
Run #1 Run #2	Initial Weight 15.4 g	Final Volum 50.0 ml	e				
VOA Speci	ial List						
CAS No.	Compound		Result	RL	MDL Units	Q	
96-12-8 106-93-4	1,2-Dibromo- 1,2-Dibromoe	3-chloropropane ethane	e ND ND	0.0051 0.0051	0.0015 mg/kg 0.0013 mg/kg		
CAS No.	Surrogate Re	coveries	Run# 1	Run# 2	Limits		
460-00-4 460-00-4	Bromofluorol Bromofluorol	• •	106% 147%		61-167% 61-167%		

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



4.2

				Rep	ort of An	alysis			Page 1 of 1
Client San Lab Samp Matrix: Method: Project:		MC3249 SO - Soi SW846	97-2 il 8015	(28-30')DU ma VMP-1{		, 900 So	Date Perc	Received: 0	7/30/14 7/31/14 5.6 kana, IL
Run #1 Run #2	File ID AB8524	4.D	DF 1	Analyzed 08/07/14	By AF	Prep E n/a	Date	Prep Batch n/a	Analytical Batch GAB4535
Run #1 Run #2	Initial V 4.12 g	Veight	Final Vol 10.0 ml	ume	Methanol Al 100 ul	iquot			
CAS No.	Compo	ound		Result	RL	MDL	Units	Q	
	TPH-G	RO (VO	A)	ND	13	1.9	mg/kg		
CAS No.	Surrog	ate Reco	veries	Run# (l Run#2	Lim	its		
	2,3,4-T	rifluorot	oluene	94%		61-1	16%		

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

1 4.2

Client Sam Lab Sampl Matrix: Method: Project:			Replacemen	t, 900 Sou	Date Perc	Received: 07 ent Solids: n/	
Run #1 Run #2	File IDDFL86225.D1	Analyzed 08/11/14	By GK	Prep Da n/a	ate	Prep Batch n/a	Analytical Batch MSL3863
A	Purge Volume						
Run #1 Run #2	5.0 ml						
VOA Spec	ial 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		

Report of Analysis

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Page 1 of 3

Report of Analysis									Page 2 of 3
Client Samp Lab Sample Matrix: Method: Project:		TB-073014-HCL MC32497-3 AQ - Trip Blank Water SW846 8260C URSMOSTL: Roxana		eplacement	, 900 So	Date Perc	Sampled: Received: ent Solids: I Avenue,	07/31/14 n/a	
VOA Specia	l List								
CAS No.	Compo	ound	Result	RL	MDL	Units	Q		
78-87-5	1 2-Die	chloropropane	ND	2.0	0 50				
142-28-9		chloropropane	ND	5.0	0.50	ug/l			
594-20-7		chloropropane	ND	5.0	0.89	ug/1			
563-58-6		chloropropene	ND	5.0	0.70	ug/l			
10061-01-5		Dichloropropene	ND	0.50	0.47	ug/l			
10061-02-6		3-Dichloropropene	ND	0.50	0.42	ug/l			
123-91-1	1,4-Dic		ND	25	0.50	ug/1			
97-63-2		iethacrylate	ND	5.0	11	ug/1			
100-41-4	Ethylbe		ND		0.50	ug/l			
37-68-3		lorobutadiene	ND	1.0 5.0	0.38	ug/l			
591-78-6	2-Hexa		ND	5.0	1.7	ug/l			
98-82-8		ylbenzene	ND	5.0	1.6	ug/l			
99-87-6		opyltoluene	ND		0.35	ug/l			
634-04-4		Tert Butyl Ether	ND	5.0	0.37	ug/l			
108-10-1		yl-2-pentanone (MIBK)		1.0 5.0	0.51	ug/l			
4-95-3		ene bromide	ND		0.99	ug/l			
75-09-2		ene chloride	ND	5.0	0.52	ug/l			
91-20-3	Naphtha		ND	2.0	0.28	ug/1			
		Ibenzene	ND	5.0	0.69	ug/l			
	Styrene	IDCHZEIIC	ND	5.0	0.49	ug/l			
630-20-6		Tetrachloroethane	ND	5.0	0.85	ug/l			
		Tetrachloroethane	ND	1.0	0.43	ug/l			
		loroethene	ND	0.50	0.40	ug/1			
	Toluene		ND	1.0	0.59	ug/l			
		richlorobenzene	ND	1.0	0.33	ug/1			
		richlorobenzene	ND	5.0	0.68	ug/1			
		richloroethane	ND	5.0	0.50	ug/l			
		richloroethane	ND	1.0	0.46	ug/l			
	Trichlor		ND	1.0 1.0	0.45	ug/1			
			ND		0.47	ug/l			
			ND	1.0 5.0	0.55	ug/1			
			ND	5.0	0.81	ug/l			
			ND	5.0	0.32	ug/l			
	Vinyl A	0	ND	5.0 5.0	0.38	ug/l			
	Vinyl ch		ND		0.71	ug/l			
	m,p-Xyl		ND	1.0	0.58	ug/l			
	o-Xylen		ND	1.0	0.93	ug/l			
	Xylene (1.0	0.36	ug/l			
000 40-1	A yielle	(ioiai)	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



4.3

		neper	C OI I MIG	
Client Samj Lab Sample				Date Sampled: 07/30/14
Matrix:	AQ - Trip Blank Wa	ter		Date Received: 07/31/14
Method:	SW846 8260C			Percent Solids: n/a
Project:	URSMOSTL: Roxa	na VMP-15 Re	eplacement, 9	900 South Central Avenue, Roxana, IL
VOA Specia 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 Con	npounds	R.T.	Est. Conc. Units Q
	Total TIC, Volatile			0 ug/l

Report of Analysis

Page 3 of 3

4.3 4

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



460-00-4

			Repor	t of An	alysis			Page 1 of
Client Sam Lab Samp Matrix: Method: Project:	le ID: MC324 AQ - Tr SW846	97-4 rip Blank Wat 8011 SW84	6 80 11	eplacement	, 900 Sou	Date Perc	-	
Run #1 Run #2	File ID BK39943.D		Analyzed 08/05/14	By NK	Prep Da 08/04/1		Prep Batch OP39247	Analytical Batch GBK1298
Run #1 Run #2	Initial Volume 36.7 ml	Final Volur 2.0 ml	ne					
VOA Speci	ial List							
CAS No.	Compound		Result	RL	MDL	Units	Q	
96-12-8 106-93-4	1,2-Dibromo-3- 1,2-Dibromoeth	-chloropropan nane	e ND ND	0.014 0.014	0.0058 0.0058	ug/l ug/l		
CAS No.	Surrogate Recoveries		Run# 1	Run# 2	Limits			
160-00-4	Bromofluorobe	nzene (S)	87 %		36-17	73%		

 Bromofluorobenzene (S)
 87%
 36-173%

 Bromofluorobenzene (S)
 101%
 36-173%

 $\begin{array}{ll} ND = Not \mbox{ detected } & MDL = Method \mbox{ Detection Limit} \\ RL = Reporting \mbox{ Limit} \\ E = Indicates \mbox{ value exceeds calibration range} \end{array}$

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



4

4.4

Section 5



Forms

Custody Documents and Other Forms

Includes the following where applicable:

• Chain of Custody

- Sample Tracking Chronicle
- Internal Chain of Custody



LAB (LOCATION)		Internet				6	3		She	I C)il	Pr	od	ict	s C	hai	n O	f Cu	sto	dy	Red	or	d			URS
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Please provide sample receipt upor	i login.				OT NEE	:0E0	ON REQUE			1	SL+TICS		SL+TICS			11		11		- 6						
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Field Sample Identi	fication	DATE	TIME	MAYREK	H			-T	- NO CON	DF 7.		S S	83	102	12	11	- 10	11			11			PID		
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MC32497: Chain of Custody Page 1 of 2





Accutest Laboratories Sample Receipt Summary

Accutest Job Number: M	1C324	97		Clier	nt: URS					Immediate Client Ser	rvices Actio	n Re	quired:	No
Date / Time Received: 7/	/31/20	14			De	livery N	lethod:			Client Service Action Required at Login:				
Project: 900 SOUTH CEN	NTRAL				No.	Coole	rs:	1	Airbill	l #'s:				
Cooler Security	<u>Y o</u>	or N	_			_ <u>Y</u>	or N		Sample Integrity -	Documentation	Y	or	N	
1, Custody Seals Present:	V		j	3. CO(C Present:	\checkmark	8 🗆		1. Sample labels pre	esent on bottles:	\checkmark			
2. Custody Seals Intact:	\checkmark		4	. Smpl D	ates/Time C	K 🗸			2. Container labeling	g complete:	V			
Cooler Temperature		Y	or N	<u>N_</u>					3. Sample container	label / COC agree:	\checkmark			
1. Temp criteria achieved:		¥	ſ					- i	Sample Integrity -	- Condition	Y	or	N	
2. Cooler temp verification:		Infa	ared g	gun	2.0				1. Sample recvd with	hin HT:	V			
3. Cooler media:	_	lc	ce (ba	ig)					2. All containers acc	counted for:	\checkmark			
Quality Control Preserva	tion	Y	or	N 1	N/A				3. Condition of samp	ple:		Intac	t	
1. Trip Blank present / cooler	r:	<u>v</u> .	t						Sample Integrity -	- Instructions	<u>Y</u>	or	N	N/A
2. Trip Blank listed on COC:		1	Ĺ						1. Analysis requeste	ed is clear:	V			
3, Samples preserved prope	erly:	V	Ē						2. Bottles received f	for unspecified tests			\checkmark	
4. VOCs headspace free:		V	1		()				3. Sufficient volume	e recvd for analysis:	~			
·									4. Compositing instr	tructions clear:				V
									5. Filtering instruction	ons clear:				\checkmark

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

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Job No: MC32497 5.2

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

Sample Number	Method	Analyzed	Ву	Prepped	Ву	Test Codes
	Collected: 30-JUL-14 1 -073014(28-30')	1:00 By:	Recei	ved: 31-JUL-	14 By	
VINI 10 20	0/3014(20-30)					
MC32497-1	SM21 2540 B MOD.	04-AUG-14	BF			%SOL
MC32497-1	SW846 8270D	04-AUG-14 12:44		01-AUG-14	AZ	AB8270SL+
MC32497-1	SW846 8011	07-AUG-14 12:01	NK	05-AUG-14		V8011SL
MC32497-1	SW846 8015	07-AUG-14 17:45	AF	00110011		V80115E
MC32497-1	SW846 8270D BY SIM	08-AUG-14 10:26		04-AUG-14	NE	B8270SIMSL
	SW846 8260C	12-AUG-14 12:07				V8260SL+
MC32497-2	Collected: 30-JUL-14 1	1.00 By	Recei	ved: 31-JUL-	A Bu	
	073014(28-30')DUP	1.00 DJ.	MUU	vea. JI-JUL	L4 Dy.	
MC32497-2	SM21 2540 B MOD.	04-AUG-14	BF			%SOL
	SW846 8270D	04-AUG-14 13:04		01-AUG-14	17	%SOL AB8270SL+
	SW846 8011	07-AUG-14 12:40	NK	05-AUG-14		V8011SL
	SW846 8015	07-AUG-14 18:22	AF	03-706-14	INE	V8015GRO
	SW846 8270D BY SIM		MR	04-AUG-14	NF	B8270SIMSL
	SW846 8260C	12-AUG-14 12:37		01-700-14	INE	V8260SL+
МС32497-3 ГВ-073014-	Collected: 30-JUL-14 0 HCL	0:00 By:	Receiv	ved: 31-JUL-1	4 By:	
MC32497-3	SW846 8260C	11-AUG-14 12:34	GK			V8260SL+
МС32497-4 ГВ-073014-	Collected: 30-JUL-14 0 ST	0:00 By:	Receiv	ved: 31-JUL-1	4 By:	
MC32497-4	SW846 8011	05-AUG-14 12:11	NK	04-AUG-14	MT	V8011SL



Accutest Internal Chain of Custody Job Number: MC32497

Job Number:MC32497Account:SHELLWIC Shell OilProject:URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, ILReceived:07/31/14

LMC32497-1.1Walk In Ref #9Nicole EsteyWalk In Ref #908/01/14 16:15Retrieve from StorageMC32497-1.2Walk In Ref #9Aysia WoodWalk In Ref #908/04/14 10:31Retrieve from StorageMC32497-1.2Walk In Ref #9Alireza Zeighami08/05/14 12:03Retrieve from StorageMC32497-1.2Walk In Ref #9Alireza Zeighami08/05/14 07:53Retrieve from StorageMC32497-1.2Walk In Ref #9Walk In Ref #908/05/14 12:08Return to StorageMC32497-1.3VCC Ref #10Krysten Dufort08/12/14 11:02Load on InstrumentMC32497-1.3Krysten DufortGCMSM08/12/14 09:24Unload from InstrumentMC32497-1.3Krysten DufortVOC Ref #1008/13/14 09:24Unload from InstrumentMC32497-1.7VOC Ref #10Krysten Dufort08/07/14 16:09Return to StorageMC32497-1.7VOC Ref #10Anthony Franciosa08/07/14 07:53Load on InstrumentMC32497-1.7Anthony FranciosaGCAB08/07/14 07:53Load on InstrumentMC32497-1.7Anthony FranciosaVOC Ref #1008/08/14 09:08Return to StorageMC32497-1.7Anthony FranciosaVOC Ref #1008/08/14 09:08Return to StorageMC32497-1.7Anthony FranciosaVOC Ref #1008/04/14 16:05Retrieve from StorageMC32497-2.1Walk In Ref #9Miciole Estey08/01/14 16:15Retrieve from StorageMC32497-2.1Walk In Ref #9Miciole Estey08/01/14 11:02Return to Storage	Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
MC32497-1.1Nicole EsteyWalk In Ref #908/01/14 21:44Return to StorageMC32497-1.2Walk In Ref #9Aysia WoodWalk In Ref #908/04/14 20:23Return to StorageMC32497-1.2Walk In Ref #9Alireza Zeighami08/05/14 07:53Retrieve from StorageMC32497-1.2Walk In Ref #9Alireza Zeighami08/05/14 07:53Return to StorageMC32497-1.3Krysten DufortGCMSM08/05/14 11:02Lead on InstrumentMC32497-1.3Krysten DufortGCMSM08/12/14 11:02Lead on InstrumentMC32497-1.3Krysten DufortVOC Ref #1008/13/14 09:24Return to StorageMC32497-1.7VOC Ref #10Krysten Dufort08/01/14 15:25Retrieve from StorageMC32497-1.7VOC Ref #10Krysten Dufort08/07/14 07:53Retrieve from StorageMC32497-1.7Krysten DufortVOC Ref #1008/07/14 07:53Retrieve from StorageMC32497-1.7Krysten DufortVOC Ref #1008/07/14 07:53Reture to StorageMC32497-1.7Anthony FranciosaGCAB08/07/14 07:53Lead on InstrumentMC32497-1.7Anthony FranciosaVOC Ref #1008/07/14 07:53Reture to StorageMC32497-1.7Anthony FranciosaVOC Ref #1008/07/14 07:53Reture to StorageMC32497-2.1Walk In Ref #9Nicole Estey08/07/14 07:53Return to StorageMC32497-2.1Walk In Ref #9Meldi Abdolrahim08/04/14 10:03Return to StorageMC32497-2.2Walk In Ref #9Mel	MC32497-1.1	Walk In Ref #9	Nicole Estey		
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J		Anthony Franciosa		08/08/14 09:08	Return to Storage
J	MC32497-3.2	VOC Ref #1	Gary Krasinski		
MC32497-3.2 Gary Krasinski GCMSL 08/11/14 12:08 Load on Instrument					

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ACCUTEST. MC32497

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

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

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Section 6



GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

Method Blank Summaries

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



Job Number: Account: Project:	ank Summa MC32497 SHELLWIC Sh URSMOSTL: R	ell Oil	IP-15 Replacem	ent, 900	South Central A	venue, Roxana, 1	Page 1 of 3
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/1	
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	
					-0.1	

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MC32497

Job Number: Account: Project:	MC32497 SHELLWIC Sh URSMOSTL: R		IP-15 Replaceme	ent, 900	South Central A	venue, Roxana, 1	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:

MC32497-3

CAS No.	Compound	Result	RL	MDL	Units Q
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.42	ug/l
	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

Method: SW846 8260C

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6.1.1 6

Method	Blank Summary er: MC32497					Page 3 of 3
Account: Project:	SHELLWIC Shell Oil URSMOSTL: Roxana V	MP-15 Replacer	nent. 900 S	outh Central	Avenue Roxana	IT
Sample MSL3863-	File ID DF	Analyzed 08/11/14		Prep Date n/a	Prep Batch n/a	Analytical Batch MSL3863
The QC re	ported here applies to the fol	lowing samples	:		Method: SW84	
MC32497-3	3					
CAS No.	Surrogate Recoveries		Limits			
1868-53-7 2037-26-5	Dibromofluoromethane Toluene-D8		70-130% 70-130%			
460-00-4	4-Bromofluorobenzene		70-130%			
CAS No.	Tentatively Identified Com	pounds	R.T.	Est. Conc.	Units Q	
	Total TIC, Volatile			0	ug/l	

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MC32497

Job Number: Account: Project:	MC32497 SHELLWIC She URSMOSTL: R		IP-15 Replaceme	ent, 900	South Central A	venue, Roxana,	IL
Sample MSM2388-MB	File ID M67512.D	DF 1	Analyzed 08/12/14	By KD	Prep Date n/a	Prep Batch n/a	Analytical Batch MSM2388
The QC report	ed here applies t	o the follo	owing samples:			Method: SW84	6 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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MC32497

Job Number: Account: Project:	MC32497 SHELLWIC Shell Oil URSMOSTL: Roxana V	MP-15 Replac	cement, 90	00 South (Central .	Avenue, Ro	oxana, II	rage z or s L
Sample MSM2388-MB	File ID DF M67512.D 1	Analyza 08/12/1	-	Pre n/a	p Date	Prep E n/a	Batch	Analytical Batch MSM2388
The QC report MC32497-1, M	ed here applies to the fol C32497-2	lowing sampl	es:			Method:	SW846	8260C
CAS No. Cor	npound	Result	RL	MDL	Units	Q		
10061-02-6 tran	1,3-Dichloropropene s-1,3-Dichloropropene Diovane	ND ND	2.0 2.0	0.23 0.26	ug/kg ug/kg			

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	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



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Job Number: Account: Project:	MC32497 SHELLWIC Shell Oil URSMOSTL: Roxana	/MP-15 Replacen	nent, 900 S	outh Central A	Avenue, Roxana, I	IL
Sample MSM2388-M	File ID DF B M67512.D 1	Analyzed 08/12/14	By KD	Prep Date n/a	Prep Batch n/a	Analytical Batch MSM2388
The QC repo MC32497-1, 1	rted here applies to the fo	bllowing samples	:	. man e L	Method: SW84	6 8260C
			T : :4-			
	Surrogate Recoveries		Limits			
1000 00	Dibromofluoromethane	91%	70-130%			
2037-26-5 1	Coluene-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



ACCUTEST. MC32497

Blank Spil Job Number: Account: Project:	Ke Summary MC32497 SHELLWIC Sh URSMOSTL: R	ell Oil	IP-15 Replacem	ent, 900	South Central A	venue, Roxana, 1	Page 1 of 3
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

GAGN		Spike	BSP	BSP	
CAS No.	Compound	ug/l	ug/l	%	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.

6.2.1



Job Number: Account: Project:	nt: SHELLWIC Shell Oil								
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:

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
	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.



Method: SW846 8260C

43 of 93 ACCUTEST. MC32497

Job Number: Account: Project:	ke Summary MC32497 SHELLWIC Sh URSMOSTL: R	Page 3 of 3 L					
Sample MSL3863-BS	File ID L86220.D	DF 1	Analyzed 08/11/14	By GK	Prep Date n/a	Prep Batch n/a	Analytical Batch MSL3863
The QC report	ted here applies t	o the follo	wing samples:			Method: SW84	6 8260C

MC32497-3

CAS No.	Surrogate Recoveries	BSP	Limits
-	Dibromofluoromethane	78%	70-130%
	Toluene-D8	89%	70-130%
	4-Bromofluorobenzene	89%	70-130%

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



Job Number: Account: Project:	MC32497 SHELLWIC She URSMOSTL: R		IP-15 Replacem	ent, 900	South Central A	venue, Roxana, 1	IL
Sample MSM2388-BS	File ID M67509.D	DF 1	Analyzed 08/12/14	By KD	Prep Date n/a	Prep Batch n/a	Analytical Batch MSM2388
						×	

The QC reported here applies to the following samples:

MC32497-1, MC32497-2

		Spike	BSP	BSP	
CAS No.	Compound	ug/kg	ug/kg	%	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.



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Method: SW846 8260C



Blank Spike Summary

Blank Spil Job Number: Account: Project:	Ke Summary MC32497 SHELLWIC Sho URSMOSTL: R	ell Oil	IP-15 Replacem	ent, 900	South Central A	venue. Roxana	Page 2 of 3
Sample MSM2388-BS	File ID M67509.D	DF 1	Analyzed 08/12/14	By KD	Prep Date n/a	Prep Batch n/a	Analytical Batch MSM2388
The QC report	ted here applies to	the follo	wing samples:			Method: SW84	6 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.



6.2.2 6

Blank Spike Summary

-							
Sample	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
MSM2388-BS	M67509.D	1	08/12/14	KD	n/a	n/a	MSM2388
			6-3				

MC32497-1, MC32497-2

CAS No. Surrogate Recoveries B	BSP	Limits
2037-26-5 Toluene-D8 8	88%	70-130% 70-130% 70-130%

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

6.2.2

6

Page 3 of 3



Matrix Spike/Matrix Spike Duplicate Summary

MC32497 Job Number: Account:

SHELLWIC Shell Oil Project:

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

Sample MC32562-1MS MC32562-1MSD MC32562-1	File ID L86233.D L86234.D L86227.D	DF 1 1 1	Analyzed 08/11/14 08/11/14 08/11/14	By GK GK GK	Prep Date n/a n/a n/a	Prep Batch n/a n/a n/a	Analytical Batch MSL3863 MSL3863 MSL3863 MSL3863
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The QC reported here applies to the following samples:

Method: SW846 8260C

MC32497-3

CAS No.	Compound	MC32562-1 ug/l 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	22.0	44* a	50	21.2	42* a	4	70 120/20
107-02-8	Acrolein	ND	250	190	76	250	187	42 - 75	2	70-130/30 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	40.2 51.7	103	2	70-130/30
108-86-1	Bromobenzene	ND	50	50.2	100	50	51.7	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 51.0	103	0	70-130/30
75-25-2	Bromoform	ND	50	50.6	101	50	51.0 51.4	102	2	70-130/30
74-83-9	Bromomethane	ND	50	38.2	76	50	50.4	105	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	54.0 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.



