

November 4, 2016

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, 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:

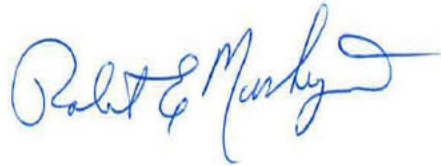
- VMP-15
- VMP-55

If you have any questions or require further information, please contact Robert Mooshegian at robert.mooshegian@aecom.com (314/743-4106) or Michael Currier at michael.currier@aecom.com (314-346-9071).

Sincerely,
AECOM, on behalf of Shell Oil Products US



Michael Currier
Environmental Scientist



Robert E. Mooshegian, CHMM
Senior Program Manager

Attachments

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

10/17/2016
Ms. Elizabeth Kunkel
URS Corporation
1001 Highlands Plaza Dr. West
Suite 300
St. Louis MO 63110

Project Name: Roxana Quarterly Soil Vapor
Project #:
Workorder #: 1608081AR1

Dear Ms. Elizabeth Kunkel

The following report includes the data for the above referenced project for sample(s) received on 8/4/2016 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 Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free 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

WORK ORDER #: 1608081AR1

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 PO Box 203970 Austin, TX 78720
PHONE:	314-743-4179	P.O. #	60477387-1.04.003
FAX:		PROJECT #	Roxana Quarterly Soil Vapor
DATE RECEIVED:	08/04/2016	CONTACT:	Kelly Buettner
DATE COMPLETED:	08/17/2016		
DATE REISSUED:	10/17/2016		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	VMP-15-5-080216	TO-15	7.8 "Hg	15.1 psi
02A	VMP-15-21.5-080216	TO-15	6.7 "Hg	15.4 psi
03A	VMP-15-25.5-080216	TO-15	8.8 "Hg	14.8 psi
04A	VMP-15-29-080216	TO-15	7.1 "Hg	15.2 psi
05A(cancelled)	VMP-55-5-080316	TO-15	6.7 "Hg	15.2 psi
06A	VMP-55-20-080316	TO-15	9.8 "Hg	14.7 psi
07A	Lab Blank	TO-15	NA	NA
07B	Lab Blank	TO-15	NA	NA
07C	Lab Blank	TO-15	NA	NA
08A	CCV	TO-15	NA	NA
08B	CCV	TO-15	NA	NA
08C	CCV	TO-15	NA	NA
09A	LCS	TO-15	NA	NA
09AA	LCSD	TO-15	NA	NA
09B	LCS	TO-15	NA	NA
09BB	LCSD	TO-15	NA	NA
09C	LCS	TO-15	NA	NA
09CC	LCSD	TO-15	NA	NA

CERTIFIED BY: 

 Technical Director

DATE: 10/17/16

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
 TX NELAP - T104704434-15-9, UT NELAP CA0093332015-6, VA NELAP - 8113, WA NELAP - C935
 Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
 Accreditation number: CA300005, Effective date: 10/18/2015, Expiration date: 10/17/2016.

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

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180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
 (916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
EPA Method TO-15
URS Corporation
Workorder# 1608081AR1

Six 1 Liter Summa Canister samples were received on August 04, 2016. 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

The Summa canister for sample VMP-55-5-080316 was leaking upon arrival. The client was notified and the analysis cancelled.

The work order was reissued on 10/17/16 to change identification of sample VMP-55-20-080316 per the revised Chain of Custody (COC) provided by the client.

Analytical Notes

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

Dilution was performed on samples VMP-15-21.5-080216, VMP-15-25.5-080216, VMP-15-29-080216, and VMP-55-20-20-080316 due to the presence of high level target species.

The recovery of surrogate 1,2-Dichloroethane-d4 in sample VMP-55-20-20-080316 was outside laboratory control limits due to high level hydrocarbon matrix interference. The surrogate recovery is flagged.

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

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

Client Sample ID: VMP-15-5-080216

Lab ID#: 1608081AR1-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.4	0.58 J	6.8	2.8 J
Acetone	14	4.1 J	32	9.7 J
2-Propanol	5.5	5.7	13	14
Carbon Disulfide	5.5	0.63 J	17	2.0 J
Methylene Chloride	14	0.64 J	48	2.2 J
Chloroform	1.4	0.97 J	6.7	4.7 J
2,2,4-Trimethylpentane	1.4	0.69 J	6.4	3.2 J
Toluene	1.4	0.24 J	5.2	0.90 J

Client Sample ID: VMP-15-21.5-080216

Lab ID#: 1608081AR1-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	88	14 J	210	34 J
Carbon Disulfide	35	2.8 J	110	8.8 J
2,2,4-Trimethylpentane	8.8	1900	41	8900
Benzene	8.8	2.5 J	28	8.1 J
Isopentane	35	12 J	100	35 J

Client Sample ID: VMP-15-25.5-080216

Lab ID#: 1608081AR1-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Cyclohexane	14	370	49	1300
2,2,4-Trimethylpentane	14	4300	66	20000
m,p-Xylene	14	3.7 J	62	16 J
Butane	57	470	140	1100
Isopentane	57	2100	170	6200

Client Sample ID: VMP-15-29-080216

Lab ID#: 1608081AR1-04A

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

Client Sample ID: VMP-15-29-080216

Lab ID#: 1608081AR1-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Disulfide	71	3.3 J	220	10 J
Cyclohexane	18	20	61	68
2,2,4-Trimethylpentane	18	4300	83	20000
Benzene	18	28	57	89
Butane	71	190	170	450
Isopentane	71	330	210	980

Client Sample ID: VMP-55-20-080316

Lab ID#: 1608081AR1-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methyl tert-butyl ether	93	30 J	340	110 J
Hexane	93	46000	330	160000
Cyclohexane	93	56000	320	190000
2,2,4-Trimethylpentane	93	56000	430	260000
Heptane	93	19000	380	76000
Butane	370	58000	880	140000
Isopentane	370	180000	1100	540000



Air Toxics

Client Sample ID: VMP-15-5-080216

Lab ID#: 1608081AR1-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	17080921	Date of Collection:	8/2/16 9:14:00 AM
Dil. Factor:	2.74	Date of Analysis:	8/9/16 11:35 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.4	0.58 J	6.8	2.8 J
Freon 114	1.4	Not Detected	9.6	Not Detected
Chloromethane	14	Not Detected	28	Not Detected
Vinyl Chloride	1.4	Not Detected	3.5	Not Detected
1,3-Butadiene	1.4	Not Detected	3.0	Not Detected
Bromomethane	14	Not Detected	53	Not Detected
Chloroethane	5.5	Not Detected	14	Not Detected
Freon 11	1.4	Not Detected	7.7	Not Detected
Ethanol	5.5	Not Detected	10	Not Detected
Freon 113	1.4	Not Detected	10	Not Detected
1,1-Dichloroethene	1.4	Not Detected	5.4	Not Detected
Acetone	14	4.1 J	32	9.7 J
2-Propanol	5.5	5.7	13	14
Carbon Disulfide	5.5	0.63 J	17	2.0 J
3-Chloropropene	5.5	Not Detected	17	Not Detected
Methylene Chloride	14	0.64 J	48	2.2 J
Methyl tert-butyl ether	5.5	Not Detected	20	Not Detected
trans-1,2-Dichloroethene	1.4	Not Detected	5.4	Not Detected
Hexane	1.4	Not Detected	4.8	Not Detected
1,1-Dichloroethane	1.4	Not Detected	5.5	Not Detected
2-Butanone (Methyl Ethyl Ketone)	5.5	Not Detected	16	Not Detected
cis-1,2-Dichloroethene	1.4	Not Detected	5.4	Not Detected
Tetrahydrofuran	1.4	Not Detected	4.0	Not Detected
Chloroform	1.4	0.97 J	6.7	4.7 J
1,1,1-Trichloroethane	1.4	Not Detected	7.5	Not Detected
Cyclohexane	1.4	Not Detected	4.7	Not Detected
Carbon Tetrachloride	1.4	Not Detected	8.6	Not Detected
2,2,4-Trimethylpentane	1.4	0.69 J	6.4	3.2 J
Benzene	1.4	Not Detected	4.4	Not Detected
1,2-Dichloroethane	1.4	Not Detected	5.5	Not Detected
Heptane	1.4	Not Detected	5.6	Not Detected
Trichloroethene	1.4	Not Detected	7.4	Not Detected
1,2-Dichloropropane	1.4	Not Detected	6.3	Not Detected
1,4-Dioxane	5.5	Not Detected	20	Not Detected
Bromodichloromethane	1.4	Not Detected	9.2	Not Detected
cis-1,3-Dichloropropene	1.4	Not Detected	6.2	Not Detected
4-Methyl-2-pentanone	1.4	Not Detected	5.6	Not Detected
Toluene	1.4	0.24 J	5.2	0.90 J
trans-1,3-Dichloropropene	1.4	Not Detected	6.2	Not Detected
1,1,2-Trichloroethane	1.4	Not Detected	7.5	Not Detected
Tetrachloroethene	1.4	Not Detected	9.3	Not Detected
2-Hexanone	5.5	Not Detected	22	Not Detected



