AECOM
1001 Highlands Plaza Drive West
Suite 300
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August 10, 2015

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 Vapor Sampling According to Illinois Department of Transportation (IDOT) Permits No. 8-28548 and No. 8-28875

Dear Mr. Brown,

AECOM (formerly URS Corporation), on behalf of Shell Oil Products US (SOPUS), is submitting the attached analytical results for soil vapor samples collected from the following vapor monitoring points in accordance with IDOT Permits No. 8-28548 and No. 8-28875:

- VMP-15
- VMP-55

If you have any questions or require further information please contact Robert Mooshegian at robert.mooshegian@aecom.com (314/743-4106).

Sincerely,
AECOM, on behalf of Shell Oil Products US

Michael Currier
Environmental Scientist

Robert Mooshegian, CHMM
Senior Project Manager

Attachments

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

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5/18/2015
Ms. Elizabeth Kunkel
URS Corporation
1001 Highlands Plaza Dr. West
Suite 300
St. Louis MO 63110

Project Name: Roxana Soil Vapor
Project #: 21563720.04202
Workorder #: 1505094A

Dear Ms. Elizabeth Kunkel

The following report includes the data for the above referenced project for sample(s) received on 5/5/2015 at Air Toxics Ltd.

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

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

Regards,

Kelly Buettner

Project Manager

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WORK ORDER #: 1505094A

Work Order Summary

CLIENT:	Ms. Elizabeth Kunkel AECOM 1001 Highlands Plaza Dr. West Suite 300 St. Louis, MO 63110	**BILL TO:**	Accounts Payable Austin AECOM P.O. BOX 203970 Austin, TX 78720-1088
PHONE:	314-743-4179	**P.O. #**	87243.UB
FAX:		**PROJECT #**	21563720.04202 Roxana Soil Vapor
DATE RECEIVED:	05/05/2015	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	05/18/2015		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
06A	VMP-15-5-050415	TO-15	5.1 "Hg	14.8 psi
07A	VMP-15-21.5-050415	TO-15	5.7 "Hg	15 psi
08A	VMP-15-25.5-050415	TO-15	7.3 "Hg	15 psi
09A	VMP-15-29-050415	TO-15	8.6 "Hg	14.7 psi
20A	Lab Blank	TO-15	NA	NA
20B	Lab Blank	TO-15	NA	NA

Continued on next page

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WORK ORDER #: 1505094A

Work Order Summary

CLIENT:	Ms. Elizabeth Kunkel AECOM 1001 Highlands Plaza Dr. West Suite 300 St. Louis, MO 63110	**BILL TO:**	Accounts Payable Austin AECOM P.O. BOX 203970 Austin, TX 78720-1088
PHONE:	314-743-4179	**P.O. #**	87243.UB
FAX:		**PROJECT #**	21563720.04202 Roxana Soil Vapor
DATE RECEIVED:	05/05/2015	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	05/18/2015		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
21A	CCV	TO-15	NA	NA
21B	CCV	TO-15	NA	NA
22A	LCS	TO-15	NA	NA
22AA	LCSD	TO-15	NA	NA
22B	LCS	TO-15	NA	NA
22BB	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Mayo DATE: 05/18/15

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704343-14-7, UT NELAP CA009332014-5, VA NELAP - 460197, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2014, Expiration date: 10/17/2015.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

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

LABORATORY NARRATIVE
EPA Method TO-15
URS Corporation
Workorder# 1505094A

Nineteen 1 Liter Summa Canister samples were received on May 05, 2015. 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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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: VMP-15-5-050415

Lab ID#: 1505094A-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	0.56 J	6.0	2.8 J
Ethanol	4.8	2.4 J	9.1	4.5 J
Acetone	12	10 J	29	25 J
2-Propanol	4.8	8.1	12	20
2-Butanone (Methyl Ethyl Ketone)	4.8	1.4 J	14	4.3 J
Chloroform	1.2	0.25 J	5.9	1.2 J
2,2,4-Trimethylpentane	1.2	1.7	5.6	8.0
Toluene	1.2	3.1	4.6	12

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

Client Sample ID: VMP-15-5-050415

Lab ID#: 1505094A-06A

Propylbenzene	1.2	0.29 J	5.9	1.4 J
4-Ethyltoluene	1.2	0.49 J	5.9	2.4 J
1,3,5-Trimethylbenzene	1.2	0.24 J	5.9	1.2 J
1,2,4-Trimethylbenzene	1.2	0.83 J	5.9	4.1 J

Client Sample ID: VMP-15-21.5-050415

Lab ID#: 1505094A-07A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	0.42 J	6.2	2.1 J
Acetone	12	5.8 J	30	14 J
2-Propanol	5.0	3.2 J	12	7.8 J
Carbon Disulfide	5.0	1.0 J	16	3.2 J
Methylene Chloride	12	0.65 J	43	2.3 J
2-Butanone (Methyl Ethyl Ketone)	5.0	2.8 J	15	8.4 J
Chloroform	1.2	1.1 J	6.1	5.5 J
Benzene	1.2	0.30 J	4.0	0.96 J
4-Methyl-2-pentanone	1.2	0.47 J	5.1	1.9 J
Toluene	1.2	0.55 J	4.7	2.0 J
Butane	5.0	3.4 J	12	8.0 J
Isopentane	5.0	1.4 J	15	4.1 J

Client Sample ID: VMP-15-25.5-050415

Lab ID#: 1505094A-08A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.3	0.49 J	6.6	2.4 J
Ethanol	5.3	8.5	10	16
Acetone	13	6.4 J	32	15 J
2-Propanol	5.3	1.6 J	13	3.9 J
2-Butanone (Methyl Ethyl Ketone)	5.3	2.2 J	16	6.6 J
Chloroform	1.3	1.1 J	6.5	5.4 J
2,2,4-Trimethylpentane	1.3	2.4	6.2	11
Benzene	1.3	0.82 J	4.3	2.6 J

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

Client Sample ID: VMP-15-25.5-050415

Lab ID#: 1505094A-08A

Butane	5.3	6.4	13	15
Isopentane	5.3	4.2 J	16	12 J

Client Sample ID: VMP-15-29-050415

Lab ID#: 1505094A-09A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.4	0.50 J	6.9	2.4 J
Ethanol	5.6	2.3 J	10	4.4 J
Acetone	14	8.0 J	33	19 J
2-Propanol	5.6	3.1 J	14	7.7 J
Carbon Disulfide	5.6	1.9 J	17	5.9 J
Hexane	1.4	0.81 J	4.9	2.8 J
2-Butanone (Methyl Ethyl Ketone)	5.6	2.1 J	16	6.3 J
Chloroform	1.4	1.4 J	6.8	6.7 J
Cyclohexane	1.4	1.9	4.8	6.4
2,2,4-Trimethylpentane	1.4	8.9	6.5	41
Benzene	1.4	3.1	4.5	10
Trichloroethene	1.4	0.44 J	7.5	2.4 J
Toluene	1.4	1.9	5.3	7.1
m,p-Xylene	1.4	0.38 J	6.1	1.6 J
Cumene	1.4	0.15 J	6.9	0.76 J
Propylbenzene	1.4	0.25 J	6.9	1.2 J
4-Ethyltoluene	1.4	0.33 J	6.9	1.6 J
1,3,5-Trimethylbenzene	1.4	0.30 J	6.9	1.5 J
1,2,4-Trimethylbenzene	1.4	0.38 J	6.9	1.9 J
Butane	5.6	11	13	27
Isopentane	5.6	110	16	320

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Client Sample ID: VMP-15-5-050415

Lab ID#: 1505094A-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p050815**	**Date of Collection:**	**5/4/15 9:14:00 AM**
Dil. Factor:	**2.42**	**Date of Analysis:**	**5/8/15 06:12 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	0.56 J	6.0	2.8 J
Freon 114	1.2	Not Detected	8.4	Not Detected
Chloromethane	12	Not Detected	25	Not Detected
Vinyl Chloride	1.2	Not Detected	3.1	Not Detected
1,3-Butadiene	1.2	Not Detected	2.7	Not Detected
Bromomethane	12	Not Detected	47	Not Detected
Chloroethane	4.8	Not Detected	13	Not Detected
Freon 11	1.2	Not Detected	6.8	Not Detected
Ethanol	4.8	2.4 J	9.1	4.5 J
Freon 113	1.2	Not Detected	9.3	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.8	Not Detected
Acetone	12	10 J	29	25 J
2-Propanol	4.8	8.1	12	20
Carbon Disulfide	4.8	Not Detected	15	Not Detected
3-Chloropropene	4.8	Not Detected	15	Not Detected
Methylene Chloride	12	Not Detected	42	Not Detected
Methyl tert-butyl ether	1.2	Not Detected	4.4	Not Detected
trans-1,2-Dichloroethene	1.2	Not Detected	4.8	Not Detected
Hexane	1.2	Not Detected	4.3	Not Detected
1,1-Dichloroethane	1.2	Not Detected	4.9	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.8	1.4 J	14	4.3 J
cis-1,2-Dichloroethene	1.2	Not Detected	4.8	Not Detected
Tetrahydrofuran	1.2	Not Detected	3.6	Not Detected
Chloroform	1.2	0.25 J	5.9	1.2 J
1,1,1-Trichloroethane	1.2	Not Detected	6.6	Not Detected
Cyclohexane	1.2	Not Detected	4.2	Not Detected
Carbon Tetrachloride	1.2	Not Detected	7.6	Not Detected
2,2,4-Trimethylpentane	1.2	1.7	5.6	8.0
Benzene	1.2	Not Detected	3.9	Not Detected
1,2-Dichloroethane	1.2	Not Detected	4.9	Not Detected
Heptane	1.2	Not Detected	5.0	Not Detected
Trichloroethene	1.2	Not Detected	6.5	Not Detected
1,2-Dichloropropane	1.2	Not Detected	5.6	Not Detected
1,4-Dioxane	4.8	Not Detected	17	Not Detected
Bromodichloromethane	1.2	Not Detected	8.1	Not Detected
cis-1,3-Dichloropropene	1.2	Not Detected	5.5	Not Detected
4-Methyl-2-pentanone	1.2	Not Detected	5.0	Not Detected
Toluene	1.2	3.1	4.6	12
trans-1,3-Dichloropropene	1.2	Not Detected	5.5	Not Detected
1,1,2-Trichloroethane	1.2	Not Detected	6.6	Not Detected
Tetrachloroethene	1.2	Not Detected	8.2	Not Detected
2-Hexanone	4.8	Not Detected	20	Not Detected

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Client Sample ID: VMP-15-5-050415

Lab ID#: 1505094A-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p050815**	**Date of Collection:**	**5/4/15 9:14:00 AM**
Dil. Factor:	**2.42**	**Date of Analysis:**	**5/8/15 06:12 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.2	Not Detected	10	Not Detected
1,2-Dibromoethane (EDB)	1.2	Not Detected	9.3	Not Detected
Chlorobenzene	1.2	Not Detected	5.6	Not Detected
Ethyl Benzene	1.2	Not Detected	5.2	Not Detected
m,p-Xylene	1.2	Not Detected	5.2	Not Detected
o-Xylene	1.2	Not Detected	5.2	Not Detected
Styrene	1.2	Not Detected	5.2	Not Detected
Bromoform	1.2	Not Detected	12	Not Detected
Cumene	1.2	Not Detected	5.9	Not Detected
1,1,2,2-Tetrachloroethane	1.2	Not Detected	8.3	Not Detected
Propylbenzene	1.2	0.29 J	5.9	1.4 J
4-Ethyltoluene	1.2	0.49 J	5.9	2.4 J
1,3,5-Trimethylbenzene	1.2	0.24 J	5.9	1.2 J
1,2,4-Trimethylbenzene	1.2	0.83 J	5.9	4.1 J
1,3-Dichlorobenzene	1.2	Not Detected	7.3	Not Detected
1,4-Dichlorobenzene	1.2	Not Detected	7.3	Not Detected
alpha-Chlorotoluene	1.2	Not Detected	6.3	Not Detected
1,2-Dichlorobenzene	1.2	Not Detected	7.3	Not Detected
1,2,4-Trichlorobenzene	4.8	Not Detected	36	Not Detected
Hexachlorobutadiene	4.8	Not Detected UJ	52	Not Detected UJ
Butane	4.8	Not Detected	12	Not Detected
Isopentane	4.8	Not Detected	14	Not Detected

J = Estimated value.
UJ = Analyte associated with low bias in the CCV and/or LCS.
Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	99	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: VMP-15-21.5-050415

Lab ID#: 1505094A-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p050816**	**Date of Collection:**	**5/4/15 9:40:00 AM**
Dil. Factor:	**2.49**	**Date of Analysis:**	**5/8/15 07:01 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	0.42 J	6.2	2.1 J
Freon 114	1.2	Not Detected	8.7	Not Detected
Chloromethane	12	Not Detected	26	Not Detected
Vinyl Chloride	1.2	Not Detected	3.2	Not Detected
1,3-Butadiene	1.2	Not Detected	2.8	Not Detected
Bromomethane	12	Not Detected	48	Not Detected
Chloroethane	5.0	Not Detected	13	Not Detected
Freon 11	1.2	Not Detected	7.0	Not Detected
Ethanol	5.0	Not Detected	9.4	Not Detected
Freon 113	1.2	Not Detected	9.5	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.9	Not Detected
Acetone	12	5.8 J	30	14 J
2-Propanol	5.0	3.2 J	12	7.8 J
Carbon Disulfide	5.0	1.0 J	16	3.2 J
3-Chloropropene	5.0	Not Detected	16	Not Detected
Methylene Chloride	12	0.65 J	43	2.3 J
Methyl tert-butyl ether	1.2	Not Detected	4.5	Not Detected
trans-1,2-Dichloroethene	1.2	Not Detected	4.9	Not Detected
Hexane	1.2	Not Detected	4.4	Not Detected
1,1-Dichloroethane	1.2	Not Detected	5.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	5.0	2.8 J	15	8.4 J
cis-1,2-Dichloroethene	1.2	Not Detected	4.9	Not Detected
Tetrahydrofuran	1.2	Not Detected	3.7	Not Detected
Chloroform	1.2	1.1 J	6.1	5.5 J
1,1,1-Trichloroethane	1.2	Not Detected	6.8	Not Detected
Cyclohexane	1.2	Not Detected	4.3	Not Detected
Carbon Tetrachloride	1.2	Not Detected	7.8	Not Detected
2,2,4-Trimethylpentane	1.2	Not Detected	5.8	Not Detected
Benzene	1.2	0.30 J	4.0	0.96 J
1,2-Dichloroethane	1.2	Not Detected	5.0	Not Detected
Heptane	1.2	Not Detected	5.1	Not Detected
Trichloroethene	1.2	Not Detected	6.7	Not Detected
1,2-Dichloropropane	1.2	Not Detected	5.8	Not Detected
1,4-Dioxane	5.0	Not Detected	18	Not Detected
Bromodichloromethane	1.2	Not Detected	8.3	Not Detected
cis-1,3-Dichloropropene	1.2	Not Detected	5.6	Not Detected
4-Methyl-2-pentanone	1.2	0.47 J	5.1	1.9 J
Toluene	1.2	0.55 J	4.7	2.0 J
trans-1,3-Dichloropropene	1.2	Not Detected	5.6	Not Detected
1,1,2-Trichloroethane	1.2	Not Detected	6.8	Not Detected
Tetrachloroethene	1.2	Not Detected	8.4	Not Detected
2-Hexanone	5.0	Not Detected	20	Not Detected

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Client Sample ID: VMP-15-21.5-050415

Lab ID#: 1505094A-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p050816**	**Date of Collection:**	**5/4/15 9:40:00 AM**
Dil. Factor:	**2.49**	**Date of Analysis:**	**5/8/15 07:01 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.2	Not Detected	11	Not Detected
1,2-Dibromoethane (EDB)	1.2	Not Detected	9.6	Not Detected
Chlorobenzene	1.2	Not Detected	5.7	Not Detected
Ethyl Benzene	1.2	Not Detected	5.4	Not Detected
m,p-Xylene	1.2	Not Detected	5.4	Not Detected
o-Xylene	1.2	Not Detected	5.4	Not Detected
Styrene	1.2	Not Detected	5.3	Not Detected
Bromoform	1.2	Not Detected	13	Not Detected
Cumene	1.2	Not Detected	6.1	Not Detected
1,1,2,2-Tetrachloroethane	1.2	Not Detected	8.5	Not Detected
Propylbenzene	1.2	Not Detected	6.1	Not Detected
4-Ethyltoluene	1.2	Not Detected	6.1	Not Detected
1,3,5-Trimethylbenzene	1.2	Not Detected	6.1	Not Detected
1,2,4-Trimethylbenzene	1.2	Not Detected	6.1	Not Detected
1,3-Dichlorobenzene	1.2	Not Detected	7.5	Not Detected
1,4-Dichlorobenzene	1.2	Not Detected	7.5	Not Detected
alpha-Chlorotoluene	1.2	Not Detected	6.4	Not Detected
1,2-Dichlorobenzene	1.2	Not Detected	7.5	Not Detected
1,2,4-Trichlorobenzene	5.0	Not Detected	37	Not Detected
Hexachlorobutadiene	5.0	Not Detected UJ	53	Not Detected UJ
Butane	5.0	3.4 J	12	8.0 J
Isopentane	5.0	1.4 J	15	4.1 J

