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February 16, 2023

Illinois Department of Transportation
Keith Roberts, PE
Acting Regional 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. Roberts,

AECOM, on behalf of Shell Oil Products US (Shell), is submitting the attached analytical results for soil vapor samples collected in 2022 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 Wendy Pennington at wendy.pennington@aecom.com (314-452-8929) or Samuel Fisher at samuel.fisher@aecom.com (314-802-1152).

Sincerely,
AECOM, on behalf of Shell Oil Products US

Samuel Fisher, CHMM
Environmental Scientist

Wendy Pennington, PE
Project Manager

cc:
Leroy Bealer, Shell
Repositories – Roxana Public Library, Website
Project File

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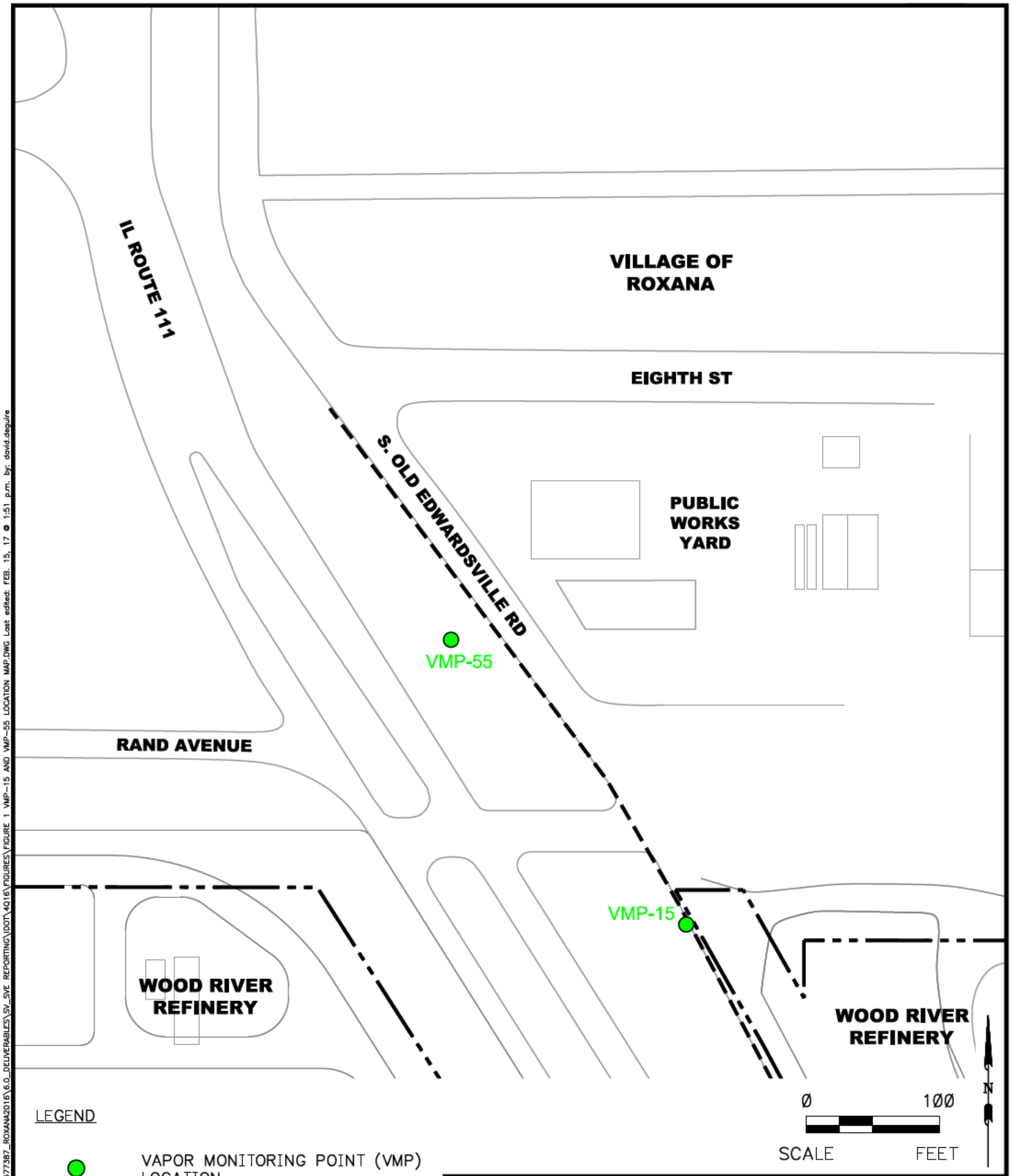

SHELL OIL PRODUCTS US
SOIL VAPOR MONITORING PROGRAM
ROXANA, ILLINOIS

PROJECT NO.
60527968

AECOM

DRN. BY:djd Feb 2017
DSGN. BY:djd
CHKD. BY:smf

VMP-15 and VMP-55
Location Map

FIG. NO.
1

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2/7/2022
Mr. Samuel Fisher
AECOM
100 N. Broadway, 20th Floor

St. Louis MO 63102

Project Name: Roxana Quarterly Soil Vapor
Project #: 60674381-4.1.2
Workorder #: 2201625A

Dear Mr. Samuel Fisher

The following report includes the data for the above referenced project for sample(s) received on 1/25/2022 at Eurofins Air Toxics LLC.

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 LLC. for your air analysis needs. Eurofins Air Toxics Inc. 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 #: 2201625A

Work Order Summary

CLIENT:	Mr. Samuel Fisher AECOM 100 N. Broadway, 20th Floor St. Louis, MO 63102	**BILL TO:**	Accounts Payable Austin AECOM PO Box 203970 Austin, TX 78720
PHONE:	314-296-1969	**P.O. #**	141259
FAX:		**PROJECT #**	60674381-4.1.2 Roxana Quarterly Soil Vapor
DATE RECEIVED:	01/25/2022	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	02/07/2022		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	VMP-55-20-012422	TO-15	8 "Hg	9.9 psi
02A	VMP-15-5-012422	TO-15	8 "Hg	9.8 psi
03A	VMP-15-21.5-012422	TO-15	7.1 "Hg	9.9 psi
04A	VMP-15-25.5-012422	TO-15	8.6 "Hg	9.9 psi
05A	Lab Blank	TO-15	NA	NA
05B	Lab Blank	TO-15	NA	NA
06A	CCV	TO-15	NA	NA
06B	CCV	TO-15	NA	NA
07A	LCS	TO-15	NA	NA
07AA	LCSD	TO-15	NA	NA
07B	LCS	TO-15	NA	NA
07BB	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 02/07/22

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209221, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-21-17, UT NELAP – CA009332021-13, VA NELAP - 10615, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-015, Effective date: 10/18/2021, Expiration date: 10/17/2022.
Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
EPA Method TO-15
AECOM
Workorder# 2201625A

Four 1 Liter Summa Canister samples were received on January 25, 2022. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

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

Non-standard compounds may have different acceptance criteria than the standard TO-14A/TO-15 compound list as per contract or verbal agreement.

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. Target compound non-detects in the samples that are associated with high bias in QC analyses have not been flagged.

Dilution was performed on sample VMP-55-20-012422 due to the presence of high level target species.

Definition of Data Qualifying Flags

Ten 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.

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

CN - See Case Narrative.

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-55-20-012422

Lab ID#: 2201625A-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Hexane	280	8300	1000	29000
Cyclohexane	280	36000	980	120000
2,2,4-Trimethylpentane	280	51000	1300	240000
Butane	1100	120000	2700	290000
Isopentane	1100	430000	3400	1300000

Client Sample ID: VMP-15-5-012422

Lab ID#: 2201625A-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	11	3.2 J	27	7.6 J
2-Propanol	4.5	3.0 J	11	7.5 J
2,2,4-Trimethylpentane	1.1	0.38 J	5.3	1.8 J

Client Sample ID: VMP-15-21.5-012422

Lab ID#: 2201625A-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	11	5.5 J	26	13 J
2-Propanol	4.4	1.7 J	11	4.3 J
Chloroform	1.1	2.4	5.3	12

Client Sample ID: VMP-15-25.5-012422

Lab ID#: 2201625A-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	12	4.7 J	28	11 J
2-Propanol	4.7	3.2 J	12	7.8 J
Chloroform	1.2	0.83 J	5.7	4.0 J
2,2,4-Trimethylpentane	1.2	0.80 J	5.5	3.7 J
1,4-Dioxane	4.7	0.99 J	17	3.6 J

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Client Sample ID: VMP-55-20-012422

Lab ID#: 2201625A-01A

EPA METHOD TO-15 GC/MS

File Name:	**14020433**	**Date of Collection:**	**1/24/22 9:17:00 AM**
Dil. Factor:	**57.0**	**Date of Analysis:**	**2/4/22 09:40 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	280	Not Detected	1400	Not Detected
Freon 114	280	Not Detected	2000	Not Detected
Chloromethane	1100	Not Detected	2400	Not Detected
Vinyl Chloride	280	Not Detected	730	Not Detected
1,3-Butadiene	280	Not Detected	630	Not Detected
Bromomethane	1100	Not Detected	4400	Not Detected
Chloroethane	1100	Not Detected	3000	Not Detected
Freon 11	280	Not Detected	1600	Not Detected
Ethanol	1400	Not Detected	2700	Not Detected
Freon 113	280	Not Detected	2200	Not Detected
1,1-Dichloroethene	280	Not Detected	1100	Not Detected
Acetone	1100	Not Detected	2700	Not Detected
2-Propanol	1400	Not Detected	3500	Not Detected
Carbon Disulfide	1100	Not Detected	3600	Not Detected
3-Chloropropene	1100	Not Detected	3600	Not Detected
Methylene Chloride	1100	Not Detected	4000	Not Detected
Methyl tert-butyl ether	280	Not Detected	1000	Not Detected
trans-1,2-Dichloroethene	280	Not Detected	1100	Not Detected
Hexane	280	8300	1000	29000
1,1-Dichloroethane	280	Not Detected	1200	Not Detected
2-Butanone (Methyl Ethyl Ketone)	1100	Not Detected	3400	Not Detected
cis-1,2-Dichloroethene	280	Not Detected	1100	Not Detected
Tetrahydrofuran	280	Not Detected	840	Not Detected
Chloroform	280	Not Detected	1400	Not Detected
1,1,1-Trichloroethane	280	Not Detected	1600	Not Detected
Cyclohexane	280	36000	980	120000
Carbon Tetrachloride	280	Not Detected	1800	Not Detected
2,2,4-Trimethylpentane	280	51000	1300	240000
Benzene	280	Not Detected	910	Not Detected
1,2-Dichloroethane	280	Not Detected	1200	Not Detected
Heptane	280	Not Detected	1200	Not Detected
Trichloroethene	280	Not Detected	1500	Not Detected
1,2-Dichloropropane	280	Not Detected	1300	Not Detected
1,4-Dioxane	1100	Not Detected	4100	Not Detected
Bromodichloromethane	280	Not Detected	1900	Not Detected
cis-1,3-Dichloropropene	280	Not Detected	1300	Not Detected
4-Methyl-2-pentanone	280	Not Detected	1200	Not Detected
Toluene	280	Not Detected	1100	Not Detected
trans-1,3-Dichloropropene	280	Not Detected	1300	Not Detected
1,1,2-Trichloroethane	280	Not Detected	1600	Not Detected
Tetrachloroethene	280	Not Detected	1900	Not Detected
2-Hexanone	1100	Not Detected	4700	Not Detected

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Client Sample ID: VMP-55-20-012422

Lab ID#: 2201625A-01A

EPA METHOD TO-15 GC/MS

File Name:	**14020433**	**Date of Collection:**	**1/24/22 9:17:00 AM**
Dil. Factor:	**57.0**	**Date of Analysis:**	**2/4/22 09:40 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	280	Not Detected	2400	Not Detected
1,2-Dibromoethane (EDB)	280	Not Detected	2200	Not Detected
Chlorobenzene	280	Not Detected	1300	Not Detected
Ethyl Benzene	280	Not Detected	1200	Not Detected
m,p-Xylene	280	Not Detected	1200	Not Detected
o-Xylene	280	Not Detected	1200	Not Detected
Styrene	280	Not Detected	1200	Not Detected
Bromoform	280	Not Detected	2900	Not Detected
Cumene	280	Not Detected	1400	Not Detected
1,1,2,2-Tetrachloroethane	280	Not Detected	2000	Not Detected
Propylbenzene	280	Not Detected	1400	Not Detected
4-Ethyltoluene	280	Not Detected	1400	Not Detected
1,3,5-Trimethylbenzene	280	Not Detected	1400	Not Detected
1,2,4-Trimethylbenzene	280	Not Detected	1400	Not Detected
1,3-Dichlorobenzene	280	Not Detected	1700	Not Detected
1,4-Dichlorobenzene	280	Not Detected	1700	Not Detected
alpha-Chlorotoluene	280	Not Detected	1500	Not Detected
1,2-Dichlorobenzene	280	Not Detected	1700	Not Detected
1,2,4-Trichlorobenzene	1100	Not Detected	8500	Not Detected
Hexachlorobutadiene	1100	Not Detected	12000	Not Detected
Butane	1100	120000	2700	290000
Isopentane	1100	430000	3400	1300000

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	107	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: VMP-15-5-012422

Lab ID#: 2201625A-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3020214**	**Date of Collection:**	**1/24/22 9:54:00 AM**
Dil. Factor:	**2.27**	**Date of Analysis:**	**2/2/22 06:12 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.1	Not Detected	5.6	Not Detected
Freon 114	1.1	Not Detected	7.9	Not Detected
Chloromethane	11	Not Detected	23	Not Detected
Vinyl Chloride	1.1	Not Detected	2.9	Not Detected
1,3-Butadiene	1.1	Not Detected	2.5	Not Detected
Bromomethane	11	Not Detected	44	Not Detected
Chloroethane	4.5	Not Detected	12	Not Detected
Freon 11	1.1	Not Detected	6.4	Not Detected
Ethanol	11	Not Detected	21	Not Detected
Freon 113	1.1	Not Detected	8.7	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.5	Not Detected
Acetone	11	3.2 J	27	7.6 J
2-Propanol	4.5	3.0 J	11	7.5 J
Carbon Disulfide	4.5	Not Detected	14	Not Detected
3-Chloropropene	4.5	Not Detected	14	Not Detected
Methylene Chloride	11	Not Detected	39	Not Detected
Methyl tert-butyl ether	4.5	Not Detected	16	Not Detected
trans-1,2-Dichloroethene	1.1	Not Detected	4.5	Not Detected
Hexane	1.1	Not Detected	4.0	Not Detected
1,1-Dichloroethane	1.1	Not Detected	4.6	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.5	Not Detected	13	Not Detected
cis-1,2-Dichloroethene	1.1	Not Detected	4.5	Not Detected
Tetrahydrofuran	1.1	Not Detected	3.3	Not Detected
Chloroform	1.1	Not Detected	5.5	Not Detected
1,1,1-Trichloroethane	1.1	Not Detected	6.2	Not Detected
Cyclohexane	1.1	Not Detected	3.9	Not Detected
Carbon Tetrachloride	1.1	Not Detected	7.1	Not Detected
2,2,4-Trimethylpentane	1.1	0.38 J	5.3	1.8 J
Benzene	1.1	Not Detected	3.6	Not Detected
1,2-Dichloroethane	1.1	Not Detected	4.6	Not Detected
Heptane	1.1	Not Detected	4.6	Not Detected
Trichloroethene	1.1	Not Detected	6.1	Not Detected
1,2-Dichloropropane	1.1	Not Detected	5.2	Not Detected
1,4-Dioxane	4.5	Not Detected	16	Not Detected
Bromodichloromethane	1.1	Not Detected	7.6	Not Detected
cis-1,3-Dichloropropene	1.1	Not Detected	5.2	Not Detected
4-Methyl-2-pentanone	1.1	Not Detected	4.6	Not Detected
Toluene	1.1	Not Detected	4.3	Not Detected
trans-1,3-Dichloropropene	1.1	Not Detected	5.2	Not Detected
1,1,2-Trichloroethane	1.1	Not Detected	6.2	Not Detected
Tetrachloroethene	1.1	Not Detected	7.7	Not Detected
2-Hexanone	4.5	Not Detected	18	Not Detected