Air Toxics

Client Sample ID: VMP-15-5-080216

Lab ID#: 1608081AR1-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	17080921	Date of Collection:	8/2/16 9:14:00 AM
Dil. Factor:	2.74	Date of Analysis:	8/9/16 11:35 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	10	Not Detected
Chlorobenzene	1.4	Not Detected	6.3	Not Detected
Ethyl Benzene	1.4	Not Detected	5.9	Not Detected
m,p-Xylene	1.4	Not Detected	5.9	Not Detected
o-Xylene	1.4	Not Detected	5.9	Not Detected
Styrene	1.4	Not Detected	5.8	Not Detected
Bromoform	1.4	Not Detected	14	Not Detected
Cumene	1.4	Not Detected	6.7	Not Detected
1,1,2,2-Tetrachloroethane	1.4	Not Detected	9.4	Not Detected
Propylbenzene	1.4	Not Detected	6.7	Not Detected
4-Ethyltoluene	1.4	Not Detected	6.7	Not Detected
1,3,5-Trimethylbenzene	1.4	Not Detected	6.7	Not Detected
1,2,4-Trimethylbenzene	1.4	Not Detected	6.7	Not Detected
1,3-Dichlorobenzene	1.4	Not Detected	8.2	Not Detected
1,4-Dichlorobenzene	1.4	Not Detected	8.2	Not Detected
alpha-Chlorotoluene	1.4	Not Detected	7.1	Not Detected
1,2-Dichlorobenzene	1.4	Not Detected	8.2	Not Detected
1,2,4-Trichlorobenzene	5.5	Not Detected	41	Not Detected
Hexachlorobutadiene	5.5	Not Detected	58	Not Detected
Butane	5.5	Not Detected	13	Not Detected
Isopentane	5.5	Not Detected	16	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	97	70-130



Air Toxics

Client Sample ID: VMP-15-21.5-080216

Lab ID#: 1608081AR1-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	17081527	Date of Collection:	8/2/16 9:34:00 AM
Dil. Factor:	17.6	Date of Analysis:	8/16/16 03:27 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	8.8	Not Detected	44	Not Detected
Freon 114	8.8	Not Detected	62	Not Detected
Chloromethane	88	Not Detected	180	Not Detected
Vinyl Chloride	8.8	Not Detected	22	Not Detected
1,3-Butadiene	8.8	Not Detected	19	Not Detected
Bromomethane	88	Not Detected	340	Not Detected
Chloroethane	35	Not Detected	93	Not Detected
Freon 11	8.8	Not Detected	49	Not Detected
Ethanol	35	Not Detected	66	Not Detected
Freon 113	8.8	Not Detected	67	Not Detected
1,1-Dichloroethene	8.8	Not Detected	35	Not Detected
Acetone	88	14 J	210	34 J
2-Propanol	35	Not Detected	86	Not Detected
Carbon Disulfide	35	2.8 J	110	8.8 J
3-Chloropropene	35	Not Detected	110	Not Detected
Methylene Chloride	88	Not Detected	300	Not Detected
Methyl tert-butyl ether	35	Not Detected	130	Not Detected
trans-1,2-Dichloroethene	8.8	Not Detected	35	Not Detected
Hexane	8.8	Not Detected	31	Not Detected
1,1-Dichloroethane	8.8	Not Detected	36	Not Detected
2-Butanone (Methyl Ethyl Ketone)	35	Not Detected	100	Not Detected
cis-1,2-Dichloroethene	8.8	Not Detected	35	Not Detected
Tetrahydrofuran	8.8	Not Detected	26	Not Detected
Chloroform	8.8	Not Detected	43	Not Detected
1,1,1-Trichloroethane	8.8	Not Detected	48	Not Detected
Cyclohexane	8.8	Not Detected	30	Not Detected
Carbon Tetrachloride	8.8	Not Detected	55	Not Detected
2,2,4-Trimethylpentane	8.8	1900	41	8900
Benzene	8.8	2.5 J	28	8.1 J
1,2-Dichloroethane	8.8	Not Detected	36	Not Detected
Heptane	8.8	Not Detected	36	Not Detected
Trichloroethene	8.8	Not Detected	47	Not Detected
1,2-Dichloropropane	8.8	Not Detected	41	Not Detected
1,4-Dioxane	35	Not Detected	130	Not Detected
Bromodichloromethane	8.8	Not Detected	59	Not Detected
cis-1,3-Dichloropropene	8.8	Not Detected	40	Not Detected
4-Methyl-2-pentanone	8.8	Not Detected	36	Not Detected
Toluene	8.8	Not Detected	33	Not Detected
trans-1,3-Dichloropropene	8.8	Not Detected	40	Not Detected
1,1,2-Trichloroethane	8.8	Not Detected	48	Not Detected
Tetrachloroethene	8.8	Not Detected	60	Not Detected
2-Hexanone	35	Not Detected	140	Not Detected



Client Sample ID: VMP-15-21.5-080216

Lab ID#: 1608081AR1-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	17081527	Date of Collection:	8/2/16 9:34:00 AM
Dil. Factor:	17.6	Date of Analysis:	8/16/16 03:27 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	8.8	Not Detected	75	Not Detected
1,2-Dibromoethane (EDB)	8.8	Not Detected	68	Not Detected
Chlorobenzene	8.8	Not Detected	40	Not Detected
Ethyl Benzene	8.8	Not Detected	38	Not Detected
m,p-Xylene	8.8	Not Detected	38	Not Detected
o-Xylene	8.8	Not Detected	38	Not Detected
Styrene	8.8	Not Detected	37	Not Detected
Bromoform	8.8	Not Detected	91	Not Detected
Cumene	8.8	Not Detected	43	Not Detected
1,1,2,2-Tetrachloroethane	8.8	Not Detected	60	Not Detected
Propylbenzene	8.8	Not Detected	43	Not Detected
4-Ethyltoluene	8.8	Not Detected	43	Not Detected
1,3,5-Trimethylbenzene	8.8	Not Detected	43	Not Detected
1,2,4-Trimethylbenzene	8.8	Not Detected	43	Not Detected
1,3-Dichlorobenzene	8.8	Not Detected	53	Not Detected
1,4-Dichlorobenzene	8.8	Not Detected	53	Not Detected
alpha-Chlorotoluene	8.8	Not Detected	46	Not Detected
1,2-Dichlorobenzene	8.8	Not Detected	53	Not Detected
1,2,4-Trichlorobenzene	35	Not Detected	260	Not Detected
Hexachlorobutadiene	35	Not Detected	380	Not Detected
Butane	35	Not Detected	84	Not Detected
Isopentane	35	12 J	100	35 J

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	103	70-130
4-Bromofluorobenzene	104	70-130