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

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	109	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	97	70-130

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Client Sample ID: VMP-15-25.5-050415

Lab ID#: 1505094A-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p050817**	**Date of Collection:**	**5/4/15 10:13:00 AM**
Dil. Factor:	**2.67**	**Date of Analysis:**	**5/8/15 07:34 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.3	0.49 J	6.6	2.4 J
Freon 114	1.3	Not Detected	9.3	Not Detected
Chloromethane	13	Not Detected	28	Not Detected
Vinyl Chloride	1.3	Not Detected	3.4	Not Detected
1,3-Butadiene	1.3	Not Detected	3.0	Not Detected
Bromomethane	13	Not Detected	52	Not Detected
Chloroethane	5.3	Not Detected	14	Not Detected
Freon 11	1.3	Not Detected	7.5	Not Detected
Ethanol	5.3	8.5	10	16
Freon 113	1.3	Not Detected	10	Not Detected
1,1-Dichloroethene	1.3	Not Detected	5.3	Not Detected
Acetone	13	6.4 J	32	15 J
2-Propanol	5.3	1.6 J	13	3.9 J
Carbon Disulfide	5.3	Not Detected	17	Not Detected
3-Chloropropene	5.3	Not Detected	17	Not Detected
Methylene Chloride	13	Not Detected	46	Not Detected
Methyl tert-butyl ether	1.3	Not Detected	4.8	Not Detected
trans-1,2-Dichloroethene	1.3	Not Detected	5.3	Not Detected
Hexane	1.3	Not Detected	4.7	Not Detected
1,1-Dichloroethane	1.3	Not Detected	5.4	Not Detected
2-Butanone (Methyl Ethyl Ketone)	5.3	2.2 J	16	6.6 J
cis-1,2-Dichloroethene	1.3	Not Detected	5.3	Not Detected
Tetrahydrofuran	1.3	Not Detected	3.9	Not Detected
Chloroform	1.3	1.1 J	6.5	5.4 J
1,1,1-Trichloroethane	1.3	Not Detected	7.3	Not Detected
Cyclohexane	1.3	Not Detected	4.6	Not Detected
Carbon Tetrachloride	1.3	Not Detected	8.4	Not Detected
2,2,4-Trimethylpentane	1.3	2.4	6.2	11
Benzene	1.3	0.82 J	4.3	2.6 J
1,2-Dichloroethane	1.3	Not Detected	5.4	Not Detected
Heptane	1.3	Not Detected	5.5	Not Detected
Trichloroethene	1.3	Not Detected	7.2	Not Detected
1,2-Dichloropropane	1.3	Not Detected	6.2	Not Detected
1,4-Dioxane	5.3	Not Detected	19	Not Detected
Bromodichloromethane	1.3	Not Detected	8.9	Not Detected
cis-1,3-Dichloropropene	1.3	Not Detected	6.0	Not Detected
4-Methyl-2-pentanone	1.3	Not Detected	5.5	Not Detected
Toluene	1.3	Not Detected	5.0	Not Detected
trans-1,3-Dichloropropene	1.3	Not Detected	6.0	Not Detected
1,1,2-Trichloroethane	1.3	Not Detected	7.3	Not Detected
Tetrachloroethene	1.3	Not Detected	9.0	Not Detected
2-Hexanone	5.3	Not Detected	22	Not Detected

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Client Sample ID: VMP-15-25.5-050415

Lab ID#: 1505094A-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p050817**	**Date of Collection: 5/4/15 10:13:00 AM**	
Dil. Factor:	**2.67**	**Date of Analysis: 5/8/15 07:34 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.3	Not Detected	11	Not Detected
1,2-Dibromoethane (EDB)	1.3	Not Detected	10	Not Detected
Chlorobenzene	1.3	Not Detected	6.1	Not Detected
Ethyl Benzene	1.3	Not Detected	5.8	Not Detected
m,p-Xylene	1.3	Not Detected	5.8	Not Detected
o-Xylene	1.3	Not Detected	5.8	Not Detected
Styrene	1.3	Not Detected	5.7	Not Detected
Bromoform	1.3	Not Detected	14	Not Detected
Cumene	1.3	Not Detected	6.6	Not Detected
1,1,2,2-Tetrachloroethane	1.3	Not Detected	9.2	Not Detected
Propylbenzene	1.3	Not Detected	6.6	Not Detected
4-Ethyltoluene	1.3	Not Detected	6.6	Not Detected
1,3,5-Trimethylbenzene	1.3	Not Detected	6.6	Not Detected
1,2,4-Trimethylbenzene	1.3	Not Detected	6.6	Not Detected
1,3-Dichlorobenzene	1.3	Not Detected	8.0	Not Detected
1,4-Dichlorobenzene	1.3	Not Detected	8.0	Not Detected
alpha-Chlorotoluene	1.3	Not Detected	6.9	Not Detected
1,2-Dichlorobenzene	1.3	Not Detected	8.0	Not Detected
1,2,4-Trichlorobenzene	5.3	Not Detected	40	Not Detected
Hexachlorobutadiene	5.3	Not Detected UJ	57	Not Detected UJ
Butane	5.3	6.4	13	15
Isopentane	5.3	4.2 J	16	12 J

J = Estimated value.
UJ = Analyte associated with low bias in the CCV and/or LCS.
Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	109	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: VMP-15-29-050415

Lab ID#: 1505094A-09A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j050808**	**Date of Collection:**	**5/4/15 10:35:00 AM**
Dil. Factor:	**2.80**	**Date of Analysis:**	**5/8/15 08:21 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.4	0.50 J	6.9	2.4 J
Freon 114	1.4	Not Detected	9.8	Not Detected
Chloromethane	14	Not Detected	29	Not Detected
Vinyl Chloride	1.4	Not Detected	3.6	Not Detected
1,3-Butadiene	1.4	Not Detected	3.1	Not Detected
Bromomethane	14	Not Detected	54	Not Detected
Chloroethane	5.6	Not Detected	15	Not Detected
Freon 11	1.4	Not Detected	7.9	Not Detected
Ethanol	5.6	2.3 J	10	4.4 J
Freon 113	1.4	Not Detected	11	Not Detected
1,1-Dichloroethene	1.4	Not Detected	5.6	Not Detected
Acetone	14	8.0 J	33	19 J
2-Propanol	5.6	3.1 J	14	7.7 J
Carbon Disulfide	5.6	1.9 J	17	5.9 J
3-Chloropropene	5.6	Not Detected	18	Not Detected
Methylene Chloride	14	Not Detected	49	Not Detected
Methyl tert-butyl ether	1.4	Not Detected	5.0	Not Detected
trans-1,2-Dichloroethene	1.4	Not Detected	5.6	Not Detected
Hexane	1.4	0.81 J	4.9	2.8 J
1,1-Dichloroethane	1.4	Not Detected	5.7	Not Detected
2-Butanone (Methyl Ethyl Ketone)	5.6	2.1 J	16	6.3 J
cis-1,2-Dichloroethene	1.4	Not Detected	5.6	Not Detected
Tetrahydrofuran	1.4	Not Detected	4.1	Not Detected
Chloroform	1.4	1.4 J	6.8	6.7 J
1,1,1-Trichloroethane	1.4	Not Detected	7.6	Not Detected
Cyclohexane	1.4	1.9	4.8	6.4
Carbon Tetrachloride	1.4	Not Detected	8.8	Not Detected
2,2,4-Trimethylpentane	1.4	8.9	6.5	41
Benzene	1.4	3.1	4.5	10
1,2-Dichloroethane	1.4	Not Detected	5.7	Not Detected
Heptane	1.4	Not Detected	5.7	Not Detected
Trichloroethene	1.4	0.44 J	7.5	2.4 J
1,2-Dichloropropane	1.4	Not Detected	6.5	Not Detected
1,4-Dioxane	5.6	Not Detected	20	Not Detected
Bromodichloromethane	1.4	Not Detected	9.4	Not Detected
cis-1,3-Dichloropropene	1.4	Not Detected	6.4	Not Detected
4-Methyl-2-pentanone	1.4	Not Detected	5.7	Not Detected
Toluene	1.4	1.9	5.3	7.1
trans-1,3-Dichloropropene	1.4	Not Detected	6.4	Not Detected
1,1,2-Trichloroethane	1.4	Not Detected	7.6	Not Detected
Tetrachloroethene	1.4	Not Detected	9.5	Not Detected
2-Hexanone	5.6	Not Detected	23	Not Detected

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Client Sample ID: VMP-15-29-050415

Lab ID#: 1505094A-09A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j050808**	**Date of Collection:**	**5/4/15 10:35:00 AM**
Dil. Factor:	**2.80**	**Date of Analysis:**	**5/8/15 08:21 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.4	Not Detected	12	Not Detected
1,2-Dibromoethane (EDB)	1.4	Not Detected	11	Not Detected
Chlorobenzene	1.4	Not Detected	6.4	Not Detected
Ethyl Benzene	1.4	Not Detected	6.1	Not Detected
m,p-Xylene	1.4	0.38 J	6.1	1.6 J
o-Xylene	1.4	Not Detected	6.1	Not Detected
Styrene	1.4	Not Detected	6.0	Not Detected
Bromoform	1.4	Not Detected	14	Not Detected
Cumene	1.4	0.15 J	6.9	0.76 J
1,1,2,2-Tetrachloroethane	1.4	Not Detected	9.6	Not Detected
Propylbenzene	1.4	0.25 J	6.9	1.2 J
4-Ethyltoluene	1.4	0.33 J	6.9	1.6 J
1,3,5-Trimethylbenzene	1.4	0.30 J	6.9	1.5 J
1,2,4-Trimethylbenzene	1.4	0.38 J	6.9	1.9 J
1,3-Dichlorobenzene	1.4	Not Detected	8.4	Not Detected
1,4-Dichlorobenzene	1.4	Not Detected	8.4	Not Detected
alpha-Chlorotoluene	1.4	Not Detected	7.2	Not Detected
1,2-Dichlorobenzene	1.4	Not Detected	8.4	Not Detected
1,2,4-Trichlorobenzene	5.6	Not Detected	42	Not Detected
Hexachlorobutadiene	5.6	Not Detected	60	Not Detected
Butane	5.6	11	13	27
Isopentane	5.6	110	16	320

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	110	70-130
4-Bromofluorobenzene	103	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1505094A-20A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p050809a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/8/15 02:28 PM**	

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	3.8	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Acetone	5.0	Not Detected	12	Not Detected
2-Propanol	2.0	Not Detected	4.9	Not Detected
Carbon Disulfide	2.0	Not Detected	6.2	Not Detected
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	0.25 J	2.3	1.1 J
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

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Client Sample ID: Lab Blank

Lab ID#: 1505094A-20A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p050809a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/8/15 02:28 PM**	

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	Not Detected	2.3	Not Detected
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	Not Detected	2.4	Not Detected
4-Ethyltoluene	0.50	Not Detected	2.4	Not Detected
1,3,5-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,2,4-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,3-Dichlorobenzene	0.50	0.20 J	3.0	1.2 J
1,4-Dichlorobenzene	0.50	0.18 J	3.0	1.1 J
alpha-Chlorotoluene	0.50	Not Detected	2.6	Not Detected
1,2-Dichlorobenzene	0.50	0.16 J	3.0	0.95 J
1,2,4-Trichlorobenzene	2.0	0.62 J	15	4.6 J
Hexachlorobutadiene	2.0	0.18 J	21	1.9 J
Butane	2.0	Not Detected	4.8	Not Detected
Isopentane	2.0	Not Detected	5.9	Not Detected

J = Estimated value.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130
1,2-Dichloroethane-d4	109	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1505094A-20B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j050805c**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/8/15 04:57 PM**	

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	3.8	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Acetone	5.0	Not Detected	12	Not Detected
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

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Client Sample ID: Lab Blank

Lab ID#: 1505094A-20B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j050805c**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/8/15 04:57 PM**	

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	Not Detected	2.3	Not Detected
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	0.20 J	2.4	1.0 J
1,1,2,2-Tetrachloroethane	0.50	Not Detected	3.4	Not Detected
Propylbenzene	0.50	0.14 J	2.4	0.68 J
4-Ethyltoluene	0.50	Not Detected	2.4	Not Detected
1,3,5-Trimethylbenzene	0.50	0.22 J	2.4	1.1 J
1,2,4-Trimethylbenzene	0.50	0.11 J	2.4	0.52 J
1,3-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
alpha-Chlorotoluene	0.50	Not Detected	2.6	Not Detected
1,2-Dichlorobenzene	0.50	0.080 J	3.0	0.48 J
1,2,4-Trichlorobenzene	2.0	Not Detected	15	Not Detected
Hexachlorobutadiene	2.0	Not Detected	21	Not Detected
Butane	2.0	Not Detected	4.8	Not Detected
Isopentane	2.0	Not Detected	5.9	Not Detected

J = Estimated value.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	104	70-130
4-Bromofluorobenzene	97	70-130

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Client Sample ID: CCV

Lab ID#: 1505094A-21A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p050802**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/8/15 09:21 AM**	

Compound	%Recovery
Freon 12	97
Freon 114	90
Chloromethane	113
Vinyl Chloride	101
1,3-Butadiene	95
Bromomethane	109
Chloroethane	111
Freon 11	100
Ethanol	109
Freon 113	97
1,1-Dichloroethene	94
Acetone	101
2-Propanol	115
Carbon Disulfide	108
3-Chloropropene	108
Methylene Chloride	120
Methyl tert-butyl ether	95
trans-1,2-Dichloroethene	90
Hexane	100
1,1-Dichloroethane	105
2-Butanone (Methyl Ethyl Ketone)	118
cis-1,2-Dichloroethene	92
Tetrahydrofuran	121
Chloroform	99
1,1,1-Trichloroethane	90
Cyclohexane	93
Carbon Tetrachloride	92
2,2,4-Trimethylpentane	102
Benzene	102
1,2-Dichloroethane	108
Heptane	106
Trichloroethene	97
1,2-Dichloropropane	107
1,4-Dioxane	99
Bromodichloromethane	98
cis-1,3-Dichloropropene	100
4-Methyl-2-pentanone	89
Toluene	96
trans-1,3-Dichloropropene	101
1,1,2-Trichloroethane	100
Tetrachloroethene	99
2-Hexanone	91

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Client Sample ID: CCV

Lab ID#: 1505094A-21A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p050802**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/8/15 09:21 AM**	

Compound	%Recovery
Dibromochloromethane	98
1,2-Dibromoethane (EDB)	100
Chlorobenzene	101
Ethyl Benzene	96
m,p-Xylene	96
o-Xylene	96
Styrene	103
Bromoform	96
Cumene	91
1,1,2,2-Tetrachloroethane	100
Propylbenzene	93
4-Ethyltoluene	93
1,3,5-Trimethylbenzene	93
1,2,4-Trimethylbenzene	94
1,3-Dichlorobenzene	91
1,4-Dichlorobenzene	89
alpha-Chlorotoluene	96
1,2-Dichlorobenzene	90
1,2,4-Trichlorobenzene	78
Hexachlorobutadiene	66 Q
Butane	86
Isopentane	123

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	96	70-130
1,2-Dichloroethane-d4	103	70-130
4-Bromofluorobenzene	92	70-130

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Client Sample ID: CCV

Lab ID#: 1505094A-21B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j050802**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/8/15 03:06 PM**	