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Client Sample ID: VMP-15-5-012422

Lab ID#: 2201625A-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3020214**	**Date of Collection:**	**1/24/22 9:54:00 AM**
Dil. Factor:	**2.27**	**Date of Analysis:**	**2/2/22 06:12 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.1	Not Detected	9.7	Not Detected
1,2-Dibromoethane (EDB)	1.1	Not Detected	8.7	Not Detected
Chlorobenzene	1.1	Not Detected	5.2	Not Detected
Ethyl Benzene	1.1	Not Detected	4.9	Not Detected
m,p-Xylene	1.1	Not Detected	4.9	Not Detected
o-Xylene	1.1	Not Detected	4.9	Not Detected
Styrene	1.1	Not Detected	4.8	Not Detected
Bromoform	1.1	Not Detected	12	Not Detected
Cumene	1.1	Not Detected	5.6	Not Detected
1,1,2,2-Tetrachloroethane	1.1	Not Detected	7.8	Not Detected
Propylbenzene	1.1	Not Detected	5.6	Not Detected
4-Ethyltoluene	1.1	Not Detected	5.6	Not Detected
1,3,5-Trimethylbenzene	1.1	Not Detected	5.6	Not Detected
1,2,4-Trimethylbenzene	1.1	Not Detected	5.6	Not Detected
1,3-Dichlorobenzene	1.1	Not Detected	6.8	Not Detected
1,4-Dichlorobenzene	1.1	Not Detected	6.8	Not Detected
alpha-Chlorotoluene	1.1	Not Detected	5.9	Not Detected
1,2-Dichlorobenzene	1.1	Not Detected	6.8	Not Detected
1,2,4-Trichlorobenzene	4.5	Not Detected	34	Not Detected
Hexachlorobutadiene	4.5	Not Detected	48	Not Detected
Butane	4.5	Not Detected	11	Not Detected
Isopentane	4.5	Not Detected	13	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	97	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: VMP-15-21.5-012422

Lab ID#: 2201625A-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3020213**	**Date of Collection:**	**1/24/22 10:06:00 AM**
Dil. Factor:	**2.19**	**Date of Analysis:**	**2/2/22 05:43 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.1	Not Detected	5.4	Not Detected
Freon 114	1.1	Not Detected	7.6	Not Detected
Chloromethane	11	Not Detected	23	Not Detected
Vinyl Chloride	1.1	Not Detected	2.8	Not Detected
1,3-Butadiene	1.1	Not Detected	2.4	Not Detected
Bromomethane	11	Not Detected	42	Not Detected
Chloroethane	4.4	Not Detected	12	Not Detected
Freon 11	1.1	Not Detected	6.2	Not Detected
Ethanol	11	Not Detected	21	Not Detected
Freon 113	1.1	Not Detected	8.4	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.3	Not Detected
Acetone	11	5.5 J	26	13 J
2-Propanol	4.4	1.7 J	11	4.3 J
Carbon Disulfide	4.4	Not Detected	14	Not Detected
3-Chloropropene	4.4	Not Detected	14	Not Detected
Methylene Chloride	11	Not Detected	38	Not Detected
Methyl tert-butyl ether	4.4	Not Detected	16	Not Detected
trans-1,2-Dichloroethene	1.1	Not Detected	4.3	Not Detected
Hexane	1.1	Not Detected	3.8	Not Detected
1,1-Dichloroethane	1.1	Not Detected	4.4	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.4	Not Detected	13	Not Detected
cis-1,2-Dichloroethene	1.1	Not Detected	4.3	Not Detected
Tetrahydrofuran	1.1	Not Detected	3.2	Not Detected
Chloroform	1.1	2.4	5.3	12
1,1,1-Trichloroethane	1.1	Not Detected	6.0	Not Detected
Cyclohexane	1.1	Not Detected	3.8	Not Detected
Carbon Tetrachloride	1.1	Not Detected	6.9	Not Detected
2,2,4-Trimethylpentane	1.1	Not Detected	5.1	Not Detected
Benzene	1.1	Not Detected	3.5	Not Detected
1,2-Dichloroethane	1.1	Not Detected	4.4	Not Detected
Heptane	1.1	Not Detected	4.5	Not Detected
Trichloroethene	1.1	Not Detected	5.9	Not Detected
1,2-Dichloropropane	1.1	Not Detected	5.1	Not Detected
1,4-Dioxane	4.4	Not Detected	16	Not Detected
Bromodichloromethane	1.1	Not Detected	7.3	Not Detected
cis-1,3-Dichloropropene	1.1	Not Detected	5.0	Not Detected
4-Methyl-2-pentanone	1.1	Not Detected	4.5	Not Detected
Toluene	1.1	Not Detected	4.1	Not Detected
trans-1,3-Dichloropropene	1.1	Not Detected	5.0	Not Detected
1,1,2-Trichloroethane	1.1	Not Detected	6.0	Not Detected
Tetrachloroethene	1.1	Not Detected	7.4	Not Detected
2-Hexanone	4.4	Not Detected	18	Not Detected

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Client Sample ID: VMP-15-21.5-012422

Lab ID#: 2201625A-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3020213**	**Date of Collection:**	**1/24/22 10:06:00 AM**
Dil. Factor:	**2.19**	**Date of Analysis:**	**2/2/22 05:43 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.1	Not Detected	9.3	Not Detected
1,2-Dibromoethane (EDB)	1.1	Not Detected	8.4	Not Detected
Chlorobenzene	1.1	Not Detected	5.0	Not Detected
Ethyl Benzene	1.1	Not Detected	4.8	Not Detected
m,p-Xylene	1.1	Not Detected	4.8	Not Detected
o-Xylene	1.1	Not Detected	4.8	Not Detected
Styrene	1.1	Not Detected	4.7	Not Detected
Bromoform	1.1	Not Detected	11	Not Detected
Cumene	1.1	Not Detected	5.4	Not Detected
1,1,2,2-Tetrachloroethane	1.1	Not Detected	7.5	Not Detected
Propylbenzene	1.1	Not Detected	5.4	Not Detected
4-Ethyltoluene	1.1	Not Detected	5.4	Not Detected
1,3,5-Trimethylbenzene	1.1	Not Detected	5.4	Not Detected
1,2,4-Trimethylbenzene	1.1	Not Detected	5.4	Not Detected
1,3-Dichlorobenzene	1.1	Not Detected	6.6	Not Detected
1,4-Dichlorobenzene	1.1	Not Detected	6.6	Not Detected
alpha-Chlorotoluene	1.1	Not Detected	5.7	Not Detected
1,2-Dichlorobenzene	1.1	Not Detected	6.6	Not Detected
1,2,4-Trichlorobenzene	4.4	Not Detected	32	Not Detected
Hexachlorobutadiene	4.4	Not Detected	47	Not Detected
Butane	4.4	Not Detected	10	Not Detected
Isopentane	4.4	Not Detected	13	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	102	70-130

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Client Sample ID: VMP-15-25.5-012422

Lab ID#: 2201625A-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3020212**	**Date of Collection:**	**1/24/22 10:17:00 AM**
Dil. Factor:	**2.34**	**Date of Analysis:**	**2/2/22 05:13 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	Not Detected	5.8	Not Detected
Freon 114	1.2	Not Detected	8.2	Not Detected
Chloromethane	12	Not Detected	24	Not Detected
Vinyl Chloride	1.2	Not Detected	3.0	Not Detected
1,3-Butadiene	1.2	Not Detected	2.6	Not Detected
Bromomethane	12	Not Detected	45	Not Detected
Chloroethane	4.7	Not Detected	12	Not Detected
Freon 11	1.2	Not Detected	6.6	Not Detected
Ethanol	12	Not Detected	22	Not Detected
Freon 113	1.2	Not Detected	9.0	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.6	Not Detected
Acetone	12	4.7 J	28	11 J
2-Propanol	4.7	3.2 J	12	7.8 J
Carbon Disulfide	4.7	Not Detected	14	Not Detected
3-Chloropropene	4.7	Not Detected	15	Not Detected
Methylene Chloride	12	Not Detected	41	Not Detected
Methyl tert-butyl ether	4.7	Not Detected	17	Not Detected
trans-1,2-Dichloroethene	1.2	Not Detected	4.6	Not Detected
Hexane	1.2	Not Detected	4.1	Not Detected
1,1-Dichloroethane	1.2	Not Detected	4.7	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.7	Not Detected	14	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	4.6	Not Detected
Tetrahydrofuran	1.2	Not Detected	3.4	Not Detected
Chloroform	1.2	0.83 J	5.7	4.0 J
1,1,1-Trichloroethane	1.2	Not Detected	6.4	Not Detected
Cyclohexane	1.2	Not Detected	4.0	Not Detected
Carbon Tetrachloride	1.2	Not Detected	7.4	Not Detected
2,2,4-Trimethylpentane	1.2	0.80 J	5.5	3.7 J
Benzene	1.2	Not Detected	3.7	Not Detected
1,2-Dichloroethane	1.2	Not Detected	4.7	Not Detected
Heptane	1.2	Not Detected	4.8	Not Detected
Trichloroethene	1.2	Not Detected	6.3	Not Detected
1,2-Dichloropropane	1.2	Not Detected	5.4	Not Detected
1,4-Dioxane	4.7	0.99 J	17	3.6 J
Bromodichloromethane	1.2	Not Detected	7.8	Not Detected
cis-1,3-Dichloropropene	1.2	Not Detected	5.3	Not Detected
4-Methyl-2-pentanone	1.2	Not Detected	4.8	Not Detected
Toluene	1.2	Not Detected	4.4	Not Detected
trans-1,3-Dichloropropene	1.2	Not Detected	5.3	Not Detected
1,1,2-Trichloroethane	1.2	Not Detected	6.4	Not Detected
Tetrachloroethene	1.2	Not Detected	7.9	Not Detected
2-Hexanone	4.7	Not Detected	19	Not Detected

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Client Sample ID: VMP-15-25.5-012422

Lab ID#: 2201625A-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3020212**	**Date of Collection:**	**1/24/22 10:17:00 AM**
Dil. Factor:	**2.34**	**Date of Analysis:**	**2/2/22 05:13 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	9.0	Not Detected
Chlorobenzene	1.2	Not Detected	5.4	Not Detected
Ethyl Benzene	1.2	Not Detected	5.1	Not Detected
m,p-Xylene	1.2	Not Detected	5.1	Not Detected
o-Xylene	1.2	Not Detected	5.1	Not Detected
Styrene	1.2	Not Detected	5.0	Not Detected
Bromoform	1.2	Not Detected	12	Not Detected
Cumene	1.2	Not Detected	5.8	Not Detected
1,1,2,2-Tetrachloroethane	1.2	Not Detected	8.0	Not Detected
Propylbenzene	1.2	Not Detected	5.8	Not Detected
4-Ethyltoluene	1.2	Not Detected	5.8	Not Detected
1,3,5-Trimethylbenzene	1.2	Not Detected	5.8	Not Detected
1,2,4-Trimethylbenzene	1.2	Not Detected	5.8	Not Detected
1,3-Dichlorobenzene	1.2	Not Detected	7.0	Not Detected
1,4-Dichlorobenzene	1.2	Not Detected	7.0	Not Detected
alpha-Chlorotoluene	1.2	Not Detected	6.0	Not Detected
1,2-Dichlorobenzene	1.2	Not Detected	7.0	Not Detected
1,2,4-Trichlorobenzene	4.7	Not Detected	35	Not Detected
Hexachlorobutadiene	4.7	Not Detected	50	Not Detected
Butane	4.7	Not Detected	11	Not Detected
Isopentane	4.7	Not Detected	14	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	97	70-130
4-Bromofluorobenzene	103	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2201625A-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3020205c**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/2/22 12:44 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	5.0	Not Detected	9.4	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

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Client Sample ID: Lab Blank

Lab ID#: 2201625A-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3020205c**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/2/22 12:44 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	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

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	97	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2201625A-05B

EPA METHOD TO-15 GC/MS

File Name:	**14020406a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/4/22 09:28 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	5.0	Not Detected	25	Not Detected
Freon 114	5.0	Not Detected	35	Not Detected
Chloromethane	20	Not Detected	41	Not Detected
Vinyl Chloride	5.0	Not Detected	13	Not Detected
1,3-Butadiene	5.0	Not Detected	11	Not Detected
Bromomethane	20	Not Detected	78	Not Detected
Chloroethane	20	Not Detected	53	Not Detected
Freon 11	5.0	Not Detected	28	Not Detected
Ethanol	25	Not Detected	47	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	25	Not Detected	61	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

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Client Sample ID: Lab Blank

Lab ID#: 2201625A-05B

EPA METHOD TO-15 GC/MS

File Name:	**14020406a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/4/22 09:28 AM**	

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

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	85	70-130
Toluene-d8	95	70-130
4-Bromofluorobenzene	103	70-130

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Client Sample ID: CCV

Lab ID#: 2201625A-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3020202**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 2/2/22 10:46 AM**

Compound	%Recovery
Freon 12	96
Freon 114	99
Chloromethane	96
Vinyl Chloride	91
1,3-Butadiene	93
Bromomethane	95
Chloroethane	93
Freon 11	100
Ethanol	90
Freon 113	97
1,1-Dichloroethene	87
Acetone	92
2-Propanol	98
Carbon Disulfide	93
3-Chloropropene	92
Methylene Chloride	102
Methyl tert-butyl ether	91
trans-1,2-Dichloroethene	86
Hexane	91
1,1-Dichloroethane	94
2-Butanone (Methyl Ethyl Ketone)	96
cis-1,2-Dichloroethene	85
Tetrahydrofuran	100
Chloroform	92
1,1,1-Trichloroethane	93
Cyclohexane	89
Carbon Tetrachloride	97
2,2,4-Trimethylpentane	96
Benzene	96
1,2-Dichloroethane	100
Heptane	82
Trichloroethene	96
1,2-Dichloropropane	93
1,4-Dioxane	97
Bromodichloromethane	95
cis-1,3-Dichloropropene	94
4-Methyl-2-pentanone	84
Toluene	95
trans-1,3-Dichloropropene	97
1,1,2-Trichloroethane	95
Tetrachloroethene	105
2-Hexanone	93

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Client Sample ID: CCV

Lab ID#: 2201625A-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3020202**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/2/22 10:46 AM**	

Compound	%Recovery
Dibromochloromethane	102
1,2-Dibromoethane (EDB)	97
Chlorobenzene	97
Ethyl Benzene	98
m,p-Xylene	99
o-Xylene	96
Styrene	97
Bromoform	107
Cumene	96
1,1,2,2-Tetrachloroethane	94
Propylbenzene	99
4-Ethyltoluene	98
1,3,5-Trimethylbenzene	97
1,2,4-Trimethylbenzene	91
1,3-Dichlorobenzene	98
1,4-Dichlorobenzene	98
alpha-Chlorotoluene	96
1,2-Dichlorobenzene	98
1,2,4-Trichlorobenzene	92
Hexachlorobutadiene	99
Butane	67
Isopentane	99

Container Type: NA - Not Applicable

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

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Client Sample ID: CCV
Lab ID#: 2201625A-06B
EPA METHOD TO-15 GC/MS