Air Toxics

Client Sample ID: VMP-15-25.5-080216

Lab ID#: 1608081AR1-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	17080922	Date of Collection:	8/2/16 10:00:00 AM
Dil. Factor:	28.4	Date of Analysis:	8/9/16 11:59 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	14	Not Detected	70	Not Detected
Freon 114	14	Not Detected	99	Not Detected
Chloromethane	140	Not Detected	290	Not Detected
Vinyl Chloride	14	Not Detected	36	Not Detected
1,3-Butadiene	14	Not Detected	31	Not Detected
Bromomethane	140	Not Detected	550	Not Detected
Chloroethane	57	Not Detected	150	Not Detected
Freon 11	14	Not Detected	80	Not Detected
Ethanol	57	Not Detected	110	Not Detected
Freon 113	14	Not Detected	110	Not Detected
1,1-Dichloroethene	14	Not Detected	56	Not Detected
Acetone	140	Not Detected	340	Not Detected
2-Propanol	57	Not Detected	140	Not Detected
Carbon Disulfide	57	Not Detected	180	Not Detected
3-Chloropropene	57	Not Detected	180	Not Detected
Methylene Chloride	140	Not Detected	490	Not Detected
Methyl tert-butyl ether	57	Not Detected	200	Not Detected
trans-1,2-Dichloroethene	14	Not Detected	56	Not Detected
Hexane	14	Not Detected	50	Not Detected
1,1-Dichloroethane	14	Not Detected	57	Not Detected
2-Butanone (Methyl Ethyl Ketone)	57	Not Detected	170	Not Detected
cis-1,2-Dichloroethene	14	Not Detected	56	Not Detected
Tetrahydrofuran	14	Not Detected	42	Not Detected
Chloroform	14	Not Detected	69	Not Detected
1,1,1-Trichloroethane	14	Not Detected	77	Not Detected
Cyclohexane	14	370	49	1300
Carbon Tetrachloride	14	Not Detected	89	Not Detected
2,2,4-Trimethylpentane	14	4300	66	20000
Benzene	14	Not Detected	45	Not Detected
1,2-Dichloroethane	14	Not Detected	57	Not Detected
Heptane	14	Not Detected	58	Not Detected
Trichloroethene	14	Not Detected	76	Not Detected
1,2-Dichloropropane	14	Not Detected	66	Not Detected
1,4-Dioxane	57	Not Detected	200	Not Detected
Bromodichloromethane	14	Not Detected	95	Not Detected
cis-1,3-Dichloropropene	14	Not Detected	64	Not Detected
4-Methyl-2-pentanone	14	Not Detected	58	Not Detected
Toluene	14	Not Detected	54	Not Detected
trans-1,3-Dichloropropene	14	Not Detected	64	Not Detected
1,1,2-Trichloroethane	14	Not Detected	77	Not Detected
Tetrachloroethene	14	Not Detected	96	Not Detected
2-Hexanone	57	Not Detected	230	Not Detected



Client Sample ID: VMP-15-25.5-080216

Lab ID#: 1608081AR1-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	17080922	Date of Collection:	8/2/16 10:00:00 AM
Dil. Factor:	28.4	Date of Analysis:	8/9/16 11:59 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	14	Not Detected	120	Not Detected
1,2-Dibromoethane (EDB)	14	Not Detected	110	Not Detected
Chlorobenzene	14	Not Detected	65	Not Detected
Ethyl Benzene	14	Not Detected	62	Not Detected
m,p-Xylene	14	3.7 J	62	16 J
o-Xylene	14	Not Detected	62	Not Detected
Styrene	14	Not Detected	60	Not Detected
Bromoform	14	Not Detected	150	Not Detected
Cumene	14	Not Detected	70	Not Detected
1,1,2,2-Tetrachloroethane	14	Not Detected	97	Not Detected
Propylbenzene	14	Not Detected	70	Not Detected
4-Ethyltoluene	14	Not Detected	70	Not Detected
1,3,5-Trimethylbenzene	14	Not Detected	70	Not Detected
1,2,4-Trimethylbenzene	14	Not Detected	70	Not Detected
1,3-Dichlorobenzene	14	Not Detected	85	Not Detected
1,4-Dichlorobenzene	14	Not Detected	85	Not Detected
alpha-Chlorotoluene	14	Not Detected	74	Not Detected
1,2-Dichlorobenzene	14	Not Detected	85	Not Detected
1,2,4-Trichlorobenzene	57	Not Detected	420	Not Detected
Hexachlorobutadiene	57	Not Detected	600	Not Detected
Butane	57	470	140	1100
Isopentane	57	2100	170	6200

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	110	70-130
4-Bromofluorobenzene	103	70-130



Air Toxics

Client Sample ID: VMP-15-29-080216

Lab ID#: 1608081AR1-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	17080923	Date of Collection:	8/2/16 10:16:00 AM
Dil. Factor:	35.5	Date of Analysis:	8/10/16 12:23 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	18	Not Detected	88	Not Detected
Freon 114	18	Not Detected	120	Not Detected
Chloromethane	180	Not Detected	370	Not Detected
Vinyl Chloride	18	Not Detected	45	Not Detected
1,3-Butadiene	18	Not Detected	39	Not Detected
Bromomethane	180	Not Detected	690	Not Detected
Chloroethane	71	Not Detected	190	Not Detected
Freon 11	18	Not Detected	100	Not Detected
Ethanol	71	Not Detected	130	Not Detected
Freon 113	18	Not Detected	140	Not Detected
1,1-Dichloroethene	18	Not Detected	70	Not Detected
Acetone	180	Not Detected	420	Not Detected
2-Propanol	71	Not Detected	170	Not Detected
Carbon Disulfide	71	3.3 J	220	10 J
3-Chloropropene	71	Not Detected	220	Not Detected
Methylene Chloride	180	Not Detected	620	Not Detected
Methyl tert-butyl ether	71	Not Detected	260	Not Detected
trans-1,2-Dichloroethene	18	Not Detected	70	Not Detected
Hexane	18	Not Detected	62	Not Detected
1,1-Dichloroethane	18	Not Detected	72	Not Detected
2-Butanone (Methyl Ethyl Ketone)	71	Not Detected	210	Not Detected
cis-1,2-Dichloroethene	18	Not Detected	70	Not Detected
Tetrahydrofuran	18	Not Detected	52	Not Detected
Chloroform	18	Not Detected	87	Not Detected
1,1,1-Trichloroethane	18	Not Detected	97	Not Detected
Cyclohexane	18	20	61	68
Carbon Tetrachloride	18	Not Detected	110	Not Detected
2,2,4-Trimethylpentane	18	4300	83	20000
Benzene	18	28	57	89
1,2-Dichloroethane	18	Not Detected	72	Not Detected
Heptane	18	Not Detected	73	Not Detected
Trichloroethene	18	Not Detected	95	Not Detected
1,2-Dichloropropane	18	Not Detected	82	Not Detected
1,4-Dioxane	71	Not Detected	260	Not Detected
Bromodichloromethane	18	Not Detected	120	Not Detected
cis-1,3-Dichloropropene	18	Not Detected	80	Not Detected
4-Methyl-2-pentanone	18	Not Detected	73	Not Detected
Toluene	18	Not Detected	67	Not Detected
trans-1,3-Dichloropropene	18	Not Detected	80	Not Detected
1,1,2-Trichloroethane	18	Not Detected	97	Not Detected
Tetrachloroethene	18	Not Detected	120	Not Detected
2-Hexanone	71	Not Detected	290	Not Detected



Client Sample ID: VMP-15-29-080216

Lab ID#: 1608081AR1-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	17080923	Date of Collection:	8/2/16 10:16:00 AM
Dil. Factor:	35.5	Date of Analysis:	8/10/16 12:23 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	18	Not Detected	150	Not Detected
1,2-Dibromoethane (EDB)	18	Not Detected	140	Not Detected
Chlorobenzene	18	Not Detected	82	Not Detected
Ethyl Benzene	18	Not Detected	77	Not Detected
m,p-Xylene	18	Not Detected	77	Not Detected
o-Xylene	18	Not Detected	77	Not Detected
Styrene	18	Not Detected	76	Not Detected
Bromoform	18	Not Detected	180	Not Detected
Cumene	18	Not Detected	87	Not Detected
1,1,2,2-Tetrachloroethane	18	Not Detected	120	Not Detected
Propylbenzene	18	Not Detected	87	Not Detected
4-Ethyltoluene	18	Not Detected	87	Not Detected
1,3,5-Trimethylbenzene	18	Not Detected	87	Not Detected
1,2,4-Trimethylbenzene	18	Not Detected	87	Not Detected
1,3-Dichlorobenzene	18	Not Detected	110	Not Detected
1,4-Dichlorobenzene	18	Not Detected	110	Not Detected
alpha-Chlorotoluene	18	Not Detected	92	Not Detected
1,2-Dichlorobenzene	18	Not Detected	110	Not Detected
1,2,4-Trichlorobenzene	71	Not Detected	530	Not Detected
Hexachlorobutadiene	71	Not Detected	760	Not Detected
Butane	71	190	170	450
Isopentane	71	330	210	980