Compound	%Recovery
Freon 12	106
Freon 114	104
Chloromethane	103
Vinyl Chloride	100
1,3-Butadiene	98
Bromomethane	104
Chloroethane	103
Freon 11	102
Ethanol	96
Freon 113	99
1,1-Dichloroethene	99
Acetone	100
2-Propanol	107
Carbon Disulfide	101
3-Chloropropene	106
Methylene Chloride	101
Methyl tert-butyl ether	109
trans-1,2-Dichloroethene	102
Hexane	107
1,1-Dichloroethane	100
2-Butanone (Methyl Ethyl Ketone)	108
cis-1,2-Dichloroethene	104
Tetrahydrofuran	109
Chloroform	104
1,1,1-Trichloroethane	104
Cyclohexane	110
Carbon Tetrachloride	102
2,2,4-Trimethylpentane	101
Benzene	103
1,2-Dichloroethane	100
Heptane	105
Trichloroethene	111
1,2-Dichloropropane	100
1,4-Dioxane	111
Bromodichloromethane	99
cis-1,3-Dichloropropene	106
4-Methyl-2-pentanone	117
Toluene	105
trans-1,3-Dichloropropene	104
1,1,2-Trichloroethane	100
Tetrachloroethene	101
2-Hexanone	114

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Client Sample ID: CCV

Lab ID#: 1505094A-21B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j050802**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/8/15 03:06 PM**	

Compound	%Recovery
Dibromochloromethane	100
1,2-Dibromoethane (EDB)	100
Chlorobenzene	102
Ethyl Benzene	110
m,p-Xylene	110
o-Xylene	114
Styrene	116
Bromoform	104
Cumene	107
1,1,2,2-Tetrachloroethane	92
Propylbenzene	111
4-Ethyltoluene	114
1,3,5-Trimethylbenzene	109
1,2,4-Trimethylbenzene	113
1,3-Dichlorobenzene	111
1,4-Dichlorobenzene	110
alpha-Chlorotoluene	116
1,2-Dichlorobenzene	110
1,2,4-Trichlorobenzene	119
Hexachlorobutadiene	110
Butane	99
Isopentane	101

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130
1,2-Dichloroethane-d4	105	70-130
4-Bromofluorobenzene	105	70-130

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Client Sample ID: LCS

Lab ID#: 1505094A-22A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p050806**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/8/15 12:45 PM**	

Compound	%Recovery	Method Limits
Freon 12	113	70-130
Freon 114	105	70-130
Chloromethane	122	70-130
Vinyl Chloride	110	70-130
1,3-Butadiene	106	70-130
Bromomethane	116	70-130
Chloroethane	128	70-130
Freon 11	109	70-130
Ethanol	121	70-130
Freon 113	99	70-130
1,1-Dichloroethene	97	70-130
Acetone	110	70-130
2-Propanol	123	70-130
Carbon Disulfide	94	70-130
3-Chloropropene	106	70-130
Methylene Chloride	122	70-130
Methyl tert-butyl ether	98	70-130
trans-1,2-Dichloroethene	83	70-130
Hexane	102	70-130
1,1-Dichloroethane	110	70-130
2-Butanone (Methyl Ethyl Ketone)	107	70-130
cis-1,2-Dichloroethene	106	70-130
Tetrahydrofuran	121	70-130
Chloroform	102	70-130
1,1,1-Trichloroethane	93	70-130
Cyclohexane	96	70-130
Carbon Tetrachloride	96	70-130
2,2,4-Trimethylpentane	108	70-130
Benzene	107	70-130
1,2-Dichloroethane	111	70-130
Heptane	110	70-130
Trichloroethene	104	70-130
1,2-Dichloropropane	115	70-130
1,4-Dioxane	103	70-130
Bromodichloromethane	104	70-130
cis-1,3-Dichloropropene	100	70-130
4-Methyl-2-pentanone	94	70-130
Toluene	102	70-130
trans-1,3-Dichloropropene	100	70-130
1,1,2-Trichloroethane	99	70-130
Tetrachloroethene	97	70-130
2-Hexanone	92	70-130

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Client Sample ID: LCS

Lab ID#: 1505094A-22A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p050806**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/8/15 12:45 PM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	99	70-130
1,2-Dibromoethane (EDB)	97	70-130
Chlorobenzene	97	70-130
Ethyl Benzene	96	70-130
m,p-Xylene	96	70-130
o-Xylene	96	70-130
Styrene	102	70-130
Bromoform	95	70-130
Cumene	90	70-130
1,1,2,2-Tetrachloroethane	96	70-130
Propylbenzene	93	70-130
4-Ethyltoluene	91	70-130
1,3,5-Trimethylbenzene	91	70-130
1,2,4-Trimethylbenzene	92	70-130
1,3-Dichlorobenzene	88	70-130
1,4-Dichlorobenzene	89	70-130
alpha-Chlorotoluene	95	70-130
1,2-Dichlorobenzene	88	70-130
1,2,4-Trichlorobenzene	74	70-130
Hexachlorobutadiene	63 Q	70-130
Butane	114	60-140
Isopentane	131	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	100	70-130
4-Bromofluorobenzene	91	70-130

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Client Sample ID: LCSD

Lab ID#: 1505094A-22AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p050807**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/8/15 01:28 PM**	

Compound	%Recovery	Method Limits
Freon 12	111	70-130
Freon 114	109	70-130
Chloromethane	115	70-130
Vinyl Chloride	112	70-130
1,3-Butadiene	103	70-130
Bromomethane	118	70-130
Chloroethane	126	70-130
Freon 11	116	70-130
Ethanol	114	70-130
Freon 113	110	70-130
1,1-Dichloroethene	98	70-130
Acetone	110	70-130
2-Propanol	124	70-130
Carbon Disulfide	96	70-130
3-Chloropropene	104	70-130
Methylene Chloride	121	70-130
Methyl tert-butyl ether	102	70-130
trans-1,2-Dichloroethene	86	70-130
Hexane	98	70-130
1,1-Dichloroethane	106	70-130
2-Butanone (Methyl Ethyl Ketone)	109	70-130
cis-1,2-Dichloroethene	103	70-130
Tetrahydrofuran	118	70-130
Chloroform	104	70-130
1,1,1-Trichloroethane	96	70-130
Cyclohexane	100	70-130
Carbon Tetrachloride	102	70-130
2,2,4-Trimethylpentane	107	70-130
Benzene	103	70-130
1,2-Dichloroethane	106	70-130
Heptane	99	70-130
Trichloroethene	101	70-130
1,2-Dichloropropane	105	70-130
1,4-Dioxane	97	70-130
Bromodichloromethane	99	70-130
cis-1,3-Dichloropropene	97	70-130
4-Methyl-2-pentanone	88	70-130
Toluene	101	70-130
trans-1,3-Dichloropropene	100	70-130
1,1,2-Trichloroethane	98	70-130
Tetrachloroethene	102	70-130
2-Hexanone	90	70-130

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Client Sample ID: LCSD

Lab ID#: 1505094A-22AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p050807**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/8/15 01:28 PM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	100	70-130
1,2-Dibromoethane (EDB)	102	70-130
Chlorobenzene	102	70-130
Ethyl Benzene	99	70-130
m,p-Xylene	97	70-130
o-Xylene	103	70-130
Styrene	106	70-130
Bromoform	100	70-130
Cumene	93	70-130
1,1,2,2-Tetrachloroethane	99	70-130
Propylbenzene	96	70-130
4-Ethyltoluene	99	70-130
1,3,5-Trimethylbenzene	96	70-130
1,2,4-Trimethylbenzene	96	70-130
1,3-Dichlorobenzene	95	70-130
1,4-Dichlorobenzene	95	70-130
alpha-Chlorotoluene	99	70-130
1,2-Dichlorobenzene	95	70-130
1,2,4-Trichlorobenzene	82	70-130
Hexachlorobutadiene	72	70-130
Butane	106	60-140
Isopentane	132	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	104	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: LCS

Lab ID#: 1505094A-22B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j050803**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/8/15 03:46 PM**	

Compound	%Recovery	Method Limits
Freon 12	109	70-130
Freon 114	111	70-130
Chloromethane	106	70-130
Vinyl Chloride	104	70-130
1,3-Butadiene	95	70-130
Bromomethane	104	70-130
Chloroethane	108	70-130
Freon 11	107	70-130
Ethanol	97	70-130
Freon 113	101	70-130
1,1-Dichloroethene	100	70-130
Acetone	96	70-130
2-Propanol	109	70-130
Carbon Disulfide	90	70-130
3-Chloropropene	98	70-130
Methylene Chloride	101	70-130
Methyl tert-butyl ether	101	70-130
trans-1,2-Dichloroethene	88	70-130
Hexane	103	70-130
1,1-Dichloroethane	101	70-130
2-Butanone (Methyl Ethyl Ketone)	104	70-130
cis-1,2-Dichloroethene	111	70-130
Tetrahydrofuran	102	70-130
Chloroform	103	70-130
1,1,1-Trichloroethane	104	70-130
Cyclohexane	111	70-130
Carbon Tetrachloride	106	70-130
2,2,4-Trimethylpentane	106	70-130
Benzene	107	70-130
1,2-Dichloroethane	106	70-130
Heptane	110	70-130
Trichloroethene	102	70-130
1,2-Dichloropropane	104	70-130
1,4-Dioxane	111	70-130
Bromodichloromethane	105	70-130
cis-1,3-Dichloropropene	100	70-130
4-Methyl-2-pentanone	120	70-130
Toluene	109	70-130
trans-1,3-Dichloropropene	101	70-130
1,1,2-Trichloroethane	100	70-130
Tetrachloroethene	104	70-130
2-Hexanone	110	70-130

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Client Sample ID: LCS

Lab ID#: 1505094A-22B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j050803**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/8/15 03:46 PM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	103	70-130
1,2-Dibromoethane (EDB)	102	70-130
Chlorobenzene	104	70-130
Ethyl Benzene	108	70-130
m,p-Xylene	111	70-130
o-Xylene	115	70-130
Styrene	123	70-130
Bromoform	106	70-130
Cumene	113	70-130
1,1,2,2-Tetrachloroethane	107	70-130
Propylbenzene	116	70-130
4-Ethyltoluene	112	70-130
1,3,5-Trimethylbenzene	118	70-130
1,2,4-Trimethylbenzene	119	70-130
1,3-Dichlorobenzene	114	70-130
1,4-Dichlorobenzene	114	70-130
alpha-Chlorotoluene	113	70-130
1,2-Dichlorobenzene	113	70-130
1,2,4-Trichlorobenzene	123	70-130
Hexachlorobutadiene	120	70-130
Butane	102	60-140
Isopentane	101	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	106	70-130
1,2-Dichloroethane-d4	99	70-130
4-Bromofluorobenzene	104	70-130

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Client Sample ID: LCSD

Lab ID#: 1505094A-22BB

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j050804**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/8/15 04:13 PM**	

Compound	%Recovery	Method Limits
Freon 12	112	70-130
Freon 114	110	70-130
Chloromethane	107	70-130
Vinyl Chloride	105	70-130
1,3-Butadiene	102	70-130
Bromomethane	106	70-130
Chloroethane	107	70-130
Freon 11	110	70-130
Ethanol	102	70-130
Freon 113	102	70-130
1,1-Dichloroethene	101	70-130
Acetone	100	70-130
2-Propanol	114	70-130
Carbon Disulfide	92	70-130
3-Chloropropene	102	70-130
Methylene Chloride	106	70-130
Methyl tert-butyl ether	105	70-130
trans-1,2-Dichloroethene	91	70-130
Hexane	105	70-130
1,1-Dichloroethane	105	70-130
2-Butanone (Methyl Ethyl Ketone)	108	70-130
cis-1,2-Dichloroethene	114	70-130
Tetrahydrofuran	107	70-130
Chloroform	106	70-130
1,1,1-Trichloroethane	108	70-130
Cyclohexane	111	70-130
Carbon Tetrachloride	109	70-130
2,2,4-Trimethylpentane	107	70-130
Benzene	108	70-130
1,2-Dichloroethane	104	70-130
Heptane	109	70-130
Trichloroethene	104	70-130
1,2-Dichloropropane	104	70-130
1,4-Dioxane	112	70-130
Bromodichloromethane	106	70-130
cis-1,3-Dichloropropene	99	70-130
4-Methyl-2-pentanone	116	70-130
Toluene	106	70-130
trans-1,3-Dichloropropene	104	70-130
1,1,2-Trichloroethane	102	70-130
Tetrachloroethene	107	70-130
2-Hexanone	107	70-130

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Client Sample ID: LCSD

Lab ID#: 1505094A-22BB

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j050804**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/8/15 04:13 PM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	105	70-130
1,2-Dibromoethane (EDB)	102	70-130
Chlorobenzene	104	70-130
Ethyl Benzene	112	70-130
m,p-Xylene	116	70-130
o-Xylene	118	70-130
Styrene	123	70-130
Bromoform	110	70-130
Cumene	115	70-130
1,1,2,2-Tetrachloroethane	108	70-130
Propylbenzene	117	70-130
4-Ethyltoluene	118	70-130
1,3,5-Trimethylbenzene	119	70-130
1,2,4-Trimethylbenzene	117	70-130
1,3-Dichlorobenzene	114	70-130
1,4-Dichlorobenzene	116	70-130
alpha-Chlorotoluene	114	70-130
1,2-Dichlorobenzene	116	70-130
1,2,4-Trichlorobenzene	123	70-130
Hexachlorobutadiene	122	70-130
Butane	111	60-140
Isopentane	103	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	103	70-130

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5/18/2015
Ms. Elizabeth Kunkel
URS Corporation
1001 Highlands Plaza Dr. West
Suite 300
St. Louis MO 63110

Project Name: Roxana Soil Vapor
Project #: 21563720.04202
Workorder #: 1505094B

Dear Ms. Elizabeth Kunkel

The following report includes the data for the above referenced project for sample(s) received on 5/5/2015 at Air Toxics Ltd.

The data and associated QC analyzed by Modified ASTM D-1946 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

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

Regards,

Kelly Buettner

Project Manager

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WORK ORDER #: 1505094B

Work Order Summary

CLIENT:	Ms. Elizabeth Kunkel AECOM 1001 Highlands Plaza Dr. West Suite 300 St. Louis, MO 63110	**BILL TO:**	Accounts Payable Austin AECOM P.O. BOX 203970 Austin, TX 78720-1088
PHONE:	314-743-4179	**P.O. #**	87243.UB
FAX:		**PROJECT #**	21563720.04202 Roxana Soil Vapor
DATE RECEIVED:	05/05/2015	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	05/18/2015		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
06A	VMP-15-5-050415	Modified ASTM D-1946	5.1 "Hg	14.8 psi
07A	VMP-15-21.5-050415	Modified ASTM D-1946	5.7 "Hg	15 psi
08A	VMP-15-25.5-050415	Modified ASTM D-1946	7.3 "Hg	15 psi
09A	VMP-15-29-050415	Modified ASTM D-1946	8.6 "Hg	14.7 psi
20A	Lab Blank	Modified ASTM D-1946	NA	NA
20B	Lab Blank	Modified ASTM D-1946	NA	NA
21A	LCS	Modified ASTM D-1946	NA	NA
21AA	LCSD	Modified ASTM D-1946	NA	NA

CERTIFIED BY: Heidi Mayo DATE: 05/18/15

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704343-14-7, UT NELAP CA009332014-5, VA NELAP - 460197, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2014, Expiration date: 10/17/2015.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

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

LABORATORY NARRATIVE
Modified ASTM D-1946
URS Corporation
Workorder# 1505094B

Nineteen 1 Liter Summa Canister samples were received on May 05, 2015. 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

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

Client Sample ID: VMP-15-5-050415

Lab ID#: 1505094B-06A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.24	14
Nitrogen	0.24	82
Carbon Dioxide	0.024	3.5
Helium	0.12	0.20

Client Sample ID: VMP-15-21.5-050415

Lab ID#: 1505094B-07A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.25	5.1
Nitrogen	0.25	86
Carbon Dioxide	0.025	8.8
Helium	0.12	0.24

Client Sample ID: VMP-15-25.5-050415

Lab ID#: 1505094B-08A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.27	4.6
Nitrogen	0.27	83
Methane	0.00027	0.00026 J
Carbon Dioxide	0.027	12

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

Client Sample ID: VMP-15-25.5-050415

Lab ID#: 1505094B-08A

Helium	0.13	0.19

Client Sample ID: VMP-15-29-050415

Lab ID#: 1505094B-09A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.28	5.0
Nitrogen	0.28	83
Methane	0.00028	0.00023 J
Carbon Dioxide	0.028	12

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Client Sample ID: VMP-15-5-050415

Lab ID#: 1505094B-06A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10051511**	**Date of Collection: 5/4/15 9:14:00 AM**	
Dil. Factor:	**2.42**	**Date of Analysis: 5/15/15 03:41 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.24	14
Nitrogen	0.24	82
Carbon Monoxide	0.024	Not Detected
Methane	0.00024	Not Detected
Carbon Dioxide	0.024	3.5
Ethane	0.0024	Not Detected
Ethene	0.0024	Not Detected
Helium	0.12	0.20

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-15-21.5-050415

Lab ID#: 1505094B-07A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10051512**	**Date of Collection: 5/4/15 9:40:00 AM**	
Dil. Factor:	**2.50**	**Date of Analysis: 5/15/15 04:04 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.25	5.1
Nitrogen	0.25	86
Carbon Monoxide	0.025	Not Detected
Methane	0.00025	Not Detected
Carbon Dioxide	0.025	8.8
Ethane	0.0025	Not Detected
Ethene	0.0025	Not Detected
Helium	0.12	0.24

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-15-25.5-050415

Lab ID#: 1505094B-08A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10051513**	**Date of Collection: 5/4/15 10:13:00 AM**	
Dil. Factor:	**2.68**	**Date of Analysis: 5/15/15 04:30 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.27	4.6
Nitrogen	0.27	83
Carbon Monoxide	0.027	Not Detected
Methane	0.00027	0.00026 J
Carbon Dioxide	0.027	12
Ethane	0.0027	Not Detected
Ethene	0.0027	Not Detected
Helium	0.13	0.19

J = Estimated value.