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

Sample File ID MC32562-1MS L86233 MC32562-1MSD L86234 MC32562-1MSD L86234 MC32562-1 L86234	.D 1 .D 1	Analyzed 08/11/14 08/11/14 08/11/14	By GK GK GK	Prep Date n/a n/a n/a	Prep Batch n/a n/a n/a	Analytical Batch MSL3863 MSL3863 MSL3863
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The QC reported here applies to the following samples:

MC32497-3

		MC32562-1	Spike	MS	MS	Spike	MSD	MSD		Limits
CAS No.	Compound	ug/l Q	ug/l	ug/l	%	ug/l	ug /1	%	RPD	Rec/RPD
10061-01-5	cis-1,3-Dichloropropene	ND	50	52.1	104	50	52.8	106	1	70-130/30
	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.

x



Method: SW846 8260C

6.3.1 **5**

Account: Project:	SHELLWIC Sh URSMOSTL: F		IP-15 Replacem	ent, 900	South Central A	venue, Roxana, 1	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
MC32562-1MSI	D 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.

6.3.1 6

SHELLWIC Shell Oil Account:

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

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:

MC32497-1, MC32497-2

		MC32521-1	Spike	MS	MS	Spike	MSD	MSD		Limits
CAS No.	Compound	ug/kg Q	ug/kg	ug/kg	%	ug/kg	ug/kg	%	RPD	Rec/RPD
					= 0			554 3	10	70.100/00
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
142-28-3 594-20-7	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 56.4	32.6	58* a	59	34.4	58* a	5	70-130/30
102-10-0	1,1-Dicinoropropene		30.4	52.0	00	00	01.1	00	U	10 100,00

* = Outside of Control Limits.

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Method: SW846 8260C

6.3.2 ດ

Matrix Spike/Matrix Spike Duplicate Summary

1

	MC32497 SHELLWIC She URSMOSTL: R		IP-15 Replacem	ent, 900	South Central A	venue, 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
MC32521-1MSI	D M67520.D	1	08/12/14	KD	n/a	n/a	MSM2388

KD

n/a

08/12/14

The QC reported here applies to the following samples:

M67515.D

Method: SW846 8260C

n/a

MC32497-1, MC32497-2

MC32521-1

		MC32521-1	Spike	MS	MS	Spike	MSD	MSD		Limits
CAS No.	Compound	ug/kg Q	ug/kg	ug/kg	%	ug/kg	ug/kg	%	RPD	Rec/RPD
10001 01 5	-'- 1 0 D' 11	ND								
	cis-1,3-Dichloropropene	ND	56.4	41.9	74	59	41.3	70	1	70-130/30
	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)		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.

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MSM2388

6.3.2 6

ACCUTEST. MC32497

Matrix Spike/Matrix Spike Duplicate Summary

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

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

Page 3 of 3



Volatile Internal Standard Area Summary Job Number: MC32497

Account: Project:	SHELLW URSMOS			15 Repla	cement, 90	0 South (Central Av	venue, Ro	oxana, IL	
Check Std: Lab File ID: Instrument ID:	MSL3863 L86219.1 GCMSL	3-CC386)	3	I	njection D njection T Method:	ime: 09	/11/14 :26 V846 8260	С		
	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		379746		123830	6.35
Lower Limit ^b	104747	7.61	164368	8.43	106234		94937		30958	5.35
Lab	IS 1		IS 2		IS 3		IS 4		IS 5	
Sample ID	AREA	RT	AREA	RT	AREA	RT	AREA	RT	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		132569		58032	
ZZZZZZ	180669	8.12	284405	8.93	174482		129671		52795	5.91
MC32497-3	173002	8.11	270718	8.93	164595		121600		51751	5.90
ZZZZZZ	170666	8.12	267852	8.93	164353		120140		51944	5.90
MC32562-1	169937	8.11	269739	8.93	164898		119872		48211	5.91
ZZZZZZ	169871	8.12	269240	8.93	166080		124821		40211 57171	5.90
ZZZZZZ	180445	8.12	285967	8.93	187116		175971	14.66	60012	5.89
ZZZZZ	198205	8.12	308958	8.93	186174		139564		67566	5.88
ZZZZZ	172789	8.12	273141	8.93	168856		122831		57347	5.90
ZZZZZZ	175761	8.12	286060	8.93	183035		146070		56331	5.90
MC32562-1MS	201974	8.11	316848	8.93	208608		189215		61632	5.90
MC32562-1MSD	208348	8.11	323792	8.93	209252		188577		66861	5.85
ZZZZZ	171842	8.12	267929	8.93	158644		117173	14.66		5.85
ZZZZZZ	162040	8.12	250564	8.93	151722		112394			5.90
ZZZZZ	173842	8.12	275706	8.93	167250		122669		51968	5.91
ZZZZZZ	166689	8.12	267325	8.93	164335		119951		53550	5.89
ZZZZZZ	161471	8.12	258597	8.93	162295		119951		55914	5.89
ZZZZZ	162316	8.12	255871	8.93	161216		117978	14.66	50681	5.90
ZZZZZ	161703	8.12	258400	8.93	165151		121956	14.66		5.91
ZZZZZZ	159659	8.12	255309	8.93	160021		121956	14.66		5.89
		0.10	200000	0.00	100021	12.12	110240	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.

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ACCUTEST.

MC32497

Check Std: Lab File ID: Instrument ID:	MSM2388 M67509.D GCMSM		8	In	Injection Date: 08/12/14 Injection Time: 10:09 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	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		499778		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		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		170757	6.85		
MC32521-1MSE		9.35	512436	10.23	221077	13.50	288417		178617	6.85		
ZZZZZZ	204338	9.35	324449	10.23	141236		189618		81425	6.84		
ZZZZZZ	289128	9.35	456368	10.23	193512	13.51	258862		92050	6.85		
ZZZZZZ	282615	9.35	449010	10.23	187142		246977		91357	6.84		
ZZZZZZ	272802	9.35	439962	10.23	182088	13.50	236009		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		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		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

= 1,4-Difluorobenzene **IS 2**

IS 3 = Chlorobenzene-D5

IS 4 = 1,4-Dichlorobenzene-d4

= Tert Butyl Alcohol-D9 IS 5

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

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

6.4.2

6

Volatile Surrogate Recovery Summary

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

Method: SW846	8260C		1	Matrix: AQ	
Samples and QC	shown here ap	ply to the a	bove met	hod	
Lab	Lab				
Sample ID	File ID	S 1	S2	S 3	
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		Recover	ťv		
Compounds		Limits			
S1 = Dibromoflue	oromethane	70-1309	6		
S2 = Toluene-D8		70-1307			
$S_2 = 1$ of u energies $S_3 = 4$ -Bromoflue		70-1309	-		



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6.5.1 6

Volatile Surrogate Recovery Summary

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

Method: SW846	8260C		N	Aatrix:	SO	
Samples and QC	shown here ap	ply to the abo	ove met	hod		
Lab	Lab					
Sample ID	File ID	S 1	S2	S 3		
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		Recovery	7			
Compounds		Limits				
S1 = Dibromoflu	oromethane	70-130%				
S2 = Toluene-D8		70-130%				
S3 = 4-Bromoflu	orobenzene	70-130%				



Section 7



GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

• Method Blank Summaries

• Blank Spike Summaries

Matrix Spike and Duplicate Summaries

• Internal Standard Area Summaries

Surrogate Recovery Summaries



Method Blank Summary Job Number: MC32497

ample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
P39211-MB	X04130.D	1	08/04/14	WK	08/01/14	OP39211	MSX136

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

Sample OP39211-	File ID DF MB X04130.D 1	Analy 08/04			ep Date /01/14		9211	Analytical Batch MSX136
The QC r	eported here applies to the fol	lowing sam	ples:			Metho	1: SW84	6 8270D
MC32497-	1, MC32497-2		-					
			з					
CAS No.	Compound	Result	RL	MDL	Units	Q		
77-47-4	Hexachlorocyclopentadiene	ND	490	120	ug/kg			
67-72-1	Hexachloroethane	ND	240	120	ug/kg 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		Limit	5				
367-12-4	2-Fluorophenol	70%	30-13	1 0/				
4165-62-2	Phenol-d5	80%	30-13					
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		87%	30-130					
CAS No.	Tentatively Identified Comp	pounds	R.T.	Est	Conc.	Units (2	
	Total TIC, Semi-Volatile			0	of the	ug/kg		



7.1.1

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Job Number: Account: Project:	MC32497 SHELLWIC Sh URSMOSTL: F		IP-15 Replaceme	ent, 900	South Central A	venue, Roxana, 1	IL
Sample OP39255-MB	File ID I91093.D	DF 1	Analyzed 08/08/14	By MR	Prep Date 08/04/14	Prep Batch OP39255	Analytical Batch 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%



7.1.2

Blank Spike Summary

Job Number: Account: Project:	MC32497 SHELLWIC Sh URSMOSTL: F		IP-15 Replacem	ent, 900	South Central A	venue, Roxana, 1	IL
Sample	File ID	DF	Analyzed	By	Prep Date 08/04/14	Prep Batch	Analytical Batch
OP39255-BS	I91094.D	1	08/08/14	MR		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	Lim	iits	
007 10 4			_		
367-12-4	2-Fluorophenol	37%		l 10 %	
4165-62-2	Phenol-d5	36%		1 10 %	
118-79-6	2,4,6-Tribromophenol	42%		10%	
4165-60-0	Nitrobenzene-d5	76%		1 30 %	
321-60-8	2-Fluorobiphenyl	73%		30%	
1718-51-0	Terphenyl-d14	93%	30-1	l 30 %	

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* = Outside of Control Limits.

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Blank Spike/Blank Spike Duplicate Summary

Job Number: Account: Project:	MC32497 SHELLWIC Sho URSMOSTL: R		IP-15 Replacem	ent, 900 S	South Central A	venue, Roxana, I	IL
Sample OP39211-BS	File ID X04131.D	DF 1	Analyzed 08/04/14 08/04/14	By WK WK	Prep Date 08/01/14 08/01/14	Prep Batch OP39211 OP39211	Analytical Batch MSX136 MSX136
OP39211-BSD	X04132.D	1	00/04/14	VVIX	00/01/14	01 39211	MSAISU

The QC reported here applies to the following samples:

Method: SW846 8270D

MC32497-1, MC32497-2

		Spike	BSP	BSP	BSD	BSD		Limits
CAS No.	Compound	ug/kg	ug/kg	%	ug/kg	%	RPD	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 2460	2650	108	2870	120	8	40-140/30
		2460	2340	95	2510	105	7	40-140/30
84-66-2	Diethyl phthalate	2460	2340	96	2500	103	6	40-140/30
131-11-3	Dimethyl phthalate	2460 2460	2500	102	2300	113	8	40-140/30
117-81-7	bis(2-Ethylhexyl)phthalate Hexachlorobenzene	2460 2460	2500	102	2720	113	8	40-140/30
118-74-1	пехасшогорепzене	2400	2320	103	6120	115	0	10-110/30

* = Outside of Control Limits.

7.3.1

Blank Spike/Blank Spike Duplicate Summary

Job Number: Account: Project:	MC32497 SHELLWIC Sh URSMOSTL: R		IP-15 Replacem	ent, 900	South Central A	venue, Roxana, 1	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	BSI	D	Limits	ş		
007 10 4								
367-12-4	2-Fluorophenol	63%	62%		30-130%	6		
4165-62-2	Phenol-d5	71%	74%	1.00	30-130%	6		
118-79-6	2,4,6-Tribromophenol	84%	94%		30-130%	6		
4165-60-0	Nitrobenzene-d5	75%	76%	6	30-130 %	6		
321-60-8	2-Fluorobiphenyl	72%	76%	6	30-130%	6		
1718-51-0	Terphenyl-d14	84%	90%	6	30-1309	6		

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



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SHELLWIC Shell Oil Account:

Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL								
Sample OP39211-MS OP39211-MSD	File ID X04133.D X04134.D	DF 1	Analyzed 08/04/14 08/04/14	By WK WK	Prep Date 08/01/14 08/01/14	Prep Batch OP39211 OP39211	Analytical Batch MSX136 MSX136		
MC32521-1	X04134.D 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

		MC32521-1		MS	MS	Spike	MSD	MSD		Limits
CAS No.	Compound	ug/kg Q	ug/kg	ug/kg	%	ug/kg	ug/kg	%	RPD	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.

65 of 93 ACCUTEST. MC32497

Account: Project:	SHELLWIC Sh URSMOSTL: R		IP-15 Replacem	ent, 900 (South Central A	venue, Roxana, 1	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 Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
77-47-4 67-72-1 78-59-1 88-74-4 99-09-2 100-01-6 98-95-3 62-75-9 621-64-7 86-30-6 110-86-1	Hexachlorocyclopentadiene Hexachloroethane Isophorone 2-Nitroaniline 3-Nitroaniline 4-Nitroaniline Nitrobenzene n-Nitrosodimethylamine N-Nitroso-di-n-propylamine N-Nitrosodiphenylamine Pyridine	ND ND ND ND ND ND ND ND ND	2820 2820 2820 2820 2820 2820 2820 2820	1680 2320 2340 2800 2650 2480 2540 1960 2640 2450 1570	60 82 83 99 94 88 90 69 94 87 56	2820 2820 2820 2820 2820 2820 2820 2820	1630 2350 2420 3040 2820 2740 2600 1950 2710 2620 1570	58 83 86 108 100 97 92 69 96 93 56	3 1 3 8 6 10 2 1 3 7 0	40-140/30 40-140/30 40-140/30 40-140/30 40-140/30 40-140/30 40-140/30 40-140/30 40-140/30
CAS No.	Surrogate Recoveries	MS	MSD	МС	32521-1	Limits				
367-12-4 4165-62-2 118-79-6 4165-60-0 321-60-8 1718-51-0	2-Fluorophenol Phenol-d5 2,4,6-Tribromophenol Nitrobenzene-d5 2-Fluorobiphenyl Terphenyl-d14	69% 76% 89% 81% 80% 89%	70% 78% 95% 81% 79% 91%	65% 72% 81% 74% 70% 82%	6 6 6	30-130% 30-130% 30-130% 30-130% 30-130% 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.



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SHELLWIC Shell Oil Account:

Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL
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Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP39255-MS	191101.D	5	08/08/14	MR	08/04/14	OP39255	MSI3392
OP39255-MSD	191102.D	5	08/08/14	MR	08/04/14	OP39255	MSI3392
MC32549-1	191103.D	5	08/08/14	MR	08/04/14	OP39255	MSI3392

The QC reported here applies to the following samples:

MC32497-1, MC32497-2

CAS No.	Compound	MC32549- ug/kg Q	-	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
CAS NO.	Compound	ug/ng V	ug/Ng	*******		-00				
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	M	232549-1	Limits				
007 10 4	2 Elwaranhanal	31%	32%			15-110	%			
367-12-4	2-Fluorophenol Phenol-d5	31%	32 /0			15-110				
4165-62-2		41%	43%			15-110				
118-79-6	2,4,6-Tribromophenol	41 <i>%</i> 71%	43 % 80%	80	0/	30-130				
4165-60-0	Nitrobenzene-d5	81%	85%	86		30-130				
321-60-8	2-Fluorobiphenyl	95%	101%	10		30-130				
1718-51-0	Terphenyl-d14	3370	101/0	10	170	00 100	/0			

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

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Method: SW846 8270D BY SIM

* = Outside of Control Limits.

Semivolatile Internal Standard Area Summary Job Number: MC32497

Account: Project:	SHELLW URSMOS		ll Oil Dxana VMF	-15 R	eplacemen	t, 900	South Cent	ral Av	enue, Rox	ana, IL			
Check Std: Lab File ID: Instrument ID:	MSI3392-CC3386 I91092.D GCMSI				Injection Date: 08/08/14 Injection Time: 08:08 Method: SW846 8270D BY SIM								
				Wiethou. 500840 827				0 0270					
	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				3177990		
Lower Limit ^b	255640	3.67	549841	4.73	282494				310597			11.93	
Lab	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6		
Sample ID	AREA	RT	AREA	RT	AREA	RT	AREA	RT		RT		RT	
OP39255-MB	642747	4.17	1409110	5.22	712875	6.76	1152340	8 16	726483	10.02	1838594	10 40	
OP39255-BS	640486	4.17	1382468		690720	6.76	1110255				1743358		
MC32497-1	637271	4.17	1407726		712496	6.76	1131219				1745558		
MC32497-2	553045	4.17	1213971		610689	6.76	974670		590785		1474503		
ZZZZZ	608545	4.17	1326787		671521	6.76	1081142		696628		1783504		
DP39255-MS	508820	4.18	1098216	5.23	556813	6.76		8.16	579829		1459164		
OP39255-MSD	505056	4.18	1086017	5.23	555177	6.76		8.16			1457065	-	
MC32549-1	506820	4.18	1089212	5.23	565469	6.76		8.16	571243		1460953		
DP39280-MB	597422	4.17	1300626	5.22	648785	6.76	1026827	8.16	672554		1704803		
DP39280-BS	593393	4.17	1272944	5.23	621749	6.76	989964	8.16	654811		1655784		
DP39280-MS	537251	4.17	1161892		570701	6.76	908648	8.16			1504148		
DP39280-MSD	603048	4.17	1307056		639628	6.76	1027093	8.16	662804		1687516		
MC32300-23	581325	4.17	1265301	5.23	637052	6.76	1017012	8.16	648564		1678393		
ZZZZZZ	605624	4.17	1319849	5.22	659451	6.76	1046431	8.16			1715659		
ZZZZZ	561533	4.17	1207991	5.22	602540	6.76	968663	8.16			1582934		

- 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.

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7.5.1



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Semivolatile Internal Standard Area Summary

Job Number: MC32497

Account: SHELLWIC Shell Oil

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

Check Std: Lab File ID: Instrument ID:	MSX136-CC106Injection Date:08/04/14X04129.DInjection Time:07:53GCMSXMethod:SW846 8270D											
	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
Check Std	269102	3.38	1034275	4.42	567950	5.93	930188	7.20	810477	9.59	656948	
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		3.92	283975	5.43	465094	6.70	405239	9.09	328474	10.64
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
OP39211-MB	329202	3.38	1284213	4.42	697000	5.93	1034735	7.20	766975	9.59	560078	11.14
OP39211-MD	306224	3.38	1142232		632064	5.93	1004364		821561	9.59	653074	11.14
OP39211-BSD	286801	3.38	1067731		588614	5.93		7.20	791546	9.59	632709	11.14
OP39211-DSD	333747	3.38	1266255		673571	5.93	1045985		775406	9.59	618318	11.14
OP39211-MSD	306924	3.38	1163682		642556	5.93	1021511		811608	9.59	637169	11.14
MC32521-1	305760	3.38	1173204		646738	5.92	1009317		745436	9.59	553839	11.13
ZZZZZZ	293924	3.38	1104211		620527	5.93	952435	7.20	748352	9.59	590352	11.14
ZZZZZZ	291038	3.38	1091651		603738	5.93	909086	7.20	649808	9.59	514449	11.14
ZZZZZZ	275553	3.38	1023638		563019	5.93	863454	7.20	695729	9.59	564240	11.13
ZZZZZZ	288914	3.38	1064126		580151	5.93	833741	7.20	612759	9.61	483544	11.16
ZZZZZZ	308045	3.38	1119775		603497	5.93	895300	7.20	640264	9.59	511642	11.14
ZZZZZZ	331523	3.38	1225425		650792	5.93	952491	7.20	667966	9.59	570416	11.14
ZZZZZZ	288811	3.38	1043149		558433	5.93	845411	7.20	662283	9.59	547993	11.14
MC32497-1	281645	3.38	1055631		586165	5.93	908461	7.20	681316	9.59	525367	11.14
MC32497-2	304527	3.38	1139635		611412	5.93	920986	7.20	666799	9.59	529101	11.13
ZZZZZZ	292153	3.38	1081748		600734	5.93	928351	7.20	686018	9.59	522901	11.13
ZZZZZZ	277392	3.38	1013364		560833	5.93	869099	7.20	674421	9.59	533920	11.14
ZZZZZZ	283827	3.38	1045649		562693	5.92	839179	7.20	654623	9.59	563418	11.14
ZZZZZZ	334405	3.38	1213208		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		586862	5.93	895526	7.20	697813	9.59	529536	11.14
OP39205-BS	296747	3.38	1096072		590440	5.93	903850	7.20	726981	9.59	600437	11.14
ZZZZZZ	302990	3.38	1112739		614020	5.92	932369	7.20	707451	9.59	532223	11.14
ZZZZZZ	315073	3.38	1174079		626324	5.92	920105	7.20	707333	9.59	539944	11.1

- 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.