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	97	70-130
4-Bromofluorobenzene	103	70-130



Air Toxics

Client Sample ID: VMP-55-20-080316

Lab ID#: 1608081AR1-06A

EPA METHOD TO-15 GC/MS

File Name:	14081028	Date of Collection:	8/3/16 1:46:00 PM
Dil. Factor:	18.6	Date of Analysis:	8/11/16 08:57 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	93	Not Detected	460	Not Detected
Freon 114	93	Not Detected	650	Not Detected
Chloromethane	370	Not Detected	770	Not Detected
Vinyl Chloride	93	Not Detected	240	Not Detected
1,3-Butadiene	93	Not Detected	200	Not Detected
Bromomethane	370	Not Detected	1400	Not Detected
Chloroethane	370	Not Detected	980	Not Detected
Freon 11	93	Not Detected	520	Not Detected
Ethanol	370	Not Detected	700	Not Detected
Freon 113	93	Not Detected	710	Not Detected
1,1-Dichloroethene	93	Not Detected	370	Not Detected
Acetone	370	Not Detected	880	Not Detected
2-Propanol	370	Not Detected	910	Not Detected
Carbon Disulfide	370	Not Detected	1200	Not Detected
3-Chloropropene	370	Not Detected	1200	Not Detected
Methylene Chloride	370	Not Detected	1300	Not Detected
Methyl tert-butyl ether	93	30 J	340	110 J
trans-1,2-Dichloroethene	93	Not Detected	370	Not Detected
Hexane	93	46000	330	160000
1,1-Dichloroethane	93	Not Detected	380	Not Detected
2-Butanone (Methyl Ethyl Ketone)	370	Not Detected	1100	Not Detected
cis-1,2-Dichloroethene	93	Not Detected	370	Not Detected
Tetrahydrofuran	93	Not Detected	270	Not Detected
Chloroform	93	Not Detected	450	Not Detected
1,1,1-Trichloroethane	93	Not Detected	510	Not Detected
Cyclohexane	93	56000	320	190000
Carbon Tetrachloride	93	Not Detected	580	Not Detected
2,2,4-Trimethylpentane	93	56000	430	260000
Benzene	93	Not Detected	300	Not Detected
1,2-Dichloroethane	93	Not Detected	380	Not Detected
Heptane	93	19000	380	76000
Trichloroethene	93	Not Detected	500	Not Detected
1,2-Dichloropropane	93	Not Detected	430	Not Detected
1,4-Dioxane	370	Not Detected	1300	Not Detected
Bromodichloromethane	93	Not Detected	620	Not Detected
cis-1,3-Dichloropropene	93	Not Detected	420	Not Detected
4-Methyl-2-pentanone	93	Not Detected	380	Not Detected
Toluene	93	Not Detected	350	Not Detected
trans-1,3-Dichloropropene	93	Not Detected	420	Not Detected
1,1,2-Trichloroethane	93	Not Detected	510	Not Detected
Tetrachloroethene	93	Not Detected	630	Not Detected
2-Hexanone	370	Not Detected	1500	Not Detected

Client Sample ID: VMP-55-20-080316

Lab ID#: 1608081AR1-06A

EPA METHOD TO-15 GC/MS

File Name:	14081028	Date of Collection:	8/3/16 1:46:00 PM
Dil. Factor:	18.6	Date of Analysis:	8/11/16 08:57 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	93	Not Detected	790	Not Detected
1,2-Dibromoethane (EDB)	93	Not Detected	710	Not Detected
Chlorobenzene	93	Not Detected	430	Not Detected
Ethyl Benzene	93	Not Detected	400	Not Detected
m,p-Xylene	93	Not Detected	400	Not Detected
o-Xylene	93	Not Detected	400	Not Detected
Styrene	93	Not Detected	400	Not Detected
Bromoform	93	Not Detected	960	Not Detected
Cumene	93	Not Detected	460	Not Detected
1,1,2,2-Tetrachloroethane	93	Not Detected	640	Not Detected
Propylbenzene	93	Not Detected	460	Not Detected
4-Ethyltoluene	93	Not Detected	460	Not Detected
1,3,5-Trimethylbenzene	93	Not Detected	460	Not Detected
1,2,4-Trimethylbenzene	93	Not Detected	460	Not Detected
1,3-Dichlorobenzene	93	Not Detected	560	Not Detected
1,4-Dichlorobenzene	93	Not Detected	560	Not Detected
alpha-Chlorotoluene	93	Not Detected	480	Not Detected
1,2-Dichlorobenzene	93	Not Detected	560	Not Detected
1,2,4-Trichlorobenzene	370	Not Detected	2800	Not Detected
Hexachlorobutadiene	370	Not Detected	4000	Not Detected
Butane	370	58000	880	140000
Isopentane	370	180000	1100	540000

J = Estimated value.

Q = Exceeds Quality Control limits of 70% to 130%, due to matrix effects.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	135 Q	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	99	70-130



Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 1608081AR1-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	17080905c	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	8/9/16 12:46 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	0.081 J	6.2	0.25 J
3-Chloropropene	2.0	Not Detected	6.3	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
Methyl tert-butyl ether	2.0	Not Detected	7.2	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Hexane	0.50	Not Detected	1.8	Not Detected
1,1-Dichloroethane	0.50	Not Detected	2.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2.0	Not Detected	5.9	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Tetrahydrofuran	0.50	Not Detected	1.5	Not Detected
Chloroform	0.50	Not Detected	2.4	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Cyclohexane	0.50	Not Detected	1.7	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
2,2,4-Trimethylpentane	0.50	Not Detected	2.3	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
1,2-Dichloroethane	0.50	Not Detected	2.0	Not Detected
Heptane	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
1,2-Dichloropropane	0.50	Not Detected	2.3	Not Detected
1,4-Dioxane	2.0	Not Detected	7.2	Not Detected
Bromodichloromethane	0.50	Not Detected	3.4	Not Detected
cis-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
4-Methyl-2-pentanone	0.50	Not Detected	2.0	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
trans-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
1,1,2-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
2-Hexanone	2.0	Not Detected	8.2	Not Detected



Client Sample ID: Lab Blank

Lab ID#: 1608081AR1-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	17080905c	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/9/16 12:46 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	0.27 J	2.4	1.3 J
1,3,5-Trimethylbenzene	0.50	0.39 J	2.4	1.9 J
1,2,4-Trimethylbenzene	0.50	0.48 J	2.4	2.3 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	102	70-130
1,2-Dichloroethane-d4	97	70-130
4-Bromofluorobenzene	98	70-130



Air Toxics

Client Sample ID: Lab Blank
Lab ID#: 1608081AR1-07B
EPA METHOD TO-15 GC/MS

File Name:	14081005a	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/10/16 02:56 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	20	Not Detected	78	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	20	Not Detected	62	Not Detected
3-Chloropropene	20	Not Detected	63	Not Detected
Methylene Chloride	20	Not Detected	69	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

Client Sample ID: Lab Blank
Lab ID#: 1608081AR1-07B
EPA METHOD TO-15 GC/MS

File Name:	14081005a	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/10/16 02:56 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	0.85 J	30	5.1 J
alpha-Chlorotoluene	5.0	1.3 J	26	7.0 J
1,2-Dichlorobenzene	5.0	Not Detected	30	Not Detected
1,2,4-Trichlorobenzene	20	Not Detected	150	Not Detected
Hexachlorobutadiene	20	Not Detected	210	Not Detected
Butane	20	Not Detected	48	Not Detected
Isopentane	20	Not Detected	59	Not Detected

J = Estimated value.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	92	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	99	70-130



Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 1608081AR1-07C

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	17081515c	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	8/15/16 08:04 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	2.0	Not Detected	7.2	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Hexane	0.50	Not Detected	1.8	Not Detected
1,1-Dichloroethane	0.50	Not Detected	2.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2.0	Not Detected	5.9	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Tetrahydrofuran	0.50	Not Detected	1.5	Not Detected
Chloroform	0.50	Not Detected	2.4	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Cyclohexane	0.50	Not Detected	1.7	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
2,2,4-Trimethylpentane	0.50	Not Detected	2.3	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
1,2-Dichloroethane	0.50	Not Detected	2.0	Not Detected
Heptane	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
1,2-Dichloropropane	0.50	Not Detected	2.3	Not Detected
1,4-Dioxane	2.0	Not Detected	7.2	Not Detected
Bromodichloromethane	0.50	Not Detected	3.4	Not Detected
cis-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
4-Methyl-2-pentanone	0.50	Not Detected	2.0	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
trans-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
1,1,2-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
2-Hexanone	2.0	Not Detected	8.2	Not Detected

Client Sample ID: Lab Blank

Lab ID#: 1608081AR1-07C

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	17081515c	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	8/15/16 08:04 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	0.24 J	2.4	1.2 J
4-Ethyltoluene	0.50	0.17 J	2.4	0.85 J
1,3,5-Trimethylbenzene	0.50	0.38 J	2.4	1.9 J
1,2,4-Trimethylbenzene	0.50	0.43 J	2.4	2.1 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	100	70-130
1,2-Dichloroethane-d4	99	70-130
4-Bromofluorobenzene	102	70-130



Air Toxics

Client Sample ID: CCV

Lab ID#: 1608081AR1-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	17080902	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/9/16 10:44 AM

Compound	%Recovery
Freon 12	105
Freon 114	105
Chloromethane	110
Vinyl Chloride	98
1,3-Butadiene	92
Bromomethane	102
Chloroethane	94
Freon 11	102
Ethanol	93
Freon 113	99
1,1-Dichloroethene	98
Acetone	92
2-Propanol	95
Carbon Disulfide	95
3-Chloropropene	91
Methylene Chloride	96
Methyl tert-butyl ether	95
trans-1,2-Dichloroethene	99
Hexane	92
1,1-Dichloroethane	95
2-Butanone (Methyl Ethyl Ketone)	95
cis-1,2-Dichloroethene	99
Tetrahydrofuran	92
Chloroform	101
1,1,1-Trichloroethane	101
Cyclohexane	94
Carbon Tetrachloride	104
2,2,4-Trimethylpentane	95
Benzene	97
1,2-Dichloroethane	105
Heptane	100
Trichloroethene	100
1,2-Dichloropropane	95
1,4-Dioxane	98
Bromodichloromethane	102
cis-1,3-Dichloropropene	98
4-Methyl-2-pentanone	95
Toluene	100
trans-1,3-Dichloropropene	102
1,1,2-Trichloroethane	106
Tetrachloroethene	106
2-Hexanone	100

Client Sample ID: CCV

Lab ID#: 1608081AR1-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	17080902	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/9/16 10:44 AM

Compound	%Recovery
Dibromochloromethane	111
1,2-Dibromoethane (EDB)	106
Chlorobenzene	103
Ethyl Benzene	105
m,p-Xylene	107
o-Xylene	107
Styrene	112
Bromoform	114
Cumene	105
1,1,2,2-Tetrachloroethane	102
Propylbenzene	102
4-Ethyltoluene	112
1,3,5-Trimethylbenzene	107
1,2,4-Trimethylbenzene	104
1,3-Dichlorobenzene	106
1,4-Dichlorobenzene	107
alpha-Chlorotoluene	106
1,2-Dichlorobenzene	106
1,2,4-Trichlorobenzene	84
Hexachlorobutadiene	90
Butane	90
Isopentane	88

Container Type: NA - Not Applicable

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



Air Toxics

Client Sample ID: CCV

Lab ID#: 1608081AR1-08B

EPA METHOD TO-15 GC/MS

File Name:	14081002	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/10/16 01:57 PM

Compound	%Recovery
Freon 12	84
Freon 114	91
Chloromethane	102
Vinyl Chloride	81
1,3-Butadiene	85
Bromomethane	97
Chloroethane	95
Freon 11	94
Ethanol	98
Freon 113	92
1,1-Dichloroethene	95
Acetone	100
2-Propanol	92
Carbon Disulfide	91
3-Chloropropene	101
Methylene Chloride	100
Methyl tert-butyl ether	91
trans-1,2-Dichloroethene	92
Hexane	105
1,1-Dichloroethane	98
2-Butanone (Methyl Ethyl Ketone)	94
cis-1,2-Dichloroethene	96
Tetrahydrofuran	92
Chloroform	89
1,1,1-Trichloroethane	91
Cyclohexane	102
Carbon Tetrachloride	90
2,2,4-Trimethylpentane	97
Benzene	90
1,2-Dichloroethane	84
Heptane	97
Trichloroethene	94
1,2-Dichloropropane	90
1,4-Dioxane	98
Bromodichloromethane	89
cis-1,3-Dichloropropene	90
4-Methyl-2-pentanone	94
Toluene	91
trans-1,3-Dichloropropene	89
1,1,2-Trichloroethane	92
Tetrachloroethene	97
2-Hexanone	103

Client Sample ID: CCV
Lab ID#: 1608081AR1-08B
EPA METHOD TO-15 GC/MS

File Name:	14081002	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/10/16 01:57 PM

Compound	%Recovery
Dibromochloromethane	88
1,2-Dibromoethane (EDB)	90
Chlorobenzene	87
Ethyl Benzene	93
m,p-Xylene	95
o-Xylene	92
Styrene	99
Bromoform	94
Cumene	95
1,1,2,2-Tetrachloroethane	91
Propylbenzene	97
4-Ethyltoluene	101
1,3,5-Trimethylbenzene	100
1,2,4-Trimethylbenzene	102
1,3-Dichlorobenzene	97
1,4-Dichlorobenzene	96
alpha-Chlorotoluene	93
1,2-Dichlorobenzene	96
1,2,4-Trichlorobenzene	114
Hexachlorobutadiene	105
Butane	84
Isopentane	106

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	90	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	102	70-130



Air Toxics

Client Sample ID: CCV

Lab ID#: 1608081AR1-08C

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	17081512	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/15/16 06:05 PM

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

Client Sample ID: CCV

Lab ID#: 1608081AR1-08C

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	17081512	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/15/16 06:05 PM

Compound	%Recovery
Dibromochloromethane	94
1,2-Dibromoethane (EDB)	90
Chlorobenzene	86
Ethyl Benzene	89
m,p-Xylene	90
o-Xylene	92
Styrene	93
Bromoform	95
Cumene	89
1,1,2,2-Tetrachloroethane	86
Propylbenzene	87
4-Ethyltoluene	93
1,3,5-Trimethylbenzene	93
1,2,4-Trimethylbenzene	90
1,3-Dichlorobenzene	91
1,4-Dichlorobenzene	92
alpha-Chlorotoluene	91
1,2-Dichlorobenzene	92
1,2,4-Trichlorobenzene	87
Hexachlorobutadiene	92
Butane	82
Isopentane	76

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	107	70-130



Air Toxics

Client Sample ID: LCS

Lab ID#: 1608081AR1-09A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	17080903	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/9/16 11:24 AM

Compound	%Recovery	Method Limits
Freon 12	113	70-130
Freon 114	113	70-130
Chloromethane	107	70-130
Vinyl Chloride	104	70-130
1,3-Butadiene	95	70-130
Bromomethane	110	70-130
Chloroethane	101	70-130
Freon 11	109	70-130
Ethanol	103	70-130
Freon 113	102	70-130
1,1-Dichloroethene	101	70-130
Acetone	94	70-130
2-Propanol	105	70-130
Carbon Disulfide	86	70-130
3-Chloropropene	89	70-130
Methylene Chloride	98	70-130
Methyl tert-butyl ether	98	70-130
trans-1,2-Dichloroethene	104	70-130
Hexane	98	70-130
1,1-Dichloroethane	98	70-130
2-Butanone (Methyl Ethyl Ketone)	97	70-130
cis-1,2-Dichloroethene	100	70-130
Tetrahydrofuran	96	70-130
Chloroform	104	70-130
1,1,1-Trichloroethane	107	70-130
Cyclohexane	101	70-130
Carbon Tetrachloride	110	70-130
2,2,4-Trimethylpentane	101	70-130
Benzene	101	70-130
1,2-Dichloroethane	107	70-130
Heptane	106	70-130
Trichloroethene	104	70-130
1,2-Dichloropropane	98	70-130
1,4-Dioxane	100	70-130
Bromodichloromethane	107	70-130
cis-1,3-Dichloropropene	97	70-130
4-Methyl-2-pentanone	99	70-130
Toluene	104	70-130
trans-1,3-Dichloropropene	107	70-130
1,1,2-Trichloroethane	109	70-130
Tetrachloroethene	110	70-130
2-Hexanone	103	70-130