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-15-29-050415

Lab ID#: 1505094B-09A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10051514**	**Date of Collection: 5/4/15 10:35:00 AM**	
Dil. Factor:	**2.80**	**Date of Analysis: 5/15/15 04:53 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.28	5.0
Nitrogen	0.28	83
Carbon Monoxide	0.028	Not Detected
Methane	0.00028	0.00023 J
Carbon Dioxide	0.028	12
Ethane	0.0028	Not Detected
Ethene	0.0028	Not Detected
Helium	0.14	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister

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Client Sample ID: Lab Blank

Lab ID#: 1505094B-20A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10051504**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/15/15 12:15 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.10	Not Detected
Nitrogen	0.10	Not Detected
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

Container Type: NA - Not Applicable

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Client Sample ID: Lab Blank

Lab ID#: 1505094B-20B

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10051503c**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/15/15 11:42 AM**	

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

Container Type: NA - Not Applicable

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Client Sample ID: LCS

Lab ID#: 1505094B-21A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10051502**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/15/15 11:11 AM**	

Compound	%Recovery	Method Limits
Oxygen	100	85-115
Nitrogen	92	85-115
Carbon Monoxide	93	85-115
Methane	104	85-115
Carbon Dioxide	98	85-115
Ethane	102	85-115
Ethene	103	85-115
Helium	103	85-115

Container Type: NA - Not Applicable

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Client Sample ID: LCSD

Lab ID#: 1505094B-21AA

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10051525**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/15/15 09:14 PM**	

Compound	%Recovery	Method Limits
Oxygen	99	85-115
Nitrogen	92	85-115
Carbon Monoxide	94	85-115
Methane	103	85-115
Carbon Dioxide	98	85-115
Ethane	102	85-115
Ethene	103	85-115
Helium	102	85-115

Container Type: NA - Not Applicable

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5/19/2015
Ms. Elizabeth Kunkel
URS Corporation
1001 Highlands Plaza Dr. West
Suite 300
St. Louis MO 63110

Project Name: Roxana Soil Vapor
Project #: 21563720.04202
Workorder #: 1505127A

Dear Ms. Elizabeth Kunkel

The following report includes the data for the above referenced project for sample(s) received on 5/7/2015 at Air Toxics Ltd.

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

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

Regards,

Kelly Buettner

Project Manager

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WORK ORDER #: 1505127A

Work Order Summary

CLIENT:	Ms. Elizabeth Kunkel AECOM 1001 Highlands Plaza Dr. West Suite 300 St. Louis, MO 63110	**BILL TO:**	Accounts Payable Austin AECOM P.O. BOX 203970 Austin, TX 78720-1088
PHONE:	314-743-4179	**P.O. #**	87243.UB
FAX:		**PROJECT #**	21563720.04202 Roxana Soil Vapor
DATE RECEIVED:	05/07/2015	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	05/19/2015		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
05A	VMP-55-5-050615	TO-15	5.9 "Hg	15 psi
09A	Lab Blank	TO-15	NA	NA
10A	CCV	TO-15	NA	NA
11A	LCS	TO-15	NA	NA
11AA	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Mayo DATE: 05/19/15

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704343-14-7, UT NELAP CA009332014-5, VA NELAP - 460197, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2014, Expiration date: 10/17/2015.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

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

LABORATORY NARRATIVE
EPA Method TO-15
URS Corporation
Workorder# 1505127A

Eight 1 Liter Summa Canister samples were received on May 07, 2015. 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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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: VMP-55-5-050615

Lab ID#: 1505127A-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.3	0.38 J	6.2	1.9 J
Acetone	13	1.1 J	30	2.7 J
2-Propanol	5.0	3.0 J	12	7.5 J
Hexane	1.3	0.46 J	4.4	1.6 J
2,2,4-Trimethylpentane	1.3	0.48 J	5.9	2.2 J

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Client Sample ID: VMP-55-5-050615

Lab ID#: 1505127A-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p051416**	**Date of Collection:**	**5/6/15 12:09:00 PM**
Dil. Factor:	**2.52**	**Date of Analysis:**	**5/14/15 08:07 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.3	0.38 J	6.2	1.9 J
Freon 114	1.3	Not Detected	8.8	Not Detected
Chloromethane	13	Not Detected	26	Not Detected
Vinyl Chloride	1.3	Not Detected	3.2	Not Detected
1,3-Butadiene	1.3	Not Detected	2.8	Not Detected
Bromomethane	13	Not Detected	49	Not Detected
Chloroethane	5.0	Not Detected	13	Not Detected
Freon 11	1.3	Not Detected	7.1	Not Detected
Ethanol	5.0	Not Detected	9.5	Not Detected
Freon 113	1.3	Not Detected	9.6	Not Detected
1,1-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Acetone	13	1.1 J	30	2.7 J
2-Propanol	5.0	3.0 J	12	7.5 J
Carbon Disulfide	5.0	Not Detected	16	Not Detected
3-Chloropropene	5.0	Not Detected	16	Not Detected
Methylene Chloride	13	Not Detected	44	Not Detected
Methyl tert-butyl ether	1.3	Not Detected	4.5	Not Detected
trans-1,2-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Hexane	1.3	0.46 J	4.4	1.6 J
1,1-Dichloroethane	1.3	Not Detected	5.1	Not Detected
2-Butanone (Methyl Ethyl Ketone)	5.0	Not Detected	15	Not Detected
cis-1,2-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Tetrahydrofuran	1.3	Not Detected	3.7	Not Detected
Chloroform	1.3	Not Detected	6.2	Not Detected
1,1,1-Trichloroethane	1.3	Not Detected	6.9	Not Detected
Cyclohexane	1.3	Not Detected	4.3	Not Detected
Carbon Tetrachloride	1.3	Not Detected	7.9	Not Detected
2,2,4-Trimethylpentane	1.3	0.48 J	5.9	2.2 J
Benzene	1.3	Not Detected	4.0	Not Detected
1,2-Dichloroethane	1.3	Not Detected	5.1	Not Detected
Heptane	1.3	Not Detected	5.2	Not Detected
Trichloroethene	1.3	Not Detected	6.8	Not Detected
1,2-Dichloropropane	1.3	Not Detected	5.8	Not Detected
1,4-Dioxane	5.0	Not Detected	18	Not Detected
Bromodichloromethane	1.3	Not Detected	8.4	Not Detected
cis-1,3-Dichloropropene	1.3	Not Detected	5.7	Not Detected
4-Methyl-2-pentanone	1.3	Not Detected	5.2	Not Detected
Toluene	1.3	Not Detected	4.7	Not Detected
trans-1,3-Dichloropropene	1.3	Not Detected	5.7	Not Detected
1,1,2-Trichloroethane	1.3	Not Detected	6.9	Not Detected
Tetrachloroethene	1.3	Not Detected	8.5	Not Detected
2-Hexanone	5.0	Not Detected	21	Not Detected

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Client Sample ID: VMP-55-5-050615

Lab ID#: 1505127A-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p051416**	**Date of Collection: 5/6/15 12:09:00 PM**	
Dil. Factor:	**2.52**	**Date of Analysis: 5/14/15 08:07 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.3	Not Detected	11	Not Detected
1,2-Dibromoethane (EDB)	1.3	Not Detected	9.7	Not Detected
Chlorobenzene	1.3	Not Detected	5.8	Not Detected
Ethyl Benzene	1.3	Not Detected	5.5	Not Detected
m,p-Xylene	1.3	Not Detected	5.5	Not Detected
o-Xylene	1.3	Not Detected	5.5	Not Detected
Styrene	1.3	Not Detected	5.4	Not Detected
Bromoform	1.3	Not Detected	13	Not Detected
Cumene	1.3	Not Detected	6.2	Not Detected
1,1,2,2-Tetrachloroethane	1.3	Not Detected	8.6	Not Detected
Propylbenzene	1.3	Not Detected	6.2	Not Detected
4-Ethyltoluene	1.3	Not Detected	6.2	Not Detected
1,3,5-Trimethylbenzene	1.3	Not Detected	6.2	Not Detected
1,2,4-Trimethylbenzene	1.3	Not Detected	6.2	Not Detected
1,3-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
1,4-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
alpha-Chlorotoluene	1.3	Not Detected	6.5	Not Detected
1,2-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
1,2,4-Trichlorobenzene	5.0	Not Detected	37	Not Detected
Hexachlorobutadiene	5.0	Not Detected	54	Not Detected
Butane	5.0	Not Detected	12	Not Detected
Isopentane	5.0	Not Detected	15	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	109	70-130
4-Bromofluorobenzene	92	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1505127A-09A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p051405**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/14/15 12:40 PM**	

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	0.94 J	3.8	1.8 J
Freon 113	0.50	Not Detected	3.8	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Acetone	5.0	Not Detected	12	Not Detected
2-Propanol	2.0	Not Detected	4.9	Not Detected
Carbon Disulfide	2.0	Not Detected	6.2	Not Detected
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	0.10 J	2.3	0.46 J
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

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Client Sample ID: Lab Blank

Lab ID#: 1505127A-09A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p051405**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/14/15 12:40 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	0.50	0.083 J	4.2	0.71 J
1,2-Dibromoethane (EDB)	0.50	Not Detected	3.8	Not Detected
Chlorobenzene	0.50	Not Detected	2.3	Not Detected
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	0.11 J	2.2	0.50 J
Styrene	0.50	0.086 J	2.1	0.36 J
Bromoform	0.50	0.091 J	5.2	0.94 J
Cumene	0.50	0.079 J	2.4	0.39 J
1,1,2,2-Tetrachloroethane	0.50	0.13 J	3.4	0.92 J
Propylbenzene	0.50	0.12 J	2.4	0.60 J
4-Ethyltoluene	0.50	Not Detected	2.4	Not Detected
1,3,5-Trimethylbenzene	0.50	0.10 J	2.4	0.52 J
1,2,4-Trimethylbenzene	0.50	0.14 J	2.4	0.69 J
1,3-Dichlorobenzene	0.50	0.21 J	3.0	1.3 J
1,4-Dichlorobenzene	0.50	0.29 J	3.0	1.7 J
alpha-Chlorotoluene	0.50	0.27 J	2.6	1.4 J
1,2-Dichlorobenzene	0.50	0.24 J	3.0	1.4 J
1,2,4-Trichlorobenzene	2.0	0.91 J	15	6.8 J
Hexachlorobutadiene	2.0	0.39 J	21	4.2 J
Butane	2.0	Not Detected	4.8	Not Detected
Isopentane	2.0	Not Detected	5.9	Not Detected

J = Estimated value.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130
1,2-Dichloroethane-d4	97	70-130
4-Bromofluorobenzene	104	70-130

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Client Sample ID: CCV

Lab ID#: 1505127A-10A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p051402**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 5/14/15 10:51 AM**

Compound	%Recovery
Freon 12	113
Freon 114	104
Chloromethane	123
Vinyl Chloride	108
1,3-Butadiene	100
Bromomethane	112
Chloroethane	104
Freon 11	104
Ethanol	103
Freon 113	96
1,1-Dichloroethene	92
Acetone	100
2-Propanol	116
Carbon Disulfide	103
3-Chloropropene	104
Methylene Chloride	118
Methyl tert-butyl ether	96
trans-1,2-Dichloroethene	91
Hexane	100
1,1-Dichloroethane	105
2-Butanone (Methyl Ethyl Ketone)	101
cis-1,2-Dichloroethene	92
Tetrahydrofuran	121
Chloroform	100
1,1,1-Trichloroethane	94
Cyclohexane	92
Carbon Tetrachloride	94
2,2,4-Trimethylpentane	104
Benzene	99
1,2-Dichloroethane	109
Heptane	99
Trichloroethene	97
1,2-Dichloropropane	108
1,4-Dioxane	96
Bromodichloromethane	99
cis-1,3-Dichloropropene	101
4-Methyl-2-pentanone	87
Toluene	97
trans-1,3-Dichloropropene	98
1,1,2-Trichloroethane	98
Tetrachloroethene	93
2-Hexanone	84

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Client Sample ID: CCV

Lab ID#: 1505127A-10A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p051402**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/14/15 10:51 AM**	

Compound	%Recovery
Dibromochloromethane	97
1,2-Dibromoethane (EDB)	97
Chlorobenzene	96
Ethyl Benzene	95
m,p-Xylene	95
o-Xylene	96
Styrene	102
Bromoform	94
Cumene	92
1,1,2,2-Tetrachloroethane	97
Propylbenzene	93
4-Ethyltoluene	94
1,3,5-Trimethylbenzene	95
1,2,4-Trimethylbenzene	95
1,3-Dichlorobenzene	93
1,4-Dichlorobenzene	92
alpha-Chlorotoluene	99
1,2-Dichlorobenzene	94
1,2,4-Trichlorobenzene	85
Hexachlorobutadiene	70
Butane	102
Isopentane	125

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	118	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: LCS

Lab ID#: 1505127A-11A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p051403**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/14/15 11:29 AM**	

Compound	%Recovery	Method Limits
Freon 12	120	70-130
Freon 114	107	70-130
Chloromethane	139 Q	70-130
Vinyl Chloride	122	70-130
1,3-Butadiene	117	70-130
Bromomethane	123	70-130
Chloroethane	130	70-130
Freon 11	123	70-130
Ethanol	124	70-130
Freon 113	110	70-130
1,1-Dichloroethene	101	70-130
Acetone	116	70-130
2-Propanol	137 Q	70-130
Carbon Disulfide	104	70-130
3-Chloropropene	113	70-130
Methylene Chloride	133 Q	70-130
Methyl tert-butyl ether	108	70-130
trans-1,2-Dichloroethene	85	70-130
Hexane	109	70-130
1,1-Dichloroethane	116	70-130
2-Butanone (Methyl Ethyl Ketone)	121	70-130
cis-1,2-Dichloroethene	110	70-130
Tetrahydrofuran	134 Q	70-130
Chloroform	109	70-130
1,1,1-Trichloroethane	108	70-130
Cyclohexane	101	70-130
Carbon Tetrachloride	109	70-130
2,2,4-Trimethylpentane	121	70-130
Benzene	113	70-130
1,2-Dichloroethane	119	70-130
Heptane	112	70-130
Trichloroethene	112	70-130
1,2-Dichloropropane	115	70-130
1,4-Dioxane	97	70-130
Bromodichloromethane	109	70-130
cis-1,3-Dichloropropene	106	70-130
4-Methyl-2-pentanone	98	70-130
Toluene	108	70-130
trans-1,3-Dichloropropene	116	70-130
1,1,2-Trichloroethane	109	70-130
Tetrachloroethene	104	70-130
2-Hexanone	101	70-130