File Name:	**14020402**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 2/4/22 07:44 AM**

Compound	%Recovery
Freon 12	88
Freon 114	104
Chloromethane	92
Vinyl Chloride	94
1,3-Butadiene	82
Bromomethane	94
Chloroethane	87
Freon 11	100
Ethanol	95
Freon 113	105
1,1-Dichloroethene	92
Acetone	91
2-Propanol	79
Carbon Disulfide	87
3-Chloropropene	85
Methylene Chloride	90
Methyl tert-butyl ether	66 Q
trans-1,2-Dichloroethene	91
Hexane	78
1,1-Dichloroethane	88
2-Butanone (Methyl Ethyl Ketone)	81
cis-1,2-Dichloroethene	89
Tetrahydrofuran	79
Chloroform	88
1,1,1-Trichloroethane	89
Cyclohexane	85
Carbon Tetrachloride	94
2,2,4-Trimethylpentane	81
Benzene	89
1,2-Dichloroethane	95
Heptane	82
Trichloroethene	94
1,2-Dichloropropane	87
1,4-Dioxane	90
Bromodichloromethane	85
cis-1,3-Dichloropropene	90
4-Methyl-2-pentanone	91
Toluene	90
trans-1,3-Dichloropropene	88
1,1,2-Trichloroethane	98
Tetrachloroethene	108
2-Hexanone	84

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Client Sample ID: CCV
Lab ID#: 2201625A-06B
EPA METHOD TO-15 GC/MS

File Name:	**14020402**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/4/22 07:44 AM**	

Compound	%Recovery
Dibromochloromethane	106
1,2-Dibromoethane (EDB)	99
Chlorobenzene	100
Ethyl Benzene	98
m,p-Xylene	95
o-Xylene	94
Styrene	96
Bromoform	101
Cumene	94
1,1,2,2-Tetrachloroethane	90
Propylbenzene	102
4-Ethyltoluene	97
1,3,5-Trimethylbenzene	94
1,2,4-Trimethylbenzene	89
1,3-Dichlorobenzene	100
1,4-Dichlorobenzene	102
alpha-Chlorotoluene	84
1,2-Dichlorobenzene	101
1,2,4-Trichlorobenzene	80
Hexachlorobutadiene	87
Butane	99
Isopentane	96

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	85	70-130
Toluene-d8	94	70-130
4-Bromofluorobenzene	106	70-130

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Client Sample ID: LCS

Lab ID#: 2201625A-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3020203**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/2/22 11:13 AM**	

Compound	%Recovery	Method Limits
Freon 12	97	70-130
Freon 114	98	70-130
Chloromethane	97	70-130
Vinyl Chloride	88	70-130
1,3-Butadiene	94	70-130
Bromomethane	91	70-130
Chloroethane	92	70-130
Freon 11	99	70-130
Ethanol	92	70-130
Freon 113	97	70-130
1,1-Dichloroethene	86	70-130
Acetone	94	70-130
2-Propanol	106	70-130
Carbon Disulfide	93	70-130
3-Chloropropene	88	70-130
Methylene Chloride	100	70-130
Methyl tert-butyl ether	94	70-130
trans-1,2-Dichloroethene	88	70-130
Hexane	92	70-130
1,1-Dichloroethane	93	70-130
2-Butanone (Methyl Ethyl Ketone)	95	70-130
cis-1,2-Dichloroethene	86	70-130
Tetrahydrofuran	100	70-130
Chloroform	92	70-130
1,1,1-Trichloroethane	93	70-130
Cyclohexane	92	70-130
Carbon Tetrachloride	100	70-130
2,2,4-Trimethylpentane	97	70-130
Benzene	99	70-130
1,2-Dichloroethane	102	70-130
Heptane	88	70-130
Trichloroethene	101	70-130
1,2-Dichloropropane	94	70-130
1,4-Dioxane	103	70-130
Bromodichloromethane	96	70-130
cis-1,3-Dichloropropene	98	70-130
4-Methyl-2-pentanone	91	70-130
Toluene	98	70-130
trans-1,3-Dichloropropene	99	70-130
1,1,2-Trichloroethane	101	70-130
Tetrachloroethene	108	70-130
2-Hexanone	101	70-130

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Client Sample ID: LCS

Lab ID#: 2201625A-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3020203**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/2/22 11:13 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	106	70-130
1,2-Dibromoethane (EDB)	100	70-130
Chlorobenzene	100	70-130
Ethyl Benzene	102	70-130
m,p-Xylene	102	70-130
o-Xylene	99	70-130
Styrene	98	70-130
Bromoform	112	70-130
Cumene	99	70-130
1,1,2,2-Tetrachloroethane	99	70-130
Propylbenzene	100	70-130
4-Ethyltoluene	102	70-130
1,3,5-Trimethylbenzene	100	70-130
1,2,4-Trimethylbenzene	92	70-130
1,3-Dichlorobenzene	101	70-130
1,4-Dichlorobenzene	100	70-130
alpha-Chlorotoluene	98	70-130
1,2-Dichlorobenzene	102	70-130
1,2,4-Trichlorobenzene	105	70-130
Hexachlorobutadiene	113	70-130
Butane	68	60-140
Isopentane	99	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	104	70-130

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Client Sample ID: LCSD

Lab ID#: 2201625A-07AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3020204**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/2/22 11:39 AM**	

Compound	%Recovery	Method Limits
Freon 12	98	70-130
Freon 114	99	70-130
Chloromethane	98	70-130
Vinyl Chloride	91	70-130
1,3-Butadiene	94	70-130
Bromomethane	92	70-130
Chloroethane	93	70-130
Freon 11	100	70-130
Ethanol	92	70-130
Freon 113	97	70-130
1,1-Dichloroethene	85	70-130
Acetone	96	70-130
2-Propanol	106	70-130
Carbon Disulfide	94	70-130
3-Chloropropene	89	70-130
Methylene Chloride	100	70-130
Methyl tert-butyl ether	95	70-130
trans-1,2-Dichloroethene	88	70-130
Hexane	92	70-130
1,1-Dichloroethane	93	70-130
2-Butanone (Methyl Ethyl Ketone)	96	70-130
cis-1,2-Dichloroethene	85	70-130
Tetrahydrofuran	100	70-130
Chloroform	92	70-130
1,1,1-Trichloroethane	94	70-130
Cyclohexane	93	70-130
Carbon Tetrachloride	101	70-130
2,2,4-Trimethylpentane	98	70-130
Benzene	99	70-130
1,2-Dichloroethane	103	70-130
Heptane	89	70-130
Trichloroethene	101	70-130
1,2-Dichloropropane	95	70-130
1,4-Dioxane	104	70-130
Bromodichloromethane	96	70-130
cis-1,3-Dichloropropene	98	70-130
4-Methyl-2-pentanone	90	70-130
Toluene	98	70-130
trans-1,3-Dichloropropene	98	70-130
1,1,2-Trichloroethane	99	70-130
Tetrachloroethene	106	70-130
2-Hexanone	100	70-130

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Client Sample ID: LCSD

Lab ID#: 2201625A-07AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3020204**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/2/22 11:39 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	103	70-130
1,2-Dibromoethane (EDB)	98	70-130
Chlorobenzene	98	70-130
Ethyl Benzene	100	70-130
m,p-Xylene	100	70-130
o-Xylene	98	70-130
Styrene	98	70-130
Bromoform	110	70-130
Cumene	98	70-130
1,1,2,2-Tetrachloroethane	97	70-130
Propylbenzene	99	70-130
4-Ethyltoluene	100	70-130
1,3,5-Trimethylbenzene	99	70-130
1,2,4-Trimethylbenzene	92	70-130
1,3-Dichlorobenzene	101	70-130
1,4-Dichlorobenzene	98	70-130
alpha-Chlorotoluene	97	70-130
1,2-Dichlorobenzene	101	70-130
1,2,4-Trichlorobenzene	114	70-130
Hexachlorobutadiene	120	70-130
Butane	67	60-140
Isopentane	100	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	95	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: LCS

Lab ID#: 2201625A-07B

EPA METHOD TO-15 GC/MS

File Name:	**14020403**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/4/22 08:10 AM**	

Compound	%Recovery	Method Limits
Freon 12	89	70-130
Freon 114	101	70-130
Chloromethane	88	70-130
Vinyl Chloride	97	70-130
1,3-Butadiene	83	70-130
Bromomethane	99	70-130
Chloroethane	88	70-130
Freon 11	100	70-130
Ethanol	79	70-130
Freon 113	104	70-130
1,1-Dichloroethene	90	70-130
Acetone	92	70-130
2-Propanol	86	70-130
Carbon Disulfide	88	70-130
3-Chloropropene	91	70-130
Methylene Chloride	87	70-130
Methyl tert-butyl ether	90	70-130
trans-1,2-Dichloroethene	90	70-130
Hexane	80	70-130
1,1-Dichloroethane	87	70-130
2-Butanone (Methyl Ethyl Ketone)	90	70-130
cis-1,2-Dichloroethene	92	70-130
Tetrahydrofuran	76	70-130
Chloroform	87	70-130
1,1,1-Trichloroethane	90	70-130
Cyclohexane	86	70-130
Carbon Tetrachloride	94	70-130
2,2,4-Trimethylpentane	83	70-130
Benzene	96	70-130
1,2-Dichloroethane	101	70-130
Heptane	88	70-130
Trichloroethene	101	70-130
1,2-Dichloropropane	91	70-130
1,4-Dioxane	104	70-130
Bromodichloromethane	91	70-130
cis-1,3-Dichloropropene	95	70-130
4-Methyl-2-pentanone	93	70-130
Toluene	94	70-130
trans-1,3-Dichloropropene	98	70-130
1,1,2-Trichloroethane	99	70-130
Tetrachloroethene	109	70-130
2-Hexanone	90	70-130

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Client Sample ID: LCS

Lab ID#: 2201625A-07B

EPA METHOD TO-15 GC/MS

File Name:	**14020403**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/4/22 08:10 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	105	70-130
1,2-Dibromoethane (EDB)	104	70-130
Chlorobenzene	101	70-130
Ethyl Benzene	100	70-130
m,p-Xylene	97	70-130
o-Xylene	94	70-130
Styrene	101	70-130
Bromoform	104	70-130
Cumene	95	70-130
1,1,2,2-Tetrachloroethane	96	70-130
Propylbenzene	104	70-130
4-Ethyltoluene	99	70-130
1,3,5-Trimethylbenzene	95	70-130
1,2,4-Trimethylbenzene	92	70-130
1,3-Dichlorobenzene	102	70-130
1,4-Dichlorobenzene	102	70-130
alpha-Chlorotoluene	88	70-130
1,2-Dichlorobenzene	102	70-130
1,2,4-Trichlorobenzene	93	70-130
Hexachlorobutadiene	90	70-130
Butane	95	60-140
Isopentane	98	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	84	70-130
Toluene-d8	95	70-130
4-Bromofluorobenzene	108	70-130

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Client Sample ID: LCSD

Lab ID#: 2201625A-07BB

EPA METHOD TO-15 GC/MS

File Name:	**14020404**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/4/22 08:40 AM**	

Compound	%Recovery	Method Limits
Freon 12	93	70-130
Freon 114	106	70-130
Chloromethane	88	70-130
Vinyl Chloride	95	70-130
1,3-Butadiene	79	70-130
Bromomethane	100	70-130
Chloroethane	92	70-130
Freon 11	104	70-130
Ethanol	90	70-130
Freon 113	105	70-130
1,1-Dichloroethene	89	70-130
Acetone	88	70-130
2-Propanol	85	70-130
Carbon Disulfide	90	70-130
3-Chloropropene	90	70-130
Methylene Chloride	89	70-130
Methyl tert-butyl ether	96	70-130
trans-1,2-Dichloroethene	94	70-130
Hexane	81	70-130
1,1-Dichloroethane	89	70-130
2-Butanone (Methyl Ethyl Ketone)	89	70-130
cis-1,2-Dichloroethene	89	70-130
Tetrahydrofuran	79	70-130
Chloroform	90	70-130
1,1,1-Trichloroethane	95	70-130
Cyclohexane	92	70-130
Carbon Tetrachloride	99	70-130
2,2,4-Trimethylpentane	84	70-130
Benzene	97	70-130
1,2-Dichloroethane	99	70-130
Heptane	88	70-130
Trichloroethene	102	70-130
1,2-Dichloropropane	93	70-130
1,4-Dioxane	99	70-130
Bromodichloromethane	92	70-130
cis-1,3-Dichloropropene	94	70-130
4-Methyl-2-pentanone	94	70-130
Toluene	94	70-130
trans-1,3-Dichloropropene	97	70-130
1,1,2-Trichloroethane	102	70-130
Tetrachloroethene	110	70-130
2-Hexanone	94	70-130

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Client Sample ID: LCSD

Lab ID#: 2201625A-07BB

EPA METHOD TO-15 GC/MS

File Name:	**14020404**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/4/22 08:40 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	106	70-130
1,2-Dibromoethane (EDB)	104	70-130
Chlorobenzene	102	70-130
Ethyl Benzene	101	70-130
m,p-Xylene	97	70-130
o-Xylene	96	70-130
Styrene	101	70-130
Bromoform	108	70-130
Cumene	96	70-130
1,1,2,2-Tetrachloroethane	99	70-130
Propylbenzene	106	70-130
4-Ethyltoluene	102	70-130
1,3,5-Trimethylbenzene	98	70-130
1,2,4-Trimethylbenzene	94	70-130
1,3-Dichlorobenzene	102	70-130
1,4-Dichlorobenzene	104	70-130
alpha-Chlorotoluene	89	70-130
1,2-Dichlorobenzene	105	70-130
1,2,4-Trichlorobenzene	97	70-130
Hexachlorobutadiene	96	70-130
Butane	92	60-140
Isopentane	97	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	85	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	109	70-130

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2/7/2022
Mr. Samuel Fisher
AECOM
100 N. Broadway, 20th Floor

St. Louis MO 63102

Project Name: Roxana Quarterly Soil Vapor
Project #: 60674381-4.1.2
Workorder #: 2201625B

Dear Mr. Samuel Fisher

The following report includes the data for the above referenced project for sample(s) received on 1/25/2022 at Eurofins Air Toxics LLC.

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 LLC. for your air analysis needs. Eurofins Air Toxics Inc. 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 #: 2201625B

Work Order Summary

CLIENT:	Mr. Samuel Fisher AECOM 100 N. Broadway, 20th Floor St. Louis, MO 63102	**BILL TO:**	Accounts Payable Austin AECOM PO Box 203970 Austin, TX 78720
PHONE:	314-296-1969	**P.O. #**	141259
FAX:		**PROJECT #**	60674381-4.1.2 Roxana Quarterly Soil Vapor
DATE RECEIVED:	01/25/2022	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	02/07/2022		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	VMP-55-20-012422	Modified ASTM D-1946	8 "Hg	9.9 psi
02A	VMP-15-5-012422	Modified ASTM D-1946	8 "Hg	9.8 psi
03A	VMP-15-21.5-012422	Modified ASTM D-1946	7.1 "Hg	9.9 psi
04A	VMP-15-25.5-012422	Modified ASTM D-1946	8.6 "Hg	9.9 psi
05A	Lab Blank	Modified ASTM D-1946	NA	NA
05B	Lab Blank	Modified ASTM D-1946	NA	NA
06A	CCV	Modified ASTM D-1946	NA	NA
07A	LCS	Modified ASTM D-1946	NA	NA
07AA	LCSD	Modified ASTM D-1946	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 02/07/22

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209221, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-21-17, UT NELAP – CA009332021-13, VA NELAP - 10615, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-015, Effective date: 10/18/2021, Expiration date: 10/17/2022.
Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
Modified ASTM D-1946
AECOM
Workorder# 2201625B

Four 1 Liter Summa Canister samples were received on January 25, 2022. 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.