7.5.2

Semivolatile Surrogate Recovery Summary Job Number: MC32497

Account: SHELLWIC Shell Oil

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

Method: SW84	fethod: SW846 8270D			Aatrix: S	0			
Samples and QC	C shown here ap	ply to the a	above met	hod				
Lab	Lab							
Sample ID	File ID	S 1	S 2	S 3	S4	S 5	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		Recove	erv					
Compounds		Limits						
S1 = 2-Fluoroph	enol	30-130	%					
S2 = Phenol-d5		30-130						
S3 = 2,4,6-Tribr	omophenol	30-130						
S4 = Nitrobenzer		30-130						
S5 = 2-Fluorobig	= 2-Fluorobiphenyl		%					
	= Terphenyl-d14		%					

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7.6.1 7

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Semivolatile Surrogate Recovery Summary Job Number: MC32497 Account: SHELLWIC Shell Oil

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

Method:	SW846 8270D BY SIM	Matrix:	SO	
Samples	and QC shown here apply to the	above method		
Lah	Lah			

Lab	Lab				
Sample ID	File ID	S1	S2	S 3	
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		Recov	2		
Compounds		Limit	8		
S1 = Nitrobenze	ene-d5	30-13	0%		
S2 = 2-Fluorobi	phenyl	30-13	0%		
S3 = Terphenyl		30-13	D%		

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MC32497

Section 8



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



Job Number: Account: Project:	MC32497 SHELLWIC She URSMOSTL: Ro		IP-15 Replacem	ent, 900 S	South Central A	Avenue, Roxana, I	IL
Sample OP39247-MB	File ID BK39938.D	DF 1	Analyzed 08/05/14	By NK	Prep Date 08/04/14	Prep Batch OP39247	Analytical Batch GBK1298
The QC report	ted here applies to	the follo	wing samples:		an als service	Method: SW84	6 8011
				, ×,		0	
CAS No. Co	ompound				ADL Units	Q	

CAS No.	Compound	Result	KL	MDL	Units	Q
96-12-8 106-93-4	1,2-Dibromo-3-chloropropane 1,2-Dibromoethane	ND ND	0.015 0.015	0.0061 0.0061	ug/l ug/l	
CAS No.	Surrogate Recoveries		Limits			
460-00-4	Bromofluorobenzene (S)	115%	36-1739			
460-00-4	Bromofluorobenzene (S)	107%	36-1739	%		

∞



Job Number: Account: Project:	MC32497 SHELLWIC She URSMOSTL: Re		IP-15 Replacem	ent, 900	South Central A	venue, Roxana, 1	IL
Sample OP39257-MB	File ID BK39961.D	DF 1	Analyzed 08/07/14	By NK	Prep Date 08/05/14	Prep Batch OP39257	Analytical Batch GBK1299
The QC report MC32497-1, M	ed here applies to	the follo]	Method: SW84	6 8011		

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%





Job Number: Account: Project:	MC32497 SHELLWIC She URSMOSTL: Ro		P-15 Replaceme	ent, 900	South Central A	venue, Roxana, I	L
Sample GAB4535-MB	File ID AB85228.D	DF 1	Analyzed 08/07/14	By AF	Prep Date n/a	Prep Batch n/a	Analytical Batch GAB4535
The QC report MC32497-1, M	ted here applies to	the follo	wing samples:			Method: SW84	6 8015
CAS No. Co	mpound		Result R	LP	MDL Units	Q	

CAS No.	Compound	Result	RL	MDL	Units Q
	TPH-GRO (VOA)	ND	5.0	0.74	mg/kg
CAS No.	Surrogate Recoveries		Limits	5	
	2,3,4-Trifluorotoluene	95%	61-116	6%	

8.1.3 8

Blank Spike Summary

Job Number: Account:	ke Summary MC32497 SHELLWIC She	ll Oil					Page 1 of 1
Project:	URSMOSTL: R	oxana VN	IP-15 Replacem	ent, 900	South Central A	venue, Roxana,	IL
Sample OP39247-BS	File ID BK39939.D	DF 1	Analyzed 08/05/14	By NK	Prep Date 08/04/14	Prep Batch OP39247	Analytical Batch 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
96-12-8 106-93-4	1,2-Dibromo-3-chloropropane 1,2-Dibromoethane	0.071 0.071	0.085 0.083	120 117	60-140 60-140
CAS No.	Surrogate Recoveries	BSP	Lim	its	
460-00-4 460-00-4	Bromofluorobenzene (S) Bromofluorobenzene (S)	110% 118%		1 73 %	

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8.2.1 8

* = Outside of Control Limits.

Blank Spike Summary

Job Number: Account: Project:	MC32497 SHELLWIC She URSMOSTL: Re		IP-15 Replacem	ent, 900	South Central A	venue, Roxana, I	IL
Sample OP39257-BS	File ID BK39962.D	DF 1	Analyzed 08/07/14	By NK	Prep Date 08/05/14	Prep Batch OP39257	Analytical Batch GBK1299
The QC repor MC32497-1, N	ted here applies to	o the follo		Method: SW84	6 8011		

Spike BSP BSP CAS No. Compound ug/kg ug/kg % Limits 1,2-Dibromo-3-chloropropane 33.1 59-142 96-12-8 37.1 112 1,2-Dibromoethane 33.1 28.4 86 56-140 106-93-4 BSP Limits CAS No. Surrogate Recoveries 61-167% 460-00-4 Bromofluorobenzene (S) 135% Bromofluorobenzene (S) 61-167% 460-00-4 123%



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8.2.2

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* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: Account: Project:	C e/Blank Spi MC32497 SHELLWIC She URSMOSTL: Re	ll Oil		·		venue, Roxana, 1	Page 1 of 1 IL
Sample GAB4535-BSP GAB4535-BSD	File ID AB85229.D AB85230.D	DF 1 1	Analyzed 08/07/14 08/07/14	By AF AF	Prep Date n/a n/a	Prep Batch n/a n/a	Analytical Batch GAB4535 GAB4535
The QC reporte	ed here applies to]	Method: SW840	6 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)	ng/kg 32.5 ries BSP	32.0	98	31.9	98	0	66-126/30
CAS No.	Surrogate Recoveries	BSP	BSI)	Limits			
	2,3,4-Trifluorotoluene	98%	97%	6	61-116%	ź		

8.3.1 8

Account:	SHELLWIC Shell Oil
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Project: URS	SMOSTL: Roxana VMP-15 Replace	cement, 900 South Central Avenue	, Roxana, IL
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OP39247-MS BI OP39247-MSD BI	ile ID D K39940.D 1 K39941.D 1 K39942.D 1	F Analyzed 08/05/14 08/05/14 08/05/14	By NK NK NK	Prep Date 08/04/14 08/04/14 08/04/14	Prep Batch OP39247 OP39247 OP39247 OP39247	Analytical Batch GBK1298 GBK1298 GBK1298
---------------------------------	----------------------------------------------------	------------------------------------------------	----------------------	-----------------------------------------------	--------------------------------------------------------	---------------------------------------------------

The QC reported here applies to the following samples:

MC32497-4

CAS No.	Compound	MC3230 ug/l	0-19 Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD	
96-12-8 106-93-4	1,2-Dibromo-3-chloropropane 1,2-Dibromoethane	ND ND		0.071 0.071	0.087 0.082	123 115	0.071 0.071	0.084 0.078	118 110	4 5	64-141/29 63-163/27	C
CAS No.	Surrogate Recoveries	MS		MSD	MC32300-19 Limits							
460-00-4 460-00-4	Bromofluorobenzene (S) Bromofluorobenzene (S)	89% 100%		88% 104%	92% 106	10.1	36-173% 36-173%	-				

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ACCL MC32497

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Method: SW846 8011



1

Account: Project:	MC32497 SHELLWIC She URSMOSTL: Re		1P-15 Replacem	ent, 900	South Central A	venue, 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

NK

08/05/14

08/07/14

The QC reported here applies to the following samples:

BK39965.D

Method: SW846 8011

OP39257

MC32497-1, MC32497-2

MC32521-1

CAS No.	Compound	MC32521-1 ug/kg Q		MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD	8.4.2
96-12-8 106-93-4	1,2-Dibromo-3-chloropropane 1,2-Dibromoethane	ND ND	37.4 37.4	58.5 46.9	156 125	37.7 37.7	57.7 48.5	153 129	1 3	40-156/27 48-141/27	8
CAS No.	Surrogate Recoveries	MS	MSD	MC	32521-1	Limits					
460-00-4 460-00-4	Bromofluorobenzene (S) Bromofluorobenzene (S)	159% 152%	162% 158%	1559 1559		61-167% 61-167%					

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GBK1299



Matrix Spike/Matrix Spike Duplicate Summary

Job Ni	imber:	MC32497	

SHELLWIC Shell Oil Account:

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

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 Q	-	MS mg/kg	MS %	Spike mg/kg	MSD mg/kg	MSD %	RPD	Limits Rec/RPD	.4.3
	TPH-GRO (VOA)	ND	94.1	94.9	101	94.1	95.1	101	0	41-150/20	∞
CAS No.	Surrogate Recoveries	MS	MSD	мс	32521-1	Limits					
	2,3,4-Trifluorotoluene	101%	100%	98%	6	61-1169	6				

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of 93 JTEST.

 $\mathbf{\Lambda}$ MC32497

* = Outside of Control Limits.

Volatile Surrogate Recovery Summary Job Number: MC32497 SHELLWIC Shell Oil Account: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL Project: Method: SW846 8011

Method: SW84	6 8011		Matrix:	AQ	
Samples and QC	C shown here app	ly to the ab	ove method		
Lab Sample ID	Lab File ID	S1 ^a	S1 ^b		
		51 -	51 ~		
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		Recovery	7		
Compounds		Limits			
S1 = Bromofluor	robenzene (S)	36-173%			
(a) Recovery from	n GC signal #2				
(b) Recovery from	n GC signal #1				



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Volatile Surrogate Recovery Summary

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

Method: SW846	6 8011		Matrix: SO				
Samples and QC shown here apply to the above method							
Lab	Lab						
Sample ID	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		Recove	rv				
Compounds		Limits	, ,				
S1 = Bromofluo	robenzene (S)	61-167	%				

(b) Recovery from GC signal #1

8.5.2



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

Method: SW846	6 8015		Matrix: SO			
Samples and QC	shown here app	bly to the above n				
Lab	Lab					
Sample ID	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		Recovery				
Compounds		Limits				
S1 = 2,3,4-Triflu	orotoluene	61-116%				
(a) Recovery from	1 GC signal #1			8		
S1 = 2,3,4-Triflu(a) Recovery from		61-116%		9		



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8.5.3

Job Number: Account: Project:	MC32497 SHELLWIC Shell Oil URSMOSTL: Roxana VMP	-15 Replacement, 900 South Central Avenue, Roxana, IL
Check Std: Lab File ID:	GBK1298-ICC1298 BK39934.D	Injection Date: 08/05/14 Injection Time: 09:17
Instrument ID:	GCBK	Method: SW846 8011
		S1 ^a S1 ^b PT PT

Surrogate

Compounds

S1 = Bromofluorobenzene (S)

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

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8.6.1



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

Check Std: Lab File ID: Instrument ID:	GBK1299-CC BK39960.D GCBK	Injection Date:08/07/14Injection Time:08:31Method:SW846 80				
				S1 ^a RT	S1 ^b RT	
Check Std				4.27	4.29	
Lab	Lab	Date	Time	S1 a	\$1 ^b	
Sample ID	File ID	Analyzed	Analyzed	RT	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	
ZZZZZ	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



Job Number: Account: Project:	MC32497 SHELLWIC Sh URSMOSTL: R		15 Replacem	ient, 900 S	South Central Avenue, Roxana, IL	
Check Std: Lab File ID: Instrument ID:	GBK1299-CC1 BK39971.D GCBK	1299	Inje	ction Date ction Time hod:		
					S1 ^b RT	
Check Std				4.27	4.28	
Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed		S1 ^b RT	
MC32497-2 ZZZZZZ ZZZZZZ ZZZZZZ	BK39972.D BK39973.D BK39974.D BK39975.D	08/07/14 08/07/14 08/07/14 08/07/14	12:40 12:59 13:19 13:38	4.27 4.27	4.28 4.30 4.28 4.28	

4.27

4.27

4.27

4.27

4.27

4.27

4.28

4.28

4.28

4.28

4.28

4.28

Surrogate

ZZZZZZ

ZZZZZZ

ZZZZZZ

ZZZZZZ

ZZZZZZ

ZZZZZZ

Compounds

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #2

BK39976.D

BK39977.D

BK39978.D

BK39979.D

BK39980.D

BK39981.D

08/07/14

08/07/14 08/07/14

08/07/14

08/07/14

08/07/14

13:58

14:17

14:36

14:56

15:15 15:34

(b) Retention time from GC signal #1





GC Surrogate Retention Time Summary Job Number: MC32497

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

Check Std: Lab File ID: Instrument ID:	GAB4536-CC4 AB85227A.D GCAB	488	Inj	ection Date: ection Time: thod:	08/07/14 07:43 SW846 8015	
				S1 ^a RT		
Check Std				20.33		
Lab	Lab	Date	Time	S1 a		
Sample ID	File ID	Analyzed	Analyzed	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





Job Number: Account: Project:	MC32497 SHELLWIC She URSMOSTL: Ro	ll Oil			uth Central Avenue, 1	Roxana, IL
Check Std: Lab File ID: Instrument ID:	GAB4535-CC44 AB85227.D GCAB	488		ction Date: ction Time: nod:	08/07/14 07:43 SW846 8015	
				S1 ^a RT		
Check Std				20.33		
Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 ^a RT		
GAB4535-MB GAB4536-MB GAB4536-BSP GAB4535-BSP GAB4535-BSD GAB4536-BSD MC32468-3 MC32521-1	AB85228.D AB85228A.D AB85229A.D AB85229.D AB85230.D AB85230A.D AB85231.D AB85232.D	08/07/14 08/07/14 08/07/14 08/07/14 08/07/14 08/07/14 08/07/14 08/07/14	08:21 08:29 08:59 09:37 09:37 10:15 10:53	20.33 20.33 20.32 20.32 20.32 20.32 20.32 20.33 20.33		

20.32

20.32

20.32

20.33

Surrogate Compounds

MC32521-1MS

MC32468-3MS

S1 = 2,3,4-Trifluorotoluene

MC32521-1MSD AB85234.D

MC32468-3MSD AB85236.D

(a) Retention time from GC signal #1

AB85233.D

AB85235.D

08/07/14

08/07/14

08/07/14

08/07/14

11:30

12:08

12:45 13:23





Job Number: Account: Project:	MC32497 SHELLWIC Shell Oil URSMOSTL: Roxana VMF	P-15 Replacement, 900 Sou	uth Central Avenue, Roxana, IL	U
Check Std: Lab File ID:	GAB4536-CC4488 AB85237A.D	Injection Date: Injection Time:		

Instrument ID:	GCAB		Met	hod:	SW846 8015	
				S1 ^a		
				RT		
Check Std				20.32		
Lab	Lab	Date	Time	S1 a		
Sample ID	File ID	Analyzed	Analyzed	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		
ZZZZZ	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

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8.6.6

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Job Number: Account: Project:	MC32497 SHELLWIC Shell Oil URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL						
Check Std: Lab File ID:	GAB4535-CC AB85237.D	C4488	-	ction Date: ction Time:	08/07/14 14:01		
Instrument ID:				hod:	SW846 8015		
				S1 ^a RT			
Check Std				20.32			
Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 ^a RT			
•		•					

Sample ID	File ID	Analyzed	Analyzed	KI	
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	
ZZZZZŹ	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

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8.6.7



Section 9

9



General Chemistry

QC Data Summaries

Includes the following where applicable:

Percent Solids Raw Data Summary



Percent Solids Raw Data Summary

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

Sample: MC32497-1 ClientID: VMP15-29-07301	Analyzed: 04-AUG-14 by BF 4(28-30')	Method: SM21 2540 B MOD
Wet Weight (Total)	36.286 g	
Tare Weight	24.654 g	
Dry Weight (Total)	35.698 g	
Solids, Percent	94.9 %	
Sample: MC32497-2 ClientID: VMP15-29-07301	Analyzed: 04-AUG-14 by BF 4(28-30')DUP	Method: SM21 2540 B MOD
Wet Weight (Total)	37.2 g	
Tare Weight	26.651 g	
Dry Weight (Total)	36.735 g	
DIV WEIght (I Utal)		

9.1

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e-Hardcopy 2.0 **Automated Report**

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



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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.

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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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	Matri Code		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 rec	ommended method	l holding time.			
4	Sample(s) MC32529-5MS, MC32529-5	5MSD were used as	the QC samples indicated.			
ĸ	All method blanks for this batch meet m	ethod specific crite	ria.			
N.	MSU962-BS Recovery(s) for 1,4-Dioxane, Dichlorodifluoromethane are outside control limits. Blank Spike meets program technical requirements.					
	Blank Spike meets program technical rec	quirements.	promethane, trans-1,3-Dichloropropene are outside control limits.			
	MC32529-5MS Recovery(s) for 1,1,1-T relative to spike amount.	richloroethane is ou	utside control limits. Outside control limits due to high level in sample			
Ē	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.					
E.						
l	RPD of MSU962-BSD for 2-Chloroethy	RPD of MSU962-BSD for 2-Chloroethyl vinyl ether. Outside control limits. Individual spike recoveries within acceptance limits.				
ſ	RPD of MSU962-BSD for trans-1,3-Dichloropropene: Outside control limits. Blank Spike meets program technical requirements.					
	MC32529-5MS Recovery(s) for 2-Butar	none (MEK), 2-Chlo	proethyl vinyl ether, 2-Hexanone, Acetone, Dichlorodifluoromethane are e matrix interference. Refer to Blank Spike.			
			ane 30% Difference (response bias high). Associated samples are non-			
	Matrix AQ	Batch ID:	MSU964			
	All samples were analyzed within the rece	ommended method	holding time.			
	All method blanks for this batch meet me	ethod specific criter	ia.			
	Sample(s) MC32593-2AMS, MC32593-	-2AMSD were used	as the QC samples indicated.			
	MSU964-BS Recovery(s) for 1,4-Dioxar compound.	ne, Chloroethane are	e outside control limits. Associated samples are non-detect for this			
	MSU964-BS Recovery(s) for Acrolein a	are outside control l	limits. Blank Spike meets program technical requirements.			
		2-Chloroethyl viny	l ether, 2-Hexanone, Acetone, Acrolein, Chloroethane are outside			
			ne 40% Difference (response bias high). Associated samples are non-			

detect for this compound. Ash ID Matrix SO

MSM2388

	B	a	tC	h	D	÷

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

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Volatiles by GCMS By Method SW846 8260C

Matrix SO	Batch ID: MSM2388
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- 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-Dichloroethane, 1,1-Dichloroethane, 1,1-Dichloroethane, 1,1-Dichloroethane, 1,2,3-Trichlorobenzene, 1,2,4-Trimethylbenzene, 1,2,4-Trimethylbenzene, 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, Trohuene, 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.

Batch ID: OP39211	
	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.

Friday, August 15, 2014

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Extractables by GCMS By Method SW846 8270D BY SIM

Matrix AQ	Batch ID:	OP39229
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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) MC32300-14MS, 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 t	he recommended method	d halding time

- 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).

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Summary of Hits Job Number: MC32521 Shell Oil Account: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL Project: Collected: 07/31/14

Lab Sample ID C Analyte	lient Sample ID	Result/ Qual	RL	MDL	Units	Method
MC32521-1 V	MP15-25.5-0731	14(24-28')				
Benzene Carbon disulfide Benzo(g,h,i)peryler Phenanthrene	ie	0.0040 0.00079 J 0.0018 J 0.0015 J	0.00055 0.0055 0.0056 0.0056	0.00037 0.00014 0.0015 0.0012	mg/kg mg/kg mg/kg mg/kg	SW846 8260C SW846 8260C SW846 8270D BY SIM SW846 8270D BY SIM
MC32521-2 E	QB-073114 (24-2	(8')				
Toluene Di-n-butyl phthalate Diethyl phthalate bis(2-Ethylhexyl)ph		4.1 0.60 JB 0.62 J 3.0	1.0 5.2 5.2 2.1	0.33 0.18 0.21 0.34	ug/l ug/l ug/l ug/l	SW846 8260C SW846 8270D SW846 8270D SW846 8270D
МС32521-3 Т	B-073114-HCL					

No hits reported in this sample.

TB-073114-ST MC32521-4

No hits reported in this sample.