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Client Sample ID: LCS

Lab ID#: 1505127A-11A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p051403**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/14/15 11:29 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	110	70-130
1,2-Dibromoethane (EDB)	112	70-130
Chlorobenzene	109	70-130
Ethyl Benzene	105	70-130
m,p-Xylene	111	70-130
o-Xylene	110	70-130
Styrene	119	70-130
Bromoform	107	70-130
Cumene	105	70-130
1,1,2,2-Tetrachloroethane	108	70-130
Propylbenzene	109	70-130
4-Ethyltoluene	107	70-130
1,3,5-Trimethylbenzene	111	70-130
1,2,4-Trimethylbenzene	110	70-130
1,3-Dichlorobenzene	110	70-130
1,4-Dichlorobenzene	109	70-130
alpha-Chlorotoluene	116	70-130
1,2-Dichlorobenzene	109	70-130
1,2,4-Trichlorobenzene	100	70-130
Hexachlorobutadiene	86	70-130
Butane	129	60-140
Isopentane	146 Q	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	111	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: LCSD

Lab ID#: 1505127A-11AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p051404**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/14/15 11:52 AM**	

Compound	%Recovery	Method Limits
Freon 12	109	70-130
Freon 114	95	70-130
Chloromethane	119	70-130
Vinyl Chloride	101	70-130
1,3-Butadiene	93	70-130
Bromomethane	104	70-130
Chloroethane	109	70-130
Freon 11	106	70-130
Ethanol	105	70-130
Freon 113	100	70-130
1,1-Dichloroethene	95	70-130
Acetone	96	70-130
2-Propanol	121	70-130
Carbon Disulfide	92	70-130
3-Chloropropene	103	70-130
Methylene Chloride	120	70-130
Methyl tert-butyl ether	97	70-130
trans-1,2-Dichloroethene	78	70-130
Hexane	96	70-130
1,1-Dichloroethane	105	70-130
2-Butanone (Methyl Ethyl Ketone)	107	70-130
cis-1,2-Dichloroethene	100	70-130
Tetrahydrofuran	118	70-130
Chloroform	103	70-130
1,1,1-Trichloroethane	101	70-130
Cyclohexane	103	70-130
Carbon Tetrachloride	101	70-130
2,2,4-Trimethylpentane	112	70-130
Benzene	111	70-130
1,2-Dichloroethane	121	70-130
Heptane	111	70-130
Trichloroethene	111	70-130
1,2-Dichloropropane	119	70-130
1,4-Dioxane	108	70-130
Bromodichloromethane	117	70-130
cis-1,3-Dichloropropene	109	70-130
4-Methyl-2-pentanone	99	70-130
Toluene	112	70-130
trans-1,3-Dichloropropene	103	70-130
1,1,2-Trichloroethane	104	70-130
Tetrachloroethene	103	70-130
2-Hexanone	92	70-130

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Client Sample ID: LCSD

Lab ID#: 1505127A-11AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p051404**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/14/15 11:52 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	106	70-130
1,2-Dibromoethane (EDB)	108	70-130
Chlorobenzene	108	70-130
Ethyl Benzene	103	70-130
m,p-Xylene	107	70-130
o-Xylene	109	70-130
Styrene	114	70-130
Bromoform	112	70-130
Cumene	105	70-130
1,1,2,2-Tetrachloroethane	108	70-130
Propylbenzene	106	70-130
4-Ethyltoluene	110	70-130
1,3,5-Trimethylbenzene	108	70-130
1,2,4-Trimethylbenzene	107	70-130
1,3-Dichlorobenzene	109	70-130
1,4-Dichlorobenzene	106	70-130
alpha-Chlorotoluene	112	70-130
1,2-Dichlorobenzene	109	70-130
1,2,4-Trichlorobenzene	109	70-130
Hexachlorobutadiene	87	70-130
Butane	101	60-140
Isopentane	122	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	100	70-130

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6/1/2015
Ms. Elizabeth Kunkel
URS Corporation
1001 Highlands Plaza Dr. West
Suite 300
St. Louis MO 63110

Project Name: Roxana Soil Vapor
Project #: 21563720.04202
Workorder #: 1505127B

Dear Ms. Elizabeth Kunkel

The following report includes the data for the above referenced project for sample(s) received on 5/7/2015 at Air Toxics Ltd.

The data and associated QC analyzed by Modified ASTM D-1946 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

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

Regards,

Kelly Buettner

Project Manager

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WORK ORDER #: 1505127B

Work Order Summary

CLIENT:	Ms. Elizabeth Kunkel AECOM 1001 Highlands Plaza Dr. West Suite 300 St. Louis, MO 63110	**BILL TO:**	Accounts Payable Austin AECOM P.O. BOX 203970 Austin, TX 78720-1088
PHONE:	314-743-4179	**P.O. #**	87243.UB
FAX:		**PROJECT #**	21563720.04202 Roxana Soil Vapor
DATE RECEIVED:	05/07/2015	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	06/01/2015		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
05A	VMP-55-5-050615	Modified ASTM D-1946	5.9 "Hg	15 psi
09A	Lab Blank	Modified ASTM D-1946	NA	NA
09B	Lab Blank	Modified ASTM D-1946	NA	NA
10A	LCS	Modified ASTM D-1946	NA	NA
10AA	LCSD	Modified ASTM D-1946	NA	NA

CERTIFIED BY: Heidi Mayo DATE: 06/01/15

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704343-14-7, UT NELAP CA009332014-5, VA NELAP - 460197, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2014, Expiration date: 10/17/2015.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

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

LABORATORY NARRATIVE
Modified ASTM D-1946
URS Corporation
Workorder# 1505127B

Eight 1 Liter Summa Canister samples were received on May 07, 2015. 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.

The Method Detection Limit (MDL) study used to evaluate Methane, Ethane and Ethene expired prior to sample analysis on 05/09/2015. An MDL is not required per ASTM D-1946.

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-55-5-050615

Lab ID#: 1505127B-05A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.25	2.7
Nitrogen	0.25	80
Methane	0.00025	0.00028
Carbon Dioxide	0.025	17
Helium	0.13	0.21

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Client Sample ID: VMP-55-5-050615

Lab ID#: 1505127B-05A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**9051817**	**Date of Collection: 5/6/15 12:09:00 PM**	
Dil. Factor:	**2.52**	**Date of Analysis: 5/19/15 09:07 AM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.25	2.7
Nitrogen	0.25	80
Carbon Monoxide	0.025	Not Detected
Methane	0.00025	0.00028
Carbon Dioxide	0.025	17
Ethane	0.0025	Not Detected
Ethene	0.0025	Not Detected
Helium	0.13	0.21

Container Type: 1 Liter Summa Canister

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Client Sample ID: Lab Blank

Lab ID#: 1505127B-09A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**9051803a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/18/15 03:09 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.10	Not Detected
Nitrogen	0.10	Not Detected
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

Container Type: NA - Not Applicable

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Client Sample ID: Lab Blank

Lab ID#: 1505127B-09B

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**9051805b**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/18/15 06:44 PM**	

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

Container Type: NA - Not Applicable

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Client Sample ID: LCS

Lab ID#: 1505127B-10A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**9051802**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/18/15 02:40 PM**	

Compound	%Recovery	Method Limits
Oxygen	97	85-115
Nitrogen	93	85-115
Carbon Monoxide	103	85-115
Methane	96	85-115
Carbon Dioxide	102	85-115
Ethane	95	85-115
Ethene	96	85-115
Helium	101	85-115

Container Type: NA - Not Applicable

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Client Sample ID: LCSD

Lab ID#: 1505127B-10AA

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**9051821**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/19/15 10:41 AM**	

Compound	%Recovery	Method Limits
Oxygen	98	85-115
Nitrogen	93	85-115
Carbon Monoxide	104	85-115
Methane	98	85-115
Carbon Dioxide	102	85-115
Ethane	98	85-115
Ethene	99	85-115
Helium	101	85-115

Container Type: NA - Not Applicable

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7/2/2015

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

Project Name: Roxana Soil Vapor
Project #: 21563720.04202
Workorder #: 1505205AR1

Dear Ms. Elizabeth Kunkel

The following report includes the data for the above referenced project for sample(s) received on 5/11/2015 at Air Toxics Ltd.

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

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

Regards,

Kelly Buettner

Project Manager

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WORK ORDER #: 1505205AR1

Work Order Summary

CLIENT:	Ms. Elizabeth Kunkel AECOM 1001 Highlands Plaza Dr. West Suite 300 St. Louis, MO 63110	**BILL TO:**	Accounts Payable Austin AECOM P.O. BOX 203970 Austin, TX 78720-1088
PHONE:	314-743-4179	**P.O. #**	87243.UB
FAX:		**PROJECT #**	21563720.04202 Roxana Soil Vapor
DATE RECEIVED:	05/11/2015	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	05/22/2015		
DATE REISSUED:	07/02/2015		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
07A	VMP-55-20-050615	TO-15	8 "Hg	14.5 psi
08A	VMP-55-30-050615	TO-15	8.6 "Hg	14.9 psi
09A	VMP-55-30-050615-DUP	TO-15	8.6 "Hg	15.1 psi
17B	Lab Blank	TO-15	NA	NA
18B	CCV	TO-15	NA	NA

Continued on next page

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WORK ORDER #: 1505205AR1

Work Order Summary

CLIENT:	Ms. Elizabeth Kunkel AECOM 1001 Highlands Plaza Dr. West Suite 300 St. Louis, MO 63110	**BILL TO:**	Accounts Payable Austin AECOM P.O. BOX 203970 Austin, TX 78720-1088
PHONE:	314-743-4179	**P.O. #**	87243.UB
FAX:		**PROJECT #**	21563720.04202 Roxana Soil Vapor
DATE RECEIVED:	05/11/2015	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	05/22/2015		
DATE REISSUED:	07/02/2015		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
19B	LCS	TO-15	NA	NA
19BB	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 07/02/15

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704343-14-7, UT NELAP CA009332014-5, VA NELAP - 460197, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2014, Expiration date: 10/17/2015.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 956
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LABORATORY NARRATIVE
EPA Method TO-15
URS Corporation
Workorder# 1505205AR1

Sixteen 1 Liter Summa Canister samples were received on May 11, 2015. 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

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.

Dilution was performed on all of the samples except VMP-55-20-050615 due to the presence of high level target species.

Dilution was performed on sample VMP-55-20-050615 due to the presence of high level non-target species.

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.

The workorder was reissued on July 2, 2015 to qualify results for Tetrachloroethene (PCE) in samples

VMP-55-30-050615-DUP

due to potential cross-contamination during the sample loading and preparation step. A Corrective Action Report (CAR) was generated in response to inquiry regarding anomalous PCE concentration. Please refer to the attached CAR # F6VB511636 for complete details.

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

Client Sample ID: VMP-55-20-050615

Lab ID#: 1505205AR1-07A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethanol	3400	13000	6400	24000
Acetone	8400	1000 J	20000	2500 J
Carbon Disulfide	3400	360 J	10000	1100 J
Hexane	840	220 J	3000	760 J
Cyclohexane	840	1700	2900	6000
2,2,4-Trimethylpentane	840	100000	3900	490000
Toluene	840	650 J	3200	2400 J
Butane	3400	2400 J	8000	5800 J
Isopentane	3400	60000	10000	180000

Client Sample ID: VMP-55-30-050615

Lab ID#: 1505205AR1-08A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethanol	4700	13000	8800	25000
Acetone	12000	1200 J	28000	2800 J
Carbon Disulfide	4700	440 J	15000	1400 J

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

Client Sample ID: VMP-55-30-050615

Lab ID#: 1505205AR1-08A

Hexane	1200	960 J	4100	3400 J
Cyclohexane	1200	11000	4000	39000
2,2,4-Trimethylpentane	1200	130000	5500	590000
Toluene	1200	710 J	4400	2700 J
m,p-Xylene	1200	490 J	5100	2100 J
Butane	4700	29000	11000	70000
Isopentane	4700	210000	14000	620000

Client Sample ID: VMP-55-30-050615-DUP

Lab ID#: 1505205AR1-09A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethanol	4700	16000	8900	30000
Acetone	12000	1400 J	28000	3300 J
Carbon Disulfide	4700	400 J	15000	1300 J
Hexane	1200	950 J	4200	3400 J
Cyclohexane	1200	12000	4100	40000
2,2,4-Trimethylpentane	1200	130000	5500	600000
Toluene	1200	730 J	4500	2800 J
Tetrachloroethene	1200	11000 JB	8000	74000 JB
Butane	4700	30000	11000	72000
Isopentane	4700	210000	14000	630000

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Client Sample ID: VMP-55-20-050615

Lab ID#: 1505205AR1-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051814**	**Date of Collection: 5/6/15 12:28:00 PM**	
Dil. Factor:	**1690**	**Date of Analysis: 5/18/15 07:23 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	840	Not Detected	4200	Not Detected
Freon 114	840	Not Detected	5900	Not Detected
Chloromethane	8400	Not Detected	17000	Not Detected
Vinyl Chloride	840	Not Detected	2200	Not Detected
1,3-Butadiene	840	Not Detected	1900	Not Detected
Bromomethane	8400	Not Detected	33000	Not Detected
Chloroethane	3400	Not Detected	8900	Not Detected
Freon 11	840	Not Detected	4700	Not Detected
Ethanol	3400	13000	6400	24000
Freon 113	840	Not Detected	6500	Not Detected
1,1-Dichloroethene	840	Not Detected	3400	Not Detected
Acetone	8400	1000 J	20000	2500 J
2-Propanol	3400	Not Detected	8300	Not Detected
Carbon Disulfide	3400	360 J	10000	1100 J
3-Chloropropene	3400	Not Detected	10000	Not Detected
Methylene Chloride	8400	Not Detected	29000	Not Detected
Methyl tert-butyl ether	840	Not Detected	3000	Not Detected
trans-1,2-Dichloroethene	840	Not Detected	3400	Not Detected
Hexane	840	220 J	3000	760 J
1,1-Dichloroethane	840	Not Detected	3400	Not Detected
2-Butanone (Methyl Ethyl Ketone)	3400	Not Detected	10000	Not Detected
cis-1,2-Dichloroethene	840	Not Detected	3400	Not Detected
Tetrahydrofuran	840	Not Detected	2500	Not Detected
Chloroform	840	Not Detected	4100	Not Detected
1,1,1-Trichloroethane	840	Not Detected	4600	Not Detected
Cyclohexane	840	1700	2900	6000
Carbon Tetrachloride	840	Not Detected	5300	Not Detected
2,2,4-Trimethylpentane	840	100000	3900	490000
Benzene	840	Not Detected	2700	Not Detected
1,2-Dichloroethane	840	Not Detected	3400	Not Detected
Heptane	840	Not Detected	3500	Not Detected
Trichloroethene	840	Not Detected	4500	Not Detected
1,2-Dichloropropane	840	Not Detected	3900	Not Detected
1,4-Dioxane	3400	Not Detected	12000	Not Detected
Bromodichloromethane	840	Not Detected	5700	Not Detected
cis-1,3-Dichloropropene	840	Not Detected	3800	Not Detected
4-Methyl-2-pentanone	840	Not Detected	3500	Not Detected
Toluene	840	650 J	3200	2400 J
trans-1,3-Dichloropropene	840	Not Detected	3800	Not Detected
1,1,2-Trichloroethane	840	Not Detected	4600	Not Detected
Tetrachloroethene	840	Not Detected	5700	Not Detected
2-Hexanone	3400	Not Detected	14000	Not Detected

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Client Sample ID: VMP-55-20-050615

Lab ID#: 1505205AR1-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051814**	**Date of Collection: 5/6/15 12:28:00 PM**	
Dil. Factor:	**1690**	**Date of Analysis: 5/18/15 07:23 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	840	Not Detected	7200	Not Detected
1,2-Dibromoethane (EDB)	840	Not Detected	6500	Not Detected
Chlorobenzene	840	Not Detected	3900	Not Detected
Ethyl Benzene	840	Not Detected	3700	Not Detected
m,p-Xylene	840	Not Detected	3700	Not Detected
o-Xylene	840	Not Detected	3700	Not Detected
Styrene	840	Not Detected	3600	Not Detected
Bromoform	840	Not Detected	8700	Not Detected
Cumene	840	Not Detected	4200	Not Detected
1,1,2,2-Tetrachloroethane	840	Not Detected	5800	Not Detected
Propylbenzene	840	Not Detected	4200	Not Detected
4-Ethyltoluene	840	Not Detected	4200	Not Detected
1,3,5-Trimethylbenzene	840	Not Detected	4200	Not Detected
1,2,4-Trimethylbenzene	840	Not Detected	4200	Not Detected
1,3-Dichlorobenzene	840	Not Detected	5100	Not Detected
1,4-Dichlorobenzene	840	Not Detected	5100	Not Detected
alpha-Chlorotoluene	840	Not Detected	4400	Not Detected
1,2-Dichlorobenzene	840	Not Detected	5100	Not Detected
1,2,4-Trichlorobenzene	3400	Not Detected	25000	Not Detected
Hexachlorobutadiene	3400	Not Detected	36000	Not Detected
Butane	3400	2400 J	8000	5800 J
Isopentane	3400	60000	10000	180000