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 requirements, 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-55-20-012422

Lab ID#: 2201625B-01A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	1.2
Nitrogen	0.23	70
Methane	0.00023	11
Carbon Dioxide	0.023	18
Ethane	0.0023	0.0041
Helium	0.11	0.054 J

Client Sample ID: VMP-15-5-012422

Lab ID#: 2201625B-02A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	15
Nitrogen	0.23	82
Carbon Dioxide	0.023	3.5

Client Sample ID: VMP-15-21.5-012422

Lab ID#: 2201625B-03A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.22	3.9
Nitrogen	0.22	82
Carbon Dioxide	0.022	14

Client Sample ID: VMP-15-25.5-012422

Lab ID#: 2201625B-04A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	1.8
Nitrogen	0.23	82
Methane	0.00023	0.00020 J
Carbon Dioxide	0.023	16

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Client Sample ID: VMP-55-20-012422

Lab ID#: 2201625B-01A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10020523**	**Date of Collection:**	**1/24/22 9:17:00 AM**
Dil. Factor:	**2.28**	**Date of Analysis:**	**2/5/22 03:40 PM**

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	1.2
Nitrogen	0.23	70
Carbon Monoxide	0.023	Not Detected
Methane	0.00023	11
Carbon Dioxide	0.023	18
Ethane	0.0023	0.0041
Ethene	0.0023	Not Detected
Helium	0.11	0.054 J

J = Estimated value.

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-15-5-012422

Lab ID#: 2201625B-02A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10020518**	**Date of Collection:**	**1/24/22 9:54:00 AM**
Dil. Factor:	**2.27**	**Date of Analysis:**	**2/5/22 01:38 PM**

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	15
Nitrogen	0.23	82
Carbon Monoxide	0.023	Not Detected
Methane	0.00023	Not Detected
Carbon Dioxide	0.023	3.5
Ethane	0.0023	Not Detected
Ethene	0.0023	Not Detected
Helium	0.11	Not Detected

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-15-21.5-012422

Lab ID#: 2201625B-03A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10020519**	**Date of Collection: 1/24/22 10:06:00 AM**	
Dil. Factor:	**2.20**	**Date of Analysis: 2/5/22 02:02 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.22	3.9
Nitrogen	0.22	82
Carbon Monoxide	0.022	Not Detected
Methane	0.00022	Not Detected
Carbon Dioxide	0.022	14
Ethane	0.0022	Not Detected
Ethene	0.0022	Not Detected
Helium	0.11	Not Detected

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-15-25.5-012422

Lab ID#: 2201625B-04A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10020520**	**Date of Collection: 1/24/22 10:17:00 AM**	
Dil. Factor:	**2.34**	**Date of Analysis: 2/5/22 02:25 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	1.8
Nitrogen	0.23	82
Carbon Monoxide	0.023	Not Detected
Methane	0.00023	0.00020 J
Carbon Dioxide	0.023	16
Ethane	0.0023	Not Detected
Ethene	0.0023	Not Detected
Helium	0.12	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister

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Client Sample ID: Lab Blank

Lab ID#: 2201625B-05A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10020505a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/4/22 10:18 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.10	Not Detected
Nitrogen	0.10	0.028 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#: 2201625B-05B

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10020504c**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/4/22 09:56 PM**	

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

Container Type: NA - Not Applicable

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Client Sample ID: CCV

Lab ID#: 2201625B-06A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10020502**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/4/22 09:03 PM**	

Compound	%Recovery
Oxygen	97
Nitrogen	93
Carbon Monoxide	108
Methane	94
Carbon Dioxide	106
Ethane	96
Ethene	97
Helium	100

Container Type: NA - Not Applicable

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Client Sample ID: LCS

Lab ID#: 2201625B-07A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10020503**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/4/22 09:28 PM**	

Compound	%Recovery	Method Limits
Oxygen	97	85-115
Nitrogen	94	85-115
Carbon Monoxide	103	85-115
Methane	94	85-115
Carbon Dioxide	105	85-115
Ethane	96	85-115
Ethene	94	85-115
Helium	113	85-115

Container Type: NA - Not Applicable

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Client Sample ID: LCSD

Lab ID#: 2201625B-07AA

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10020525**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/5/22 04:40 PM**	

Compound	%Recovery	Method Limits
Oxygen	96	85-115
Nitrogen	93	85-115
Carbon Monoxide	103	85-115
Methane	102	85-115
Carbon Dioxide	104	85-115
Ethane	104	85-115
Ethene	102	85-115
Helium	112	85-115

Container Type: NA - Not Applicable

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5/17/2022
Mr. Samuel Fisher
AECOM
100 N. Broadway, 20th Floor

St. Louis MO 63102

Project Name: Roxana Quarterly Soil Vapor
Project #: 60674381-4.2.2
Workorder #: 2205095A

Dear Mr. Samuel Fisher

The following report includes the data for the above referenced project for sample(s) received on 5/4/2022 at Eurofins Air Toxics LLC.

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 LLC. for your air analysis needs. Eurofins Air Toxics Inc. 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 #: 2205095A

Work Order Summary

CLIENT:	Mr. Samuel Fisher AECOM 100 N. Broadway, 20th Floor St. Louis, MO 63102	**BILL TO:**	Accounts Payable Austin AECOM PO Box 203970 Austin, TX 78720
PHONE:	314-296-1969	**P.O. #**	141259
FAX:		**PROJECT #**	60674381-4.2.2 Roxana Quarterly Soil Vapor
DATE RECEIVED:	05/04/2022	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	05/17/2022		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	VMP-55-20-050322	TO-15	5.3 "Hg	9.9 psi
02A	VMP-15-5-050322	TO-15	8.2 "Hg	9.9 psi
03A	VMP-15-21.5-050322	TO-15	6.3 "Hg	10 psi
04A	VMP-15-25.5-050322	TO-15	5.9 "Hg	10 psi
05A	VMP-15-29-050322	TO-15	5.7 "Hg	9.9 psi
06A	Lab Blank	TO-15	NA	NA
06B	Lab Blank	TO-15	NA	NA
07A	CCV	TO-15	NA	NA
07B	CCV	TO-15	NA	NA
08A	LCS	TO-15	NA	NA
08AA	LCSD	TO-15	NA	NA
08B	LCS	TO-15	NA	NA
08BB	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 05/17/22

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209221, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-21-17, UT NELAP – CA009332021-13, VA NELAP - 10615, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-015, Effective date: 10/18/2021, Expiration date: 10/17/2022.
Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
EPA Method TO-15
AECOM
Workorder# 2205095A

Five 1 Liter Summa Canister samples were received on May 04, 2022. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

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

Dilution was performed on sample VMP-55-20-050322 due to the presence of high level target species.

Definition of Data Qualifying Flags

Ten 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.

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

CN - See Case Narrative.

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-55-20-050322

Lab ID#: 2205095A-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloromethane	2000	1200 J	4200	2400 J
Acetone	2000	8200	4800	20000
Hexane	510	30000	1800	110000
Cyclohexane	510	96000	1800	330000
2,2,4-Trimethylpentane	510	91000	2400	420000
Butane	2000	280000	4800	660000
Isopentane	2000	830000	6000	2400000

Client Sample ID: VMP-15-5-050322

Lab ID#: 2205095A-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloromethane	12	6.9 J	24	14 J
Ethanol	12	9.9 J	22	19 J
Acetone	12	9.7 J	27	23 J
2-Propanol	4.6	8.6	11	21
Hexane	1.2	0.74 J	4.0	2.6 J
Chloroform	1.2	2.0	5.6	9.7
2,2,4-Trimethylpentane	1.2	0.43 J	5.4	2.0 J
Toluene	1.2	4.3	4.3	16
Tetrachloroethene	1.2	1.2	7.8	7.9

Client Sample ID: VMP-15-21.5-050322

Lab ID#: 2205095A-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethanol	11	4.0 J	20	7.6 J
Acetone	11	9.9 J	25	24 J
2-Propanol	4.3	2.9 J	10	7.0 J
2-Butanone (Methyl Ethyl Ketone)	4.3	1.4 J	12	4.1 J
Chloroform	1.1	0.70 J	5.2	3.4 J

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

Client Sample ID: VMP-15-25.5-050322

Lab ID#: 2205095A-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	10	5.9 J	25	14 J
2-Propanol	4.2	5.6	10	14
2,2,4-Trimethylpentane	1.0	390	4.9	1800
Benzene	1.0	0.49 J	3.3	1.6 J
Toluene	1.0	0.33 J	3.9	1.2 J
Butane	4.2	4.3	9.9	10
Isopentane	4.2	11	12	32

Client Sample ID: VMP-15-29-050322

Lab ID#: 2205095A-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	10	3.2 J	24	7.6 J
2-Propanol	4.1	2.4 J	10	5.8 J
Chloroform	1.0	5.3	5.0	26
Isopentane	4.1	4.1	12	12

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Client Sample ID: VMP-55-20-050322

Lab ID#: 2205095A-01A

EPA METHOD TO-15 GC/MS

File Name:	**14051114**	**Date of Collection:**	**5/3/22 9:56:00 AM**
Dil. Factor:	**102**	**Date of Analysis:**	**5/11/22 01:04 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	510	Not Detected	2500	Not Detected
Freon 114	510	Not Detected	3600	Not Detected
Chloromethane	2000	1200 J	4200	2400 J
Vinyl Chloride	510	Not Detected	1300	Not Detected
1,3-Butadiene	510	Not Detected	1100	Not Detected
Bromomethane	2000	Not Detected	7900	Not Detected
Chloroethane	2000	Not Detected	5400	Not Detected
Freon 11	510	Not Detected	2900	Not Detected
Ethanol	2600	Not Detected	4800	Not Detected
Freon 113	510	Not Detected	3900	Not Detected
1,1-Dichloroethene	510	Not Detected	2000	Not Detected
Acetone	2000	8200	4800	20000
2-Propanol	2600	Not Detected	6300	Not Detected
Carbon Disulfide	2000	Not Detected	6400	Not Detected
3-Chloropropene	2000	Not Detected	6400	Not Detected
Methylene Chloride	2000	Not Detected	7100	Not Detected
Methyl tert-butyl ether	510	Not Detected	1800	Not Detected
trans-1,2-Dichloroethene	510	Not Detected	2000	Not Detected
Hexane	510	30000	1800	110000
1,1-Dichloroethane	510	Not Detected	2100	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2000	Not Detected	6000	Not Detected
cis-1,2-Dichloroethene	510	Not Detected	2000	Not Detected
Tetrahydrofuran	510	Not Detected	1500	Not Detected
Chloroform	510	Not Detected	2500	Not Detected
1,1,1-Trichloroethane	510	Not Detected	2800	Not Detected
Cyclohexane	510	96000	1800	330000
Carbon Tetrachloride	510	Not Detected	3200	Not Detected
2,2,4-Trimethylpentane	510	91000	2400	420000
Benzene	510	Not Detected	1600	Not Detected
1,2-Dichloroethane	510	Not Detected	2100	Not Detected
Heptane	510	Not Detected	2100	Not Detected
Trichloroethene	510	Not Detected	2700	Not Detected
1,2-Dichloropropane	510	Not Detected	2400	Not Detected
1,4-Dioxane	2000	Not Detected	7400	Not Detected
Bromodichloromethane	510	Not Detected	3400	Not Detected
cis-1,3-Dichloropropene	510	Not Detected	2300	Not Detected
4-Methyl-2-pentanone	2000	Not Detected	8400	Not Detected
Toluene	510	Not Detected	1900	Not Detected
trans-1,3-Dichloropropene	510	Not Detected	2300	Not Detected
1,1,2-Trichloroethane	510	Not Detected	2800	Not Detected
Tetrachloroethene	510	Not Detected	3400	Not Detected
2-Hexanone	2000	Not Detected	8400	Not Detected

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Client Sample ID: VMP-55-20-050322

Lab ID#: 2205095A-01A

EPA METHOD TO-15 GC/MS

File Name:	**14051114**	**Date of Collection:**	**5/3/22 9:56:00 AM**
Dil. Factor:	**102**	**Date of Analysis:**	**5/11/22 01:04 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	510	Not Detected	4300	Not Detected
1,2-Dibromoethane (EDB)	510	Not Detected	3900	Not Detected
Chlorobenzene	510	Not Detected	2300	Not Detected
Ethyl Benzene	510	Not Detected	2200	Not Detected
m,p-Xylene	510	Not Detected	2200	Not Detected
o-Xylene	510	Not Detected	2200	Not Detected
Styrene	510	Not Detected	2200	Not Detected
Bromoform	510	Not Detected	5300	Not Detected
Cumene	510	Not Detected	2500	Not Detected
1,1,2,2-Tetrachloroethane	510	Not Detected	3500	Not Detected
Propylbenzene	510	Not Detected	2500	Not Detected
4-Ethyltoluene	510	Not Detected	2500	Not Detected
1,3,5-Trimethylbenzene	510	Not Detected	2500	Not Detected
1,2,4-Trimethylbenzene	510	Not Detected	2500	Not Detected
1,3-Dichlorobenzene	510	Not Detected	3100	Not Detected
1,4-Dichlorobenzene	510	Not Detected	3100	Not Detected
alpha-Chlorotoluene	510	Not Detected	2600	Not Detected
1,2-Dichlorobenzene	510	Not Detected	3100	Not Detected
1,2,4-Trichlorobenzene	2000	Not Detected	15000	Not Detected
Hexachlorobutadiene	2000	Not Detected	22000	Not Detected
Butane	2000	280000	4800	660000
Isopentane	2000	830000	6000	2400000

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	103	70-130
Toluene-d8	107	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: VMP-15-5-050322

Lab ID#: 2205095A-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j051310**	**Date of Collection:**	**5/3/22 10:34:00 AM**
Dil. Factor:	**2.30**	**Date of Analysis:**	**5/13/22 05:39 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	Not Detected	5.7	Not Detected
Freon 114	1.2	Not Detected	8.0	Not Detected
Chloromethane	12	6.9 J	24	14 J
Vinyl Chloride	1.2	Not Detected	2.9	Not Detected
1,3-Butadiene	1.2	Not Detected	2.5	Not Detected
Bromomethane	12	Not Detected	45	Not Detected
Chloroethane	4.6	Not Detected	12	Not Detected
Freon 11	1.2	Not Detected	6.5	Not Detected
Ethanol	12	9.9 J	22	19 J
Freon 113	1.2	Not Detected	8.8	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.6	Not Detected
Acetone	12	9.7 J	27	23 J
2-Propanol	4.6	8.6	11	21
Carbon Disulfide	4.6	Not Detected	14	Not Detected
3-Chloropropene	4.6	Not Detected	14	Not Detected
Methylene Chloride	12	Not Detected	40	Not Detected
Methyl tert-butyl ether	4.6	Not Detected	16	Not Detected
trans-1,2-Dichloroethene	1.2	Not Detected	4.6	Not Detected
Hexane	1.2	0.74 J	4.0	2.6 J
1,1-Dichloroethane	1.2	Not Detected	4.6	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.6	Not Detected	14	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	4.6	Not Detected
Tetrahydrofuran	1.2	Not Detected	3.4	Not Detected
Chloroform	1.2	2.0	5.6	9.7
1,1,1-Trichloroethane	1.2	Not Detected	6.3	Not Detected
Cyclohexane	1.2	Not Detected	4.0	Not Detected
Carbon Tetrachloride	1.2	Not Detected	7.2	Not Detected
2,2,4-Trimethylpentane	1.2	0.43 J	5.4	2.0 J
Benzene	1.2	Not Detected	3.7	Not Detected
1,2-Dichloroethane	1.2	Not Detected	4.6	Not Detected
Heptane	1.2	Not Detected	4.7	Not Detected
Trichloroethene	1.2	Not Detected	6.2	Not Detected
1,2-Dichloropropane	1.2	Not Detected	5.3	Not Detected
1,4-Dioxane	4.6	Not Detected	16	Not Detected
Bromodichloromethane	1.2	Not Detected	7.7	Not Detected
cis-1,3-Dichloropropene	1.2	Not Detected	5.2	Not Detected
4-Methyl-2-pentanone	1.2	Not Detected	4.7	Not Detected
Toluene	1.2	4.3	4.3	16
trans-1,3-Dichloropropene	1.2	Not Detected	5.2	Not Detected
1,1,2-Trichloroethane	1.2	Not Detected	6.3	Not Detected
Tetrachloroethene	1.2	1.2	7.8	7.9
2-Hexanone	4.6	Not Detected	19	Not Detected