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Section 4



Sample Results

Report of Analysis



			Керог	t OI Alle	19313			1 age 1 of
Client Sam Lab Samp Matrix: Method: Project:	le ID: MC32 SO - S SW84	6 8260C	14(24-28') 1na VMP-15 Re	eplacement,	900 Sout	Date Perce	Received: 08 ent Solids: 87	7/31/14 8/01/14 7.8 ana, IL
Run #1 Run #2	File ID M67515.D	DF 1	Analyzed 08/12/14	By KD	Prep Da n/a	te	Prep Batch n/a	Analytical Batch MSM2388
Run #1 Run #2	Initial Weight 5.17 g	Final Vol 5.0 ml	ume					
VOA Spec	ial List							
CAS No.	Compound		Result	RL	MDL	Units	Q	
107-02-8 107-13-1 71-43-2 108-86-1 74-97-5 75-27-4 75-25-2 74-83-9 78-93-3 104-51-8 135-98-8 98-06-6 75-15-0 56-23-5 108-90-7 75-00-3 110-75-8 67-66-3	Acrolein Acrylonitrile Benzene Bromobenzen Bromochloro Bromodichlo Bromoform Bromometha 2-Butanone (n-Butylbenze sec-Butylben tert-Butylben Carbon disul Carbon tetrae Chlorobenze Chlorobenze Chloroethane 2-Chloroethane	methane romethane MEK) ne zene zene fide chloride ne	ND ND 0.0040 ND ND ND ND ND ND ND ND ND ND ND ND ND	0.028 0.028 0.00055 0.0055 0.0055 0.0022 0.0022 0.0022 0.0022 0.0011 0.0055 0.0055 0.0055 0.0055 0.0022 0.0022 0.0022 0.0055 0.0055 0.0055	0.0097 0.0030 0.00037 0.00028 0.00028 0.00023 0.00039 0.00066 0.0034 0.00027 0.00082 0.00023 0.00014 0.00024 0.00017 0.00083 0.0014 0.00019	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	J	
67-66-3 74-87-3 95-49-8 106-43-4 124-48-1 95-50-1 541-73-1 106-46-7 75-71-8 75-34-3 107-06-2 75-35-4 156-59-2 156-60-5	Chloroform Chlorometha o-Chlorotolu p-Chlorotolu Dibromochlo 1,2-Dichloro 1,3-Dichloro 1,4-Dichloro Dichlorodifla 1,1-Dichloro 1,2-Dichloro 1,1-Dichloro cis-1,2-Dich trans-1,2-Dich	ene ene promethane benzene benzene benzene uoromethane bethane bethane bethane bethane bethane	ND ND ND ND ND ND ND ND ND ND ND ND ND N	0.0022 0.0055 0.0055 0.0055 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022	0.00019 0.00062 0.00021 0.00029 0.00036 0.00033 0.00038 0.00038 0.00039 0.00029 0.00035 0.00046 0.00050 0.00046	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg		

Report of Analysis

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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		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		
75-35-4	1,1-Dichloroethene	ND	0.0022	0.00046		
156-59-2	cis-1,2-Dichloroethene	ND	0.0022	0.00050		
156-60-5	trans-1,2-Dichloroethene	ND	0.0022	0.00046		

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Report of Analysis								Page 2 of 3	
Client Sam		24-28')							
Lab Sample	ID: MC32521-1	,			Date	Sampled:	07/31/14		
Matrix:	SO - Soil					Received:	08/01/14		
Method:	SW846 8260C				Perce	ent Solids:	87.8		
Project: URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL									
VOA Specia	al List								
CAS No.	Compound	Result	RL	MDL	Units	Q			
78-87-5	1,2-Dichloropropane	ND	0.0022	0.00046	mø/kø				
42-28-9	1,3-Dichloropropane	ND	0.0055	0.00036					
94-20-7	2,2-Dichloropropane	ND	0.0055	0.00062					
63-58-6	1,1-Dichloropropene	ND	0.0055	0.00029					
0061-01-5	cis-1,3-Dichloropropene	ND	0.0022	0.00025					
0061-02-6	trans-1,3-Dichloropropene	ND	0.0022	0.00029					
23-91-1	1,4-Dioxane	ND	0.028	0.022	mg/kg				
7-63-2	Ethyl methacrylate	ND	0.0055	0.00039					
00-41-4	Ethylbenzene	ND	0.0022	0.00076					
7-68-3	Hexachlorobutadiene	ND	0.0055	0.00063					
91-78-6	2-Hexanone	ND	0.011	0.00083	mg/kg				
8-82-8	Isopropylbenzene	ND	0.0055	0.00018					
9-87-6	p-Isopropyltoluene	ND	0.0055	0.00019					
634-04-4	Methyl Tert Butyl Ether	ND	0.0022	0.00020					
08-10-1	4-Methyl-2-pentanone (MIBK)	ND	0.0055	0.00059					
4-95-3	Methylene bromide	ND	0.0055	0.00050					
5-09-2	Methylene chloride	ND	0.0022	0.00059					
1-20-3	Naphthalene	ND	0.0055	0.00044					
03-65-1	n-Propylbenzene	ND	0.0055	0.00017					
00-42-5	Styrene	ND	0.0055	0.00019					
30-20-6	1,1,1,2-Tetrachloroethane	ND	0.0055	0.00044					
9-34-5	1,1,2,2-Tetrachloroethane	ND	0.0022	0.00043					
27-18-4	Tetrachloroethene	ND	0.0022	0.00035					
08-88-3	Toluene	ND	0.0055	0.00023					
7-61-6	1,2,3-Trichlorobenzene	ND	0.0055	0.00047					
20-82-1	1,2,4-Trichlorobenzene	ND	0.0055	0.00056					
1-55-6	1,1,1-Trichloroethane	ND	0.0022	0.00024	mg/kg				
9-00-5	1,1,2-Trichloroethane	ND	0.0022	0.00063	mg/kg				
9-01-6	Trichloroethene	ND	0.0022	0.00027					
5-69-4	Trichlorofluoromethane	ND	0.0022	0.00044					
6-18-4	1,2,3-Trichloropropane	ND	0.0055	0.00032					
5-63-6	1,2,4-Trimethylbenzene	ND	0.0055		mg/kg				
08-67-8	1,3,5-Trimethylbenzene	ND	0.0055		mg/kg				
08-05-4	Vinyl Acetate	ND	0.0055		mg/kg		04		
5-01-4	Vinyl chloride	ND	0.0022		mg/kg				
		ND	0.0022	0.00048					
5-47-6	o-Xylene	ND	0.0022	0.00031					
330-20-7	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



Lab Sample ID:MC32521-1Matrix:SO - SoilMethod:SW846 8260CProject:URSMOSTL: Roxana VMP-15		na VMP-15 Re	eplacement, S	Date Sampled: 07/31/14 Date Received: 08/01/14 Percent Solids: 87.8 900 South Central Avenue, Roxana, IL
VOA Speci	al List			
CAS No.	Surrogate Recoveries	Run # 1	Run# 2	Limits
1868-53-7 2037-26-5 460-00-4	Dibromofluoromethane Toluene-D8 4-Bromofluorobenzene	102% 89% 87%		70-130% 70-130% 70-130%
CAS No.	Tentatively Identified Con	npounds	R.T.	Est. Conc. Units Q
	Total TIC, Volatile			0 mg/kg

Report of Analysis

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ND = Not detected MDL = Method Detection LimitRL = Reporting LimitE = Indicates value exceeds calibration range

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



4.1

			Repo	ort of A	nalysis			Page 1 of 2
Client Sam Lab Sampl Matrix: Method: Project:	le ID: MC325 SO - So SW846	il 8270D SW	846 3546	Replacemer	nt, 900 So	Date Perc	Received: 08	7/31/14 3/01/14 7.8 ana, IL
Run #1 Run #2	File ID X04135.D	DF 1	Analyzed 08/04/14	By WK	Prep D 08/01/2		Prep Batch OP39211	Analytical Batch MSX136
Run #1 Run #2	Initial Weight 20.2 g	Final Volu 1.0 ml	me					
ABN Speci	al 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-met	hyl phenol	ND	0.56	0.014	mg/kg		
120-83-2	2,4-Dichloroph	enol	ND	0.56	0.016	mg/kg		
105-67-9	2,4-Dimethylph	enol	ND	0.56	0.092	mg/kg		
51-28-5	2,4-Dinitropher		ND	1.1	0.14	mg/kg		
534-52-1	4,6-Dinitro-o-ci	resol	ND	0.56	0.070	mg/kg		
95-48-7	2-Methylphenol	l	ND	0.56	0.022	mg/kg		
	3&4-Methylphe	nol	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	Pentachloropher	nol	ND	0.56	0.040	mg/kg		
l 08 -95-2	Phenol		ND	0.28	0.016	mg/kg		
95-95-4	2,4,5-Trichloro	phenol	ND	0.56	0.014	mg/kg		
38-06-2	2,4,6-Trichloro	phenol	ND	0.56	0.014	mg/kg		
62-53-3	Aniline		ND	0.56	0.028	mg/kg		
01-55-3	4-Bromophenyl	phenyl ether	ND	0.28	0.014	mg/kg		
35-68-7	Butyl benzyl ph	thalate	ND	0.28	0.011	mg/kg		
.00-51-6	Benzyl Alcohol		ND	0.56	0.028	mg/kg		
91-58-7	2-Chloronaphtha		ND	0.28	0.015	mg/kg		
06-47-8	4-Chloroaniline		ND	0.56	0.014	mg/kg		
11-91-1	bis(2-Chloroeth	oxy)methane	ND	0.28	0.013	mg/kg		
11-44-4	bis(2-Chloroeth		ND	0.28	0.017	mg/kg		
08-60-1	bis(2-Chloroiso		ND	0.28	0.020	mg/kg		
005-72-3	4-Chlorophenyl			0.28	0.017	mg/kg		
22-66-7	1,2-Diphenylhy		ND	0.28	0.013	mg/kg		
21-14-2	2,4-Dinitrotolue		ND	0.56	0.038	mg/kg		
606-20-2 11-94-1	2,6-Dinitrotolue		ND	0.56	0.014	mg/kg		
32-64-9	3,3'-Dichlorobe Dibenzofuran	uziaine	ND	0.28	0.028	mg/kg		
32-04-9 84-74-2		lata	ND	0.11	0.016	mg/kg		
17-84-0	Di-n-butyl phtha		ND	0.28	0.030	mg/kg		
11-04-0	Di-n-octyl phtha	lale	ND	0.28	0.0088	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

12 of 116 ACCUTEST.

MC32521

N = Indicates presumptive evidence of a compound

4.1 4

Client Sam Lab Sampl Matrix: Method: Project:	ab Sample ID:MC32521-1Date Sampled:07/31/1Iatrix:SO - SoilDate Received:08/01/1Iethod:SW846 8270DSW846 3546Percent Solids:87.8										
ABN Speci	al 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	Lim	its						

65%

72%

81%

74%

70%

82%

R.T.

Report of Analysis

Page 2 of 2

ND = Not detected	MDL = Method Detection Limit

J = Indicates an estimated value

30-130%

30-130%

30-130%

30-130%

30-130%

30-130%

0

Est. Conc. Units Q

mg/kg

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

E = Indicates value exceeds calibration range

RL = Reporting Limit

367-12-4

4165-62-2

118-79-6

4165-60-0

321-60-8

1718-51-0

CAS No.

2-Fluorophenol

Nitrobenzene-d5

2-Fluorobiphenyl

Terphenyl-d14

2,4,6-Tribromophenol

Total TIC, Semi-Volatile

Tentatively Identified Compounds

Phenol-d5

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Client San	nle ID. VMD15 25 5 072	114(24 201)			_		
Lab Samp		114(24-28)				G1 1 07	7/01/14
Matrix:	SO - Soil						7/31/14
Method:	SW846 8270D BY	Y SIM SW846	3546				3/01/14
Project:	URSMOSTL: Ro			t. 900 Sou	th Centr	ent Solids: 87 al Avenue, Rox	7.8 ana II
	File ID DF			_			
Run #1 Run #2	I90992.D 1	Analyzed 08/04/14	By MR	Prep Da 08/01/14		Prep Batch OP39212	Analytical Batch MSI3396
Run #1 Run #2	Initial Weight Final Vo 20.2 g 1.0 ml	olume					
BN Special	l List						
CAS No.	Compound	Result	RL	MDL	Units	Q	
83-32-9	Acenaphthene	ND	0.0056	0.00097	mg/kø		
208-96-8	Acenaphthylene	ND	0.0056	0.00086	mg/kg		
20-12-7	Anthracene	ND	0.0056	0.0012	mg/kg		
56-55-3	Benzo(a)anthracene	ND	0.0056	0.0026	mg/kg		
i0-32-8	Benzo(a)pyrene	ND	0.0056	0.0022	mg/kg		
205-99-2	Benzo(b)fluoranthene	ND	0.0056	0.0025	mg/kg		÷
91-24-2	Benzo(g,h,i)perylene	0.0018	0.0056	0.0015	mg/kg	J	
07-08-9	Benzo(k)fluoranthene	ND	0.0056	0.0017	mg/kg	J	
218-01-9	Chrysene	ND	0.0056	0.0015	mg/kg		
3-70-3	Dibenzo(a,h)anthracene	ND	0.0056	0.0016	mg/kg		
06-44-0	Fluoranthene	ND	0.0056	0.0017	mg/kg		
6-73-7	Fluorene	ND	0.0056	0.0011	mg/kg		
93-39-5	Indeno(1,2,3-cd)pyrene	ND	0.0056	0.0014	mg/kg		
0-12-0	1-Methylnaphthalene	ND	0.011	0.0012	mg/kg		
1-57-6	2-Methylnaphthalene	ND	0.011	0.0010	mg/kg		
5-01-8	Phenanthrene	0.0015	0.0056	0.0012	mg/kg	J	
29-00-0	Pyrene	ND	0.0056	0.0012	mg/kg	ل.	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limit	s		
67-12-4	2-Fluorophenol	35%		15-11	0%		
165-62-2	Phenol-d5	33%		15-11			
18-79-6	2,4,6-Tribromophenol	38%		15-11			
165-60-0	Nitrobenzene-d5	77%		30-13			
21-60-8	2-Fluorobiphenyl	66%		30-13			
718-51-0	Terphenyl-d14	86%		30-13			

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



4.1 4

			Kepu		119515			rage 1 01 1
Client Sam Lab Sampl Matrix: Method: Project:	e ID: MC325 SO - So SW846	oil	3550B	eplacement,	900 Sout	Date Perce	Received: 08 ent Solids: 87	7/31/14 8/01/14 7.8 ana, IL
Run #1 Run #2	File ID BK39965.D		Analyzed 98/07/14	By NK	Prep Dat 08/05/14		Prep Batch OP39257	Analytical Batch GBK1299
Run #1 Run #2	Initial Weight 30.7 g	Final Volun 50.0 ml	ie					
VOA Speci	ial List							
CAS No.	Compound		Result	RL	MDL	Units	Q	
96-12-8 106-93-4	1,2-Dibromo- 1,2-Dibromoe	3-chloropropan thane	e ND ND	0.0028 0.0028	0.00082 0.00068			
CAS No.	Surrogate Re	coveries	Run# 1	Run#2	Limit	ts		
460-00-4 460-00-4	Bromofluorob Bromofluorob	• •	155% 155%		61-16 61-16			

Report of Analysis

Page 1 of 1

ND = Not detected MDL = Method Detection LimitRL = Reporting LimitE = Indicates value exceeds calibration range J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



			Repo	ort of An	alysis			Page 1 of 1
Client San Lab Samp Matrix: Method: Project:	le ID: MC32 SO - S SW84	Soil 6 8015		Replacement	, 900 South	Date Perce	1	
Run #1 Run #2	File ID AB85232.D	DF 1	Analyzed 08/07/14	By AF	Prep Date n/a	e	Prep Batch n/a	Analytical Batch GAB4535
Run #1 Run #2	Initial Weight 4.13 g	Final Vo 10.0 ml		Methanol Al 100 ul	iquot			
CAS No.	Compound		Result	RL	MDL 1	Units	Q	
	TPH-GRO (V	OA)	ND	14	2.1	mg/kg		
CAS No.	Surrogate Re	coveries	Run# 1	Run# 2	Limits			
	2,3,4-Trifluor	otoluene	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 blankN = Indicates presumptive evidence of a compound



Client Sam Lab Sampl Matrix: Method: Project:	e ID: MC32521-2 AQ - Equipment Bl SW846 8260C	ank	t, 900 Sou	Date Sampled: 07/31/14 Date Received: 08/01/14 Percent Solids: n/a 900 South Central Avenue, Roxana, IL					
Run #1 Run #2	File IDDFU21700.D1	Analyzed 08/11/14	By GK	Prep D n/a	ate	Prep Batch n/a	Analytical Batch MSU962		
	Purge Volume								
Run #1 Run #2	5.0 ml								
VOA Spec	ial 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	100 N			
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				

Report of Analysis

Page 1 of 3

4.2

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Report of Analysis									
Client Sam Lab Sample Matrix: Method: Project:	e ID: MC32521-2 AQ - Equipment Blank SW846 8260C				Date Perc	Sampled: Received: ent Solids:	07/31/14 08/01/14 n/a		
VOA Specia	al 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/1 ug/1				
37-68-3	Hexachlorobutadiene	ND	5.0	1.7	ug/l				
591-78-6	2-Hexanone	ND	5.0	1.6					
8-82-8	Isopropylbenzene	ND	5.0	0.35	ug/l				
99-87-6	p-Isopropyltoluene	ND	5.0	0.33	ug/l				
634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l				
08-10-1	4-Methyl-2-pentanone (MIBK)		5.0	0.99	ug/l				
74-95-3	Methylene bromide	ND	5.0	0.55	ug/1				
75-09-2	Methylene chloride	ND	2.0	0.52	ug/l				
91-20-3	Naphthalene	ND	5.0		ug/l				
03-65-1	n-Propylbenzene	ND	5.0	0.69	ug/l				
00-42-5	Styrene	ND	5.0	0.49	ug/l				
630-20-6	1,1,1,2-Tetrachloroethane	ND		0.85	ug/l				
/9-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.43	ug/l				
27-18-4	Tetrachloroethene	ND	0.50	0.40	ug/l				
08-88-3	Toluene		1.0	0.59	ug/l				
7-61-6	1,2,3-Trichlorobenzene	4.1 ND	1.0	0.33	ug/l				
20-82-1	1,2,4-Trichlorobenzene		5.0	0.68	ug/l				
1-55-6	1,1,1-Trichloroethane	ND	5.0	0.50	ug/l				
'9-00-5	1,1,2-Trichloroethane	ND ND	1.0	0.46	ug/1				
9-01-6	Trichloroethene	ND	1.0	0.45	ug/l				
5-69-4	Trichlorofluoromethane		1.0	0.47	ug/1				
6-18-4	1,2,3-Trichloropropane	ND	1.0	0.55	ug/l				
5-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.81	ug/1				
08-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.32	ug/l				
08-07-8	Vinyl Acetate	ND	5.0	0.38	ug/l				
5-01-4		ND	5.0	0.71	ug/l				
0-01-4	Vinyl chloride	ND	1.0	0.58	ug/l				
5-47-6	m,p-Xylene	ND	1.0	0.93	ug/l				
330-20-7	o-Xylene Xylene (total)	ND	1.0	0.36	ug/l				
330-20-1	Ayielle (lotal)	ND	1.0	0.36	ug/l				

Report of Analysis

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4.2

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

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

B = Indicates analyte found in associated method blank



					-
Client Sam Lab Sample Matrix: Method: Project:	e ID: MC32521-2 AQ - Equipment Bla SW846 8260C	nk	eplacement, S	Date Sampled: 07/31/14 Date Received: 08/01/14 Percent Solids: n/a 900 South Central Avenue, Roxana, IL	
VOA Speci	al 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 Cor	npounds	R.T.	Est. Conc. Units Q	
	Total TIC, Volatile			0 ug/l	

Report of Analysis

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4.2

ND = Not detected MDL = Method Detection LimitRL = Reporting LimitE = Indicates value exceeds calibration range J = Indicates an estimated value

B = Indicates analyte found in associated method blank



		Repo	ort of An	alysis			Page 1 of
Client Sam Lab Samp Matrix: Method: Project:		ank V846 3510C	Replacement	, 900 Sc	Date Perc	e Received: 08 cent Solids: n/	7/31/14 8/01/14 ′a ana, IL
Run #1 Run #2	File ID DF F75169.D 1	Analyzed 08/06/14	By WK	Prep I 08/02/		Prep Batch OP39228	Analytical Batch MSF3308
Run #1 Run #2	Initial Volume Final Vol 970 ml 1.0 ml	ume					
ABN Speci	al 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		51
62-53-3	Aniline	ND	10	0.66	ug/l		
101-55-3	4-Bromophenyl phenyl ethe		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		
)1-58-7	2-Chloronaphthalene	ND	5.2	0.32	ug/l		
06-47-8	4-Chloroaniline	ND	10	0.57	ug/l		
11-91-1	bis(2-Chloroethoxy)methan		5.2	0.30	ug/l		
11-44-4	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		
/005-72-3	4-Chlorophenyl phenyl ethe	r ND	5.2	0.26	ug/l		
22-66-7	1,2-Diphenylhydrazine	ND	5.2	0.25	ug/l		
21-14-2	2,4-Dinitrotoluene	ND	10	0.47	ug/l		
606-20-2	2,6-Dinitrotoluene	ND	10	0.31	ug/l		
1-94-1	3,3'-Dichlorobenzidine	ND	5.2	0.28	ug/l		
32-64-9	Dibenzofuran	ND	2.1	0.27	ug/l		
84-74-2	Di-n-butyl phthalate	0.60	5.2	0.18	ug/l	JB	
17-84-0	Di-n-octyl phthalate	ND	5.2	0.29	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

20 of 116 ACCUTEST.