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	105	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: VMP-55-30-050615

Lab ID#: 1505205AR1-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051815**	**Date of Collection: 5/6/15 12:50:00 PM**	
Dil. Factor:	**2350**	**Date of Analysis: 5/18/15 07:48 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1200	Not Detected	5800	Not Detected
Freon 114	1200	Not Detected	8200	Not Detected
Chloromethane	12000	Not Detected	24000	Not Detected
Vinyl Chloride	1200	Not Detected	3000	Not Detected
1,3-Butadiene	1200	Not Detected	2600	Not Detected
Bromomethane	12000	Not Detected	46000	Not Detected
Chloroethane	4700	Not Detected	12000	Not Detected
Freon 11	1200	Not Detected	6600	Not Detected
Ethanol	4700	13000	8800	25000
Freon 113	1200	Not Detected	9000	Not Detected
1,1-Dichloroethene	1200	Not Detected	4600	Not Detected
Acetone	12000	1200 J	28000	2800 J
2-Propanol	4700	Not Detected	12000	Not Detected
Carbon Disulfide	4700	440 J	15000	1400 J
3-Chloropropene	4700	Not Detected	15000	Not Detected
Methylene Chloride	12000	Not Detected	41000	Not Detected
Methyl tert-butyl ether	1200	Not Detected	4200	Not Detected
trans-1,2-Dichloroethene	1200	Not Detected	4600	Not Detected
Hexane	1200	960 J	4100	3400 J
1,1-Dichloroethane	1200	Not Detected	4800	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4700	Not Detected	14000	Not Detected
cis-1,2-Dichloroethene	1200	Not Detected	4600	Not Detected
Tetrahydrofuran	1200	Not Detected	3500	Not Detected
Chloroform	1200	Not Detected	5700	Not Detected
1,1,1-Trichloroethane	1200	Not Detected	6400	Not Detected
Cyclohexane	1200	11000	4000	39000
Carbon Tetrachloride	1200	Not Detected	7400	Not Detected
2,2,4-Trimethylpentane	1200	130000	5500	590000
Benzene	1200	Not Detected	3800	Not Detected
1,2-Dichloroethane	1200	Not Detected	4800	Not Detected
Heptane	1200	Not Detected	4800	Not Detected
Trichloroethene	1200	Not Detected	6300	Not Detected
1,2-Dichloropropane	1200	Not Detected	5400	Not Detected
1,4-Dioxane	4700	Not Detected	17000	Not Detected
Bromodichloromethane	1200	Not Detected	7900	Not Detected
cis-1,3-Dichloropropene	1200	Not Detected	5300	Not Detected
4-Methyl-2-pentanone	1200	Not Detected	4800	Not Detected
Toluene	1200	710 J	4400	2700 J
trans-1,3-Dichloropropene	1200	Not Detected	5300	Not Detected
1,1,2-Trichloroethane	1200	Not Detected	6400	Not Detected
Tetrachloroethene	1200	Not Detected	8000	Not Detected
2-Hexanone	4700	Not Detected	19000	Not Detected

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Client Sample ID: VMP-55-30-050615

Lab ID#: 1505205AR1-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051815**	**Date of Collection: 5/6/15 12:50:00 PM**	
Dil. Factor:	**2350**	**Date of Analysis: 5/18/15 07:48 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1200	Not Detected	10000	Not Detected
1,2-Dibromoethane (EDB)	1200	Not Detected	9000	Not Detected
Chlorobenzene	1200	Not Detected	5400	Not Detected
Ethyl Benzene	1200	Not Detected	5100	Not Detected
m,p-Xylene	1200	490 J	5100	2100 J
o-Xylene	1200	Not Detected	5100	Not Detected
Styrene	1200	Not Detected	5000	Not Detected
Bromoform	1200	Not Detected	12000	Not Detected
Cumene	1200	Not Detected	5800	Not Detected
1,1,2,2-Tetrachloroethane	1200	Not Detected	8100	Not Detected
Propylbenzene	1200	Not Detected	5800	Not Detected
4-Ethyltoluene	1200	Not Detected	5800	Not Detected
1,3,5-Trimethylbenzene	1200	Not Detected	5800	Not Detected
1,2,4-Trimethylbenzene	1200	Not Detected	5800	Not Detected
1,3-Dichlorobenzene	1200	Not Detected	7100	Not Detected
1,4-Dichlorobenzene	1200	Not Detected	7100	Not Detected
alpha-Chlorotoluene	1200	Not Detected	6100	Not Detected
1,2-Dichlorobenzene	1200	Not Detected	7100	Not Detected
1,2,4-Trichlorobenzene	4700	Not Detected	35000	Not Detected
Hexachlorobutadiene	4700	Not Detected	50000	Not Detected
Butane	4700	29000	11000	70000
Isopentane	4700	210000	14000	620000

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	95	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: VMP-55-30-050615-DUP

Lab ID#: 1505205AR1-09A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051816**	**Date of Collection: 5/6/15 12:50:00 PM**	
Dil. Factor:	**2370**	**Date of Analysis: 5/18/15 08:13 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1200	Not Detected	5900	Not Detected
Freon 114	1200	Not Detected	8300	Not Detected
Chloromethane	12000	Not Detected	24000	Not Detected
Vinyl Chloride	1200	Not Detected	3000	Not Detected
1,3-Butadiene	1200	Not Detected	2600	Not Detected
Bromomethane	12000	Not Detected	46000	Not Detected
Chloroethane	4700	Not Detected	12000	Not Detected
Freon 11	1200	Not Detected	6600	Not Detected
Ethanol	4700	16000	8900	30000
Freon 113	1200	Not Detected	9100	Not Detected
1,1-Dichloroethene	1200	Not Detected	4700	Not Detected
Acetone	12000	1400 J	28000	3300 J
2-Propanol	4700	Not Detected	12000	Not Detected
Carbon Disulfide	4700	400 J	15000	1300 J
3-Chloropropene	4700	Not Detected	15000	Not Detected
Methylene Chloride	12000	Not Detected	41000	Not Detected
Methyl tert-butyl ether	1200	Not Detected	4300	Not Detected
trans-1,2-Dichloroethene	1200	Not Detected	4700	Not Detected
Hexane	1200	950 J	4200	3400 J
1,1-Dichloroethane	1200	Not Detected	4800	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4700	Not Detected	14000	Not Detected
cis-1,2-Dichloroethene	1200	Not Detected	4700	Not Detected
Tetrahydrofuran	1200	Not Detected	3500	Not Detected
Chloroform	1200	Not Detected	5800	Not Detected
1,1,1-Trichloroethane	1200	Not Detected	6500	Not Detected
Cyclohexane	1200	12000	4100	40000
Carbon Tetrachloride	1200	Not Detected	7400	Not Detected
2,2,4-Trimethylpentane	1200	130000	5500	600000
Benzene	1200	Not Detected	3800	Not Detected
1,2-Dichloroethane	1200	Not Detected	4800	Not Detected
Heptane	1200	Not Detected	4800	Not Detected
Trichloroethene	1200	Not Detected	6400	Not Detected
1,2-Dichloropropane	1200	Not Detected	5500	Not Detected
1,4-Dioxane	4700	Not Detected	17000	Not Detected
Bromodichloromethane	1200	Not Detected	7900	Not Detected
cis-1,3-Dichloropropene	1200	Not Detected	5400	Not Detected
4-Methyl-2-pentanone	1200	Not Detected	4800	Not Detected
Toluene	1200	730 J	4500	2800 J
trans-1,3-Dichloropropene	1200	Not Detected	5400	Not Detected
1,1,2-Trichloroethane	1200	Not Detected	6500	Not Detected
Tetrachloroethene	1200	11000 JB	8000	74000 JB
2-Hexanone	4700	Not Detected	19000	Not Detected

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Client Sample ID: VMP-55-30-050615-DUP

Lab ID#: 1505205AR1-09A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051816**	**Date of Collection: 5/6/15 12:50:00 PM**	
Dil. Factor:	**2370**	**Date of Analysis: 5/18/15 08:13 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1200	Not Detected	10000	Not Detected
1,2-Dibromoethane (EDB)	1200	Not Detected	9100	Not Detected
Chlorobenzene	1200	Not Detected	5400	Not Detected
Ethyl Benzene	1200	Not Detected	5100	Not Detected
m,p-Xylene	1200	Not Detected	5100	Not Detected
o-Xylene	1200	Not Detected	5100	Not Detected
Styrene	1200	Not Detected	5000	Not Detected
Bromoform	1200	Not Detected	12000	Not Detected
Cumene	1200	Not Detected	5800	Not Detected
1,1,2,2-Tetrachloroethane	1200	Not Detected	8100	Not Detected
Propylbenzene	1200	Not Detected	5800	Not Detected
4-Ethyltoluene	1200	Not Detected	5800	Not Detected
1,3,5-Trimethylbenzene	1200	Not Detected	5800	Not Detected
1,2,4-Trimethylbenzene	1200	Not Detected	5800	Not Detected
1,3-Dichlorobenzene	1200	Not Detected	7100	Not Detected
1,4-Dichlorobenzene	1200	Not Detected	7100	Not Detected
alpha-Chlorotoluene	1200	Not Detected	6100	Not Detected
1,2-Dichlorobenzene	1200	Not Detected	7100	Not Detected
1,2,4-Trichlorobenzene	4700	Not Detected	35000	Not Detected
Hexachlorobutadiene	4700	Not Detected	50000	Not Detected
Butane	4700	30000	11000	72000
Isopentane	4700	210000	14000	630000

J = Estimated value.

JB: Estimated value due to potential cross-contamination

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1505205AR1-17B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051806d**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/18/15 10:53 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Freon 114	0.50	Not Detected	3.5	Not Detected
Chloromethane	5.0	Not Detected	10	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,3-Butadiene	0.50	Not Detected	1.1	Not Detected
Bromomethane	5.0	Not Detected	19	Not Detected
Chloroethane	2.0	Not Detected	5.3	Not Detected
Freon 11	0.50	Not Detected	2.8	Not Detected
Ethanol	2.0	Not Detected	3.8	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Acetone	5.0	0.21 J	12	0.50 J
2-Propanol	2.0	Not Detected	4.9	Not Detected
Carbon Disulfide	2.0	0.35 J	6.2	1.1 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	0.090 J	2.0	0.37 J
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

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Client Sample ID: Lab Blank

Lab ID#: 1505205AR1-17B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051806d**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/18/15 10:53 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	Not Detected	2.3	Not Detected
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	Not Detected	2.4	Not Detected
4-Ethyltoluene	0.50	Not Detected	2.4	Not Detected
1,3,5-Trimethylbenzene	0.50	0.12 J	2.4	0.57 J
1,2,4-Trimethylbenzene	0.50	0.10 J	2.4	0.51 J
1,3-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
alpha-Chlorotoluene	0.50	Not Detected	2.6	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,2,4-Trichlorobenzene	2.0	Not Detected	15	Not Detected
Hexachlorobutadiene	2.0	Not Detected	21	Not Detected
Butane	2.0	Not Detected	4.8	Not Detected
Isopentane	2.0	Not Detected	5.9	Not Detected

J = Estimated value.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	107	70-130

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Client Sample ID: CCV

Lab ID#: 1505205AR1-18B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051802**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 5/18/15 08:40 AM**

Compound	%Recovery
Freon 12	102
Freon 114	101
Chloromethane	80
Vinyl Chloride	98
1,3-Butadiene	94
Bromomethane	102
Chloroethane	95
Freon 11	105
Ethanol	80
Freon 113	100
1,1-Dichloroethene	97
Acetone	83
2-Propanol	80
Carbon Disulfide	88
3-Chloropropene	91
Methylene Chloride	83
Methyl tert-butyl ether	92
trans-1,2-Dichloroethene	94
Hexane	83
1,1-Dichloroethane	87
2-Butanone (Methyl Ethyl Ketone)	89
cis-1,2-Dichloroethene	94
Tetrahydrofuran	75
Chloroform	94
1,1,1-Trichloroethane	98
Cyclohexane	88
Carbon Tetrachloride	101
2,2,4-Trimethylpentane	82
Benzene	89
1,2-Dichloroethane	95
Heptane	88
Trichloroethene	100
1,2-Dichloropropane	83
1,4-Dioxane	92
Bromodichloromethane	96
cis-1,3-Dichloropropene	92
4-Methyl-2-pentanone	85
Toluene	92
trans-1,3-Dichloropropene	91
1,1,2-Trichloroethane	90
Tetrachloroethene	97
2-Hexanone	82

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Client Sample ID: CCV

Lab ID#: 1505205AR1-18B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051802**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/18/15 08:40 AM**	

Compound	%Recovery
Dibromochloromethane	99
1,2-Dibromoethane (EDB)	95
Chlorobenzene	94
Ethyl Benzene	93
m,p-Xylene	94
o-Xylene	94
Styrene	94
Bromoform	101
Cumene	95
1,1,2,2-Tetrachloroethane	87
Propylbenzene	91
4-Ethyltoluene	98
1,3,5-Trimethylbenzene	99
1,2,4-Trimethylbenzene	98
1,3-Dichlorobenzene	103
1,4-Dichlorobenzene	103
alpha-Chlorotoluene	99
1,2-Dichlorobenzene	103
1,2,4-Trichlorobenzene	116
Hexachlorobutadiene	113
Butane	84
Isopentane	83

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	100	70-130
4-Bromofluorobenzene	106	70-130

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Client Sample ID: LCS

Lab ID#: 1505205AR1-19B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051803**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/18/15 09:05 AM**	

Compound	%Recovery	Method Limits
Freon 12	103	70-130
Freon 114	105	70-130
Chloromethane	79	70-130
Vinyl Chloride	104	70-130
1,3-Butadiene	92	70-130
Bromomethane	104	70-130
Chloroethane	101	70-130
Freon 11	109	70-130
Ethanol	88	70-130
Freon 113	101	70-130
1,1-Dichloroethene	99	70-130
Acetone	84	70-130
2-Propanol	84	70-130
Carbon Disulfide	80	70-130
3-Chloropropene	88	70-130
Methylene Chloride	82	70-130
Methyl tert-butyl ether	94	70-130
trans-1,2-Dichloroethene	82	70-130
Hexane	86	70-130
1,1-Dichloroethane	90	70-130
2-Butanone (Methyl Ethyl Ketone)	90	70-130
cis-1,2-Dichloroethene	106	70-130
Tetrahydrofuran	77	70-130
Chloroform	97	70-130
1,1,1-Trichloroethane	99	70-130
Cyclohexane	92	70-130
Carbon Tetrachloride	104	70-130
2,2,4-Trimethylpentane	85	70-130
Benzene	91	70-130
1,2-Dichloroethane	98	70-130
Heptane	88	70-130
Trichloroethene	108	70-130
1,2-Dichloropropane	86	70-130
1,4-Dioxane	94	70-130
Bromodichloromethane	101	70-130
cis-1,3-Dichloropropene	90	70-130
4-Methyl-2-pentanone	86	70-130
Toluene	93	70-130
trans-1,3-Dichloropropene	93	70-130
1,1,2-Trichloroethane	92	70-130
Tetrachloroethene	101	70-130
2-Hexanone	85	70-130

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Client Sample ID: LCS

Lab ID#: 1505205AR1-19B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051803**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/18/15 09:05 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	102	70-130
1,2-Dibromoethane (EDB)	98	70-130
Chlorobenzene	96	70-130
Ethyl Benzene	96	70-130
m,p-Xylene	96	70-130
o-Xylene	98	70-130
Styrene	96	70-130
Bromoform	106	70-130
Cumene	97	70-130
1,1,2,2-Tetrachloroethane	90	70-130
Propylbenzene	95	70-130
4-Ethyltoluene	100	70-130
1,3,5-Trimethylbenzene	101	70-130
1,2,4-Trimethylbenzene	101	70-130
1,3-Dichlorobenzene	107	70-130
1,4-Dichlorobenzene	106	70-130
alpha-Chlorotoluene	106	70-130
1,2-Dichlorobenzene	107	70-130
1,2,4-Trichlorobenzene	117	70-130
Hexachlorobutadiene	116	70-130
Butane	89	70-130
Isopentane	84	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	99	70-130
4-Bromofluorobenzene	105	70-130