Client Sample ID: LCS

Lab ID#: 1608081AR1-09A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	17080903	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/9/16 11:24 AM

Compound	%Recovery	Method Limits
Dibromochloromethane	114	70-130
1,2-Dibromoethane (EDB)	110	70-130
Chlorobenzene	105	70-130
Ethyl Benzene	111	70-130
m,p-Xylene	110	70-130
o-Xylene	116	70-130
Styrene	120	70-130
Bromoform	119	70-130
Cumene	112	70-130
1,1,2,2-Tetrachloroethane	107	70-130
Propylbenzene	111	70-130
4-Ethyltoluene	119	70-130
1,3,5-Trimethylbenzene	116	70-130
1,2,4-Trimethylbenzene	114	70-130
1,3-Dichlorobenzene	112	70-130
1,4-Dichlorobenzene	112	70-130
alpha-Chlorotoluene	115	70-130
1,2-Dichlorobenzene	112	70-130
1,2,4-Trichlorobenzene	103	70-130
Hexachlorobutadiene	109	70-130
Butane	95	60-140
Isopentane	93	60-140

Container Type: NA - Not Applicable

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



Air Toxics

Client Sample ID: LCS D

Lab ID#: 1608081AR1-09AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	17080904	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	8/9/16 11:48 AM

Compound	%Recovery	Method Limits
Freon 12	112	70-130
Freon 114	112	70-130
Chloromethane	110	70-130
Vinyl Chloride	102	70-130
1,3-Butadiene	96	70-130
Bromomethane	110	70-130
Chloroethane	101	70-130
Freon 11	108	70-130
Ethanol	105	70-130
Freon 113	103	70-130
1,1-Dichloroethene	100	70-130
Acetone	94	70-130
2-Propanol	106	70-130
Carbon Disulfide	87	70-130
3-Chloropropene	89	70-130
Methylene Chloride	98	70-130
Methyl tert-butyl ether	98	70-130
trans-1,2-Dichloroethene	104	70-130
Hexane	98	70-130
1,1-Dichloroethane	98	70-130
2-Butanone (Methyl Ethyl Ketone)	99	70-130
cis-1,2-Dichloroethene	100	70-130
Tetrahydrofuran	97	70-130
Chloroform	104	70-130
1,1,1-Trichloroethane	108	70-130
Cyclohexane	103	70-130
Carbon Tetrachloride	112	70-130
2,2,4-Trimethylpentane	102	70-130
Benzene	99	70-130
1,2-Dichloroethane	106	70-130
Heptane	106	70-130
Trichloroethene	102	70-130
1,2-Dichloropropane	98	70-130
1,4-Dioxane	100	70-130
Bromodichloromethane	108	70-130
cis-1,3-Dichloropropene	97	70-130
4-Methyl-2-pentanone	99	70-130
Toluene	104	70-130
trans-1,3-Dichloropropene	106	70-130
1,1,2-Trichloroethane	108	70-130
Tetrachloroethene	109	70-130
2-Hexanone	104	70-130

Client Sample ID: LCSD

Lab ID#: 1608081AR1-09AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	17080904	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/9/16 11:48 AM

Compound	%Recovery	Method Limits
Dibromochloromethane	114	70-130
1,2-Dibromoethane (EDB)	109	70-130
Chlorobenzene	104	70-130
Ethyl Benzene	110	70-130
m,p-Xylene	112	70-130
o-Xylene	116	70-130
Styrene	120	70-130
Bromoform	118	70-130
Cumene	111	70-130
1,1,2,2-Tetrachloroethane	107	70-130
Propylbenzene	111	70-130
4-Ethyltoluene	120	70-130
1,3,5-Trimethylbenzene	114	70-130
1,2,4-Trimethylbenzene	114	70-130
1,3-Dichlorobenzene	112	70-130
1,4-Dichlorobenzene	114	70-130
alpha-Chlorotoluene	114	70-130
1,2-Dichlorobenzene	113	70-130
1,2,4-Trichlorobenzene	109	70-130
Hexachlorobutadiene	115	70-130
Butane	101	60-140
Isopentane	92	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	103	70-130
4-Bromofluorobenzene	102	70-130

Client Sample ID: LCS
Lab ID#: 1608081AR1-09B
EPA METHOD TO-15 GC/MS

File Name:	14081003	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/10/16 02:18 PM

Compound	%Recovery	Method Limits
Freon 12	86	70-130
Freon 114	95	70-130
Chloromethane	104	70-130
Vinyl Chloride	85	70-130
1,3-Butadiene	84	70-130
Bromomethane	105	70-130
Chloroethane	90	70-130
Freon 11	98	70-130
Ethanol	106	70-130
Freon 113	98	70-130
1,1-Dichloroethene	99	70-130
Acetone	103	70-130
2-Propanol	98	70-130
Carbon Disulfide	80	70-130
3-Chloropropene	98	70-130
Methylene Chloride	98	70-130
Methyl tert-butyl ether	89	70-130
trans-1,2-Dichloroethene	93	70-130
Hexane	104	70-130
1,1-Dichloroethane	97	70-130
2-Butanone (Methyl Ethyl Ketone)	93	70-130
cis-1,2-Dichloroethene	94	70-130
Tetrahydrofuran	89	70-130
Chloroform	89	70-130
1,1,1-Trichloroethane	91	70-130
Cyclohexane	102	70-130
Carbon Tetrachloride	93	70-130
2,2,4-Trimethylpentane	99	70-130
Benzene	88	70-130
1,2-Dichloroethane	83	70-130
Heptane	104	70-130
Trichloroethene	95	70-130
1,2-Dichloropropane	91	70-130
1,4-Dioxane	94	70-130
Bromodichloromethane	90	70-130
cis-1,3-Dichloropropene	85	70-130
4-Methyl-2-pentanone	92	70-130
Toluene	91	70-130
trans-1,3-Dichloropropene	91	70-130
1,1,2-Trichloroethane	90	70-130
Tetrachloroethene	96	70-130
2-Hexanone	100	70-130

Client Sample ID: LCS
Lab ID#: 1608081AR1-09B
EPA METHOD TO-15 GC/MS

File Name:	14081003	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/10/16 02:18 PM

Compound	%Recovery	Method Limits
Dibromochloromethane	92	70-130
1,2-Dibromoethane (EDB)	91	70-130
Chlorobenzene	86	70-130
Ethyl Benzene	92	70-130
m,p-Xylene	97	70-130
o-Xylene	95	70-130
Styrene	99	70-130
Bromoform	95	70-130
Cumene	97	70-130
1,1,2,2-Tetrachloroethane	94	70-130
Propylbenzene	97	70-130
4-Ethyltoluene	102	70-130
1,3,5-Trimethylbenzene	100	70-130
1,2,4-Trimethylbenzene	101	70-130
1,3-Dichlorobenzene	98	70-130
1,4-Dichlorobenzene	96	70-130
alpha-Chlorotoluene	100	70-130
1,2-Dichlorobenzene	100	70-130
1,2,4-Trichlorobenzene	128	70-130
Hexachlorobutadiene	108	70-130
Butane	92	60-140
Isopentane	101	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	87	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	102	70-130



Air Toxics

Client Sample ID: LCS D

Lab ID#: 1608081AR1-09BB

EPA METHOD TO-15 GC/MS

File Name:	14081004	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	8/10/16 02:37 PM