LABORATORIES

MC32521

N = Indicates presumptive evidence of a compound

4.2

Client Samj Lab Sample Matrix: Method: Project:		6 3510C	eplacement,	900 Sou	Date Perc	e Sampled: Received: ent Solids: al Avenue,	: 08/01/14 : n/a
ABN Specia	al 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	Lim	its		
367-12-4	2-Fluorophenol	36%		15-2	110%		
4165-62-2	Phenol-d5	22%		15-1	l 10%		
118-79-6	2,4,6-Tribromophenol	73%		15-1	l 10%		
4165-60-0	Nitrobenzene-d5	57%		30-3	130%		
321-60-8	2-Fluorobiphenyl	67%		30-	130%		
1718-51-0	Terphenyl-d14	89%		30-3	130%		
CAS No.	Tentatively Identified Comp	ounds	R.T.	Est	. Conc.	Units Q	
	Total TIC, Semi-Volatile			0		ug/l	

Report of Analysis

Page 2 of 2

4.2

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Client San Lab Samp Matrix: Method: Project:	le ID: MC32521-2 AQ - Equipm SW846 8270I			it, 900 So	Date Perc	e Received: 08 cent Solids: n/	7/31/14 3/01/14 'a ana, IL
Run #1 Run #2	File IDDFI91100.D1	Analyzed 08/08/14	By MR	Prep I 08/02/		Prep Batch OP39229	Analytical Batch MSI3392
Run #1 Run #2	Initial Volume Fina 970 ml 1.0 r	l Volume ml					
BN Special	lList						
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		
20-12-7	Anthracene	ND	0.10	0.095	ug/l		
6-55-3	Benzo(a)anthracene	ND	0.052	0.020	ug/l		
0-32-8	Benzo(a)pyrene	ND	0.10	0.030	ug/l		
205-99-2	Benzo(b)fluoranthene	ND	0.052	0.033	ug/l		
91-24-2	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		
18-01-9	Chrysene	ND	0.10	0.025	ug/l		
3-70-3	Dibenzo(a,h)anthracen	ne ND	0.10	0.033	ug/l		
206-44-0	Fluoranthene	ND	0.10	0.042	ug/l		
6-73-7	Fluorene	ND	0.10	0.10	ug/l		
93-39-5	Indeno(1,2,3-cd)pyrer		0.10	0.032	ug/l		
0-12-0	1-Methylnaphthalene	ND	0.21	0.051	ug/l		
1-57-6	2-Methylnaphthalene	ND	0.21	0.076	ug/l		
85-01-8	Phenanthrene	ND	0.052	0.013	ug/l		
29-00-0	Pyrene	ND	0.10	0.040	ug/l		
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its		
165-60-0	Nitrobenzene-d5	75%		30.1	30%		
21-60-8	2-Fluorobiphenyl	68%			30%		
718-51-0	Terphenyl-d14	101%		30-1 30-1			

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

E = Indicates value exceeds calibration range

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B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



ACCUTEST. MC32521

	Report of Analysis								
Client Sam Lab Sampl Matrix: Method: Project:	e ID: MC32521-2 AQ - Equipment Blank SW846 8011 SW846 8	Date Sampled: 07/31/14 Date Received: 08/01/14 B011 Percent Solids: n/a VMP-15 Replacement, 900 South Central Avenue, Roxana, IL							
Run #1 Run #2			By NK	Prep Da 08/04/14		Prep Batch OP39247	Analytical Batch GBK1298		
Run #1 Run #2	Initial VolumeFinal Volume36.4 ml2.0 ml)							
VOA Speci	ial List								
CAS No.	Compound	Result	RL	MDL	Units	Q			
96-12-8 106-93-4	1,2-Dibromo-3-chloropropane 1,2-Dibromoethane	ND ND	0.014 0.014	0.0059 0.0059	ug/l ug/l				
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	2 Limits					
460-00-4 460-00-4	Bromofluorobenzene (S) Bromofluorobenzene (S)	94% 105%		36-173% 36-173%					

Report of Analysis

Page 1 of 1

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

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



4.2 4

Report of Analysis									
Client San Lab Samp Matrix: Method: Project:			Replaceme	nt, 900 Sou	Date Perc	e Received: 08 cent Solids: n/	7/31/14 8/01/14 ⁄a cana, IL		
Run #1 Run #2	File ID DF U21739.D 1	Analyzed 08/12/14	By GK	Prep D n/a	Date	Prep Batch n/a	Analytical Batch MSU964		
Run #1 Run #2	Purge Volume 5.0 ml								
VOA Spec	ial 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				
24-48-1	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				
06-46-7	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 detectedMDL = Method Detection Limit

4

RL = Reporting Limit

E = Indicates value exceeds calibration range

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B = Indicates analyte found in associated method blank

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LABORATORIES

MC32521

N = Indicates presumptive evidence of a compound



4.3

Accutest LabLink@152090 11:19 18-Aug-2014

		nopor	t of fill					
Client Samp Lab Sample Matrix: Method: Project:		/MP-15 R	eplacement	t, 900 Sou	Date Perce	Sampled: Received: ent Solids: I Avenue, I	07/31/14 08/01/14 n/a Roxana, IL	
VOA Specia	ll 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/1			
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			
97-63-2 100-41-4	Ethylbenzene	ND	1.0	0.38	ug/l			
100-41-4 87-68-3	Hexachlorobutadiene	ND	5.0	1.7	ug/l			
	2-Hexanone	ND	5.0	1.6	ug/l			
591-78-6		ND	5.0	0.35	ug/l			
98-82-8	Isopropylbenzene	ND	5.0	0.33	ug/l			
99-87-6	p-Isopropyltoluene Mathyl Tort Putyl Ether	ND	1.0	0.51	ug/l			
1634-04-4	Methyl Tert Butyl Ether		5.0	0.99	ug/l			
108-10-1	4-Methyl-2-pentanone (MIBK)		5.0	0.99				
74-95-3	Methylene bromide	ND		0.52	ug/l			
75-09-2	Methylene chloride	ND	2.0		ug/l			
91-20-3	Naphthalene	ND	5.0	0.69	ug/1			
103-65-1	n-Propylbenzene	ND	5.0	0.49	ug/1			
100-42-5	Styrene	ND	5.0	0.85	ug/1			
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/1			
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			

Report of Analysis

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4.3

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

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

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

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	Report of Analysis										
Client Sam Lab Sampl Matrix: Method: Project:	e ID: MC32521-3 AQ - Trip Blank Wa SW846 8260C		eplacement, S	Date Sampled: 07/31/ Date Received: 08/01/ Percent Solids: n/a 000 South Central Avenue, Roxana,	14						
VOA Speci	al List										
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits							
1868-53-7 2037-26-5 460-00-4	Dibromofluoromethane Toluene-D8 4-Bromofluorobenzene	121% 107% 112%		70-130% 70-130% 70-130%							
CAS No.	Tentatively Identified Com	pounds	R.T.	Est. Conc. Units Q							
	Total TIC, Volatile			0 ug/l							

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

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LABORAT

MC32521

N = Indicates presumptive evidence of a compound



Accutest LabLink@152090 11:19 18-Aug-2014

			Repo	rt of Ana	alysis			Page 1 of 1
Client Sam Lab Sampl Matrix: Method: Project:	le ID: MC325 AQ - T SW846	21-4 rip Blank Wate 8011 SW846	8011	Replacement,	900 Sout	Date Perc	Received: 0	7/31/14 8/01/14 /a kana, IL
Run #1 Run #2	File ID BK39945.D		Analyzed 08/05/14	By NK	Prep Da 08/04/14		Prep Batch OP39247	Analytical Batch GBK1298
Run #1 Run #2	Initial Volume 36.1 ml	Final Volun 2.0 ml	ne					
VOA Spec	ial List							
CAS No.	Compound		Result	RL	MDL	Units	Q	
96-12-8 106-93-4	1,2-Dibromo-3 1,2-Dibromoet		e ND ND	0.015 0.015	0.0059 0.0059	ug/l ug/l		
CAS No.	Surrogate Rec	coveries	Run# 1	Run# 2	Limi	its		
460-00-4 460-00-4	Bromofluorob Bromofluorob	99% 113%		36-1 36-1				

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

E = Indicates value exceeds calibration range

- J = Indicates an estimated value
- B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



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MC32521

Section 5



Misc.	Forms

Custody Documents and Other Forms

Includes the following where applicable:

• Chain of Custody

• Sample Tracking Chronicle

Internal Chain of Custody



LAB (LOCATION)						>	sł	nell (liC	Pr	rod	uc	ts	Ch	ain	Of	Cus	sto	dy	Re	co	rd				URS	
[]XENCO ()	1000000	Plot	se Check	Ann	roori	ate Bo	10100		TPri	int.E	Bill T	0.0	bintad	t Na	net				INC	DER	DENT # (ENV. SERVICES) CIGIEOK # NO INCIDENT # APRILES						
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TEMPERATURE ON RECEIPT C* Cooler#1	Cooler #2			Cook	-	_						1	ł.														
SPECIAL INSTRUCTIONS OR NOTES :			വണം	CONTRA	CT 043	e avve ies	_		12		S	E.							- 1								
* Please include *J* values on Reports. * Please provide sample receipt upon login.			STATE	ARTMOL	KSEME KD KLATIO	NT RATE A			VOC 3260B SL+TICS	9011 SL	SVOC 8270C SL+TICS	PAH 8270LL	Percent Moisture	0												Container PID Readings or Laboratory Notes	
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Field Sample Identification	OATE	TIME	MATRIX	HOL	18403	H2504 NO	ME OTHE	CONT.	-	100	_	-	-	<u>+</u>		_		_	-	_	_	_	_	4	(mqc		
VMP15-25.5-073114 (24-28)	7/31/2014	1130	s			1	8	1	×	-	-	×	×	x	_	_		_	-	-	-	_	-		2,4		
0647 VMP15-25.5-073114 (24-287) SVMP15-25.5-073114 (24-287) MS	7/31/2014	1130	S			4	6	7	×	X	×	X	×	x	_	_		_	_	+	+		+	-	2.4		
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			_	-	_				-	_						-				1	-	-	-			dStable Review	

MC32521: Chain of Custody Page 1 of 2





Accutest Laboratories Sample Receipt Summary

Accutest Job Number: M	/IC3	252	1	C	lient: URS			Immediate Client Ser	vices Acti	on Re	auired:	No
Date / Time Received: 8	/1/2	014			Delive	ery Meth	nod:	Client Service Ac				
Project: 900 SOUTH CE	NTR	AL			No. Ce	oolers:		1 Airbill #'s:	0.1			
Cooler Security	Y	or	N			_Y o	r N	Sample Integrity - Documentation	Y	or	N	
1. Custody Seals Present: 2. Custody Seals Intact:	\mathbf{V}				COC Present: pl Dates/Time OK	\checkmark	Ţ.,	1. Sample labels present on bottles:	Z		0	
2. Custody Seats Intact:				т. опі	pr Dates/ Time OK	~		2. Container labeling complete:	\checkmark			
Cooler Temperature		_	Y or	N				3. Sample container label / COC agree:	$\overline{\mathbf{v}}$			
 Temp criteria achieved: Cooler temp verification: 		1	Z Infared					Sample Integrity - Condition	Y	or	N	
3. Cooler media:		_	Ice (t					1. Sample recvd within HT:	\checkmark			
	-		100 11	ay)				2. All containers accounted for:	V			
Quality Control_Preserva	tion	_	<u>Y or</u>	N	<u>N/A</u>			3. Condition of sample:		Intac		
1. Trip Blank present / cooler	:		2					Sample Integrity - Instructions	Y	ог	N	N/A
2. Trip Blank listed on COC:		N		0				1. Analysis requested is clear:	$\overline{\vee}$		D	
3. Samples preserved proper	·ly:	V	7					2. Bottles received for unspecified tests	·		2	
4, VOCs headspace free:		V	1					3. Sufficient volume recvd for analysis:	V			
								4. Compositing instructions clear:			G	$\overline{\mathbf{v}}$
								5. Filtering instructions clear:				$\overline{\mathbf{v}}$

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



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Internal Sample Tracking Chronicle

Shell Oil

Job No: MC32521 Roxana II

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

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
	1 Collected: 31-JUL-14 1 5.5-073114(24-28')	1:30 By:	Recei	ved: 01-AUG	-14 By	y:
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+
	2 Collected: 31-JUL-14 1 14 (24-28')	2:30 By:	Recei	ved: 01-AUG	-14 B	y:
MC32521-	2 SW846 8011	05-AUG-14 12:30	NK	04-AUG-14	MT	V8011SL
	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
	2 SW846 8260C	11-AUG-14 19:34				V8260SL+
MC32521- TB-073114	-3 Collected: 31-JUL-14 0 4-HCL	00:00 By:	Recei	ived: 01-AUG	-14 B	y:
MC32521-	-3 SW846 8260C	12-AUG-14 13:20	GK			V8260SL +
MC32521- TB-073114	-4 Collected: 31-JUL-14 (4-ST	00:00 By:	Recei	ived: 01-AUG	-14 B	y:
MC22521	-4 SW846 8011	05-AUG-14 12:49	NK	04-AUG-14	мт	V8011SL



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

Sample.Bottle	Transfer	Transfer		
Number	FROM	ТО	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		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		Return to Storage
MC32521-1.7	VOC Ref #10	Krysten Dufort	08/12/14 11:02	Retrieve from Storage
MC32521-1.7	Krysten Dufort	GČMSM		Load on Instrument
MC32521-1.7	GČMSM	Krysten Dufort		Unload from Instrument
MC32521-1.7	Krysten Dufort	VOC Ref #10		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		Unload from Instrument
MC32521-1.8	Krysten Dufort	VOC Ref #10		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		Load on Instrument
MC32521-1.9	GCMSM	Krysten Dufort		Unload from Instrument
MC32521-1.9	Krysten Dufort	VOC Ref #10		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		Unload from Instrument
MC32521-1.20	Anthony Franciosa	VOC Ref #10		Return to Storage
MC32521-2.1	Walk In Ref #22	Alireza Zeighami	08/02/14 00.50	Retrieve from Storage
MC32521-2.1	Alireza Zeighami	i mi oza zioignami	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		Load on Instrument
MC32521-2.4	GCMSU	Gary Krasinski		Unload from Instrument
MC32521-2.4	Gary Krasinski	VOC Ref #1		Return to Storage
AC32521-2.5	VOC Ref #1	Marc Tahtamoni	08/04/14 14.37	Retrieve from Storage
AC32521-2.5	Marc Tahtamoni	Mary Fundanioni	08/06/14 14:37	
AC32521-3.1	VOC Ref #1	Gary Krasinski	08/11/14 10.34	Retrieve from Storage
AC32521-3.1	Gary Krasinski	GCMSU		Load on Instrument
AC32521-3.1	GCMSU	Gary Krasinski		Unload from Instrument

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LABORATORIES

MC32521

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Accutest Internal Chain of Custody Job Number: MC32521

Job Number:MC32521Account:SHELLWIC Shell OilProject:URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, ILReceived: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 MC32521-3.2 MC32521-3.2 MC32521-3.2	VOC Ref #1 Gary Krasinski GCMSU Gary Krasinski	Gary Krasinski GCMSU Gary Krasinski VOC Ref #1	08/12/14 11:36 08/13/14 08:47	Retrieve from Storage Load on Instrument Unload from Instrument Return to Storage
MC32521-4.2 MC32521-4.2	VOC Ref #1 Marc Tahtamoni	Marc Tahtamoni	08/04/14 14:37 08/06/14 14:22	Retrieve from Storage Depleted

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Section 6



GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

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



Job Number: Account: Project:	MC32521 SHELLWIC Sho URSMOSTL: R		IP-15 Replacem	ent, 900	South Central A	venue, Roxana, 1	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/1	
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	

Job Number: Account: Project:	MC32521 SHELLWIC Sh URSMOSTL: R		IP-15 Replacem	ent, 900	South Central A	venue, Roxana, 1	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/1
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/1
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/I
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
		ND	1.0	0.93	ug/l
95-47-6		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: Account: Project:	MC32521 SHELLWIC Shell Oil URSMOSTL: Roxana VI	MP-15 Replacement, 900 S	South Central Avenue, Roxan	a, IL
Sample MSU962-MB	File ID DF U21680.D 1	Analyzed By 08/11/14 GK	Prep Date Prep Batc n/a n/a	h Analytical Batch MSU962
The QC repor MC32521-2	ted here applies to the foll	owing samples:	Method: SW	7846 8260C
	rrogate Recoveries	Limits 119% 70-130%		

CAS No.	Surrogate Recoveries		Limits				
1868-53-7 2037-26-5 460-00-4	Dibromofluoromethane Toluene-D8 4-Bromofluorobenzene	119% 105% 111%	70-130% 70-130% 70-130%				
CAS No.	Tentatively Identified Comp	oounds	R.T.	Est. Conc.	Units	Q	
	Total TIC, Volatile			0	ug/l		





Job Number: Account: Project:	MC32521 SHELLWIC Sh URSMOSTL: R		IP-15 Replacem	ent, 900	South Central A	venue, Roxana, 1	IL
Sample MSU964-MB	File ID U21735.D	DF 1	Analyzed 08/12/14	By GK	Prep Date n/a	Prep Batch n/a	Analytical Batch MSU964
						13	

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/1
75-34-3	1,1-Dichloroethane	ND	1.0	0.36	ug/1
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: Account: Project:	MC32521 SHELLWIC Sho URSMOSTL: R						
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:

MC32521-3

CAS No.	Compound	Result	RL	MDL	Units Q
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.42	ug/l
	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



Method: SW846 8260C



Method Job Numbe Account: Project:	Blank Summary r: MC32521 SHELLWIC Shell C URSMOSTL: Roxan		cement, 900 S	South Central	Avenue, Roxana,	Page 3 of 3 IL
Sample MSU964-M		OF Analyze 08/12/1		Prep Date n/a	Prep Batch n/a	Analytical Batch MSU964
The QC гер MC32521-3	orted here applies to the	e following sample	es:		Method: SW84	6 8260C
CAS No.	Surrogate Recoveries		Limits			
1868-53-7	Dibromofluoromethane	113%	70-130%			
	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: Account: Project:	MC32521 SHELLWIC She URSMOSTL: R		IP-15 Replaceme	ent, 900	South Central A	venue, Roxana, 1	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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Method Bl Job Number: Account: Project:	ank Summa MC32521 SHELLWIC Sh URSMOSTL: R	ell Oil	IP-15 Replacem	ent, 900	South Central A	venue, Roxana,	Page 2 of 3
Sample MSM2388-MB	File ID M67512.D	DF 1	Analyzed 08/12/14	By KD	Prep Date n/a	Prep Batch n/a	Analytical Batch MSM2388
The QC report	ed here applies t	o the follo	wing samples:]	Method: SW84	6 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 **6**

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LABORATOR

MC32521

Job Number: Account: Project:	MC32521 SHELLWIC She URSMOSTL: Re		P-15 Replaceme	ent, 900	South Central A	venue, Roxana, I	IL
Sample MSM2388-MB	File ID M67512.D	DF 1	Analyzed 08/12/14	By KD	Prep Date n/a	Prep Batch n/a	Analytical Batch MSM2388
	ed here applies to	o the follo	wing samples:		1	Method: SW84	6 8260C
MC32521-1 CAS No. Su	rrogate Recoveri	es	I	imits			

1868-53-7 2037-26-5 460-00-4	Dibromofluoromethane Toluene-D8 4-Bromofluorobenzene	91% 91% 86%	70-130% 70-130% 70-130%		
CAS No.	Tentatively Identified Comp	ounds	R.T.	Est. Conc.	
	Total TIC, Volatile			0	ug/kg



Page 3 of 3

Job Number: Account: Project:	Ke Summary MC32521 SHELLWIC Sh URSMOSTL: R	ell Oil	IP-15 Replacem	ent, 900	South Central A	venue, Roxana, I	Page 1 of 3
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	45.4	0.0	
107-02-8	Acrolein	50 250	45.1	90	70-130
107-02-0	Acrylonitrile		167	67* a	70-130
71-43-2	Benzene	50	50.3	101	70-130
108-86-1	Bromobenzene	50	51.7	103	70-130
74-97-5	Bromochloromethane	50 50	55.7	111	70-130
75-27-4	Bromodichloromethane	50 50	50.4	101	70-130
75-25-2	Bromoform	50	53.1	106	70-130
74-83-9	Bromomethane	50	46.7	93	70-130
78-93-3		50	53.8	108	70-130
104-55-5	2-Butanone (MEK)	50	44.6	89	70-130
104-51-8	n-Butylbenzene	50	58.2	116	70-130
135-96-6 98-06-6	sec-Butylbenzene	50	61.1	122	70-130
	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.

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 repor	ted here applies t	o the folk	owing samples:			Method: SW84	6 8260C	

The QC reported here applies to the following samples:

MC32521-3

		Spike	BSP	BSP	
CAS No.	Compound	ug/l	ug/l	%	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 Spil Job Number: Account: Project:	Ke Summary MC32521 SHELLWIC Sh URSMOSTL: R	ell Oil	IP-15 Replacem	ent, 900	South Central A	venue, Roxana,	Page 3 of 3
Sample MSU964-BS	File ID U21732.D	DF 1	Analyzed 08/12/14	By GK	Prep Date n/a	Prep Batch n/a	Analytical Batch MSU964
The QC report	ted here applies t	o the follo	wing samples:			Method: SW84	6 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.



Job Number: Account: Project:	MC32521 SHELLWIC She URSMOSTL: R	venue, Roxana, I	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

CAGNI	Companyal	Spike ug/kg	BSP ug/kg	BSP %	Limits
CAS No.	Compound	ug/kg	ug/kg	/0	Linns
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.



Job Number: Account: Project:	MC32521 SHELLWIC Sh URSMOSTL: R	ell Oil	1P-15 Replacem	ent, 900	South Central A	venue, Roxana,	Page 2 of 3 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:

MC32521-1

		Spike	BSP	BSP	
CAS No.	Compound	ug/kg	ug/kg	%	Limits
10061-01-5	cis-1,3-Dichloropropene	50	57.0	110	50 100
10061-02-6	trans-1,3-Dichloropropene	50	57.9	116	70-130
123-91-1	1,4-Dioxane	50 125	61.6	123	70-130
97-63-2	Ethyl methacrylate		155	124	70-130
100-41-4	Ethylbenzene	50	56.5	113	76-141
87-68-3	Hexachlorobutadiene	50 50	53.9	108	70-130
591-78-6	2-Hexanone	50	50.6	101	70-130
98-82-8		50	41.4	83	70-130
90-02-0 99-87-6	Isopropylbenzene	50	57.8	116	70-130
	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		50	55.5	111	70-130
1330-20-7		150	163	109	70-130

* = Outside of Control Limits.

Method: SW846 8260C

6.2.2 6

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MC32521

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

MC32521-1

CAS No.	Surrogate Recoveries	BSP	Limits
	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.



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6.2.2

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Account: Project:	SHELLWIC She URSMOSTL: R		IP-15 Replacem	ent, 900	South Central A	venue, Roxana, 1	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

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The QC reported here applies to the following samples:

Method: SW846 8260C

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MC32521-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
	ł	-8-		70	491	70	МD	Kee/KrD
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
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* = Outside of Control Limits.



Blank Spike/Blank Spike Duplicate Summary

Job Number: Account: Project:	MC32521 SHELLWIC Sho URSMOSTL: R		IP-15 Replacem	ent, 900	South Central A	venue, Roxana, 1	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

		Spike	BSP	BSP	BSD	BSD		Limits
CAS No.	Compound	ug/l	ug/l	%	ug/1	%	RPD	Rec/RPD
	-					110		50 100/05
	cis-1,3-Dichloropropene	50	50.7	101	58.8	118	15	70-130/25
	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
1000 201	regiono (com)							

* = Outside of Control Limits.

6.3.1 **6**

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Blank Spike/Blank Spike Duplicate Summary

Account: Project:	MC32521 SHELLWIC Sh URSMOSTL: R		IP-15 Replacem	ent, 900	South Central A	venue, Roxana, 1	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
	Dibromofluoromethane	114%	112%	70-130%
	Toluene-D8	112%	119%	70-130%
	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.