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Client Sample ID: VMP-15-5-050322

Lab ID#: 2205095A-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j051310**	**Date of Collection:**	**5/3/22 10:34:00 AM**
Dil. Factor:	**2.30**	**Date of Analysis:**	**5/13/22 05:39 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.2	Not Detected	9.8	Not Detected
1,2-Dibromoethane (EDB)	1.2	Not Detected	8.8	Not Detected
Chlorobenzene	1.2	Not Detected	5.3	Not Detected
Ethyl Benzene	1.2	Not Detected	5.0	Not Detected
m,p-Xylene	1.2	Not Detected	5.0	Not Detected
o-Xylene	1.2	Not Detected	5.0	Not Detected
Styrene	1.2	Not Detected	4.9	Not Detected
Bromoform	1.2	Not Detected	12	Not Detected
Cumene	1.2	Not Detected	5.6	Not Detected
1,1,2,2-Tetrachloroethane	1.2	Not Detected	7.9	Not Detected
Propylbenzene	1.2	Not Detected	5.6	Not Detected
4-Ethyltoluene	1.2	Not Detected	5.6	Not Detected
1,3,5-Trimethylbenzene	1.2	Not Detected	5.6	Not Detected
1,2,4-Trimethylbenzene	1.2	Not Detected	5.6	Not Detected
1,3-Dichlorobenzene	1.2	Not Detected	6.9	Not Detected
1,4-Dichlorobenzene	1.2	Not Detected	6.9	Not Detected
alpha-Chlorotoluene	1.2	Not Detected	6.0	Not Detected
1,2-Dichlorobenzene	1.2	Not Detected	6.9	Not Detected
1,2,4-Trichlorobenzene	4.6	Not Detected	34	Not Detected
Hexachlorobutadiene	4.6	Not Detected	49	Not Detected
Butane	4.6	Not Detected	11	Not Detected
Isopentane	4.6	Not Detected	14	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	94	70-130
1,2-Dichloroethane-d4	97	70-130
4-Bromofluorobenzene	92	70-130

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Client Sample ID: VMP-15-21.5-050322

Lab ID#: 2205095A-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j051312**	**Date of Collection:**	**5/3/22 10:48:00 AM**
Dil. Factor:	**2.13**	**Date of Analysis:**	**5/13/22 06:45 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.1	Not Detected	5.3	Not Detected
Freon 114	1.1	Not Detected	7.4	Not Detected
Chloromethane	11	Not Detected	22	Not Detected
Vinyl Chloride	1.1	Not Detected	2.7	Not Detected
1,3-Butadiene	1.1	Not Detected	2.4	Not Detected
Bromomethane	11	Not Detected	41	Not Detected
Chloroethane	4.3	Not Detected	11	Not Detected
Freon 11	1.1	Not Detected	6.0	Not Detected
Ethanol	11	4.0 J	20	7.6 J
Freon 113	1.1	Not Detected	8.2	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.2	Not Detected
Acetone	11	9.9 J	25	24 J
2-Propanol	4.3	2.9 J	10	7.0 J
Carbon Disulfide	4.3	Not Detected	13	Not Detected
3-Chloropropene	4.3	Not Detected	13	Not Detected
Methylene Chloride	11	Not Detected	37	Not Detected
Methyl tert-butyl ether	4.3	Not Detected	15	Not Detected
trans-1,2-Dichloroethene	1.1	Not Detected	4.2	Not Detected
Hexane	1.1	Not Detected	3.8	Not Detected
1,1-Dichloroethane	1.1	Not Detected	4.3	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.3	1.4 J	12	4.1 J
cis-1,2-Dichloroethene	1.1	Not Detected	4.2	Not Detected
Tetrahydrofuran	1.1	Not Detected	3.1	Not Detected
Chloroform	1.1	0.70 J	5.2	3.4 J
1,1,1-Trichloroethane	1.1	Not Detected	5.8	Not Detected
Cyclohexane	1.1	Not Detected	3.7	Not Detected
Carbon Tetrachloride	1.1	Not Detected	6.7	Not Detected
2,2,4-Trimethylpentane	1.1	Not Detected	5.0	Not Detected
Benzene	1.1	Not Detected	3.4	Not Detected
1,2-Dichloroethane	1.1	Not Detected	4.3	Not Detected
Heptane	1.1	Not Detected	4.4	Not Detected
Trichloroethene	1.1	Not Detected	5.7	Not Detected
1,2-Dichloropropane	1.1	Not Detected	4.9	Not Detected
1,4-Dioxane	4.3	Not Detected	15	Not Detected
Bromodichloromethane	1.1	Not Detected	7.1	Not Detected
cis-1,3-Dichloropropene	1.1	Not Detected	4.8	Not Detected
4-Methyl-2-pentanone	1.1	Not Detected	4.4	Not Detected
Toluene	1.1	Not Detected	4.0	Not Detected
trans-1,3-Dichloropropene	1.1	Not Detected	4.8	Not Detected
1,1,2-Trichloroethane	1.1	Not Detected	5.8	Not Detected
Tetrachloroethene	1.1	Not Detected	7.2	Not Detected
2-Hexanone	4.3	Not Detected	17	Not Detected

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Client Sample ID: VMP-15-21.5-050322

Lab ID#: 2205095A-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j051312**	**Date of Collection:**	**5/3/22 10:48:00 AM**
Dil. Factor:	**2.13**	**Date of Analysis:**	**5/13/22 06:45 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.1	Not Detected	9.1	Not Detected
1,2-Dibromoethane (EDB)	1.1	Not Detected	8.2	Not Detected
Chlorobenzene	1.1	Not Detected	4.9	Not Detected
Ethyl Benzene	1.1	Not Detected	4.6	Not Detected
m,p-Xylene	1.1	Not Detected	4.6	Not Detected
o-Xylene	1.1	Not Detected	4.6	Not Detected
Styrene	1.1	Not Detected	4.5	Not Detected
Bromoform	1.1	Not Detected	11	Not Detected
Cumene	1.1	Not Detected	5.2	Not Detected
1,1,2,2-Tetrachloroethane	1.1	Not Detected	7.3	Not Detected
Propylbenzene	1.1	Not Detected	5.2	Not Detected
4-Ethyltoluene	1.1	Not Detected	5.2	Not Detected
1,3,5-Trimethylbenzene	1.1	Not Detected	5.2	Not Detected
1,2,4-Trimethylbenzene	1.1	Not Detected	5.2	Not Detected
1,3-Dichlorobenzene	1.1	Not Detected	6.4	Not Detected
1,4-Dichlorobenzene	1.1	Not Detected	6.4	Not Detected
alpha-Chlorotoluene	1.1	Not Detected	5.5	Not Detected
1,2-Dichlorobenzene	1.1	Not Detected	6.4	Not Detected
1,2,4-Trichlorobenzene	4.3	Not Detected	32	Not Detected
Hexachlorobutadiene	4.3	Not Detected	45	Not Detected
Butane	4.3	Not Detected	10	Not Detected
Isopentane	4.3	Not Detected	12	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	94	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	92	70-130

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Client Sample ID: VMP-15-25.5-050322

Lab ID#: 2205095A-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j051313**	**Date of Collection:**	**5/3/22 11:02:00 AM**
Dil. Factor:	**2.09**	**Date of Analysis:**	**5/13/22 07:19 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.0	Not Detected	5.2	Not Detected
Freon 114	1.0	Not Detected	7.3	Not Detected
Chloromethane	10	Not Detected	22	Not Detected
Vinyl Chloride	1.0	Not Detected	2.7	Not Detected
1,3-Butadiene	1.0	Not Detected	2.3	Not Detected
Bromomethane	10	Not Detected	40	Not Detected
Chloroethane	4.2	Not Detected	11	Not Detected
Freon 11	1.0	Not Detected	5.9	Not Detected
Ethanol	10	Not Detected	20	Not Detected
Freon 113	1.0	Not Detected	8.0	Not Detected
1,1-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Acetone	10	5.9 J	25	14 J
2-Propanol	4.2	5.6	10	14
Carbon Disulfide	4.2	Not Detected	13	Not Detected
3-Chloropropene	4.2	Not Detected	13	Not Detected
Methylene Chloride	10	Not Detected	36	Not Detected
Methyl tert-butyl ether	4.2	Not Detected	15	Not Detected
trans-1,2-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Hexane	1.0	Not Detected	3.7	Not Detected
1,1-Dichloroethane	1.0	Not Detected	4.2	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.2	Not Detected	12	Not Detected
cis-1,2-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Tetrahydrofuran	1.0	Not Detected	3.1	Not Detected
Chloroform	1.0	Not Detected	5.1	Not Detected
1,1,1-Trichloroethane	1.0	Not Detected	5.7	Not Detected
Cyclohexane	1.0	Not Detected	3.6	Not Detected
Carbon Tetrachloride	1.0	Not Detected	6.6	Not Detected
2,2,4-Trimethylpentane	1.0	390	4.9	1800
Benzene	1.0	0.49 J	3.3	1.6 J
1,2-Dichloroethane	1.0	Not Detected	4.2	Not Detected
Heptane	1.0	Not Detected	4.3	Not Detected
Trichloroethene	1.0	Not Detected	5.6	Not Detected
1,2-Dichloropropane	1.0	Not Detected	4.8	Not Detected
1,4-Dioxane	4.2	Not Detected	15	Not Detected
Bromodichloromethane	1.0	Not Detected	7.0	Not Detected
cis-1,3-Dichloropropene	1.0	Not Detected	4.7	Not Detected
4-Methyl-2-pentanone	1.0	Not Detected	4.3	Not Detected
Toluene	1.0	0.33 J	3.9	1.2 J
trans-1,3-Dichloropropene	1.0	Not Detected	4.7	Not Detected
1,1,2-Trichloroethane	1.0	Not Detected	5.7	Not Detected
Tetrachloroethene	1.0	Not Detected	7.1	Not Detected
2-Hexanone	4.2	Not Detected	17	Not Detected

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Client Sample ID: VMP-15-25.5-050322

Lab ID#: 2205095A-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j051313**	**Date of Collection: 5/3/22 11:02:00 AM**	
Dil. Factor:	**2.09**	**Date of Analysis: 5/13/22 07:19 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.0	Not Detected	8.9	Not Detected
1,2-Dibromoethane (EDB)	1.0	Not Detected	8.0	Not Detected
Chlorobenzene	1.0	Not Detected	4.8	Not Detected
Ethyl Benzene	1.0	Not Detected	4.5	Not Detected
m,p-Xylene	1.0	Not Detected	4.5	Not Detected
o-Xylene	1.0	Not Detected	4.5	Not Detected
Styrene	1.0	Not Detected	4.4	Not Detected
Bromoform	1.0	Not Detected	11	Not Detected
Cumene	1.0	Not Detected	5.1	Not Detected
1,1,2,2-Tetrachloroethane	1.0	Not Detected	7.2	Not Detected
Propylbenzene	1.0	Not Detected	5.1	Not Detected
4-Ethyltoluene	1.0	Not Detected	5.1	Not Detected
1,3,5-Trimethylbenzene	1.0	Not Detected	5.1	Not Detected
1,2,4-Trimethylbenzene	1.0	Not Detected	5.1	Not Detected
1,3-Dichlorobenzene	1.0	Not Detected	6.3	Not Detected
1,4-Dichlorobenzene	1.0	Not Detected	6.3	Not Detected
alpha-Chlorotoluene	1.0	Not Detected	5.4	Not Detected
1,2-Dichlorobenzene	1.0	Not Detected	6.3	Not Detected
1,2,4-Trichlorobenzene	4.2	Not Detected	31	Not Detected
Hexachlorobutadiene	4.2	Not Detected	44	Not Detected
Butane	4.2	4.3	9.9	10
Isopentane	4.2	11	12	32

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	96	70-130
1,2-Dichloroethane-d4	95	70-130
4-Bromofluorobenzene	91	70-130

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Client Sample ID: VMP-15-29-050322

Lab ID#: 2205095A-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j051311**	**Date of Collection:**	**5/3/22 11:16:00 AM**
Dil. Factor:	**2.07**	**Date of Analysis:**	**5/13/22 06:12 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.0	Not Detected	5.1	Not Detected
Freon 114	1.0	Not Detected	7.2	Not Detected
Chloromethane	10	Not Detected	21	Not Detected
Vinyl Chloride	1.0	Not Detected	2.6	Not Detected
1,3-Butadiene	1.0	Not Detected	2.3	Not Detected
Bromomethane	10	Not Detected	40	Not Detected
Chloroethane	4.1	Not Detected	11	Not Detected
Freon 11	1.0	Not Detected	5.8	Not Detected
Ethanol	10	Not Detected	20	Not Detected
Freon 113	1.0	Not Detected	7.9	Not Detected
1,1-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Acetone	10	3.2 J	24	7.6 J
2-Propanol	4.1	2.4 J	10	5.8 J
Carbon Disulfide	4.1	Not Detected	13	Not Detected
3-Chloropropene	4.1	Not Detected	13	Not Detected
Methylene Chloride	10	Not Detected	36	Not Detected
Methyl tert-butyl ether	4.1	Not Detected	15	Not Detected
trans-1,2-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Hexane	1.0	Not Detected	3.6	Not Detected
1,1-Dichloroethane	1.0	Not Detected	4.2	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.1	Not Detected	12	Not Detected
cis-1,2-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Tetrahydrofuran	1.0	Not Detected	3.0	Not Detected
Chloroform	1.0	5.3	5.0	26
1,1,1-Trichloroethane	1.0	Not Detected	5.6	Not Detected
Cyclohexane	1.0	Not Detected	3.6	Not Detected
Carbon Tetrachloride	1.0	Not Detected	6.5	Not Detected
2,2,4-Trimethylpentane	1.0	Not Detected	4.8	Not Detected
Benzene	1.0	Not Detected	3.3	Not Detected
1,2-Dichloroethane	1.0	Not Detected	4.2	Not Detected
Heptane	1.0	Not Detected	4.2	Not Detected
Trichloroethene	1.0	Not Detected	5.6	Not Detected
1,2-Dichloropropane	1.0	Not Detected	4.8	Not Detected
1,4-Dioxane	4.1	Not Detected	15	Not Detected
Bromodichloromethane	1.0	Not Detected	6.9	Not Detected
cis-1,3-Dichloropropene	1.0	Not Detected	4.7	Not Detected
4-Methyl-2-pentanone	1.0	Not Detected	4.2	Not Detected
Toluene	1.0	Not Detected	3.9	Not Detected
trans-1,3-Dichloropropene	1.0	Not Detected	4.7	Not Detected
1,1,2-Trichloroethane	1.0	Not Detected	5.6	Not Detected
Tetrachloroethene	1.0	Not Detected	7.0	Not Detected
2-Hexanone	4.1	Not Detected	17	Not Detected

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Client Sample ID: VMP-15-29-050322