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Client Sample ID: LCSD

Lab ID#: 1505205AR1-19BB

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051804**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/18/15 09:30 AM**	

Compound	%Recovery	Method Limits
Freon 12	103	70-130
Freon 114	106	70-130
Chloromethane	80	70-130
Vinyl Chloride	105	70-130
1,3-Butadiene	93	70-130
Bromomethane	106	70-130
Chloroethane	102	70-130
Freon 11	109	70-130
Ethanol	86	70-130
Freon 113	100	70-130
1,1-Dichloroethene	101	70-130
Acetone	84	70-130
2-Propanol	86	70-130
Carbon Disulfide	80	70-130
3-Chloropropene	89	70-130
Methylene Chloride	83	70-130
Methyl tert-butyl ether	95	70-130
trans-1,2-Dichloroethene	84	70-130
Hexane	86	70-130
1,1-Dichloroethane	90	70-130
2-Butanone (Methyl Ethyl Ketone)	91	70-130
cis-1,2-Dichloroethene	107	70-130
Tetrahydrofuran	77	70-130
Chloroform	97	70-130
1,1,1-Trichloroethane	100	70-130
Cyclohexane	92	70-130
Carbon Tetrachloride	103	70-130
2,2,4-Trimethylpentane	87	70-130
Benzene	91	70-130
1,2-Dichloroethane	98	70-130
Heptane	86	70-130
Trichloroethene	98	70-130
1,2-Dichloropropane	88	70-130
1,4-Dioxane	94	70-130
Bromodichloromethane	100	70-130
cis-1,3-Dichloropropene	91	70-130
4-Methyl-2-pentanone	86	70-130
Toluene	93	70-130
trans-1,3-Dichloropropene	94	70-130
1,1,2-Trichloroethane	92	70-130
Tetrachloroethene	101	70-130
2-Hexanone	86	70-130

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Client Sample ID: LCSD

Lab ID#: 1505205AR1-19BB

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3051804**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/18/15 09:30 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	102	70-130
1,2-Dibromoethane (EDB)	99	70-130
Chlorobenzene	96	70-130
Ethyl Benzene	96	70-130
m,p-Xylene	98	70-130
o-Xylene	99	70-130
Styrene	98	70-130
Bromoform	107	70-130
Cumene	98	70-130
1,1,2,2-Tetrachloroethane	91	70-130
Propylbenzene	97	70-130
4-Ethyltoluene	103	70-130
1,3,5-Trimethylbenzene	102	70-130
1,2,4-Trimethylbenzene	102	70-130
1,3-Dichlorobenzene	107	70-130
1,4-Dichlorobenzene	108	70-130
alpha-Chlorotoluene	106	70-130
1,2-Dichlorobenzene	108	70-130
1,2,4-Trichlorobenzene	121	70-130
Hexachlorobutadiene	119	70-130
Butane	86	70-130
Isopentane	84	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	106	70-130

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5/22/2015

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

Project Name: Roxana Soil Vapor
Project #: 21563720.04202
Workorder #: 1505205B

Dear Ms. Elizabeth Kunkel

The following report includes the data for the above referenced project for sample(s) received on 5/11/2015 at Air Toxics Ltd.

The data and associated QC analyzed by Modified ASTM D-1946 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

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

Regards,

Kelly Buettner

Project Manager

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WORK ORDER #: 1505205B

Work Order Summary

CLIENT:	Ms. Elizabeth Kunkel AECOM 1001 Highlands Plaza Dr. West Suite 300 St. Louis, MO 63110	**BILL TO:**	Accounts Payable Austin AECOM P.O. BOX 203970 Austin, TX 78720-1088
PHONE:	314-743-4179	**P.O. #**	87243.UB
FAX:		**PROJECT #**	21563720.04202 Roxana Soil Vapor
DATE RECEIVED:	05/11/2015	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	05/22/2015		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
07A	VMP-55-20-050615	Modified ASTM D-1946	8 "Hg	14.5 psi
08A	VMP-55-30-050615	Modified ASTM D-1946	8.6 "Hg	14.9 psi
09A	VMP-55-30-050615-DUP	Modified ASTM D-1946	8.6 "Hg	15.1 psi
17A	Lab Blank	Modified ASTM D-1946	NA	NA
17B	Lab Blank	Modified ASTM D-1946	NA	NA
18A	LCS	Modified ASTM D-1946	NA	NA
18AA	LCSD	Modified ASTM D-1946	NA	NA

CERTIFIED BY: Heidi Mayo DATE: 05/22/15

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704343-14-7, UT NELAP CA009332014-5, VA NELAP - 460197, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2014, Expiration date: 10/17/2015.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

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

LABORATORY NARRATIVE
Modified ASTM D-1946
URS Corporation
Workorder# 1505205B

Sixteen 1 Liter Summa Canister samples were received on May 11, 2015. 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

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-55-20-050615

Lab ID#: 1505205B-07A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.27	1.9
Nitrogen	0.27	81

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

Client Sample ID: VMP-55-20-050615

Lab ID#: 1505205B-07A

Methane	0.00027	2.1
Carbon Dioxide	0.027	15
Ethane	0.0027	0.033

Client Sample ID: VMP-55-30-050615

Lab ID#: 1505205B-08A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.28	1.6
Nitrogen	0.28	86
Methane	0.00028	2.4
Carbon Dioxide	0.028	10
Ethane	0.0028	0.038

Client Sample ID: VMP-55-30-050615-DUP

Lab ID#: 1505205B-09A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.28	1.7
Nitrogen	0.28	86
Methane	0.00028	2.4
Carbon Dioxide	0.028	9.9
Ethane	0.0028	0.039

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Client Sample ID: VMP-55-20-050615

Lab ID#: 1505205B-07A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10051611**	**Date of Collection: 5/6/15 12:28:00 PM**	
Dil. Factor:	**2.70**	**Date of Analysis: 5/16/15 11:54 AM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.27	1.9
Nitrogen	0.27	81
Carbon Monoxide	0.027	Not Detected
Methane	0.00027	2.1
Carbon Dioxide	0.027	15
Ethane	0.0027	0.033
Ethene	0.0027	Not Detected
Helium	0.14	Not Detected

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-55-30-050615

Lab ID#: 1505205B-08A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10051612**	**Date of Collection: 5/6/15 12:50:00 PM**	
Dil. Factor:	**2.82**	**Date of Analysis: 5/16/15 12:18 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.28	1.6
Nitrogen	0.28	86
Carbon Monoxide	0.028	Not Detected
Methane	0.00028	2.4
Carbon Dioxide	0.028	10
Ethane	0.0028	0.038
Ethene	0.0028	Not Detected
Helium	0.14	Not Detected

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-55-30-050615-DUP

Lab ID#: 1505205B-09A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10051613**	**Date of Collection: 5/6/15 12:50:00 PM**	
Dil. Factor:	**2.84**	**Date of Analysis: 5/16/15 12:40 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.28	1.7
Nitrogen	0.28	86
Carbon Monoxide	0.028	Not Detected
Methane	0.00028	2.4
Carbon Dioxide	0.028	9.9
Ethane	0.0028	0.039
Ethene	0.0028	Not Detected
Helium	0.14	Not Detected

Container Type: 1 Liter Summa Canister

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Client Sample ID: Lab Blank

Lab ID#: 1505205B-17A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10051603**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/16/15 08:21 AM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.10	Not Detected
Nitrogen	0.10	0.043 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

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Client Sample ID: Lab Blank

Lab ID#: 1505205B-17B

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10051604c**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/16/15 08:45 AM**	

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

Container Type: NA - Not Applicable

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Client Sample ID: LCS

Lab ID#: 1505205B-18A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10051602**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/16/15 07:57 AM**	

Compound	%Recovery	Method Limits
Oxygen	99	85-115
Nitrogen	92	85-115
Carbon Monoxide	95	85-115
Methane	104	85-115
Carbon Dioxide	98	85-115
Ethane	103	85-115
Ethene	104	85-115
Helium	103	85-115

Container Type: NA - Not Applicable

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Client Sample ID: LCSD

Lab ID#: 1505205B-18AA

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10051621**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/16/15 03:42 PM**	

Compound	%Recovery	Method Limits
Oxygen	99	85-115
Nitrogen	92	85-115
Carbon Monoxide	94	85-115
Methane	104	85-115
Carbon Dioxide	98	85-115
Ethane	103	85-115
Ethene	103	85-115
Helium	102	85-115

Container Type: NA - Not Applicable

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6/23/2015
Ms. Elizabeth Kunkel
URS Corporation
1001 Highlands Plaza Dr. West
Suite 300
St. Louis MO 63110

Project Name: Roxana Soil Vapor
Project #: 21563720.04202
Workorder #: 1506304A

Dear Ms. Elizabeth Kunkel

The following report includes the data for the above referenced project for sample(s) received on 6/16/2015 at Air Toxics Ltd.

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

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

Regards,

Kelly Buettner

Project Manager

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WORK ORDER #: 1506304A

Work Order Summary

CLIENT:	Ms. Elizabeth Kunkel AECOM 1001 Highlands Plaza Dr. West Suite 300 St. Louis, MO 63110	**BILL TO:**	Accounts Payable Austin AECOM P.O. BOX 203970 Austin, TX 78720-1088
PHONE:	314-743-4179	**P.O. #**	87243.UB
FAX:		**PROJECT #**	21563720.04202 Roxana Soil Vapor
DATE RECEIVED:	06/16/2015	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	06/23/2015		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
07A	VMP-55-30-061515-R	TO-15	6.5 "Hg	14.6 psi
08A	VMP-55-30-061515-Dup-R	TO-15	11 "Hg	14.6 psi
10A	Lab Blank	TO-15	NA	NA
11A	CCV	TO-15	NA	NA
12A	LCS	TO-15	NA	NA
12AA	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Mayo DATE: 06/23/15

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704343-14-7, UT NELAP CA009332014-5, VA NELAP - 460197, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2014, Expiration date: 10/17/2015.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

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

LABORATORY NARRATIVE
EPA Method TO-15
URS Corporation
Workorder# 1506304A

Nine 1 Liter Summa Canister samples were received on June 16, 2015. 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

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.

Isopentane exceeded the instrument's calibration range for samples VMP-55-30-061515-R, VMP-55-30-061515-Dup-R and were flagged accordingly.

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

Client Sample ID: VMP-55-30-061515-R

Lab ID#: 1506304A-07A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methyl tert-butyl ether	13	24	46	88

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

Client Sample ID: VMP-55-30-061515-R

Lab ID#: 1506304A-07A

Hexane	13	49	45	170
Cyclohexane	13	2800	44	9800
2,2,4-Trimethylpentane	13	9700	60	46000
Benzene	13	16	41	53
Heptane	13	9.4 J	52	39 J
Toluene	13	5.8 J	48	22 J
m,p-Xylene	13	46	55	200
o-Xylene	13	10 J	55	43 J
Cumene	13	32	63	160
4-Ethyltoluene	13	9.4 J	63	46 J
Butane	51	11000	120	27000
Isopentane	51	30000 E	150	90000 E

Client Sample ID: VMP-55-30-061515-Dup-R

Lab ID#: 1506304A-08A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methyl tert-butyl ether	16	23	57	84
Hexane	16	46	56	160
Cyclohexane	16	2700	54	9400
2,2,4-Trimethylpentane	16	9400	74	44000
Benzene	16	15 J	50	49 J
Heptane	16	11 J	64	47 J
Toluene	16	5.3 J	59	20 J
m,p-Xylene	16	49	68	210
o-Xylene	16	11 J	68	47 J
Cumene	16	32	77	160
Propylbenzene	16	5.3 J	77	26 J
4-Ethyltoluene	16	8.6 J	77	42 J
1,2,4-Trimethylbenzene	16	6.7 J	77	33 J
alpha-Chlorotoluene	16	20	82	100
Butane	63	10000	150	25000
Isopentane	63	28000 E	180	84000 E

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Client Sample ID: VMP-55-30-061515-R

Lab ID#: 1506304A-07A

EPA METHOD TO-15 GC/MS

File Name:	**14061827**	**Date of Collection:**	**6/15/15 9:31:00 AM**
Dil. Factor:	**2.55**	**Date of Analysis:**	**6/19/15 09:06 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	13	Not Detected	63	Not Detected
Freon 114	13	Not Detected	89	Not Detected
Chloromethane	51	Not Detected	100	Not Detected
Vinyl Chloride	13	Not Detected	32	Not Detected
1,3-Butadiene	13	Not Detected	28	Not Detected
Bromomethane	13	Not Detected	50	Not Detected
Chloroethane	51	Not Detected	130	Not Detected
Freon 11	13	Not Detected	72	Not Detected
Ethanol	51	Not Detected	96	Not Detected
Freon 113	13	Not Detected	98	Not Detected
1,1-Dichloroethene	13	Not Detected	50	Not Detected
Acetone	51	Not Detected	120	Not Detected
2-Propanol	51	Not Detected	120	Not Detected
Carbon Disulfide	13	Not Detected	40	Not Detected
3-Chloropropene	51	Not Detected	160	Not Detected
Methylene Chloride	13	Not Detected	44	Not Detected
Methyl tert-butyl ether	13	24	46	88
trans-1,2-Dichloroethene	13	Not Detected	50	Not Detected
Hexane	13	49	45	170
1,1-Dichloroethane	13	Not Detected	52	Not Detected
2-Butanone (Methyl Ethyl Ketone)	51	Not Detected	150	Not Detected
cis-1,2-Dichloroethene	13	Not Detected	50	Not Detected
Tetrahydrofuran	13	Not Detected	38	Not Detected
Chloroform	13	Not Detected	62	Not Detected
1,1,1-Trichloroethane	13	Not Detected	70	Not Detected
Cyclohexane	13	2800	44	9800
Carbon Tetrachloride	13	Not Detected	80	Not Detected
2,2,4-Trimethylpentane	13	9700	60	46000
Benzene	13	16	41	53
1,2-Dichloroethane	13	Not Detected	52	Not Detected
Heptane	13	9.4 J	52	39 J
Trichloroethene	13	Not Detected	68	Not Detected
1,2-Dichloropropane	13	Not Detected	59	Not Detected
1,4-Dioxane	51	Not Detected	180	Not Detected
Bromodichloromethane	13	Not Detected	85	Not Detected
cis-1,3-Dichloropropene	13	Not Detected	58	Not Detected
4-Methyl-2-pentanone	13	Not Detected	52	Not Detected
Toluene	13	5.8 J	48	22 J
trans-1,3-Dichloropropene	13	Not Detected	58	Not Detected
1,1,2-Trichloroethane	13	Not Detected	70	Not Detected
Tetrachloroethene	13	Not Detected	86	Not Detected
2-Hexanone	51	Not Detected	210	Not Detected

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Client Sample ID: VMP-55-30-061515-R

Lab ID#: 1506304A-07A

EPA METHOD TO-15 GC/MS

File Name:	**14061827**	**Date of Collection:**	**6/15/15 9:31:00 AM**
Dil. Factor:	**2.55**	**Date of Analysis:**	**6/19/15 09:06 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	13	Not Detected	110	Not Detected
1,2-Dibromoethane (EDB)	13	Not Detected	98	Not Detected
Chlorobenzene	13	Not Detected	59	Not Detected
Ethyl Benzene	13	Not Detected	55	Not Detected
m,p-Xylene	13	46	55	200
o-Xylene	13	10 J	55	43 J
Styrene	13	Not Detected	54	Not Detected
Bromoform	13	Not Detected	130	Not Detected
Cumene	13	32	63	160
1,1,2,2-Tetrachloroethane	13	Not Detected	88	Not Detected
Propylbenzene	13	Not Detected	63	Not Detected
4-Ethyltoluene	13	9.4 J	63	46 J
1,3,5-Trimethylbenzene	13	Not Detected	63	Not Detected
1,2,4-Trimethylbenzene	13	Not Detected	63	Not Detected
1,3-Dichlorobenzene	13	Not Detected	77	Not Detected
1,4-Dichlorobenzene	13	Not Detected	77	Not Detected
alpha-Chlorotoluene	13	Not Detected	66	Not Detected
1,2-Dichlorobenzene	13	Not Detected	77	Not Detected
1,2,4-Trichlorobenzene	51	Not Detected	380	Not Detected
Hexachlorobutadiene	51	Not Detected	540	Not Detected
Butane	51	11000	120	27000
Isopentane	51	30000 E	150	90000 E