Page 3 of 3



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

Sample File ID MC32529-5MS U21693.D MC32529-5MSD U21694.D MC32529-5 U21688.D	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
	1	08/11/14	GK	n/a	n/a	MSU962
	1	08/11/14	GK	n/a	n/a	MSU962
	1	08/11/14	GK	n/a	n/a	MSU962

The QC reported here applies to the following samples:

MC32521-2

		MC32529-5	Spike	MS	MS	Spike	MSD	MSD		Limits
CAS No.	Compound	ug/l Q	ug/l	ug/l	%	ug/l	ug/l	%	RPD	Rec/RPD
			-0		40+ 2	50	05.0	F0# 2	00	70 100/00
67-64-1	Acetone	ND	50	20.0	40* a	50	25.0	50* a	22	70-130/30 70-130/30
107-02-8	Acrolein	ND	250	201	80	250	243	97	19	
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
	2,2-Dichloropropane	ND	50	55.9	112	50	57.5	115	3	70-130/30
594-20-7		ND	50 50	50.8	102	50	50.7	101	0	70-130/30
563-58-6	1,1-Dichloropropene	IND.	50	30.0	102	00	00.1	101	v	10 100/00

* = Outside of Control Limits.

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Method: SW846 8260C

6.4.1

Job Number:	IV
Account:	S

ount: SHELLWIC Shell Oil

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

Sample MC32529-5MS MC32529-5MSD MC32529-5	File ID U21693.D U21694.D U21688.D	DF 1 1 1	Analyzed 08/11/14 08/11/14 08/11/14	By GK GK GK	Prep Date n/a n/a n/a	Prep Batch n/a n/a n/a	Analytical Batch MSU962 MSU962 MSU962 MSU962

The QC reported here applies to the following samples:

Method: SW846 8260C

MC32521-2

CAS No.	Compound	MC3252 ug/l	Spike ug/l	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	70 100/00
	trans-1,3-Dichloropropene	ND	50	49.9	104	50 50	59.6	119		70-130/30
123-91-1	1,4-Dioxane	ND	125	109	87	125	152	119	18 33* b	70-130/30
97-63-2	Ethyl methacrylate	ND	50	46.4	93	50	152 55.4	111	18	70-130/30
100-41-4	Ethylbenzene	ND	50	51.1	102	50	51.1	102	0	72-139/30
87-68-3	Hexachlorobutadiene	ND	50	45.7	91	50	49.9	102	9	70-130/30
591-78-6	2-Hexanone	ND	50	30.0	60* a	50 50	45.5 35.6	71	9 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	4	70-130/30
1634-04-4	Methyl Tert Butyl Ether	ND	50	50.2	100	50	54.1	108	1 7	70-130/30 70-130/30
108-10-1	4-Methyl-2-pentanone (MIBK)		50	48.0	96	50	56.7	113	17	
74-95-3	Methylene bromide	ND	50	47.7	95	50	50.6	101	6	70-130/30 70-130/30
75-09-2	Methylene chloride	ND	50	52.7	105	50	55.7	111	6	
91-20-3	Naphthalene	ND	50	51.2	103	50	57.1	111	0 11	70-130/30
103-65-1	n-Propylbenzene	ND	50	57.3	115	50 50	56.2	114	2	70-130/30 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 50	49.5	99	2	70-130/30
108-88-3	Toluene	ND	50	52.5	105	50 50	45.5 55.2	110	5	70-130/30
87-61-6	1,2,3-Trichlorobenzene	ND	50	46.7	93	50	52.2	104	J 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	104 74	8 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	1011	101	1	70-130/30
95-47-6	o-Xylene	ND	50	50.0	100	50	49.9	101	0	70-130/30
1330-20-7	Xylene (total)	ND	150	150	100	150	151	101	1	70-130/30

* = Outside of Control Limits.



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Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batcl
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:

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.

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MC32521

= Outside of Control Limits. *

Matrix Spike/Matrix Spike Duplicate Summary MC32521

Job Number: Account:

MC32521-1

SHELLWIC Shell Oil

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

MC32521-1MS M67519.D I 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			DF 1 1 1				n/a	MSM2388
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The QC reported here applies to the following samples:

Method: SW846 8260C

6.4.2

CAS No.	Compound	MC3252 ug/kg	1-1 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	70 120/20
107-02-8	Acrolein	ND		282	131	46* a	295	33.0 185	63* a	34* b	70-130/30 70-130/30
107-13-1	Acrylonitrile	ND		56.4	64.2	114	295 59	50.6	86	24	
71-43-2	Benzene	4.0		56.4	37.8	60* a	59	39.2	60* a		70-130/30
108-86-1	Bromobenzene	ND		56.4	40.0	71	59 59	39.2 36.2	61* a	4 10	70-130/30
74-97-5	Bromochloromethane	ND		56.4	44.6	79	59	30.2 44.0	01 ⁺ ^u 75		70-130/30
75-27-4	Bromodichloromethane	ND		56.4	45.5	81	59 59	44.0 44.0	75	1 3	70-130/30
75-25-2	Bromoform	ND		56.4 56.4	45.5 55.2	98	59 59	44.0 43.5	75 74	3 24	70-130/30
74-83-9	Bromomethane	ND		56.4 56.4	50.3	89	59 59	43.3 53.2	74 90		70-130/30
78-93-3	2-Butanone (MEK)	ND		56.4 56.4	51.3	91	59 59	33.2 38.4	90 65* a	6	70-130/30
104-51-8	n-Butylbenzene	ND		56.4	33.3	51 59* a	59	38.4 29.9	51* a	29	70-130/30
135-98-8	sec-Butylbenzene	ND		56.4 56.4	34.0	60* a	59 59	29.9 31.6	51* a	11	70-130/30
98-06-6	tert-Butylbenzene	ND		56.4	35.0	62* a	59	32.8	56* a	7	70-130/30
75-15-0	Carbon disulfide		I	56.4 56.4	34.9	60* a	59 59	32.8 37.6	62* a	6	70-130/30
56-23-5	Carbon tetrachloride	ND	J	56.4	33.9	60* a	59 59	34.9	59* a	7	70-130/30
108-90-7	Chlorobenzene	ND		56.4	36.2	64* a	59	34.9 35.6	60* a	3	70-130/30
75-00-3	Chloroethane	ND		56.4	50.2 59.1	105	59	55.6 63.3	107	2	70-130/30
110-75-8	2-Chloroethyl vinyl ether	ND		56.4	ND	0* a	59 59	03.3 ND	107 0* a	7	70-130/30
67-66-3	Chloroform	ND		56.4	39.1	69* a	59 59	40.3	68* a	nc	10-160/30
74-87-3	Chloromethane	ND		56.4	48.5	86	59	40.3 51.7		3	70-130/30
95-49-8	o-Chlorotoluene	ND		56.4	36.2	64* a	59 59	33.8	88 57* ^a	6	70-130/30
106-43-4	p-Chlorotoluene	ND		56.4	35.7	63* a	59 59	33.8 33.7	57* a	7	70-130/30
124-48-1	Dibromochloromethane	ND		56.4	45.2	80	59 59			6	70-130/30
95-50-1	1,2-Dichlorobenzene	ND		56.4	43.9	78	59 59	41.9 35.2	71 60* a	8	70-130/30
541-73-1	1,3-Dichlorobenzene	ND		56.4	43.5 37.5	67* a	59 59	33.2 32.8	56* a	22	70-130/30
106-46-7	1,4-Dichlorobenzene	ND		56.4	38.4	68* a	59 59	32.8	56* a	13	70-130/30
75-71-8	Dichlorodifluoromethane	ND		56.4	53.3	95	59	52.9 57.1	97	15	70-130/30
75-34-3	1,1-Dichloroethane	ND		56.4 56.4	39.3	55 70	59 59	40.7	97 69* a	7	70-130/30
107-06-2	1,2-Dichloroethane	ND		56.4 56.4	45.6	81	59	40.7	69' - 74	4	70-130/30
75-35-4	1,1-Dichloroethene	ND		56.4 56.4	45.0 34.4	61* a	59 59	43.9 36.9	74 63* a	4	70-130/30
156-59-2	cis-1,2-Dichloroethene	ND		56.4	38.0	67* a	59 59	30.9 39.3		7	70-130/30
156-60-5	trans-1,2-Dichloroethene	ND		56.4	35.0	62* a	59 59		67* a	3	70-130/30
78-87-5	1,2-Dichloropropane	ND		56.4 56.4	33.0 40.8	72		37.0	63* a	6	70-130/30
142-28-9	1,3-Dichloropropane	ND		56.4	40.8 45.3		59 50	40.6	69* a	0	70-130/30
594-20-7	2,2-Dichloropropane	ND		56.4 56.4	45.3 36.7	80 65* ^a	59 59	43.1	73	5	70-130/30
563-58-6	1,1-Dichloropropene	ND		56.4 56.4	30.7 32.6			37.6	64* a	2	70-130/30
	., i Diemoropropene	IND.		50.4	32.0	58* a	59	34.4	58* a	5	70-130/30

* = Outside of Control Limits.

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SHELLWIC Shell Oil Account:

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

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:

MC32521-1

CAS No.	Compound	MC3252 ug/kg	21-1 Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
CAS NO.	Compound	ug/ Kg	Y	ug/Kg	46/16	/0	46,12	-BB			
10061-01-5	cis-1,3-Dichloropropene	ND		56.4	41.9	74	59	41.3	70	1	70-130/30
	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.



Method: SW846 8260C

6.4.2 6

116 UTEST.

MC32521

	SHELLWIC She URSMOSTL: R		IP-15 Replacem	ent, 900	South Central A	venue, 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
MC32521-1MSI	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	= ist officiated officiation	98%	98%	102%	70-130%
2037-26-5		89%	88%	89%	70-130%
460-00-4		88%	88%	87%	70-130%

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

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MC32521

* = Outside of Control Limits.

SHELLWIC Shell Oil Account:

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

MC32593-2AMS U21746.D 1 08/12/14 C MC32593-2AMSD U21747.D 1 08/12/14 C	ByPrep DatePrep BatchAnalytical BatchGKn/an/aMSU964GKn/an/aMSU964GKn/an/aMSU964
---------------------------------------------------------------------------	---------------------------------------------------------------------------------

The QC reported here applies to the following samples:

MC32521-3

		MC3259	3-2ASpike	MS	MS	Spike	MSD	MSD		Limits
CAS No.	Compound	ug/1	Q ug/l	ug /1	%	ug/l	ug/l	%	RPD	Rec/RPD
		10 11	50	00.0	40 * 2	50	ас г	F0* 3	10	70 120/20
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
142-28-9 594-20-7	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 50	49.1	98	50	45.7	91	7	70-130/30
000-00-0	r, r-Dichloropropene	J.U U	30	-10.1	00	00	10.1	01		10 100/00

* = Outside of Control Limits.

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Method: SW846 8260C

6.4.3 6

	SHELLWIC Sh URSMOSTL: R		IP-15 Replacem	ent, 900	South Central A	venue, Roxana, 1	IL
Sample		DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC32593-2AMS		1	08/12/14	GK	n/a	n/a	MSU964
MC32593-2AMS		1	08/12/14	GK	n/a	n/a	MSU964
MC32593-2A		1	08/12/14	GK	n/a	n/a	MSU964

The QC reported here applies to the following samples:

Method: SW846 8260C

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MC32521-3

		MC325	93-2	ASpike	MS	MS	Spike	MSD	MSD		Limits
CAS No.	Compound	ug/l	Q	ug/l	ug/1	%	ug/l	ug/l	%	RPD	Rec/RPD
10001 01 6					-		Ũ	U			
10061-01-5	cis-1,3-Dichloropropene	1.0 U		50	51.1	102	50	55.4	111	8	70-130/30
	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	33 87	8 1	70-130/30
96-18-4	1,2,3-Trichloropropane	5.0 U		50	54.3	109	50 50	45.0 55.5	111	2	
95-63-6	1,2,4-Trimethylbenzene	5.0 U		50	51.0	103	50 50	55.5 51.2	102	0	70-130/30
108-67-8	1,3,5-Trimethylbenzene	5.0 U		50	48.1	96	50	48.4	102 97	0	70-130/30
108-05-4	Vinyl Acetate	5.0 U		50	45.2	90	50 50	40.4			70-130/30
75-01-4	Vinyl chloride	2.0 U		50	43.2 52.9	106	50 50		84	8	70-130/30
	m,p-Xylene	2.0 U		100	96.8	97	100	51.8	104	2	70-130/30
95-47-6		2.0 U		50	50.8 48.8	97 98	100 50	94.3	94	3	70-130/30
1330-20-7		2.0 U		150	40.0 146	98 97		45.8	92	6	70-130/30
2000 80 1		2.0 U		100	140	91	150	140	93	4	70-130/30

* = Outside of Control Limits.

6.4.3 **6**

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Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC32593-2AM	IS U21746.D	1	08/12/14	GK	n/a	n/a	MSU964
MC32593-2AM	ISD 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

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CAS No. Surrogate Recoveries	MS	MSD	MC32593	-2ALimits	
1868-53-7Dibromofluoromethane2037-26-5Toluene-D8460-00-44-Bromofluorobenzene	119% 112% 114%	112% 120% 120%	126% 107% 110%	70-130% 70-130% 70-130%	

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



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= Outside of Control Limits.

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Volatile Internal Standard Area Summary Job Number: MC32521 Account: SHELLWIC Shell Oil

	SHELLWI URSMOST			15 Replac	ement. 90	0 South (Central Av	enue Ro	wana II	
Check Std:	MSM238	8-CC237		-	ijection D		/12/14			
Lab File ID:	M67509.1	D		Ir	jection Ti					
Instrument ID:	GCMSM			Μ	lethod:					
	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		499778		190806	7.34
Lower Limit ^b	143900	8.85	235644	9.73	99136		124945		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		166750		222180		88218	6.84
ZZZZZ	288020	9.35	467298		203258		273791		161691	6.85
ZZZZZ	280295	9.35	456371		196409		272496		163686	6.85
MC32521-1	275320	9.35	457329		195518		270230		153521	6.85
ZZZZZ	261533	9.35	430548		187264		254986		149101	6.84
ZZZZZ	265470	9.35	429936		188806		251613		149101	0.84 6.85
ZZZZZ	262874	9.35	431210		178193		223771		161284	
MC32521-1MS	300481	9.35	498393		220745		286803		170757	6.84 6.85
MC32521-1MSD	306944	9.35	512436		221077		288417		178617	6.85
ZZZZZ	204338	9.35	324449		141236		189618		81425	6.84
ZZZZZ	289128	9.35	456368		193512		258862	16.07		6.85
ZZZZZ	282615	9.35	449010		187142		246977		91357	6.84
ZZZZZ	272802	9.35	439962		182088		236009		101190	6.84
LZZZZZ	273222	9.35	437060		183747		238326		107369	6.85
LZZZZZ	289038	9.35	463133		191150		245933	16.07		6.86
LZZZZZ	264981	9.35	423077		176187		237185	16.07		6.85
LZZZZZ	274116	9.35	442403		188760		246916	16.07		6.84
ZZZZZ	264176	9.35	420716		175498		233637	16.07		6.85
ZZZZZ	273059	9.35	442340		185565		244440	16.07		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.

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MC32521

Volatile Internal Standard Area Summary

Job Number: MC32521

Account: SHELLWIC Shell Oil

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

Check Std: Lab File ID: Instrument ID:	MSU962-CC957 Injection Date: 08/11/14 U21676.D Injection Time: 08:33 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	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		IS 2		IS 3		IS 4		IS 5	
Sample ID	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
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		15.67	349126	6.62
ZZZZZZ	740007	8.98	1175574	9.84	395303	13.10		15.67	310199	6.62
ZZZZZZ	755968	8.98	1203758	9.85	418353		641967	15.67	358346	6.62
MC32529-5MS	848675	8.96	1436680	9.83	527137	13.09		15.66		6.60
MC32529-5MSE	751001	8.97	1254610	9.84	498705	13.10		15.66		6.59
ZZZZZZ	739432	8.98	1156315	9.85	389193	13.10		15.67		6.62
ZZZZZZ	732843	8.98	1156700	9.85	396449	13.10		15.67		6.61
ZZZZZZ	703635	8.98	1130713	9.84	397473	13.10		15.67		6.61
ZZZZZZ	698423	8.98	1105920	9.85	389199	13.10		15.67		6.60
ZZZZZZ	710963	8.98	1134732	9.85	380242	13.10		15.67		6.60
MC32521-2	686808	8.98	1083432	9.85	405957	13.10		15.67		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.

Page 1 of 1

Volatile Internal Standard Area Summary Job Number: MC32521

	MC32521 SHELLWI URSMOST		Oil ana VMP-1	5 Replac	ement, 900) South (Central Ave	enue, Ro	oxana, IL	
Check Std: Lab File ID: Instrument ID:	MSU964-CC957 Injection Date: 08/12/14 U21732.D Injection Time: 10:09 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			1688140		745562	7.10
Lower Limit ^b	485848	8.47	790128	9.34	313363		422035		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		793141		368133	6.61
ZZZZZZ	891179	8.98	1406478	9.85	477609		785838		326751	6.63
ZZZZZ	856398	8.98	1357622	9.85	477254		737578		315519	6.61
ZZZZZZ	818836	8.98	1267918	9.85	423888		762580		339815	6.62
MC32521-3	818252	8.98	1275326	9.85	442772		762825		329437	6.61
ZZZZZ	814558	8.98	1295143	9.85	456710		717939		295241	6.61
ZZZZZZ	789786	8.98	1276626	9.84	459564		707125		331160	6.61
MC32593-2A	732946	8.98	1146239	9.85	398880		706740		320556	6.61
MC32593-3A	790096	8.98	1264228	9.84	464847		696659		317363	6.61
ZZZZZZ	781023	8.98	1256863	9.85	419984		699690		304734	6.62
ZZZZZZ	762242	8.98	1215349	9.85	428364		684986		338274	6.63
MC32593-2AMS		8.97	1340705	9.84	488934		700302		328936	6.62
MC32593-2AMS	D807172	8.97	1344800	9.84	541224		728118		348109	6.63
MC32593-3AMS	802949	8.97	1356387	9.84	489797		710808		346186	6.62
MC32593-3AMS	D821327	8.97	1385754	9.84	510132		725910		338164	6.62
ZZZZZ	767882	8.98	1235142	9.84	425478		709044		347369	6.63
ZZZZZZ	786314	8.98	1249693	9.84	422130		711293		339285	6.62
ZZZZZ	721001	8.98	1157270	9.85	403758		682954		345611	6.63
ZZZZZ	770447	8.98	1276432	9.84	423141		681996		293157	6.62
ZZZZZ	752004	8.98	1219553	9.85	412350		690110		338502	6.62 6.62
ZZZZZ	777148	8.97	1299958	9.84	467791		663033		331601	6.61
ZZZZZ	688142	8.98	1077805	9.85	370409		635136		326090	6.62
MSU964-ECC957	696632	8.97	1187257	9.84	445683		667704		311175	
		3.01	1101001	0.01	110000	13.10	00//04	10.00	511175	6.64

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

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

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

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6.5.3

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Volatile Surrogate Recovery SummaryJob Number:MC32521Account:SHELLWIC Shell Oil

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

Method: SW84	6 8260C		M	latrix:	
Samples and Q	C shown here ap	ply to the a	bove meth	nod	
Lab	Lab				
Sample ID	File ID	S 1	S2	S 3	
MC32521-2	U21700.D	121	, 116	115	
MC32521-3	U21739.D	121	107	112	
MC32529-5MS	U21693.D	115	112	110	
MC32529-5MSI	D U21694.D	120	119	116	
MC32593-2AM	S U21746.D	119	112	114	
MC32593-2AM	SDU21747.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	
c		D			
Surrogate		Recove	-		
Compounds		Limits			
S1 = Dibromof	luoromethane	70-130	1%		
S2 = Toluene-I		70-130			
	luorobenzene	70-130	%		

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6.6.1

6

Volatile Surrogate Recovery Summary

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

Method: SW846	5 8260C		1	Matrix:	SO		
Samples and QC	shown here ap	ply to the ab	ove met	hod			
Lab	Lab						
Sample ID	File ID	S 1	S2	S 3			
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		Recovery	7				
Compounds		Limits					
S1 = Dibromoflu	oromethane	70-130%					
S2 = Toluene-D8		70-130%					
S3 = 4-Bromoflue	orobenzene	70-130%					



6.6.2

6

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Section 7



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



Job Number: Account: Project:	Iank Summa MC32521 SHELLWIC Sh URSMOSTL: R	ell Oil	IP-15 Replacem	ent, 900	South Central A	venue, Roxana, J	Page 1 of 2
Sample	File ID	DF	Analyzed	By	Prep Date 08/01/14	Prep Batch	Analytical Batch
OP39211-MB	X04130.D	1	08/04/14	WK		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
					<u>~6′ *6</u>

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	OAuna Viv	IP-15 Replaceme	ent, 900 S	South Central Av	venue, Roxana, I	ίL
File ID X04130.D	DF 1	Analyzed 08/04/14	By WK	Prep Date 08/01/14	Prep Batch OP39211	Analytical Batch MSX136
ed here applies t	o the follo	owing samples:]	Method: SW84	6 8270D
	X04130.D	X04130.D 1		X04130.D 1 08/04/14 WK	X04130.D 1 08/04/14 WK 08/01/14	X04130.D 1 08/04/14 WK 08/01/14 OP39211

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	l	
367-12-4	2-Fluorophenol	70%	30-130	1%	
4165-62-2	Phenol-d5	80%	30-130	1%	
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 Com Total TIC, Semi-Volatile	pounds	R.T.	H	Est. Conc. Units Q
	Total 110, Sound Condition				8 0

7.1.1

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Method B Job Number: Account: Project:	ank Summa MC32521 SHELLWIC Sh URSMOSTL: R	ell Oil	1P-15 Replacem	ent 900 :	South Central A	venue Rovana	Page 1 of 2
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	0.33	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/1	
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	

7.1.2

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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 repor MC32521-2	ted here applies	o the follo	owing samples:			Method: SW84	6 8270D			