Lab ID#: 2205095A-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j051311**	**Date of Collection:**	**5/3/22 11:16:00 AM**
Dil. Factor:	**2.07**	**Date of Analysis:**	**5/13/22 06:12 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.0	Not Detected	8.8	Not Detected
1,2-Dibromoethane (EDB)	1.0	Not Detected	8.0	Not Detected
Chlorobenzene	1.0	Not Detected	4.8	Not Detected
Ethyl Benzene	1.0	Not Detected	4.5	Not Detected
m,p-Xylene	1.0	Not Detected	4.5	Not Detected
o-Xylene	1.0	Not Detected	4.5	Not Detected
Styrene	1.0	Not Detected	4.4	Not Detected
Bromoform	1.0	Not Detected	11	Not Detected
Cumene	1.0	Not Detected	5.1	Not Detected
1,1,2,2-Tetrachloroethane	1.0	Not Detected	7.1	Not Detected
Propylbenzene	1.0	Not Detected	5.1	Not Detected
4-Ethyltoluene	1.0	Not Detected	5.1	Not Detected
1,3,5-Trimethylbenzene	1.0	Not Detected	5.1	Not Detected
1,2,4-Trimethylbenzene	1.0	Not Detected	5.1	Not Detected
1,3-Dichlorobenzene	1.0	Not Detected	6.2	Not Detected
1,4-Dichlorobenzene	1.0	Not Detected	6.2	Not Detected
alpha-Chlorotoluene	1.0	Not Detected	5.4	Not Detected
1,2-Dichlorobenzene	1.0	Not Detected	6.2	Not Detected
1,2,4-Trichlorobenzene	4.1	Not Detected	31	Not Detected
Hexachlorobutadiene	4.1	Not Detected	44	Not Detected
Butane	4.1	Not Detected	9.8	Not Detected
Isopentane	4.1	4.1	12	12

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	94	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	91	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2205095A-06A

EPA METHOD TO-15 GC/MS

File Name:	**14051112f**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/11/22 11:54 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	5.0	Not Detected	25	Not Detected
Freon 114	5.0	Not Detected	35	Not Detected
Chloromethane	20	Not Detected	41	Not Detected
Vinyl Chloride	5.0	Not Detected	13	Not Detected
1,3-Butadiene	5.0	Not Detected	11	Not Detected
Bromomethane	20	Not Detected	78	Not Detected
Chloroethane	20	Not Detected	53	Not Detected
Freon 11	5.0	Not Detected	28	Not Detected
Ethanol	25	Not Detected	47	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	25	Not Detected	61	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	20	Not Detected	82	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#: 2205095A-06A

EPA METHOD TO-15 GC/MS

File Name:	**14051112f**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/11/22 11:54 AM**	

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

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	86	70-130
Toluene-d8	80	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2205095A-06B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j051305d**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/13/22 02:08 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	5.0	Not Detected	9.4	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

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Client Sample ID: Lab Blank

Lab ID#: 2205095A-06B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j051305d**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/13/22 02:08 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	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

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	95	70-130
1,2-Dichloroethane-d4	94	70-130
4-Bromofluorobenzene	93	70-130

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Client Sample ID: CCV
Lab ID#: 2205095A-07A
EPA METHOD TO-15 GC/MS

File Name:	**14051107**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 5/11/22 09:47 AM**

Compound	%Recovery
Freon 12	106
Freon 114	120
Chloromethane	104
Vinyl Chloride	116
1,3-Butadiene	109
Bromomethane	99
Chloroethane	100
Freon 11	106
Ethanol	114
Freon 113	117
1,1-Dichloroethene	106
Acetone	118
2-Propanol	112
Carbon Disulfide	105
3-Chloropropene	108
Methylene Chloride	108
Methyl tert-butyl ether	98
trans-1,2-Dichloroethene	112
Hexane	96
1,1-Dichloroethane	86
2-Butanone (Methyl Ethyl Ketone)	88
cis-1,2-Dichloroethene	88
Tetrahydrofuran	90
Chloroform	105
1,1,1-Trichloroethane	105
Cyclohexane	110
Carbon Tetrachloride	106
2,2,4-Trimethylpentane	113
Benzene	90
1,2-Dichloroethane	79
Heptane	94
Trichloroethene	90
1,2-Dichloropropane	86
1,4-Dioxane	92
Bromodichloromethane	83
cis-1,3-Dichloropropene	86
4-Methyl-2-pentanone	96
Toluene	88
trans-1,3-Dichloropropene	89
1,1,2-Trichloroethane	89
Tetrachloroethene	96
2-Hexanone	94

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Client Sample ID: CCV
Lab ID#: 2205095A-07A
EPA METHOD TO-15 GC/MS

File Name:	**14051107**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 5/11/22 09:47 AM**

Compound	%Recovery
Dibromochloromethane	92
1,2-Dibromoethane (EDB)	92
Chlorobenzene	90
Ethyl Benzene	90
m,p-Xylene	92
o-Xylene	90
Styrene	98
Bromoform	93
Cumene	95
1,1,2,2-Tetrachloroethane	84
Propylbenzene	97
4-Ethyltoluene	93
1,3,5-Trimethylbenzene	95
1,2,4-Trimethylbenzene	93
1,3-Dichlorobenzene	94
1,4-Dichlorobenzene	92
alpha-Chlorotoluene	92
1,2-Dichlorobenzene	91
1,2,4-Trichlorobenzene	90
Hexachlorobutadiene	87
Butane	129
Isopentane	116

Container Type: NA - Not Applicable

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

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Client Sample ID: CCV

Lab ID#: 2205095A-07B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j051302**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 5/13/22 11:51 AM**

Compound	%Recovery
Freon 12	92
Freon 114	93
Chloromethane	101
Vinyl Chloride	106
1,3-Butadiene	104
Bromomethane	104
Chloroethane	100
Freon 11	89
Ethanol	98
Freon 113	99
1,1-Dichloroethene	106
Acetone	99
2-Propanol	104
Carbon Disulfide	103
3-Chloropropene	111
Methylene Chloride	95
Methyl tert-butyl ether	109
trans-1,2-Dichloroethene	107
Hexane	116
1,1-Dichloroethane	98
2-Butanone (Methyl Ethyl Ketone)	106
cis-1,2-Dichloroethene	104
Tetrahydrofuran	105
Chloroform	93
1,1,1-Trichloroethane	91
Cyclohexane	118
Carbon Tetrachloride	88
2,2,4-Trimethylpentane	114
Benzene	97
1,2-Dichloroethane	86
Heptane	120
Trichloroethene	95
1,2-Dichloropropane	94
1,4-Dioxane	103
Bromodichloromethane	88
cis-1,3-Dichloropropene	104
4-Methyl-2-pentanone	107
Toluene	95
trans-1,3-Dichloropropene	105
1,1,2-Trichloroethane	100
Tetrachloroethene	99
2-Hexanone	106

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Client Sample ID: CCV

Lab ID#: 2205095A-07B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j051302**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/13/22 11:51 AM**	

Compound	%Recovery
Dibromochloromethane	98
1,2-Dibromoethane (EDB)	103
Chlorobenzene	94
Ethyl Benzene	108
m,p-Xylene	112
o-Xylene	114
Styrene	117
Bromoform	98
Cumene	115
1,1,2,2-Tetrachloroethane	96
Propylbenzene	106
4-Ethyltoluene	108
1,3,5-Trimethylbenzene	103
1,2,4-Trimethylbenzene	110
1,3-Dichlorobenzene	100
1,4-Dichlorobenzene	101
alpha-Chlorotoluene	103
1,2-Dichlorobenzene	98
1,2,4-Trichlorobenzene	102
Hexachlorobutadiene	97
Butane	107
Isopentane	100

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	96	70-130
1,2-Dichloroethane-d4	92	70-130
4-Bromofluorobenzene	93	70-130

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Client Sample ID: LCS

Lab ID#: 2205095A-08A

EPA METHOD TO-15 GC/MS

File Name:	**14051109**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/11/22 10:39 AM**	

Compound	%Recovery	Method Limits
Freon 12	105	70-130
Freon 114	120	70-130
Chloromethane	103	70-130
Vinyl Chloride	110	70-130
1,3-Butadiene	102	70-130
Bromomethane	104	70-130
Chloroethane	104	70-130
Freon 11	103	70-130
Ethanol	104	70-130
Freon 113	114	70-130
1,1-Dichloroethene	104	70-130
Acetone	112	70-130
2-Propanol	120	70-130
Carbon Disulfide	102	70-130
3-Chloropropene	113	70-130
Methylene Chloride	101	70-130
Methyl tert-butyl ether	117	70-130
trans-1,2-Dichloroethene	106	70-130
Hexane	94	70-130
1,1-Dichloroethane	88	70-130
2-Butanone (Methyl Ethyl Ketone)	87	70-130
cis-1,2-Dichloroethene	84	70-130
Tetrahydrofuran	86	70-130
Chloroform	83	70-130
1,1,1-Trichloroethane	86	70-130
Cyclohexane	92	70-130
Carbon Tetrachloride	86	70-130
2,2,4-Trimethylpentane	82	70-130
Benzene	82	70-130
1,2-Dichloroethane	76	70-130
Heptane	90	70-130
Trichloroethene	89	70-130
1,2-Dichloropropane	102	70-130
1,4-Dioxane	114	70-130
Bromodichloromethane	99	70-130
cis-1,3-Dichloropropene	112	70-130
4-Methyl-2-pentanone	123	70-130
Toluene	105	70-130
trans-1,3-Dichloropropene	100	70-130
1,1,2-Trichloroethane	94	70-130
Tetrachloroethene	102	70-130
2-Hexanone	100	70-130

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Client Sample ID: LCS

Lab ID#: 2205095A-08A

EPA METHOD TO-15 GC/MS

File Name:	**14051109**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/11/22 10:39 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	98	70-130
1,2-Dibromoethane (EDB)	94	70-130
Chlorobenzene	94	70-130
Ethyl Benzene	94	70-130
m,p-Xylene	94	70-130
o-Xylene	93	70-130
Styrene	104	70-130
Bromoform	99	70-130
Cumene	97	70-130
1,1,2,2-Tetrachloroethane	90	70-130
Propylbenzene	101	70-130
4-Ethyltoluene	96	70-130
1,3,5-Trimethylbenzene	98	70-130
1,2,4-Trimethylbenzene	97	70-130
1,3-Dichlorobenzene	95	70-130
1,4-Dichlorobenzene	93	70-130
alpha-Chlorotoluene	100	70-130
1,2-Dichlorobenzene	92	70-130
1,2,4-Trichlorobenzene	93	70-130
Hexachlorobutadiene	87	70-130
Butane	117	60-140
Isopentane	117	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	76	70-130
Toluene-d8	116	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: LCSD

Lab ID#: 2205095A-08AA

EPA METHOD TO-15 GC/MS

File Name:	**14051110**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/11/22 11:04 AM**	

Compound	%Recovery	Method Limits
Freon 12	111	70-130
Freon 114	122	70-130
Chloromethane	103	70-130
Vinyl Chloride	114	70-130
1,3-Butadiene	104	70-130
Bromomethane	103	70-130
Chloroethane	110	70-130
Freon 11	105	70-130
Ethanol	111	70-130
Freon 113	116	70-130
1,1-Dichloroethene	107	70-130
Acetone	114	70-130
2-Propanol	124	70-130
Carbon Disulfide	105	70-130
3-Chloropropene	116	70-130
Methylene Chloride	102	70-130
Methyl tert-butyl ether	120	70-130
trans-1,2-Dichloroethene	111	70-130
Hexane	113	70-130
1,1-Dichloroethane	103	70-130
2-Butanone (Methyl Ethyl Ketone)	90	70-130
cis-1,2-Dichloroethene	88	70-130
Tetrahydrofuran	90	70-130
Chloroform	86	70-130
1,1,1-Trichloroethane	86	70-130
Cyclohexane	93	70-130
Carbon Tetrachloride	92	70-130
2,2,4-Trimethylpentane	88	70-130
Benzene	72	70-130
1,2-Dichloroethane	64 Q	70-130
Heptane	85	70-130
Trichloroethene	91	70-130
1,2-Dichloropropane	86	70-130
1,4-Dioxane	95	70-130
Bromodichloromethane	83	70-130
cis-1,3-Dichloropropene	92	70-130
4-Methyl-2-pentanone	102	70-130
Toluene	89	70-130
trans-1,3-Dichloropropene	100	70-130
1,1,2-Trichloroethane	97	70-130
Tetrachloroethene	101	70-130
2-Hexanone	99	70-130

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Client Sample ID: LCSD
Lab ID#: 2205095A-08AA
EPA METHOD TO-15 GC/MS

File Name:	**14051110**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/11/22 11:04 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	98	70-130
1,2-Dibromoethane (EDB)	95	70-130
Chlorobenzene	93	70-130
Ethyl Benzene	93	70-130
m,p-Xylene	94	70-130
o-Xylene	91	70-130
Styrene	103	70-130
Bromoform	97	70-130
Cumene	97	70-130
1,1,2,2-Tetrachloroethane	91	70-130
Propylbenzene	100	70-130
4-Ethyltoluene	96	70-130
1,3,5-Trimethylbenzene	98	70-130
1,2,4-Trimethylbenzene	96	70-130
1,3-Dichlorobenzene	96	70-130
1,4-Dichlorobenzene	92	70-130
alpha-Chlorotoluene	100	70-130
1,2-Dichlorobenzene	92	70-130
1,2,4-Trichlorobenzene	93	70-130
Hexachlorobutadiene	88	70-130
Butane	116	60-140
Isopentane	122	60-140

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	79	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: LCS

Lab ID#: 2205095A-08B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j051303**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/13/22 12:22 PM**	

Compound	%Recovery	Method Limits
Freon 12	97	70-130
Freon 114	98	70-130
Chloromethane	93	70-130
Vinyl Chloride	93	70-130
1,3-Butadiene	90	70-130
Bromomethane	90	70-130
Chloroethane	93	70-130
Freon 11	88	70-130
Ethanol	109	70-130
Freon 113	99	70-130
1,1-Dichloroethene	106	70-130
Acetone	96	70-130
2-Propanol	114	70-130
Carbon Disulfide	104	70-130
3-Chloropropene	116	70-130
Methylene Chloride	93	70-130
Methyl tert-butyl ether	112	70-130
trans-1,2-Dichloroethene	110	70-130
Hexane	116	70-130
1,1-Dichloroethane	100	70-130
2-Butanone (Methyl Ethyl Ketone)	110	70-130
cis-1,2-Dichloroethene	105	70-130
Tetrahydrofuran	107	70-130
Chloroform	94	70-130
1,1,1-Trichloroethane	94	70-130
Cyclohexane	122	70-130
Carbon Tetrachloride	90	70-130
2,2,4-Trimethylpentane	116	70-130
Benzene	99	70-130
1,2-Dichloroethane	91	70-130
Heptane	123	70-130
Trichloroethene	98	70-130
1,2-Dichloropropane	96	70-130
1,4-Dioxane	109	70-130
Bromodichloromethane	89	70-130
cis-1,3-Dichloropropene	108	70-130
4-Methyl-2-pentanone	113	70-130
Toluene	96	70-130
trans-1,3-Dichloropropene	108	70-130
1,1,2-Trichloroethane	107	70-130
Tetrachloroethene	102	70-130
2-Hexanone	116	70-130