J = Estimated value.
E = Exceeds instrument calibration range.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	112	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: VMP-55-30-061515-Dup-R

Lab ID#: 1506304A-08A

EPA METHOD TO-15 GC/MS

File Name:	**14061828**	**Date of Collection:**	**6/15/15 9:31:00 AM**
Dil. Factor:	**3.15**	**Date of Analysis:**	**6/19/15 09:25 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	16	Not Detected	78	Not Detected
Freon 114	16	Not Detected	110	Not Detected
Chloromethane	63	Not Detected	130	Not Detected
Vinyl Chloride	16	Not Detected	40	Not Detected
1,3-Butadiene	16	Not Detected	35	Not Detected
Bromomethane	16	Not Detected	61	Not Detected
Chloroethane	63	Not Detected	170	Not Detected
Freon 11	16	Not Detected	88	Not Detected
Ethanol	63	Not Detected	120	Not Detected
Freon 113	16	Not Detected	120	Not Detected
1,1-Dichloroethene	16	Not Detected	62	Not Detected
Acetone	63	Not Detected	150	Not Detected
2-Propanol	63	Not Detected	150	Not Detected
Carbon Disulfide	16	Not Detected	49	Not Detected
3-Chloropropene	63	Not Detected	200	Not Detected
Methylene Chloride	16	Not Detected	55	Not Detected
Methyl tert-butyl ether	16	23	57	84
trans-1,2-Dichloroethene	16	Not Detected	62	Not Detected
Hexane	16	46	56	160
1,1-Dichloroethane	16	Not Detected	64	Not Detected
2-Butanone (Methyl Ethyl Ketone)	63	Not Detected	180	Not Detected
cis-1,2-Dichloroethene	16	Not Detected	62	Not Detected
Tetrahydrofuran	16	Not Detected	46	Not Detected
Chloroform	16	Not Detected	77	Not Detected
1,1,1-Trichloroethane	16	Not Detected	86	Not Detected
Cyclohexane	16	2700	54	9400
Carbon Tetrachloride	16	Not Detected	99	Not Detected
2,2,4-Trimethylpentane	16	9400	74	44000
Benzene	16	15 J	50	49 J
1,2-Dichloroethane	16	Not Detected	64	Not Detected
Heptane	16	11 J	64	47 J
Trichloroethene	16	Not Detected	85	Not Detected
1,2-Dichloropropane	16	Not Detected	73	Not Detected
1,4-Dioxane	63	Not Detected	230	Not Detected
Bromodichloromethane	16	Not Detected	100	Not Detected
cis-1,3-Dichloropropene	16	Not Detected	71	Not Detected
4-Methyl-2-pentanone	16	Not Detected	64	Not Detected
Toluene	16	5.3 J	59	20 J
trans-1,3-Dichloropropene	16	Not Detected	71	Not Detected
1,1,2-Trichloroethane	16	Not Detected	86	Not Detected
Tetrachloroethene	16	Not Detected	110	Not Detected
2-Hexanone	63	Not Detected	260	Not Detected

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Client Sample ID: VMP-55-30-061515-Dup-R

Lab ID#: 1506304A-08A

EPA METHOD TO-15 GC/MS

File Name:	**14061828**	**Date of Collection:**	**6/15/15 9:31:00 AM**
Dil. Factor:	**3.15**	**Date of Analysis:**	**6/19/15 09:25 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	16	Not Detected	130	Not Detected
1,2-Dibromoethane (EDB)	16	Not Detected	120	Not Detected
Chlorobenzene	16	Not Detected	72	Not Detected
Ethyl Benzene	16	Not Detected	68	Not Detected
m,p-Xylene	16	49	68	210
o-Xylene	16	11 J	68	47 J
Styrene	16	Not Detected	67	Not Detected
Bromoform	16	Not Detected	160	Not Detected
Cumene	16	32	77	160
1,1,2,2-Tetrachloroethane	16	Not Detected	110	Not Detected
Propylbenzene	16	5.3 J	77	26 J
4-Ethyltoluene	16	8.6 J	77	42 J
1,3,5-Trimethylbenzene	16	Not Detected	77	Not Detected
1,2,4-Trimethylbenzene	16	6.7 J	77	33 J
1,3-Dichlorobenzene	16	Not Detected	95	Not Detected
1,4-Dichlorobenzene	16	Not Detected	95	Not Detected
alpha-Chlorotoluene	16	20	82	100
1,2-Dichlorobenzene	16	Not Detected	95	Not Detected
1,2,4-Trichlorobenzene	63	Not Detected	470	Not Detected
Hexachlorobutadiene	63	Not Detected	670	Not Detected
Butane	63	10000	150	25000
Isopentane	63	28000 E	180	84000 E

J = Estimated value.
E = Exceeds instrument calibration range.
Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	90	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1506304A-10A

EPA METHOD TO-15 GC/MS

File Name:	**14061807a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/18/15 01:45 PM**	

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

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Client Sample ID: Lab Blank

Lab ID#: 1506304A-10A

EPA METHOD TO-15 GC/MS

File Name:	**14061807a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/18/15 01:45 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	3.7 J	150	28 J
Hexachlorobutadiene	20	Not Detected	210	Not Detected
Butane	20	Not Detected	48	Not Detected
Isopentane	20	Not Detected	59	Not Detected

J = Estimated value.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	97	70-130

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Client Sample ID: CCV

Lab ID#: 1506304A-11A

EPA METHOD TO-15 GC/MS

File Name:	**14061802**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/18/15 11:04 AM**	

Compound	%Recovery
Freon 12	108
Freon 114	109
Chloromethane	104
Vinyl Chloride	102
1,3-Butadiene	106
Bromomethane	113
Chloroethane	108
Freon 11	107
Ethanol	112
Freon 113	112
1,1-Dichloroethene	107
Acetone	110
2-Propanol	108
Carbon Disulfide	110
3-Chloropropene	108
Methylene Chloride	104
Methyl tert-butyl ether	116
trans-1,2-Dichloroethene	112
Hexane	111
1,1-Dichloroethane	106
2-Butanone (Methyl Ethyl Ketone)	106
cis-1,2-Dichloroethene	104
Tetrahydrofuran	110
Chloroform	107
1,1,1-Trichloroethane	109
Cyclohexane	108
Carbon Tetrachloride	111
2,2,4-Trimethylpentane	107
Benzene	106
1,2-Dichloroethane	107
Heptane	112
Trichloroethene	110
1,2-Dichloropropane	106
1,4-Dioxane	114
Bromodichloromethane	107
cis-1,3-Dichloropropene	114
4-Methyl-2-pentanone	112
Toluene	109
trans-1,3-Dichloropropene	102
1,1,2-Trichloroethane	104
Tetrachloroethene	107
2-Hexanone	108

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Client Sample ID: CCV
Lab ID#: 1506304A-11A
EPA METHOD TO-15 GC/MS

File Name:	**14061802**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/18/15 11:04 AM**	

Compound	%Recovery
Dibromochloromethane	108
1,2-Dibromoethane (EDB)	106
Chlorobenzene	106
Ethyl Benzene	108
m,p-Xylene	107
o-Xylene	108
Styrene	113
Bromoform	106
Cumene	108
1,1,2,2-Tetrachloroethane	99
Propylbenzene	107
4-Ethyltoluene	109
1,3,5-Trimethylbenzene	110
1,2,4-Trimethylbenzene	109
1,3-Dichlorobenzene	101
1,4-Dichlorobenzene	101
alpha-Chlorotoluene	110
1,2-Dichlorobenzene	98
1,2,4-Trichlorobenzene	74
Hexachlorobutadiene	82
Butane	102
Isopentane	110

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	96	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: LCS

Lab ID#: 1506304A-12A

EPA METHOD TO-15 GC/MS

File Name:	**14061805**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/18/15 01:02 PM**	

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

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Client Sample ID: LCS

Lab ID#: 1506304A-12A

EPA METHOD TO-15 GC/MS

File Name:	**14061805**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/18/15 01:02 PM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	98	70-130
1,2-Dibromoethane (EDB)	97	70-130
Chlorobenzene	97	70-130
Ethyl Benzene	99	70-130
m,p-Xylene	100	70-130
o-Xylene	99	70-130
Styrene	102	70-130
Bromoform	101	70-130
Cumene	100	70-130
1,1,2,2-Tetrachloroethane	98	70-130
Propylbenzene	103	70-130
4-Ethyltoluene	101	70-130
1,3,5-Trimethylbenzene	104	70-130
1,2,4-Trimethylbenzene	102	70-130
1,3-Dichlorobenzene	100	70-130
1,4-Dichlorobenzene	99	70-130
alpha-Chlorotoluene	109	70-130
1,2-Dichlorobenzene	98	70-130
1,2,4-Trichlorobenzene	112	70-130
Hexachlorobutadiene	110	70-130
Butane	102	60-140
Isopentane	103	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	96	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: LCSD

Lab ID#: 1506304A-12AA

EPA METHOD TO-15 GC/MS

File Name:	**14061806**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/18/15 01:23 PM**	

Compound	%Recovery	Method Limits
Freon 12	102	70-130
Freon 114	103	70-130
Chloromethane	98	70-130
Vinyl Chloride	97	70-130
1,3-Butadiene	92	70-130
Bromomethane	104	70-130
Chloroethane	104	70-130
Freon 11	100	70-130
Ethanol	98	70-130
Freon 113	102	70-130
1,1-Dichloroethene	98	70-130
Acetone	98	70-130
2-Propanol	100	70-130
Carbon Disulfide	87	70-130
3-Chloropropene	92	70-130
Methylene Chloride	99	70-130
Methyl tert-butyl ether	94	70-130
trans-1,2-Dichloroethene	88	70-130
Hexane	98	70-130
1,1-Dichloroethane	96	70-130
2-Butanone (Methyl Ethyl Ketone)	96	70-130
cis-1,2-Dichloroethene	102	70-130
Tetrahydrofuran	97	70-130
Chloroform	95	70-130
1,1,1-Trichloroethane	97	70-130
Cyclohexane	96	70-130
Carbon Tetrachloride	98	70-130
2,2,4-Trimethylpentane	98	70-130
Benzene	97	70-130
1,2-Dichloroethane	96	70-130
Heptane	98	70-130
Trichloroethene	98	70-130
1,2-Dichloropropane	98	70-130
1,4-Dioxane	103	70-130
Bromodichloromethane	100	70-130
cis-1,3-Dichloropropene	95	70-130
4-Methyl-2-pentanone	99	70-130
Toluene	99	70-130
trans-1,3-Dichloropropene	88	70-130
1,1,2-Trichloroethane	98	70-130
Tetrachloroethene	99	70-130
2-Hexanone	92	70-130

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Client Sample ID: LCSD
Lab ID#: 1506304A-12AA
EPA METHOD TO-15 GC/MS

File Name:	**14061806**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/18/15 01:23 PM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	98	70-130
1,2-Dibromoethane (EDB)	98	70-130
Chlorobenzene	97	70-130
Ethyl Benzene	101	70-130
m,p-Xylene	100	70-130
o-Xylene	100	70-130
Styrene	101	70-130
Bromoform	99	70-130
Cumene	100	70-130
1,1,2,2-Tetrachloroethane	97	70-130
Propylbenzene	102	70-130
4-Ethyltoluene	102	70-130
1,3,5-Trimethylbenzene	104	70-130
1,2,4-Trimethylbenzene	104	70-130
1,3-Dichlorobenzene	100	70-130
1,4-Dichlorobenzene	103	70-130
alpha-Chlorotoluene	106	70-130
1,2-Dichlorobenzene	102	70-130
1,2,4-Trichlorobenzene	119	70-130
Hexachlorobutadiene	124	70-130
Butane	101	60-140
Isopentane	101	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	94	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	101	70-130

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6/23/2015
Ms. Elizabeth Kunkel
URS Corporation
1001 Highlands Plaza Dr. West
Suite 300
St. Louis MO 63110

Project Name: Roxana Soil Vapor
Project #: 21563720.04202
Workorder #: 1506304B

Dear Ms. Elizabeth Kunkel

The following report includes the data for the above referenced project for sample(s) received on 6/16/2015 at Air Toxics Ltd.

The data and associated QC analyzed by Modified ASTM D-1946 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

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

Regards,

Kelly Buettner

Project Manager

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WORK ORDER #: 1506304B

Work Order Summary

CLIENT:	Ms. Elizabeth Kunkel AECOM 1001 Highlands Plaza Dr. West Suite 300 St. Louis, MO 63110	**BILL TO:**	Accounts Payable Austin AECOM P.O. BOX 203970 Austin, TX 78720-1088
PHONE:	314-743-4179	**P.O. #**	87243.UB
FAX:		**PROJECT #**	21563720.04202 Roxana Soil Vapor
DATE RECEIVED:	06/16/2015	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	06/23/2015		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
07A	VMP-55-30-061515-R	Modified ASTM D-1946	6.5 "Hg	14.6 psi
08A	VMP-55-30-061515-Dup-R	Modified ASTM D-1946	11 "Hg	14.6 psi
10A	Lab Blank	Modified ASTM D-1946	NA	NA
10B	Lab Blank	Modified ASTM D-1946	NA	NA
11A	LCS	Modified ASTM D-1946	NA	NA
11AA	LCSD	Modified ASTM D-1946	NA	NA

CERTIFIED BY: Heidi Mayo DATE: 06/23/15

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704343-14-7, UT NELAP CA009332014-5, VA NELAP - 460197, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2014, Expiration date: 10/17/2015.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

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

LABORATORY NARRATIVE
Modified ASTM D-1946
URS Corporation
Workorder# 1506304B

Nine 1 Liter Summa Canister samples were received on June 16, 2015. 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

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-55-30-061515-R

Lab ID#: 1506304B-07A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.26	1.6
Nitrogen	0.26	86
Methane	0.00026	0.42
Carbon Dioxide	0.026	12
Ethane	0.0026	0.00092 J

Client Sample ID: VMP-55-30-061515-Dup-R

Lab ID#: 1506304B-08A

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

Client Sample ID: VMP-55-30-061515-Dup-R

Lab ID#: 1506304B-08A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.32	1.8
Nitrogen	0.32	86
Methane	0.00032	0.42
Carbon Dioxide	0.032	12
Ethane	0.0032	0.00092 J

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Client Sample ID: VMP-55-30-061515-R

Lab ID#: 1506304B-07A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10062224**	**Date of Collection: 6/15/15 9:31:00 AM**	
Dil. Factor:	**2.55**	**Date of Analysis: 6/22/15 09:08 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.26	1.6
Nitrogen	0.26	86
Carbon Monoxide	0.026	Not Detected
Methane	0.00026	0.42
Carbon Dioxide	0.026	12
Ethane	0.0026	0.00092 J
Ethene	0.0026	Not Detected
Helium	0.13	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-55-30-061515-Dup-R

Lab ID#: 1506304B-08A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10062225**	**Date of Collection: 6/15/15 9:31:00 AM**	
Dil. Factor:	**3.15**	**Date of Analysis: 6/22/15 09:31 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.32	1.8
Nitrogen	0.32	86
Carbon Monoxide	0.032	Not Detected
Methane	0.00032	0.42
Carbon Dioxide	0.032	12
Ethane	0.0032	0.00092 J
Ethene	0.0032	Not Detected
Helium	0.16	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister

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Client Sample ID: Lab Blank

Lab ID#: 1506304B-10A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10062204a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/22/15 10:39 AM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.10	Not Detected
Nitrogen	0.10	0.055 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

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Client Sample ID: Lab Blank

Lab ID#: 1506304B-10B

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10062203c**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/22/15 10:12 AM**	

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

Container Type: NA - Not Applicable

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Client Sample ID: LCS

Lab ID#: 1506304B-11A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10062202**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/22/15 09:48 AM**	

Compound	%Recovery	Method Limits
Oxygen	99	85-115
Nitrogen	92	85-115
Carbon Monoxide	94	85-115
Methane	106	85-115
Carbon Dioxide	99	85-115
Ethane	105	85-115
Ethene	106	85-115
Helium	102	85-115

Container Type: NA - Not Applicable

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Client Sample ID: LCSD

Lab ID#: 1506304B-11AA

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10062227**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/22/15 10:19 PM**	

Compound	%Recovery	Method Limits
Oxygen	99	85-115
Nitrogen	92	85-115
Carbon Monoxide	94	85-115
Methane	103	85-115
Carbon Dioxide	99	85-115
Ethane	101	85-115
Ethene	102	85-115
Helium	103	85-115

Container Type: NA - Not Applicable