Units Q Result RL MDL CAS No. Compound ND 10 1.3 ug/l Hexachlorocyclopentadiene 77-47-4 5.0 0.30 ug/l 67-72-1 Hexachloroethane ND 5.0 0.45 ug/l Isophorone ND 78-59-1 10 0.40 ug/l ND 88-74-4 2-Nitroaniline 10 ug/l 3-Nitroaniline ND 1.4 99-09-2 10 2.2 ug/l ND 4-Nitroaniline 100-01-6 0.39 ug/l 5.0 ND 98-95-3 Nitrobenzene ug/l ND 5.0 1.0 62-75-9 n-Nitrosodimethylamine 5.0 0.40 ug/l ND N-Nitroso-di-n-propylamine 621-64-7 5.0 0.19 ug/l ND 86-30-6 N-Nitrosodiphenylamine ND 10 0.52 ug/l 110-86-1 Pyridine Limits CAS No. Surrogate Recoveries 367-12-4 2-Fluorophenol 45% 15-110% Phenol-d5 28% 15-110% 4165-62-2 81% 15-110% 2,4,6-Tribromophenol 118-79-6 4165-60-0 67% 30-130% Nitrobenzene-d5 63% 30-130% 2-Fluorobiphenyl 321-60-8 30-130% 95% 1718-51-0 Terphenyl-d14 Est. Conc. Units Q R.T. Tentatively Identified Compounds CAS No. 0 ug/l Total TIC, Semi-Volatile



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Method B Job Number: Account: Project:	lank Summa MC32521 SHELLWIC SH URSMOSTL: H	ell Oil	IP-15 Replacem	ent 900	South Central A	venue, Roxana,	Page 1 of 1
Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP39212-MB	I90988.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

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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	1.3	
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	0.90 1.2	ug/kg
90-12-0	1-Methylnaphthalene	ND	9.7	1.2	ug/kg
91-57-6	2-Methylnaphthalene	ND	9.7 9.7		ug/kg
85-01-8	Phenanthrene	ND	4.9	0.90	ug/kg
129-00-0	Pyrene	ND		1.0	ug/kg
	I yrene	ND	4.9	1.5	ug/kg
CAS No.	Surrogate Recoveries		Limit	S	
367-12-4	2-Fluorophenol	38%	15-11	0%	
4165 62 2	Dhanal Jr	0070	10 11	070	

N			
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-Fluorobipheny1	71%	30-130%
1718-51-0	Terphenyl-d14	88%	30-130%



Job Number:	ber: 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	191065.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

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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	
		ND	0.10	0.039	ug/l	
		ND	0.10	0.024	ug/l	
		ND	0.10	0.032	ug/l	
		ND	0.10	0.041	ug/l	
		ND	0.10	0.099		
		ND	0.10	0.031	0	
		ND	0.20	0.050		
		ND	0.20	0.074		
	0 1		0.050	0.013	~	J
129-00-0	Pyrene	ND	0.10	0.038	ug/l	
207-08-9 218-01-9 53-70-3 206-44-0 86-73-7 193-39-5 90-12-0 91-57-6 85-01-8 129-00-0	Benzo(k)fluoranthene Chrysene Dibenzo(a,h)anthracene Fluoranthene Fluorene Indeno(1,2,3-cd)pyrene 1-Methylnaphthalene 2-Methylnaphthalene Phenanthrene Pyrene	ND ND ND ND ND ND 0.025	0.10 0.10 0.10 0.10 0.10 0.20 0.20 0.20	0.024 0.032 0.041 0.099 0.031 0.050 0.074 0.013	ug/l ug/l ug/l ug/l ug/l ug/l ug/l 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%



Job Number:	MC32521	7					Page 1 of 2
Account:	SHELLWIC Sh	ell Oil					
Project:	URSMOSTL: F	Roxana VN	IP-15 Replacem	ent, 900	South Central A	venue, Roxana,	IL
Sample	File ID	DF	Analyzed	Ву	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

		Spike	BSP	BSP	
CAS No.	Compound	ug/l	ug/l	%	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
					-9 1 10

* = Outside of Control Limits.

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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

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	Liı	mits	
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	-1 30 %	
1718-51-0	Terphenyl-d14	89%	30	- 130 %	

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

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MC32521

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* = Outside of Control Limits.

Job Number: Account: Project:	MC32521 SHELLWIC Sh URSMOSTL: F		IP-15 Replacem	ent, 900	South Central A	venue, Roxana,	IL
Sample	File ID	DF	Analyzed	By	Prep Date 08/01/14	Prep Batch	Analytical Batch
OP39212-BS	190989.D	1	08/04/14	MR		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	Lim	its	
367-12-4	2-Fluorophenol	36%	15-1	110%	
4165-62-2	Phenol-d5	36%		10%	
118-79-6	2,4,6-Tribromophenol	45%		10%	
4165-60-0	Nitrobenzene-d5	73%		30%	
321-60-8	2-Fluorobiphenyl	72%		30%	
1718-51-0	Terphenyl-d14	89%		30%	



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SampleFile IDDFAnalyzedByPrep DatePrep BatchAnalytical BatOP39229-BSI91066.D108/07/14MR08/02/14OP39229MSI3391	Job Number: Account: Project:	MC32521 SHELLWIC Sh URSMOSTL: F		1P-15 Replacem	ent, 900	South Central A	venue, Roxana, 1	IL
	· ·		DF 1		-	1		Analytical Batch MSI3391

The QC reported here applies to the following samples:

Method: SW846 8270D BY SIM

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MC32521-2

		Spike	BSP	BSP	
CAS No.	Compound	ug/1	ug/l	%	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	Li	mits	
4165-60-0	Nitrobenzene-d5	88%	30	-130%	
321-60-8	2-Fluorobiphenyl	71%	30	-130%	
1718-51-0	Terphenyl-d14	98%	30	-130%	



Blank Spike/Blank Spike Duplicate Summary

Job Number: Account: Project:	MC32521 SHELLWIC Sh URSMOSTL: R		1P-15 Replacem	ent, 900	South Central A	venue, 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	i	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
								0

* = Outside of Control Limits.



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Blank Spike/Blank Spike Duplicate Summary

Job Number: Account: Project:	MC32521 SHELLWIC Sho URSMOSTL: R		IP-15 Replacem	ent, 900 S	South Central A	venue, Roxana, 1	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	BS	D	Limits			
367-12-4	2-Fluorophenol	63%	629	%	30-130	%		
4165-62-2	Phenol-d5	71%	749	%	30-130	%		
118-79-6	2,4,6-Tribromophenol	84%	949	%	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%	909	%	30-130	%		

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

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* = Outside of Control Limits.



Matrix Spike/Matrix Spike Duplicate Summary Job Number: MC32521

Account: Project:	SHELLWIC Sh URSMOSTL: R		1P-15 Replacem	ent, 900	South Central A	venue, 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

		MC3252	21-1	Spike	MS	MS	Spike	MSD	MSD		Limits
CAS No.	Compound	ug/kg	Q	ug/kg	ug/kg	%	ug/kg	ug/kg	%	RPD	Rec/RPD
05.05.0							00	00			
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	104	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	
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		40-140/30
117-84-0	Di-n-octyl phthalate	ND		2820	2980	106	2820	3360	98 119	10 12	40-140/30
84-66-2	Diethyl phthalate	ND		2820	2730	97	2820				40-140/30
131-11-3	Dimethyl phthalate	ND		2820	2800	99	2820	2970	105	8	40-140/30
117-81-7	bis(2-Ethylhexyl)phthalate	ND		2820	2990	99 106	2820	2940	104	5	40-140/30
118-74-1	Hexachlorobenzene	ND		2820	2990 3040	106		3190	113	6	40-140/30
				2020	3040	100	2820	3190	113	5	40-140/30

* = Outside of Control Limits.

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7.4.1 7

MC32521

621-64-7

86-30-6

110-86-1

CAS No.

367-12-4

118-79-6

321-60-8

4165-60-0

4165-62-2

	Job Number: 1 Account:	Account: SHELLWIC Shell Oil													
	Sample	File ID	DF		Analy	yzed	By	Prep Date	Pre	Prep Batch		lytical Batch			
	OP39211-MS	X04133.D	1		08/04	/14	WK	08/01/14	OP	39211	MSZ	(136			
	OP39211-MSD	X04134.D	1		08/04	/14	WK	08/01/14	OP	39211		X136			
	MC32521-1	X04135.D	1		08/04	/14	WK	08/01/14	OP	39211	MSZ	K136			
	The QC reported MC32521-1	d here applie	es to the f	ollov	wing sam	ples:			Metho	od: SW8	46 8270	, D			
CAS No.	Compound		MC325 ug/kg	21-1 Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD			
77-47-4	Hexachlorocyclo	nentadiene	ND		2820	1680	60	2820	1630	58	3	40-140/30			
67-72-1	Hexachloroethan	-	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-Nitrosodimethy	amine	ND		2820	1960	69	2820	1950	69	1	40-140/30			

2640

2450

1570

65%

72%

81%

74%

70%

2820

2820

2820

MSD

70%

78%

95%

81%

79%

94

87

56

MC32521-1 Limits

2710

2620

1570

96

93

56

3

7

0

2820

2820

2820

30-130%

30-130% 30-130%

30-130%

30-130%

82% 30-130% Terphenyl-d14 89% 91% 1718-51-0 (a) Outside control limits due to possible matrix interference. Refer to Blank Spike.

ND

ND

ND

MS

69%

76%

89%

81%

80%

N-Nitroso-di-n-propylamine

N-Nitrosodiphenylamine

Surrogate Recoveries

2,4,6-Tribromophenol

= Outside of Control Limits.

2-Fluorophenol

Nitrobenzene-d5

2-Fluorobiphenyl

Phenol-d5

Pyridine

(b) High RPD due to possible matrix interference and/or sample heterogeneity.

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40-140/30

40-140/30

40-140/30



Matrix Spike/Matrix Spike Duplicate Summary Job Number: MC32521

Account: Project:	MC32521 SHELLWIC Sh URSMOSTL: F		IP-15 Replaceme	ent, 900	South Central A	venue, Roxana,	IL
Sample OP39228-MS	File ID F75164.D	DF 1	Analyzed 08/06/14	By WK	Prep Date 08/02/14	Prep Batch OP39228	Analytical Batch 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

			MC32300-13 Spike						MSD		Limits	
CAS No.	Compound	ug/1	Q		ug/1	%	Spike ug/l	MSD ug/l	%	RPD	Rec/RPD	
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	43 72	2 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	49 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	14	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	43 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	40.0 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	ΙB	50	52.8	103	50	57.9	113	9	40-140/20	
117-84-0	Di-n-octyl phthalate	ND	3-	50	61.2	122	50	65.4	131	3 7	40-140/20	
84-66-2	Diethyl phthalate	0.72	J	50	49.4	97	50 50	52.9	104	7	40-140/20	
131-11-3	Dimethyl phthalate	ND	J	50	46.2	92	50 50	49.8	104	7		
117-81-7	bis(2-Ethylhexyl)phthalate	ND		50 50	61.6	123	50 50	49.8 63.7	100	3	40-140/20	
118-74-1	Hexachlorobenzene	ND		50	45.2	90	50 50	47.5	95	5 5	40-140/20	
				50	10.4	50	30	47.3	30	9	40-140/20	

* = Outside of Control Limits.

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LABORATORI

MC32521

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Job Number: Account: Project:	SHELLWIC Sho URSMOSTL: R		P-15 Replacem	ent, 900 S	South Central Av	venue, Roxana, I	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:

MC32521-2

		MC32300-1	3 Spike	MS	MS	Spike	MSD	MSD		Limits
CAS No.	Compound	ug/l Q	ug/l	ug/l	%	ug/l	ug/l	%	RPD	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	м	C32300-1	3 Limits				
CAS NO.	Surrogate Recoveries	MID	MIDD	201	001000					
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	1%	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.

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Method: SW846 8270D

Account: Project:	MC32521 SHELLWIC Sh URSMOSTL: F		IP-15 Replacem	ent, 900	South Central A	venue, Roxana,	IL
Sample OP39212-MS OP39212-MSD MC32521-1	File ID 190990.D 190991.D 190992.D	DF 1 1 1	Analyzed 08/04/14 08/04/14 08/04/14	By MR MR MR	Prep Date 08/01/14 08/01/14 08/01/14	Prep Batch OP39212 OP39212 OP39212 OP39212	Analytical Batch MSI3396 MSI3396 MSI3396

The QC reported here applies to the following samples:

Method: SW846 8270D BY SIM

MC32521-1

<i></i>		MC325	21-1	Spike	MS	MS	Spike	MSD	MSD		Limits
CAS No.	Compound	ug/kg	Q	ug/kg	ug/kg	%	ug/kg	ug/kg	%	RPD	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	3 10	40-140/30
207-08-9	Benzo(k)fluoranthene	ND	5	2820	2480	88	2820	2670	95	10 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	0	2820	2810	100	2820	3020	107	7	40-140/30
CAS No.	Surrogate Recoveries	MS		MSD	MC	32521-1	Limits				
367-12-4	2-Fluorophenol	38%		39%	35%	'n	15-110%	6			
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%				

MC32521 LABORATORIES

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	Job Number: Account:	SHELLWIC Shell Oil URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, 1										rage 1 of 1
	Sample	File ID	DF		Analy		By	Prep Date		ep Batch		ytical Batch
	OP39229-MS	I91067.D	1		08/07		MR	08/02/14		39229	MSI	
	OP39229-MSD	I91068.D	1		08/07		MR	08/02/14		39229	MSI	
	MC32300-14	I91069.D	1		08/07	/14	MR	08/02/14	OP	39229	MSI	3391
	The QC reporte	d here applie	s to the f	ollov	ving sam	ples:	Metho	od: SW8	46 8 270I	O BY SIM		
	MC32521-2											
			MC323	00-1	4 Spike	MS	MS	Spike	MSD	MSD		Limits
CAS No.	Compound		ug/l	Q	ug/l	ug/l	%	ug/l	ug/l	%	RPD	Rec/RPD
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
20-12-7	Anthracene		ND		50	46.4	93	50	48.4	97	4	40-140/20
6-55-3	Benzo(a)anthrace	ene	ND		50	60.4	121	50	64.5	129	7	40-140/20
0-32-8	Benzo(a)pyrene		ND		50	52.8	106	50	55.5	111	5	40-140/20
05-99-2	Benzo(b)fluorant	hene	ND		50	64.4	129	50	67.3	135	4	40-140/20
91-24-2	Benzo(g,h,i)pery		ND		50	57.6	115	50	60.4	121	5	40-140/20
207-08-9	Benzo(k)fluorant		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
3-70-3	Dibenzo(a,h)antl	hracene	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
36-73-7	Fluorene		ND		50	43.4	87	50	45.8	92	5	40-140/20
93-39-5	Indeno(1,2,3-cd)	pyrene	ND		50	59.2	118	50	62.4	125	5	40-140/20
0-12-0	1-Methylnaphtha		ND		50	34.3	69	50	38.4	77	11	40-140/20
91-57-6	2-Methylnaphtha		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 Reco	veries	MS		MSD]	MC32300	0-14 Limits				
367-12-4	2-Fluorophenol		37%		43%		45%	15-1109				
4165-62-2	Phenol-d5		25%		28%		30%	15-1109				
118-79-6	2,4,6-Tribromo	phenol	83%		93%		82%	15-1109				
4165-60-0	Nitrobenzene-d5		71%		84%		86%	30-1309				
321-60-8	2-Fluorobipheny	/l	58%		70%		72%	30-1309				
1718-51-0	Terphenyl-d14		95%		106%		102%	30-1309	%			

MC32521

* = Outside of Control Limits.

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Semivolatile Internal Standard Area Summary Job Number: MC32521

JOD INUILIDEL:	
Account:	
Project:	

count: SHELLWIC Shell Oil

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

Check Std: Lab File ID: Instrument ID:	MSF330 F75161.1 GCMSF		270		Injection Date: 08/06/14 Injection Time: 09:01 Method: SW846 8270D								
	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT	
Check Std Upper Limit ^a	127423 254846	2.97 3.47	472476 944952	4.00 4.50	341336 682672	5.48 5.98	588249 1176498	6.72 7.22	612982 1225964		518605 1037210	10.38	
Lower Limit ^b	63712	2.47	236238	3.50	170668	4.98		6.22		8.49		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		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		6.71	663942	8.98	628518	10.38	
ZZZZZ	155144	2.97	607929	3.99	370478	5.48		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		10.38	
ZZZZZ	157057	2.97	570246	3.99	340821	5.48	550495	6.71	631937	8.98		10.38	
ZZZZZ	168429	2.97	572470	3.99	361969	5.48	614830	6.71	667924	8.98		10.38	
ZZZZZZ	162750	2.97	600100	3.99	360744	5.48	612493	6.71	651570	8.98		10.38	
ZZZZZ	154205	2.97	572525	3.99	352115	5.48	585220	6.71	618997	8.98		10.38	
ZZZZZZ	137265	2.97	517732	3.99	311652	5.47	532481	6.71	586133	8.98		10.37	
ZZZZZ	163362	2.97	612863	3.99	370910	5.48	635991	6.71		8.98		10.38	
OP38681-BS1	138684	2.97	509648	3.99	347066	5.48	555882	6.71		8.98		10.37	
OP38681-BS2	158937	2.97	577973	3.99	362701	5.48	617314	6.71	654232	8.98		10.37	
OP38681-BS3	169220	2.97	618288	3.99	358722	5.48	616403	6.71	641780	8.99		10.38	
OP38681-BS4	142077	2.97	521798	3.99	319077	5.48	567678	6.71	625461	8.98		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.

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7.5.2

Semivolatile Internal Standard Area Summary

Job Number: MC32521

SHELLWIC Shell Oil Account:

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

Check Std: Lab File ID: Instrument ID:	MSI3388 190976.D GCMSI		20 Injection Date: 08/04/14 Injection Time: 08:11 Method: SW846 8270D BY SIM										
	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT	
Check Std	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		2218318		
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		1116209		
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		1139870		
ZZZZZZ	347010	4.27	714646	5.32	373049	6.86	624200	8.27	405257		1105252		
ZZZZZZ	350334	4.27	721479	5.32	377149	6.86	630970	8.27	414184		1121524		
OP39212-MB	382944	4.27	832919	5.32	415203	6.86	700260	8.27	445795	11.04	1184508	8 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		1141262		
OP39212-MSD	383507	4.27	841221	5.32	423006	6.86	708650	8.27	449522		1171068		
MC32521-1	498434	4.27	963797	5.32	507621	6.86	794284	8.27	464696		1195273		
OP39206-MB	375496	4.27	820093	5.32	405871	6.86	670457	8.27	430551		1155071		
OP39206-BS	374012	4.27	815697	5.32	408105	6.86	679372	8.27	442247		1169438		
ZZZZZZ	358430	4.27	795669	5.32	403872	6.86	687143	8.27	458421	11.04			
ZZZZZZ	378633	4.27	832825	5.32	427044	6.86	717703	8.27	475467		1271787		
ZZZZZZ	368029	4.27	810813	5.32	413626	6.86	690287	8.27	458828	11.04			
OP39193-MB	378506	4.27	825036	5.32	414053	6.86	677498	8.27	447485		1187175		
OP39193-BS	374946	4.27	825927	5.32	414199	6.86	691584	8.27	455298		1200532		
ZZZZZ	379977	4.27	834967	5.32	418731	6.86	694351	8.27	453629		1226901		
ZZZZZZ	373164	4.27	809834	5.32	406126	6.86	666753	8.27	429384		1173306		
ZZZZZZ	379489	4.27	827469	5.32	414091	6.86	673197	8.27	432718		117158		
ZZZZZZ	384929	4.27	846304	5.32	422343	6.86	693594	8.27	444584		1196353		
ZZZZZZ	383326	4.27	832744	5.32	418639	6.86	683452	8.27	440310	11.04	118846	0 12.5	

IS 1 = 1,4-Dichlorobenzene-d4

- **IS 2** = Naphthalene-d8
- **IS 3**
- = Acenaphthene-D10 = Phenanthrene-d10 IS 4
- = Chrysene-d12 IS 5
- = Perylene-d12 IS 6



Semivolatil Job Number: Account: Project:	le Internal Standard Area Summary P MC32521 SHELLWIC Shell Oil URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL	age 2 of 2
Check Std: Lab File ID: Instrument ID:	MSI3388-CC3320 Injection Date: 08/04/14 I90976.D Injection Time: 08:11 GCMSI Method: SW846 8270D BY SIM	
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

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.