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Client Sample ID: LCS

Lab ID#: 2205095A-08B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j051303**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/13/22 12:22 PM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	101	70-130
1,2-Dibromoethane (EDB)	106	70-130
Chlorobenzene	95	70-130
Ethyl Benzene	112	70-130
m,p-Xylene	114	70-130
o-Xylene	116	70-130
Styrene	120	70-130
Bromoform	101	70-130
Cumene	118	70-130
1,1,2,2-Tetrachloroethane	102	70-130
Propylbenzene	108	70-130
4-Ethyltoluene	112	70-130
1,3,5-Trimethylbenzene	106	70-130
1,2,4-Trimethylbenzene	112	70-130
1,3-Dichlorobenzene	102	70-130
1,4-Dichlorobenzene	102	70-130
alpha-Chlorotoluene	110	70-130
1,2-Dichlorobenzene	100	70-130
1,2,4-Trichlorobenzene	103	70-130
Hexachlorobutadiene	96	70-130
Butane	92	60-140
Isopentane	94	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	95	70-130
1,2-Dichloroethane-d4	92	70-130
4-Bromofluorobenzene	92	70-130

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Client Sample ID: LCSD

Lab ID#: 2205095A-08BB

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j051304**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/13/22 12:52 PM**	

Compound	%Recovery	Method Limits
Freon 12	96	70-130
Freon 114	96	70-130
Chloromethane	98	70-130
Vinyl Chloride	91	70-130
1,3-Butadiene	88	70-130
Bromomethane	89	70-130
Chloroethane	93	70-130
Freon 11	87	70-130
Ethanol	106	70-130
Freon 113	98	70-130
1,1-Dichloroethene	106	70-130
Acetone	96	70-130
2-Propanol	113	70-130
Carbon Disulfide	103	70-130
3-Chloropropene	113	70-130
Methylene Chloride	93	70-130
Methyl tert-butyl ether	111	70-130
trans-1,2-Dichloroethene	108	70-130
Hexane	116	70-130
1,1-Dichloroethane	98	70-130
2-Butanone (Methyl Ethyl Ketone)	109	70-130
cis-1,2-Dichloroethene	105	70-130
Tetrahydrofuran	106	70-130
Chloroform	92	70-130
1,1,1-Trichloroethane	93	70-130
Cyclohexane	120	70-130
Carbon Tetrachloride	89	70-130
2,2,4-Trimethylpentane	115	70-130
Benzene	99	70-130
1,2-Dichloroethane	88	70-130
Heptane	121	70-130
Trichloroethene	97	70-130
1,2-Dichloropropane	95	70-130
1,4-Dioxane	107	70-130
Bromodichloromethane	89	70-130
cis-1,3-Dichloropropene	107	70-130
4-Methyl-2-pentanone	111	70-130
Toluene	96	70-130
trans-1,3-Dichloropropene	109	70-130
1,1,2-Trichloroethane	107	70-130
Tetrachloroethene	103	70-130
2-Hexanone	115	70-130

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Client Sample ID: LCSD

Lab ID#: 2205095A-08BB

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j051304**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/13/22 12:52 PM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	102	70-130
1,2-Dibromoethane (EDB)	106	70-130
Chlorobenzene	96	70-130
Ethyl Benzene	112	70-130
m,p-Xylene	115	70-130
o-Xylene	117	70-130
Styrene	122	70-130
Bromoform	102	70-130
Cumene	120	70-130
1,1,2,2-Tetrachloroethane	104	70-130
Propylbenzene	110	70-130
4-Ethyltoluene	115	70-130
1,3,5-Trimethylbenzene	107	70-130
1,2,4-Trimethylbenzene	115	70-130
1,3-Dichlorobenzene	103	70-130
1,4-Dichlorobenzene	104	70-130
alpha-Chlorotoluene	112	70-130
1,2-Dichlorobenzene	103	70-130
1,2,4-Trichlorobenzene	112	70-130
Hexachlorobutadiene	105	70-130
Butane	90	60-140
Isopentane	91	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	95	70-130
1,2-Dichloroethane-d4	91	70-130
4-Bromofluorobenzene	94	70-130

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5/17/2022
Mr. Samuel Fisher
AECOM
100 N. Broadway, 20th Floor

St. Louis MO 63102

Project Name: Roxana Quarterly Soil Vapor
Project #: 60674381-4.2.2
Workorder #: 2205095B

Dear Mr. Samuel Fisher

The following report includes the data for the above referenced project for sample(s) received on 5/4/2022 at Eurofins Air Toxics LLC.

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 LLC. for your air analysis needs. Eurofins Air Toxics Inc. 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 #: 2205095B

Work Order Summary

CLIENT:	Mr. Samuel Fisher AECOM 100 N. Broadway, 20th Floor St. Louis, MO 63102	**BILL TO:**	Accounts Payable Austin AECOM PO Box 203970 Austin, TX 78720
PHONE:	314-296-1969	**P.O. #**	141259
FAX:		**PROJECT #**	60674381-4.2.2 Roxana Quarterly Soil Vapor
DATE RECEIVED:	05/04/2022	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	05/17/2022		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	VMP-55-20-050322	Modified ASTM D-1946	5.3 "Hg	9.9 psi
02A	VMP-15-5-050322	Modified ASTM D-1946	8.2 "Hg	9.9 psi
03A	VMP-15-21.5-050322	Modified ASTM D-1946	6.3 "Hg	10 psi
04A	VMP-15-25.5-050322	Modified ASTM D-1946	5.9 "Hg	10 psi
05A	VMP-15-29-050322	Modified ASTM D-1946	5.7 "Hg	9.9 psi
06A	Lab Blank	Modified ASTM D-1946	NA	NA
06B	Lab Blank	Modified ASTM D-1946	NA	NA
07A	CCV	Modified ASTM D-1946	NA	NA
08A	LCS	Modified ASTM D-1946	NA	NA
08AA	LCSD	Modified ASTM D-1946	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 05/17/22

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209221, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-21-17, UT NELAP – CA009332021-13, VA NELAP - 10615, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-015, Effective date: 10/18/2021, Expiration date: 10/17/2022.
Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
Modified ASTM D-1946
AECOM
Workorder# 2205095B

Five 1 Liter Summa Canister samples were received on May 04, 2022. 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.

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-55-20-050322

Lab ID#: 2205095B-01A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.20	1.3
Nitrogen	0.20	67
Methane	0.00020	15
Carbon Dioxide	0.020	16
Ethane	0.0020	0.0081
Helium	0.10	0.0037 J

Client Sample ID: VMP-15-5-050322

Lab ID#: 2205095B-02A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	14
Nitrogen	0.23	82
Carbon Dioxide	0.023	3.8
Helium	0.12	0.0069 J

Client Sample ID: VMP-15-21.5-050322

Lab ID#: 2205095B-03A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.21	2.4
Nitrogen	0.21	85
Carbon Dioxide	0.021	13
Helium	0.11	0.0058 J

Client Sample ID: VMP-15-25.5-050322

Lab ID#: 2205095B-04A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.21	1.7
Nitrogen	0.21	82
Methane	0.00021	0.062

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

Client Sample ID: VMP-15-25.5-050322

Lab ID#: 2205095B-04A

Carbon Dioxide	0.021	16

Client Sample ID: VMP-15-29-050322

Lab ID#: 2205095B-05A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.21	1.5
Nitrogen	0.21	82
Methane	0.00021	0.0019
Carbon Dioxide	0.021	16
Helium	0.10	0.024 J

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Client Sample ID: VMP-55-20-050322

Lab ID#: 2205095B-01A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10051623**	**Date of Collection: 5/3/22 9:56:00 AM**	
Dil. Factor:	**2.03**	**Date of Analysis: 5/16/22 03:40 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.20	1.3
Nitrogen	0.20	67
Carbon Monoxide	0.020	Not Detected
Methane	0.00020	15
Carbon Dioxide	0.020	16
Ethane	0.0020	0.0081
Ethene	0.0020	Not Detected
Helium	0.10	0.0037 J

J = Estimated value.

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-15-5-050322

Lab ID#: 2205095B-02A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10051617**	**Date of Collection: 5/3/22 10:34:00 AM**	
Dil. Factor:	**2.30**	**Date of Analysis: 5/16/22 01:16 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	14
Nitrogen	0.23	82
Carbon Monoxide	0.023	Not Detected
Methane	0.00023	Not Detected
Carbon Dioxide	0.023	3.8
Ethane	0.0023	Not Detected
Ethene	0.0023	Not Detected
Helium	0.12	0.0069 J

J = Estimated value.

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-15-21.5-050322

Lab ID#: 2205095B-03A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10051619**	**Date of Collection: 5/3/22 10:48:00 AM**	
Dil. Factor:	**2.13**	**Date of Analysis: 5/16/22 02:06 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.21	2.4
Nitrogen	0.21	85
Carbon Monoxide	0.021	Not Detected
Methane	0.00021	Not Detected
Carbon Dioxide	0.021	13
Ethane	0.0021	Not Detected
Ethene	0.0021	Not Detected
Helium	0.11	0.0058 J

J = Estimated value.

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-15-25.5-050322

Lab ID#: 2205095B-04A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10051620**	**Date of Collection: 5/3/22 11:02:00 AM**	
Dil. Factor:	**2.09**	**Date of Analysis: 5/16/22 02:35 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.21	1.7
Nitrogen	0.21	82
Carbon Monoxide	0.021	Not Detected
Methane	0.00021	0.062
Carbon Dioxide	0.021	16
Ethane	0.0021	Not Detected
Ethene	0.0021	Not Detected
Helium	0.10	Not Detected

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-15-29-050322

Lab ID#: 2205095B-05A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10051618**	**Date of Collection:**	**5/3/22 11:16:00 AM**
Dil. Factor:	**2.07**	**Date of Analysis:**	**5/16/22 01:40 PM**

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.21	1.5
Nitrogen	0.21	82
Carbon Monoxide	0.021	Not Detected
Methane	0.00021	0.0019
Carbon Dioxide	0.021	16
Ethane	0.0021	Not Detected
Ethene	0.0021	Not Detected
Helium	0.10	0.024 J

J = Estimated value.

Container Type: 1 Liter Summa Canister

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Client Sample ID: Lab Blank

Lab ID#: 2205095B-06A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10051604**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/16/22 08:03 AM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.10	Not Detected
Nitrogen	0.10	0.044 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#: 2205095B-06B

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10051605c**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/16/22 08:25 AM**	

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

Container Type: NA - Not Applicable

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Client Sample ID: CCV

Lab ID#: 2205095B-07A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10051601**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/16/22 06:55 AM**	

Compound	%Recovery
Oxygen	98
Nitrogen	94
Carbon Monoxide	103
Methane	101
Carbon Dioxide	100
Ethane	103
Ethene	104
Helium	94

Container Type: NA - Not Applicable

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Client Sample ID: LCS

Lab ID#: 2205095B-08A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10051602**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/16/22 07:18 AM**	

Compound	%Recovery	Method Limits
Oxygen	98	85-115
Nitrogen	94	85-115
Carbon Monoxide	103	85-115
Methane	103	85-115
Carbon Dioxide	101	85-115
Ethane	104	85-115
Ethene	103	85-115
Helium	111	85-115

Container Type: NA - Not Applicable

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Client Sample ID: LCSD

Lab ID#: 2205095B-08AA

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10051603**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/16/22 07:40 AM**	

Compound	%Recovery	Method Limits
Oxygen	98	85-115
Nitrogen	94	85-115
Carbon Monoxide	104	85-115
Methane	103	85-115
Carbon Dioxide	101	85-115
Ethane	105	85-115
Ethene	103	85-115
Helium	111	85-115

Container Type: NA - Not Applicable

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8/12/2022
Mr. Samuel Fisher
AECOM
100 N. Broadway, 20th Floor

St. Louis MO 63102

Project Name: Roxana Quarterly Soil Vapor
Project #: 60674381 - 4.3.2
Workorder #: 2208042A

Dear Mr. Samuel Fisher

The following report includes the data for the above referenced project for sample(s) received on 8/1/2022 at Eurofins Air Toxics LLC.

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 LLC. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Brian Whittaker

Project Manager

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WORK ORDER #: 2208042A

Work Order Summary

CLIENT:	Mr. Samuel Fisher AECOM 100 N. Broadway, 20th Floor St. Louis, MO 63102	**BILL TO:**	Accounts Payable Austin AECOM PO Box 203970 Austin, TX 78720
PHONE:	314-296-1969	**P.O. #**	141259
FAX:		**PROJECT #**	60674381 - 4.3.2 Roxana Quarterly Soil Vapor
DATE RECEIVED:	08/01/2022	**CONTACT:**	Brian Whittaker
DATE COMPLETED:	08/12/2022		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	VMP-55-20-072822	TO-15	6.5 "Hg	10.1 psi
02A	VMP-15-5-072822	TO-15	6.7 "Hg	10 psi
03A	VMP-15-21.5-072822	TO-15	7.8 "Hg	10 psi
04A	VMP-15-21.5-072822-DUP	TO-15	7.1 "Hg	10 psi
05A	VMP-15-25.5-072822	TO-15	7.8 "Hg	9.9 psi
06A	Lab Blank	TO-15	NA	NA
06B	Lab Blank	TO-15	NA	NA
06C	Lab Blank	TO-15	NA	NA
07A	CCV	TO-15	NA	NA
07B	CCV	TO-15	NA	NA
07C	CCV	TO-15	NA	NA
08A	LCS	TO-15	NA	NA
08AA	LCSD	TO-15	NA	NA
08B	LCS	TO-15	NA	NA
08BB	LCSD	TO-15	NA	NA
08C	LCS	TO-15	NA	NA
08CC	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 08/12/22

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209221, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-21-17, UT NELAP – CA009332021-13, VA NELAP - 10615, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-015, Effective date: 10/18/2021, Expiration date: 10/17/2022.
Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
EPA Method TO-15
AECOM
Workorder# 2208042A

Five 1 Liter Summa Canister samples were received on August 01, 2022. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

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

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. Target compound non-detects in the samples that are associated with high bias in CCV analyses have not been flagged.

Dilution was performed on sample VMP-55-20-072822 due to the presence of high level target species.

Definition of Data Qualifying Flags

Ten 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.

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

CN - See Case Narrative.