Compound	%Recovery	Method Limits
Freon 12	90	70-130
Freon 114	99	70-130
Chloromethane	107	70-130
Vinyl Chloride	88	70-130
1,3-Butadiene	91	70-130
Bromomethane	109	70-130
Chloroethane	95	70-130
Freon 11	102	70-130
Ethanol	108	70-130
Freon 113	101	70-130
1,1-Dichloroethene	102	70-130
Acetone	112	70-130
2-Propanol	102	70-130
Carbon Disulfide	85	70-130
3-Chloropropene	107	70-130
Methylene Chloride	103	70-130
Methyl tert-butyl ether	94	70-130
trans-1,2-Dichloroethene	96	70-130
Hexane	111	70-130
1,1-Dichloroethane	101	70-130
2-Butanone (Methyl Ethyl Ketone)	98	70-130
cis-1,2-Dichloroethene	97	70-130
Tetrahydrofuran	92	70-130
Chloroform	92	70-130
1,1,1-Trichloroethane	94	70-130
Cyclohexane	106	70-130
Carbon Tetrachloride	98	70-130
2,2,4-Trimethylpentane	104	70-130
Benzene	91	70-130
1,2-Dichloroethane	85	70-130
Heptane	101	70-130
Trichloroethene	94	70-130
1,2-Dichloropropane	91	70-130
1,4-Dioxane	96	70-130
Bromodichloromethane	90	70-130
cis-1,3-Dichloropropene	87	70-130
4-Methyl-2-pentanone	93	70-130
Toluene	92	70-130
trans-1,3-Dichloropropene	92	70-130
1,1,2-Trichloroethane	91	70-130
Tetrachloroethene	94	70-130
2-Hexanone	104	70-130

Client Sample ID: LCSD
Lab ID#: 1608081AR1-09BB
EPA METHOD TO-15 GC/MS

File Name:	14081004	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/10/16 02:37 PM

Compound	%Recovery	Method Limits
Dibromochloromethane	90	70-130
1,2-Dibromoethane (EDB)	92	70-130
Chlorobenzene	88	70-130
Ethyl Benzene	93	70-130
m,p-Xylene	93	70-130
o-Xylene	97	70-130
Styrene	101	70-130
Bromoform	98	70-130
Cumene	97	70-130
1,1,2,2-Tetrachloroethane	95	70-130
Propylbenzene	98	70-130
4-Ethyltoluene	103	70-130
1,3,5-Trimethylbenzene	101	70-130
1,2,4-Trimethylbenzene	101	70-130
1,3-Dichlorobenzene	97	70-130
1,4-Dichlorobenzene	98	70-130
alpha-Chlorotoluene	100	70-130
1,2-Dichlorobenzene	102	70-130
1,2,4-Trichlorobenzene	116	70-130
Hexachlorobutadiene	107	70-130
Butane	94	60-140
Isopentane	112	60-140

Container Type: NA - Not Applicable

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

Client Sample ID: LCS

Lab ID#: 1608081AR1-09C

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	17081513	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/15/16 06:30 PM

Compound	%Recovery	Method Limits
Freon 12	101	70-130
Freon 114	101	70-130
Chloromethane	102	70-130
Vinyl Chloride	90	70-130
1,3-Butadiene	84	70-130
Bromomethane	99	70-130
Chloroethane	91	70-130
Freon 11	101	70-130
Ethanol	91	70-130
Freon 113	93	70-130
1,1-Dichloroethene	93	70-130
Acetone	84	70-130
2-Propanol	96	70-130
Carbon Disulfide	78	70-130
3-Chloropropene	81	70-130
Methylene Chloride	89	70-130
Methyl tert-butyl ether	91	70-130
trans-1,2-Dichloroethene	94	70-130
Hexane	88	70-130
1,1-Dichloroethane	89	70-130
2-Butanone (Methyl Ethyl Ketone)	89	70-130
cis-1,2-Dichloroethene	91	70-130
Tetrahydrofuran	87	70-130
Chloroform	94	70-130
1,1,1-Trichloroethane	97	70-130
Cyclohexane	92	70-130
Carbon Tetrachloride	101	70-130
2,2,4-Trimethylpentane	91	70-130
Benzene	91	70-130
1,2-Dichloroethane	99	70-130
Heptane	96	70-130
Trichloroethene	96	70-130
1,2-Dichloropropane	91	70-130
1,4-Dioxane	93	70-130
Bromodichloromethane	100	70-130
cis-1,3-Dichloropropene	89	70-130
4-Methyl-2-pentanone	92	70-130
Toluene	96	70-130
trans-1,3-Dichloropropene	96	70-130
1,1,2-Trichloroethane	96	70-130
Tetrachloroethene	98	70-130
2-Hexanone	91	70-130

Client Sample ID: LCS

Lab ID#: 1608081AR1-09C

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	17081513	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/15/16 06:30 PM

Compound	%Recovery	Method Limits
Dibromochloromethane	101	70-130
1,2-Dibromoethane (EDB)	97	70-130
Chlorobenzene	93	70-130
Ethyl Benzene	98	70-130
m,p-Xylene	98	70-130
o-Xylene	102	70-130
Styrene	105	70-130
Bromoform	106	70-130
Cumene	100	70-130
1,1,2,2-Tetrachloroethane	94	70-130
Propylbenzene	98	70-130
4-Ethyltoluene	105	70-130
1,3,5-Trimethylbenzene	102	70-130
1,2,4-Trimethylbenzene	102	70-130
1,3-Dichlorobenzene	99	70-130
1,4-Dichlorobenzene	100	70-130
alpha-Chlorotoluene	101	70-130
1,2-Dichlorobenzene	100	70-130
1,2,4-Trichlorobenzene	95	70-130
Hexachlorobutadiene	100	70-130
Butane	86	60-140
Isopentane	83	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	106	70-130

Client Sample ID: LCS D

Lab ID#: 1608081AR1-09CC

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	17081514	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/15/16 06:54 PM

Compound	%Recovery	Method Limits
Freon 12	102	70-130
Freon 114	100	70-130
Chloromethane	101	70-130
Vinyl Chloride	90	70-130
1,3-Butadiene	85	70-130
Bromomethane	98	70-130
Chloroethane	89	70-130
Freon 11	98	70-130
Ethanol	93	70-130
Freon 113	93	70-130
1,1-Dichloroethene	94	70-130
Acetone	81	70-130
2-Propanol	94	70-130
Carbon Disulfide	78	70-130
3-Chloropropene	82	70-130
Methylene Chloride	88	70-130
Methyl tert-butyl ether	91	70-130
trans-1,2-Dichloroethene	94	70-130
Hexane	88	70-130
1,1-Dichloroethane	90	70-130
2-Butanone (Methyl Ethyl Ketone)	89	70-130
cis-1,2-Dichloroethene	89	70-130
Tetrahydrofuran	84	70-130
Chloroform	94	70-130
1,1,1-Trichloroethane	98	70-130
Cyclohexane	92	70-130
Carbon Tetrachloride	101	70-130
2,2,4-Trimethylpentane	92	70-130
Benzene	93	70-130
1,2-Dichloroethane	101	70-130
Heptane	97	70-130
Trichloroethene	96	70-130
1,2-Dichloropropane	90	70-130
1,4-Dioxane	95	70-130
Bromodichloromethane	100	70-130
cis-1,3-Dichloropropene	91	70-130
4-Methyl-2-pentanone	92	70-130
Toluene	97	70-130
trans-1,3-Dichloropropene	94	70-130
1,1,2-Trichloroethane	95	70-130
Tetrachloroethene	98	70-130
2-Hexanone	91	70-130

Client Sample ID: LCS D

Lab ID#: 1608081AR1-09CC

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	17081514	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/15/16 06:54 PM

Compound	%Recovery	Method Limits
Dibromochloromethane	102	70-130
1,2-Dibromoethane (EDB)	97	70-130
Chlorobenzene	93	70-130
Ethyl Benzene	97	70-130
m,p-Xylene	100	70-130
o-Xylene	102	70-130
Styrene	106	70-130
Bromoform	105	70-130
Cumene	100	70-130
1,1,2,2-Tetrachloroethane	94	70-130
Propylbenzene	98	70-130
4-Ethyltoluene	107	70-130
1,3,5-Trimethylbenzene	101	70-130
1,2,4-Trimethylbenzene	101	70-130
1,3-Dichlorobenzene	100	70-130
1,4-Dichlorobenzene	101	70-130
alpha-Chlorotoluene	103	70-130
1,2-Dichlorobenzene	100	70-130
1,2,4-Trichlorobenzene	101	70-130
Hexachlorobutadiene	106	70-130
Butane	87	60-140
Isopentane	81	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	106	70-130

10/17/2016
Ms. Elizabeth Kunkel
URS Corporation
1001 Highlands Plaza Dr. West
Suite 300
St. Louis MO 63110