AREA RT

7.5.2



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Semivolatile Internal Standard Area Summary

Job Number: MC32521

Account: SHELLWIC Shell Oil

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

Check Std: Lab File ID: Instrument ID:	MSI3396 190976B. GCMSI		86		Injectio Injectio Methoo	on Tim	e: 08:11		D BY SIM	[
	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
Check Std	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		2219300	
Lower Limit b	175669	3.77	377730	4.82	191648	6.36	324520	7.77	207561	10.54	554825	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	2 12.55
ZZZZZZ	350334	4.27	721479	5.32	377149	6.86	630970	8.27	414184		1121524	
OP39212-MB	382944	4.27	832919	5.32	415203	6.86	700260	8.27	445795	11.04	1184508	8 12.55
OP39212-BS	399319	4.27	872951	5.32	433555	6.86	716011	8.27	449390		1168537	
OP39212-MS	427276	4.27	911451	5.32	448198	6.86	723467	8.27	440706		1141262	
OP39212-MSD	383507	4.27	841221	5.32	423006	6.86	708650	8.27	449522	11.04	1171068	3 12.55
MC32521-1	498434	4.27	963797	5.32	507621	6.86	794284	8.27	464696		1195273	
OP39206-MB	375496	4.27	820093	5.32	405871	6.86	670457	8.27	430551		1155071	
OP39206-BS	374012	4.27	815697	5.32	408105	6.86	679372	8.27	442247		1169438	
ZZZZZZ	358430	4.27	795669	5.32	403872	6.86	687143	8.27	458421		1249616	
ZZZZZZ	378633	4.27	832825	5.32	427044	6.86	717703	8.27	475467		1271787	
ZZZZZZ	368029	4.27	810813	5.32	413626	6.86	690287	8.27	458828		1229490	
OP39193-MB	378506	4.27	825036	5.32	414053	6.86	677498	8.27	447485		118717	
OP39193-BS	374946	4.27	825927	5.32	414199	6.86	691584	8.27	455298		1200532	
ZZZZZZ	379977	4.27	834967	5.32	418731	6.86	694351	8.27	453629		122690	
ZZZZZZ	373164	4.27	809834	5.32	406126	6.86	666753	8.27	429384		117330	
ZZZZZ	379489	4.27	827469	5.32	414091	6.86	673197	8.27	432718		117158	
ZZZZZZ	384929	4.27	846304	5.32	422343	6.86	693594	8.27	444584		119635	
ZZZZZZ	383326	4.27	832744	5.32	418639	6.86	683452	8.27	440310	11.04	118846	0 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



Semivolatil Job Number: Account: Project:	e Internal Standard Area Summary MC32521 SHELLWIC Shell Oil URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL	ge 2 of 2
Check Std: Lab File ID: Instrument ID:	MSI3396-CC3386 Injection Date: 08/04/14 I90976B.D Injection Time: 08:11 GCMSI Method: SW846 8270D BY SIM	
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

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



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Semivolatile Internal Standard Area Summary

Job Number: MC32521

Account: SHELLWIC Shell Oil

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

Check Std: Lab File ID: Instrument ID:	MSI3391- I91064.D GCMSI		36		Injectio Injectio Methoo	on Tim	e: 10:36		D BY SIM			
	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
Check Std	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	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
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		590215	6.78	1007715		720018	10.95	1860378	12.45
OP39229-MS	517056	4.19	1132776		591655	6.78	1015872		731192	10.95	1887422	
OP39229-MSD	514734	4.19	1132455		590498	6.78	1009905		711707	10.95	1851233	12.45
MC32300-14	527235	4.19	1155763		604071	6.78	1015843		708538	10.95	1889657	12.44
ZZZZZZ	525514	4.19	1141978		596901	6.78	1013170		708116	10.95	1885645	12.44
ZZZZZZ	522567	4.19	1141691		588879	6.78	992905	8.18	689076	10.95	1839075	12.44
OP39249-MB	507752	4.19	1100699		571213	6.78	956536	8.17	640214	10.95	1689912	12.44
OP39249-BS	575606	4.18	1259704		646816	6.78	1092110	8.18	732636	10.95	1839782	12.45
OP39249-MS	576098	4.19	1128704		640696	6.78	1070344	8.18	704821	10.95	1786245	12.45
OP39249-MSD	593384	4.19	1298459		672393	6.78	1129232	8.18	754387	10.95	1876825	12.45
MC32300-17	588215	4.19	1276070		629379	6.78	1102588	8.18	733559	10.95	1860836	12.44
ZZZZZZ	504916	4.19	1099901		563169	6.77	952744	8.17	632383	10.95	1639058	12.44
ZZZZZZ	524089	4.19	1131971		581060	6.77	965752	8.17	617551	10.95	1577568	12.44
ZZZZZZ	627015	4.19	1347511		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		657857	6.78	1059795	8.18	659631	10.95	1611523	12.45
ZZZZZZ	576459	4.19	1245939		639500	6.78	1039999	8.18	644555	10.95	1572937	12.45
OP39266-MB	547047	4.19	1199232		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		598788	6.78	1010781	8.18	681858	10.96	1708959	12.45
OP39266-MSD	527705	4.19	1167330		606817	6.78	1015599	8.18	685445	10.95	1712585	12.45
MC32644-1	506953	4.18	1114599		587402	6.78	989516	8.18	683514	10.95	1768699	12.44
ZZZZZZ	487588	4.19	1079663		568720	6.78	956475	8.18	655170	10.94	1682796	12.43

- 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 Job Number: MC32521

Account: Project:	SHELLW URSMOS		ll Oil oxana VMI	P-15 R	eplacemen	t, 900 :	South Cent	ral Av	enue, Rox	ana, IL		
Check Std: Lab File ID: Instrument ID:	MSI3392 I91092.D GCMSI	-CC33			Injectio Injectio Methoo	on Dat on Tim	e: 08/08/ ie: 08:08	14	D BY SIM			
	IS 1		IS 2		IS 3		IS 4	_	10.6		10 (
	AREA	RT		RT	AREA	RT	AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
Check Std	511280	4.17	1099682	5.23	564987	6.76	944981	8.16	621193	10.93	1588995	12 / 3
Upper Limit ^a	1022560		2199364		1129974		1889962				3177990	
Lower Limit ^b	255640	3.67	549841		282494		472491	7.66	310597			11.93
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		RT
OP39255-MB	642747	4.17	1409110	5.22	712875	6.76	1152340	8 16	726483	10.93	1838594	12 /3
OP39255-BS	640486	4.17	1382468		690720	6.76	1110255		713723		1743358	
ZZZZZ	637271	4.17	1407726		712496	6.76	1131219		689913		1726250	
ZZZZZZ	553045	4.17	1213971	5.22	610689	6.76	974670		590785		1474503	
MC32521-2	608545	4.17	1326787	5.23	671521	6.76	1081142		696628		1783504	
OP39255-MS	508820	4.18	1098216	5.23	556813	6.76	901496	8.16	579829		1459164	
OP39255-MSD	505056	4.18	1086017	5.23	555177	6.76	892975	8.16	572096		1457065	
MC32549-1	506820	4.18	1089212	5.23	565469	6.76	901944	8.16	571243		1460953	
OP39280-MB	597422	4.17	1300626	5.22	648785	6.76	1026827	8.16	672554		1704803	
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		570701	6.76	908648	8.16	587658	10.93	1504148	12.43
OP39280-MSD	603048	4.17	1307056		639628	6.76	1027093	8.16	662804	10.93	1687516	12.43
MC32300-23	581325	4.17	1265301		637052	6.76	1017012	8.16	648564	10.93	1678393	12.43
ZZZZZZ	605624	4.17	1319849		659451	6.76	1046431	8.16	661496	10.93	1715659	12.43
ZZZZZ	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.

7.5.5



Semivolatile Internal Standard Area Summary

Job Number: MC32521

Account: SHELLWIC Shell Oil

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

Check Std: Lab File ID: Instrument ID:	MSX136- X04129.I GCMSX				Injectio Injectio Method	n Tim			D			
	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
Check Std	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	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
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		632064	5.93	1004364		821561	9.59	653074	11.14
OP39211-BSD	286801	3.38	1067731		588614	5.93		7.20	791546	9.59	632709	11.14
OP39211-MS	333747	3.38	1266255		673571	5.93	1045985		775406	9.59	618318	11.14
OP39211-MSD	306924	3.38	1163682		642556	5.93	1021511		811608	9.59	637169	11.14
MC32521-1	305760	3.38	1173204		646738	5.92	1009317		745436	9.59	553839	11.13
ZZZZZZ	293924	3.38	1104211		620527	5.93	952435	7.20	748352	9.59	590352	11.14
ZZZZZZ	291038	3.38	1091651		603738	5.93	909086	7.20	649808	9.59	514449	11.14
ZZZZZZ	275553	3.38	1023638		563019	5.93	863454	7.20	695729	9.59	564240	11.13
ZZZZZZ	288914	3.38	1064126		580151	5.93	833741	7.20	612759	9.61	483544	11.16
ZZZZZZ	308045	3.38	1119775		603497	5.93	895300	7.20	640264	9.59	511642	11.14
ZZZZZZ	331523	3.38	1225425		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 Job Number: MC32521 Account: SHELLWIC Shell Oil URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL Project:

Method: SW84	6 8270D		ľ	Matrix: A	AQ			
Samples and QC	C shown here a	pply to the	above met	hod				
Lab	Lab							
Sample ID	File ID	S 1	S 2	S 3	S4	S 5	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		Recov	erv					
Compounds		Limit						
S1 = 2-Fluoroph	enol	15-11	0%					
S2 = Phenol-d5		15-110						
S3 = 2,4,6-Tribr	omophenol	15-11						
S4 = Nitrobenze		30-130						
85 = 2-Fluorobij	ohenyl	30-130						
S6 = Terphenyl-		30-130						

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LABORATORI

MC32521

Semivolatile Surrogate Recovery Summary Job Number: MC32521 Account: SHELLWIC Shell Oil

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

Method: SW84	6 8270D		Ν	fatrix: S	0			
Samples and QC	C shown here ap	ply to the a	above metl	hod				
Lab	Lab	~ (6.4	05	96	
Sample ID	File ID	S 1	S2	S 3	S 4	S 5	S 6	
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		Recov	ery					
Compounds		Limit	5					
S1 = 2-Fluoropl	henol	30-13	0%					
S2 = Phenol-d5		30-13	0%					
S3 = 2,4,6-Trib	romophenol	30-13	0%					
S4 = Nitrobenze	ene-d5	30-13	0%					
S5 = 2-Fluorobi	iphenyl	30-13	0%					
S6 = Terphenyl		30-13	0%					

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Semivolatile Surrogate Recovery Summary Job Number: MC32521 Account: SHELLWIC Shell Oil URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL Project:

Method: SW84	6 8270D BY SIN	M	I	Matrix:	AQ
Samples and QC	C shown here ap	oply to the	above met	hod	
Lab	Lab				
Sample ID	File ID	S 1	S 2	S 3	
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		Recov	AF1/		
Compounds		Limits			
S1 = Nitrobenze		30-130)%		
S2 = 2-Fluorobij		30-130			
S3 = Terphenyl	d14	30-130	%		



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Semivolatile Surrogate Recovery Summary Job Number: MC32521

Account: Project:

SHELLWIC Shell Oil URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL

Method: SW840	6 8270D BY SIM	1	N	Aatrix: S	0			
Samples and QC	C shown here ap	ply to the a	above met	hod				
Lab	Lab							
Sample ID	File ID	S 1	S2	S 3	S4	S 5	S 6	
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		Recov	ery					
Compounds		Limits	6					
1 = 2-Fluoroph	nenol	15-110)%					
32 = Phenol-d5		15-110)%					
S3 = 2, 4, 6-Trib	romophenol	15-110)%					
S4 = Nitrobenze		30-130)%					
S5 = 2-Fluorobi		30-130)%					
S6 = Terphenyl	• ·	30-130	0%					

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Section 8



GC Volatiles

QC Data Summaries

Includes the following where applicable:

• Method Blank Summaries

• Blank Spike Summaries

Matrix Spike and Duplicate Summaries

Surrogate Recovery Summaries

GC Surrogate Retention Time Summaries



Method Blank Summary

Job Number Account: Project:	:: MC32521 SHELLWIC Shell Oil URSMOSTL: Roxana VM	1P-15 Replace	ement, 900) South C	Central A	Avenue, Roxana, 1	IL .
Sample OP39247-M	File ID DF B BK39938.D 1	Analyzec 08/05/14	-	-	o Date 94/14	Prep Batch OP39247	Analytical Batch GBK1298
	orted here applies to the follo , MC32521-4	owing sample	s:			Method: SW84	6 8011
CAS No.	Compound	Result	RL	MDL	Units	Q	
96-12-8 106-93-4	1,2-Dibromo-3-chloropropane 1,2-Dibromoethane	ND ND	0.015 0.015	0.0061 0.0061	ug/l ug/l		

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



Method Blank Summary

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Method B. Job Number:	Iank Summa MC32521	ry					Page 1 of 1
Account:	SHELLWIC She	ll Oil					
Project:	URSMOSTL: R		1P-15 Replacem	ent, 900	South Central A	venue, Roxana,	IL
Sample OP39257-MB	File ID BK39961.D	DF 1	Analyzed 08/07/14	By NK	Prep Date 08/05/14	Prep Batch OP39257	Analytical Batch GBK1299
	ted here applies to	the follo	wing samples:]	Method: SW84	6 8011
MC32521-1							

CAS No.	Compound	Result	RL	MDL	Units Q	
96-12-8 106-93-4	1,2-Dibromo-3-chloropropane 1,2-Dibromoethane	ND ND	2.5 2.5	0.72 0.60	ug/kg ug/kg	
CAS No.	Surrogate Recoveries		Limits			
460-00-4 460-00-4	Bromofluorobenzene (S) Bromofluorobenzene (S)	158% 163%	61-1679 61-1679	-		

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MC32521

Method Blank Summary

Job Number: Account: Project:	MC32521 SHELLWIC She URSMOSTL: Ro		IP-15 Replaceme	ent, 900	South Central A	venue, Roxana, I	IL
Sample GAB4535-MB	File ID AB85228.D	DF 1	Analyzed 08/07/14	By AF	Prep Date n/a	Prep Batch n/a	Analytical Batch GAB4535
The QC report	ed here applies to	the follo	owing samples:			Method: SW84	6 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	5	
	2,3,4-Trifluorotoluene	95%	61-116	6%	



Blank Spike Summary

Job Number:	Ke Summary MC32521						Page 1 of 1
Account:	SHELLWIC She	ell Oil					
Project:	URSMOSTL: R	oxana VN	IP-15 Replacem	ent, 900	South Central A	venue, Roxana, 1	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
96-12-8 106-93-4	1,2-Dibromo-3-chloropropane 1,2-Dibromoethane	0.071 0.071	0.085 0.083	120 117	60-140 60-140
CAS No.	Surrogate Recoveries	BSP	Lim	its	
460-00-4 460-00-4	Bromofluorobenzene (S) Bromofluorobenzene (S)	110% 118%	36-1 36-1		

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Blank Spike Summary

Job Number: Account: Project:	MC32521 SHELLWIC She URSMOSTL: Ro		IP-15 Replacem	ent, 900	South Central A	venue, Roxana, 1	IL
Sample OP39257-BS	File ID BK39962.D	DF 1	Analyzed 08/07/14	By NK	Prep Date 08/05/14	Prep Batch OP39257	Analytical Batch GBK1299
The QC report	ted here applies to	the follo	owing samples:			Method: SW84	6 8011

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
96-12-8 106-93-4	1,2-Dibromo-3-chloropropane 1,2-Dibromoethane	33.1 33.1	37.1 28.4	112 86	59-142 56-140
CAS No.	Surrogate Recoveries	BSP	Lin	iits	
460-00-4 460-00-4	Bromofluorobenzene (S) Bromofluorobenzene (S)	135% 123%		167% 167%	





Blank Spike/Blank Spike Duplicate Summary

Job Number:	MC32521	ve Dul	olicate Sum	mary			Page 1 of 1
Account:	SHELLWIC She	ll Oil					
Project:	URSMOSTL: R	oxana VM	IP-15 Replacem	ent, 900	South Central A	venue, Roxana, 1	IL
Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
							THIGHT FIGHT DULOI
GAB4535-BSP	AB85229.D	1	08/07/14	AF	n/a	n/a	GAB4535
GAB4535-BSP GAB4535-BSD		1 1	08/07/14 08/07/14	AF AF	n/a n/a	n/a n/a	GAB4535 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	BSI)	Limits			
	2,3,4-Trifluorotoluene	98%	97%	5	61-116%	ó		

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* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job	Number:	MC32521

Account: SHELLWIC Shell Oil

Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL											
Sample	File ID	DF	Analyzed	Ву	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:

MC32521-2, MC32521-4

CAS No.	Compound	MC32300- ug/l (-19 Spike) ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD	
96-12-8 106-93-4	1,2-Dibromo-3-chloropropane 1,2-Dibromoethane	ND ND	0.071 0.071	0.087 0.082	123 115	0.071 0.071	0.084 0.078	118 110	4 5	64-141/29 63-163/27	¢
CAS No.	Surrogate Recoveries	MS	MSD	МС	32300-1	9Limits					
460-00-4 460-00-4	Bromofluorobenzene (S) Bromofluorobenzene (S)	89% 100%	88% 104%	929 106		36-1739 36-1739	-				

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Method: SW846 8011

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Matrix Spike/Matrix Spike Duplicate Summary

Job Number:	MC32521	-	-		•		
Account:	SHELLWIC She	ll Oil					
Project:	URSMOSTL: Ro	oxana VMP	-15 Replace	ment, 900 S	outh Central	Avenue, Roxana,	IL
Sample	File ID	DF	Analyzed	l 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 report	ed here applies to	the follow	ing samples	:		Method: SW84	6 8011
MC32521-1							
	М	C32521-1	Spike M	S MS	Spike	MSD MSD	Limits

CAS No.	Compound	ug/kg Q	ug/kg	ug/kg	%	ug/kg	ug/kg	%	RPD	Rec/RPD	4.2
96-12-8 106-93-4	1,2-Dibromo-3-chloropropane 1,2-Dibromoethane	ND ND	37.4 37.4	58.5 46.9	156 125	37.7 37.7	57.7 48.5	153 129	1 3	40-156/27 48-141/27	8
CAS No.	Surrogate Recoveries	MS	MSD	MC	32521-1	Limits					
460-00-4 460-00-4	Bromofluorobenzene (S) Bromofluorobenzene (S)	159% 152%	162% 158%	1559 1559		61-167% 61-167%					

* = Outside of Control Limits.



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Matrix Spike/Matrix Spike Duplicate Summary

Sample	File ID	DF		Analy		-	Prep Date		p Batch		tical Batch
MC32521-1MS	AB85233.D			08/07/		F	n/a	n/a		GAB GAB	
MC32521-1MSD	AB85234.D			08/07/ 08/07/		AF AF	n/a n/a	n/a n/a		GAB	
MC32521-1	AB85232.D) 1		00/07/	14 A	ſ	11/ d	11/ a		UAD	1000
The QC reported MC32521-1	here applies	to the fo	ollov	ving sam	ples:			Metho	d: SW84	46 8015	
Compound		MC3252 mg/kg	21-1 Q	Spike mg/kg	MS mg/kg	MS %	Spike mg/kg	MSD mg/kg	MSD %	RPD	Limits Rec/RPD

98%

100%

61-116%

101% 2,3,4-Trifluorotoluene

CAS No.

CAS No.

116

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MC32521

* = Outside of Control Limits.

Volatile Surrogate Recovery Summary

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	C shown here app	ly to the abo	ove method			
Lab	Lab					
Sample ID	File ID	S1 ^a	S 1 ^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		Recovery	r			
Compounds		Limits				
S1 = Bromofluor	robenzene (S)	36-173%				
(a) Recovery from (b) Recovery from		ž			2	

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Volatile Surrogate Recovery Summary

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

Method: SW84	6 8011		Matrix	x: 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		Recove	TV							
Compounds		Limits								
S1 = Bromofluo	orobenzene (S)	61-167	%							
(a) Recovery fro	m GC signal #2									

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

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Volatile Surrogate Recovery Summary

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Job Number:	MC32521	ruge r
Account:	SHELLWIC Shell Oil	
Project:	URSMOSTL: Roxana VMP-15 Replacement, 900 South Central Avenue, Roxana, IL	

Method: SW846 8015		M	atrix: SO	-	
Samples and QC s	shown here app	ly to the above method	bd		J
-	Lab File ID	S1 ^a			
GAB4535-BSD GAB4535-BSP GAB4535-MB MC32521-1MS	AB85232.D AB85230.D AB85229.D AB85228.D AB85233.D AB85234.D	98 97 98 95 101 100			
Surrogate Compounds		Recovery Limits			
S1 = 2,3,4-Trifluorotoluene(a) Recovery from GC signal #1		61-116%			



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MC32521

GC Surrogate Retention Time Summary

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

Check Std: Lab File ID: Instrument ID:	GBK1298-ICC BK39934.D GCBK			Injection Date:08/05/14Injection Time:09:17Method:SW846 8011		
				S1 ^a RT	S1 ^b RT	
Check Std				4.36	4.38	
Lab	Lab	Date	Time	S1 a	S1 ^b	
Sample ID	File ID	Analyzed	Analyzed	RT	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

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GC Surrogate Retention Time Summary

Job Number: Account: Project:	MC32521 SHELLWIC SH URSMOSTL: 1		-15 Replacen	nent, 90	0 South Central Avenue, Roxana, IL
Check Std: Lab File ID: Instrument ID:	GBK1299-CC BK39960.D GCBK	-	Pate: 08/07/14 Fime: 08:31 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 OP39257-BS OP39257-MS OP39257-MSD MC32521-1 ZZZZZZ ZZZZZZ ZZZZZZ ZZZZZZ ZZZZZZ ZZZZ	BK39961.D BK39962.D BK39963.D BK39964.D BK39965.D BK39966.D BK39966.D BK39968.D BK39969.D BK39970.D	08/07/14 08/07/14 08/07/14 08/07/14 08/07/14 08/07/14 08/07/14 08/07/14 08/07/14	09:07 09:26 09:46 10:05 10:24 10:44 11:03 11:22 11:42 12:01	4.27 4.27 4.27 4.27 4.27 4.27 4.27 4.26 4.27 4.27 4.27	4.28 4.28 4.28 4.28 4.28 4.28 4.28 4.28

Surrogate

Compounds

S1 = Bromofluorobenzene (S)

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

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GC Surrogate Retention Time Summary Job Number: MC32521

Account:	MC32521 SHELLWIC She URSMOSTL: Ro		15 Replacen	ient, 900 Sou	uth Central Avenue, R	eoxana, IL
Check Std: Lab File ID: Instrument ID:	GAB4536-CC44 AB85227A.D GCAB	Injection Date: Injection Time: Method:		08/07/14 07:43 SW846 8015		
				S1 ^a RT		
Check Std				20.33		
Lab	Lab	Date	Time	S1 a		
Sample ID	File ID	Analyzed	Analyzed	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



GC Surrogate Retention Time Summary

Job Number: Account: Project:	MC32521 SHELLWIC Sh URSMOSTL: R		-15 Replacen	nent, 900 Sou	uth Central Avenue, R	Roxana, IL
Check Std: Lab File ID: Instrument ID:	GAB4535-CC4 AB85227.D GCAB	488	Inje	ction Date: ction Time: hod:	08/07/14 07:43 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		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		

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Surrogate

Compounds

S1 = 2,3,4-Trifluorotoluene

(a) Retention time from GC signal #1

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8.6.4

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Section 9



General Chemistry

QC Data Summaries

Includes the following where applicable:

• Percent Solids Raw Data Summary



Percent Solids Raw Data Summary Job Number: MC32521

 Job Number:
 MC32521

 Account:
 SHELLWIC Shell Oil

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

Sample: MC32521-1 ClientID: VMP15-25.5-07311	Analyzed: 04-AUG-14 by BF 4(24-28')	Method: SM21 2540 B MOD.
Wet Weight (Total) Tare Weight Dry Weight (Total) Solids, Percent	33.52 g 18.966 g 31.748 g 87.8 %	