Project Name: Roxana Quarterly Soil Vapor
Project #:
Workorder #: 1608081BR1

Dear Ms. Elizabeth Kunkel

The following report includes the data for the above referenced project for sample(s) received on 8/4/2016 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 Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free 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

WORK ORDER #: 1608081BR1

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 PO Box 203970 Austin, TX 78720
PHONE:	314-743-4179	P.O. #	60477387-1.04.003
FAX:		PROJECT #	Roxana Quarterly Soil Vapor
DATE RECEIVED:	08/04/2016	CONTACT:	Kelly Buettner
DATE COMPLETED:	08/17/2016		
DATE REISSUED:	10/17/2016		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	VMP-15-5-080216	Modified ASTM D-1946	7.8 "Hg	15.1 psi
02A	VMP-15-21.5-080216	Modified ASTM D-1946	6.7 "Hg	15.4 psi
03A	VMP-15-25.5-080216	Modified ASTM D-1946	8.8 "Hg	14.8 psi
04A	VMP-15-29-080216	Modified ASTM D-1946	7.1 "Hg	15.2 psi
05A(cancelled)	VMP-55-5-080316	Modified ASTM D-1946	6.7 "Hg	15.2 psi
06A	VMP-55-20-080316	Modified ASTM D-1946	9.8 "Hg	14.7 psi
07A	Lab Blank	Modified ASTM D-1946	NA	NA
07B	Lab Blank	Modified ASTM D-1946	NA	NA
08A	LCS	Modified ASTM D-1946	NA	NA
08AA	LCSD	Modified ASTM D-1946	NA	NA

CERTIFIED BY: 

 Technical Director

DATE: 10/17/16

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
 TX NELAP - T104704434-15-9, UT NELAP CA0093332015-6, VA NELAP - 8113, WA NELAP - C935
 Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
 Accreditation number: CA300005, Effective date: 10/18/2015, Expiration date: 10/17/2016.

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

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

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
 (916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified ASTM D-1946
URS Corporation
Workorder# 1608081BR1

Six 1 Liter Summa Canister samples were received on August 04, 2016. 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 EATL modifications.

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

Receiving Notes

The Summa canister for sample VMP-55-5-080316 was leaking upon arrival. The client was notified and the analysis cancelled.

The work order was reissued on 10/17/16 to change identification of sample VMP-55-20-080316 per the revised Chain of Custody (COC) provided by the client.

Analytical Notes

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

Definition of Data Qualifying Flags

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

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

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

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

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

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

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

Summary of Detected Compounds

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

Client Sample ID: VMP-15-5-080216

Lab ID#: 1608081BR1-01A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.27	12
Nitrogen	0.27	80
Carbon Dioxide	0.027	7.7

Client Sample ID: VMP-15-21.5-080216

Lab ID#: 1608081BR1-02A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.26	2.2
Nitrogen	0.26	76
Methane	0.00026	7.5
Carbon Dioxide	0.026	14
Ethane	0.0026	0.0017 J

Client Sample ID: VMP-15-25.5-080216

Lab ID#: 1608081BR1-03A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.28	3.0
Nitrogen	0.28	75
Methane	0.00028	8.3
Carbon Dioxide	0.028	14
Ethane	0.0028	0.0035

Client Sample ID: VMP-15-29-080216

Lab ID#: 1608081BR1-04A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.27	1.5
Nitrogen	0.27	74
Methane	0.00027	8.7
Carbon Dioxide	0.027	16

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

Client Sample ID: VMP-15-29-080216

Lab ID#: 1608081BR1-04A

Ethane	0.0027	0.0037
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Client Sample ID: VMP-55-20-080316

Lab ID#: 1608081BR1-06A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.30	1.4
Nitrogen	0.30	78
Methane	0.00030	2.6
Carbon Dioxide	0.030	18
Ethane	0.0030	0.00087 J
Helium	0.15	0.035 J



Air Toxics

Client Sample ID: VMP-15-5-080216

Lab ID#: 1608081BR1-01A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	10080819	Date of Collection:	8/2/16 9:14:00 AM
Dil. Factor:	2.73	Date of Analysis:	8/8/16 06:02 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.27	12
Nitrogen	0.27	80
Carbon Monoxide	0.027	Not Detected
Methane	0.00027	Not Detected
Carbon Dioxide	0.027	7.7
Ethane	0.0027	Not Detected
Ethene	0.0027	Not Detected
Helium	0.14	Not Detected

Container Type: 1 Liter Summa Canister



Air Toxics

Client Sample ID: VMP-15-21.5-080216

Lab ID#: 1608081BR1-02A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	10080820	Date of Collection: 8/2/16 9:34:00 AM
Dil. Factor:	2.64	Date of Analysis: 8/8/16 06:25 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.26	2.2
Nitrogen	0.26	76
Carbon Monoxide	0.026	Not Detected
Methane	0.00026	7.5
Carbon Dioxide	0.026	14
Ethane	0.0026	0.0017 J
Ethene	0.0026	Not Detected
Helium	0.13	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister



Air Toxics

Client Sample ID: VMP-15-25.5-080216

Lab ID#: 1608081BR1-03A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	10080821	Date of Collection: 8/2/16 10:00:00 AM
Dil. Factor:	2.84	Date of Analysis: 8/8/16 06:49 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.28	3.0
Nitrogen	0.28	75
Carbon Monoxide	0.028	Not Detected
Methane	0.00028	8.3
Carbon Dioxide	0.028	14
Ethane	0.0028	0.0035
Ethene	0.0028	Not Detected
Helium	0.14	Not Detected

Container Type: 1 Liter Summa Canister



Air Toxics

Client Sample ID: VMP-15-29-080216

Lab ID#: 1608081BR1-04A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	10080822	Date of Collection:	8/2/16 10:16:00 AM
Dil. Factor:	2.67	Date of Analysis:	8/8/16 07:13 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.27	1.5
Nitrogen	0.27	74
Carbon Monoxide	0.027	Not Detected
Methane	0.00027	8.7
Carbon Dioxide	0.027	16
Ethane	0.0027	0.0037
Ethene	0.0027	Not Detected
Helium	0.13	Not Detected

Container Type: 1 Liter Summa Canister



Air Toxics

Client Sample ID: VMP-55-20-080316

Lab ID#: 1608081BR1-06A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	10080824	Date of Collection:	8/3/16 1:46:00 PM
Dil. Factor:	2.97	Date of Analysis:	8/8/16 08:12 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.30	1.4
Nitrogen	0.30	78
Carbon Monoxide	0.030	Not Detected
Methane	0.00030	2.6
Carbon Dioxide	0.030	18
Ethane	0.0030	0.00087 J
Ethene	0.0030	Not Detected
Helium	0.15	0.035 J

J = Estimated value.

Container Type: 1 Liter Summa Canister



Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 1608081BR1-07A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	10080803a	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/8/16 09:50 AM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.10	0.013 J
Nitrogen	0.10	0.054 J
Carbon Monoxide	0.010	Not Detected
Methane	0.00010	Not Detected
Carbon Dioxide	0.010	Not Detected
Ethane	0.0010	Not Detected
Ethene	0.0010	Not Detected

J = Estimated value.

Container Type: NA - Not Applicable



Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 1608081BR1-07B

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	10080804c	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	8/8/16 10:31 AM

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

Container Type: NA - Not Applicable



Air Toxics

Client Sample ID: LCS

Lab ID#: 1608081BR1-08A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	10080802	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/8/16 09:22 AM

Compound	%Recovery	Method Limits
Oxygen	97	85-115
Nitrogen	94	85-115
Carbon Monoxide	95	85-115
Methane	99	85-115
Carbon Dioxide	100	85-115
Ethane	99	85-115
Ethene	100	85-115
Helium	102	85-115

Container Type: NA - Not Applicable



Air Toxics

Client Sample ID: LCSD

Lab ID#: 1608081BR1-08AA

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	10080825	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/8/16 08:39 PM

Compound	%Recovery	Method Limits
Oxygen	97	85-115
Nitrogen	94	85-115
Carbon Monoxide	95	85-115
Methane	98	85-115
Carbon Dioxide	100	85-115
Ethane	98	85-115
Ethene	99	85-115
Helium	102	85-115

Container Type: NA - Not Applicable