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-55-20-072822

Lab ID#: 2208042A-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethanol	310	360	580	680
2-Propanol	120	92 J	300	220 J
Carbon Disulfide	120	47 J	380	150 J
Methylene Chloride	310	72 J	1100	250 J
Cyclohexane	31	140	110	500
2,2,4-Trimethylpentane	31	11000	140	50000
Toluene	31	190	120	710
m,p-Xylene	31	15 J	130	66 J
o-Xylene	31	10 J	130	45 J
Butane	120	410	290	970
Isopentane	120	3200	360	9600

Client Sample ID: VMP-15-5-072822

Lab ID#: 2208042A-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.1	0.64 J	5.3	3.2 J
Acetone	11	8.0 J	26	19 J
Hexane	1.1	0.55 J	3.8	1.9 J
2,2,4-Trimethylpentane	1.1	1.7	5.0	7.8

Client Sample ID: VMP-15-21.5-072822

Lab ID#: 2208042A-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	11	6.4 J	27	15 J
2-Propanol	4.5	2.0 J	11	5.0 J
Hexane	1.1	0.44 J	4.0	1.5 J
2,2,4-Trimethylpentane	1.1	0.41 J	5.3	1.9 J
Trichloroethene	1.1	0.66 J	6.1	3.6 J
Toluene	1.1	0.26 J	4.3	0.97 J
Tetrachloroethene	1.1	0.35 J	7.7	2.4 J
Styrene	1.1	2.3	4.8	10

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

Client Sample ID: VMP-15-21.5-072822

Lab ID#: 2208042A-03A

Client Sample ID: VMP-15-21.5-072822-DUP

Lab ID#: 2208042A-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	11	6.8 J	26	16 J
2-Propanol	4.4	2.6 J	11	6.5 J
2,2,4-Trimethylpentane	1.1	0.41 J	5.1	1.9 J
Trichloroethene	1.1	0.90 J	5.9	4.9 J

Client Sample ID: VMP-15-25.5-072822

Lab ID#: 2208042A-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	11	8.7 J	27	21 J
2,2,4-Trimethylpentane	1.1	160	5.3	750
Tetrachloroethene	1.1	0.38 J	7.7	2.6 J
Butane	4.5	19	11	45
Isopentane	4.5	7.7	13	23

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Client Sample ID: VMP-55-20-072822

Lab ID#: 2208042A-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080519**	**Date of Collection:**	**7/28/22 9:24:00 AM**
Dil. Factor:	**61.6**	**Date of Analysis:**	**8/6/22 12:32 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	31	Not Detected	150	Not Detected
Freon 114	31	Not Detected	220	Not Detected
Chloromethane	310	Not Detected	640	Not Detected
Vinyl Chloride	31	Not Detected	79	Not Detected
1,3-Butadiene	31	Not Detected	68	Not Detected
Bromomethane	310	Not Detected	1200	Not Detected
Chloroethane	120	Not Detected	320	Not Detected
Freon 11	31	Not Detected	170	Not Detected
Ethanol	310	360	580	680
Freon 113	31	Not Detected	240	Not Detected
1,1-Dichloroethene	31	Not Detected	120	Not Detected
Acetone	310	Not Detected	730	Not Detected
2-Propanol	120	92 J	300	220 J
Carbon Disulfide	120	47 J	380	150 J
3-Chloropropene	120	Not Detected	380	Not Detected
Methylene Chloride	310	72 J	1100	250 J
Methyl tert-butyl ether	120	Not Detected	440	Not Detected
trans-1,2-Dichloroethene	31	Not Detected	120	Not Detected
Hexane	31	Not Detected	110	Not Detected
1,1-Dichloroethane	31	Not Detected	120	Not Detected
2-Butanone (Methyl Ethyl Ketone)	120	Not Detected	360	Not Detected
cis-1,2-Dichloroethene	31	Not Detected	120	Not Detected
Tetrahydrofuran	31	Not Detected	91	Not Detected
Chloroform	31	Not Detected	150	Not Detected
1,1,1-Trichloroethane	31	Not Detected	170	Not Detected
Cyclohexane	31	140	110	500
Carbon Tetrachloride	31	Not Detected	190	Not Detected
2,2,4-Trimethylpentane	31	11000	140	50000
Benzene	31	Not Detected	98	Not Detected
1,2-Dichloroethane	31	Not Detected	120	Not Detected
Heptane	31	Not Detected	130	Not Detected
Trichloroethene	31	Not Detected	160	Not Detected
1,2-Dichloropropane	31	Not Detected	140	Not Detected
1,4-Dioxane	120	Not Detected	440	Not Detected
Bromodichloromethane	31	Not Detected	210	Not Detected
cis-1,3-Dichloropropene	31	Not Detected	140	Not Detected
4-Methyl-2-pentanone	31	Not Detected	130	Not Detected
Toluene	31	190	120	710
trans-1,3-Dichloropropene	31	Not Detected	140	Not Detected
1,1,2-Trichloroethane	31	Not Detected	170	Not Detected
Tetrachloroethene	31	Not Detected	210	Not Detected
2-Hexanone	120	Not Detected	500	Not Detected

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Client Sample ID: VMP-55-20-072822

Lab ID#: 2208042A-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080519**	**Date of Collection:**	**7/28/22 9:24:00 AM**
Dil. Factor:	**61.6**	**Date of Analysis:**	**8/6/22 12:32 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	31	Not Detected	260	Not Detected
1,2-Dibromoethane (EDB)	31	Not Detected	240	Not Detected
Chlorobenzene	31	Not Detected	140	Not Detected
Ethyl Benzene	31	Not Detected	130	Not Detected
m,p-Xylene	31	15 J	130	66 J
o-Xylene	31	10 J	130	45 J
Styrene	31	Not Detected	130	Not Detected
Bromoform	31	Not Detected	320	Not Detected
Cumene	31	Not Detected	150	Not Detected
1,1,2,2-Tetrachloroethane	31	Not Detected	210	Not Detected
Propylbenzene	31	Not Detected	150	Not Detected
4-Ethyltoluene	31	Not Detected	150	Not Detected
1,3,5-Trimethylbenzene	31	Not Detected	150	Not Detected
1,2,4-Trimethylbenzene	31	Not Detected	150	Not Detected
1,3-Dichlorobenzene	31	Not Detected	180	Not Detected
1,4-Dichlorobenzene	31	Not Detected	180	Not Detected
alpha-Chlorotoluene	31	Not Detected	160	Not Detected
1,2-Dichlorobenzene	31	Not Detected	180	Not Detected
1,2,4-Trichlorobenzene	120	Not Detected	910	Not Detected
Hexachlorobutadiene	120	Not Detected	1300	Not Detected
Butane	120	410	290	970
Isopentane	120	3200	360	9600

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	105	70-130
1,2-Dichloroethane-d4	100	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: VMP-15-5-072822

Lab ID#: 2208042A-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080525**	**Date of Collection:**	**7/28/22 10:00:00 AM**
Dil. Factor:	**2.16**	**Date of Analysis:**	**8/6/22 03:50 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.1	0.64 J	5.3	3.2 J
Freon 114	1.1	Not Detected	7.6	Not Detected
Chloromethane	11	Not Detected	22	Not Detected
Vinyl Chloride	1.1	Not Detected	2.8	Not Detected
1,3-Butadiene	1.1	Not Detected	2.4	Not Detected
Bromomethane	11	Not Detected	42	Not Detected
Chloroethane	4.3	Not Detected	11	Not Detected
Freon 11	1.1	Not Detected	6.1	Not Detected
Ethanol	11	Not Detected	20	Not Detected
Freon 113	1.1	Not Detected	8.3	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.3	Not Detected
Acetone	11	8.0 J	26	19 J
2-Propanol	4.3	Not Detected	11	Not Detected
Carbon Disulfide	4.3	Not Detected	13	Not Detected
3-Chloropropene	4.3	Not Detected	14	Not Detected
Methylene Chloride	11	Not Detected	38	Not Detected
Methyl tert-butyl ether	4.3	Not Detected	16	Not Detected
trans-1,2-Dichloroethene	1.1	Not Detected	4.3	Not Detected
Hexane	1.1	0.55 J	3.8	1.9 J
1,1-Dichloroethane	1.1	Not Detected	4.4	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.3	Not Detected	13	Not Detected
cis-1,2-Dichloroethene	1.1	Not Detected	4.3	Not Detected
Tetrahydrofuran	1.1	Not Detected	3.2	Not Detected
Chloroform	1.1	Not Detected	5.3	Not Detected
1,1,1-Trichloroethane	1.1	Not Detected	5.9	Not Detected
Cyclohexane	1.1	Not Detected	3.7	Not Detected
Carbon Tetrachloride	1.1	Not Detected	6.8	Not Detected
2,2,4-Trimethylpentane	1.1	1.7	5.0	7.8
Benzene	1.1	Not Detected	3.4	Not Detected
1,2-Dichloroethane	1.1	Not Detected	4.4	Not Detected
Heptane	1.1	Not Detected	4.4	Not Detected
Trichloroethene	1.1	Not Detected	5.8	Not Detected
1,2-Dichloropropane	1.1	Not Detected	5.0	Not Detected
1,4-Dioxane	4.3	Not Detected	16	Not Detected
Bromodichloromethane	1.1	Not Detected	7.2	Not Detected
cis-1,3-Dichloropropene	1.1	Not Detected	4.9	Not Detected
4-Methyl-2-pentanone	1.1	Not Detected	4.4	Not Detected
Toluene	1.1	Not Detected	4.1	Not Detected
trans-1,3-Dichloropropene	1.1	Not Detected	4.9	Not Detected
1,1,2-Trichloroethane	1.1	Not Detected	5.9	Not Detected
Tetrachloroethene	1.1	Not Detected	7.3	Not Detected
2-Hexanone	4.3	Not Detected	18	Not Detected

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Client Sample ID: VMP-15-5-072822

Lab ID#: 2208042A-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080525**	**Date of Collection:**	**7/28/22 10:00:00 AM**
Dil. Factor:	**2.16**	**Date of Analysis:**	**8/6/22 03:50 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.1	Not Detected	9.2	Not Detected
1,2-Dibromoethane (EDB)	1.1	Not Detected	8.3	Not Detected
Chlorobenzene	1.1	Not Detected	5.0	Not Detected
Ethyl Benzene	1.1	Not Detected	4.7	Not Detected
m,p-Xylene	1.1	Not Detected	4.7	Not Detected
o-Xylene	1.1	Not Detected	4.7	Not Detected
Styrene	1.1	Not Detected	4.6	Not Detected
Bromoform	1.1	Not Detected	11	Not Detected
Cumene	1.1	Not Detected	5.3	Not Detected
1,1,2,2-Tetrachloroethane	1.1	Not Detected	7.4	Not Detected
Propylbenzene	1.1	Not Detected	5.3	Not Detected
4-Ethyltoluene	1.1	Not Detected	5.3	Not Detected
1,3,5-Trimethylbenzene	1.1	Not Detected	5.3	Not Detected
1,2,4-Trimethylbenzene	1.1	Not Detected	5.3	Not Detected
1,3-Dichlorobenzene	1.1	Not Detected	6.5	Not Detected
1,4-Dichlorobenzene	1.1	Not Detected	6.5	Not Detected
alpha-Chlorotoluene	1.1	Not Detected	5.6	Not Detected
1,2-Dichlorobenzene	1.1	Not Detected	6.5	Not Detected
1,2,4-Trichlorobenzene	4.3	Not Detected	32	Not Detected
Hexachlorobutadiene	4.3	Not Detected	46	Not Detected
Butane	4.3	Not Detected	10	Not Detected
Isopentane	4.3	Not Detected	13	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister

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

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Client Sample ID: VMP-15-21.5-072822

Lab ID#: 2208042A-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080421**	**Date of Collection:**	**7/28/22 10:20:00 AM**
Dil. Factor:	**2.27**	**Date of Analysis:**	**8/5/22 12:28 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.1	Not Detected	5.6	Not Detected
Freon 114	1.1	Not Detected	7.9	Not Detected
Chloromethane	11	Not Detected	23	Not Detected
Vinyl Chloride	1.1	Not Detected	2.9	Not Detected
1,3-Butadiene	1.1	Not Detected	2.5	Not Detected
Bromomethane	11	Not Detected	44	Not Detected
Chloroethane	4.5	Not Detected	12	Not Detected
Freon 11	1.1	Not Detected	6.4	Not Detected
Ethanol	11	Not Detected	21	Not Detected
Freon 113	1.1	Not Detected	8.7	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.5	Not Detected
Acetone	11	6.4 J	27	15 J
2-Propanol	4.5	2.0 J	11	5.0 J
Carbon Disulfide	4.5	Not Detected	14	Not Detected
3-Chloropropene	4.5	Not Detected	14	Not Detected
Methylene Chloride	11	Not Detected	39	Not Detected
Methyl tert-butyl ether	4.5	Not Detected	16	Not Detected
trans-1,2-Dichloroethene	1.1	Not Detected	4.5	Not Detected
Hexane	1.1	0.44 J	4.0	1.5 J
1,1-Dichloroethane	1.1	Not Detected	4.6	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.5	Not Detected	13	Not Detected
cis-1,2-Dichloroethene	1.1	Not Detected	4.5	Not Detected
Tetrahydrofuran	1.1	Not Detected	3.3	Not Detected
Chloroform	1.1	Not Detected	5.5	Not Detected
1,1,1-Trichloroethane	1.1	Not Detected	6.2	Not Detected
Cyclohexane	1.1	Not Detected	3.9	Not Detected
Carbon Tetrachloride	1.1	Not Detected	7.1	Not Detected
2,2,4-Trimethylpentane	1.1	0.41 J	5.3	1.9 J
Benzene	1.1	Not Detected	3.6	Not Detected
1,2-Dichloroethane	1.1	Not Detected	4.6	Not Detected
Heptane	1.1	Not Detected	4.6	Not Detected
Trichloroethene	1.1	0.66 J	6.1	3.6 J
1,2-Dichloropropane	1.1	Not Detected	5.2	Not Detected
1,4-Dioxane	4.5	Not Detected	16	Not Detected
Bromodichloromethane	1.1	Not Detected	7.6	Not Detected
cis-1,3-Dichloropropene	1.1	Not Detected	5.2	Not Detected
4-Methyl-2-pentanone	1.1	Not Detected	4.6	Not Detected
Toluene	1.1	0.26 J	4.3	0.97 J
trans-1,3-Dichloropropene	1.1	Not Detected	5.2	Not Detected
1,1,2-Trichloroethane	1.1	Not Detected	6.2	Not Detected
Tetrachloroethene	1.1	0.35 J	7.7	2.4 J
2-Hexanone	4.5	Not Detected	18	Not Detected

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Client Sample ID: VMP-15-21.5-072822

Lab ID#: 2208042A-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080421**	**Date of Collection:**	**7/28/22 10:20:00 AM**
Dil. Factor:	**2.27**	**Date of Analysis:**	**8/5/22 12:28 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.1	Not Detected	9.7	Not Detected
1,2-Dibromoethane (EDB)	1.1	Not Detected	8.7	Not Detected
Chlorobenzene	1.1	Not Detected	5.2	Not Detected
Ethyl Benzene	1.1	Not Detected	4.9	Not Detected
m,p-Xylene	1.1	Not Detected	4.9	Not Detected
o-Xylene	1.1	Not Detected	4.9	Not Detected
Styrene	1.1	2.3	4.8	10
Bromoform	1.1	Not Detected	12	Not Detected
Cumene	1.1	Not Detected	5.6	Not Detected
1,1,2,2-Tetrachloroethane	1.1	Not Detected	7.8	Not Detected
Propylbenzene	1.1	Not Detected	5.6	Not Detected
4-Ethyltoluene	1.1	Not Detected	5.6	Not Detected
1,3,5-Trimethylbenzene	1.1	Not Detected	5.6	Not Detected
1,2,4-Trimethylbenzene	1.1	Not Detected	5.6	Not Detected
1,3-Dichlorobenzene	1.1	Not Detected	6.8	Not Detected
1,4-Dichlorobenzene	1.1	Not Detected	6.8	Not Detected
alpha-Chlorotoluene	1.1	Not Detected	5.9	Not Detected
1,2-Dichlorobenzene	1.1	Not Detected	6.8	Not Detected
1,2,4-Trichlorobenzene	4.5	Not Detected	34	Not Detected
Hexachlorobutadiene	4.5	Not Detected	48	Not Detected
Butane	4.5	Not Detected	11	Not Detected
Isopentane	4.5	Not Detected	13	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	99	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: VMP-15-21.5-072822-DUP

Lab ID#: 2208042A-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080422**	**Date of Collection:**	**7/28/22 10:20:00 AM**
Dil. Factor:	**2.20**	**Date of Analysis:**	**8/5/22 01:02 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.1	Not Detected	5.4	Not Detected
Freon 114	1.1	Not Detected	7.7	Not Detected
Chloromethane	11	Not Detected	23	Not Detected
Vinyl Chloride	1.1	Not Detected	2.8	Not Detected
1,3-Butadiene	1.1	Not Detected	2.4	Not Detected
Bromomethane	11	Not Detected	43	Not Detected
Chloroethane	4.4	Not Detected	12	Not Detected
Freon 11	1.1	Not Detected	6.2	Not Detected
Ethanol	11	Not Detected	21	Not Detected
Freon 113	1.1	Not Detected	8.4	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.4	Not Detected
Acetone	11	6.8 J	26	16 J
2-Propanol	4.4	2.6 J	11	6.5 J
Carbon Disulfide	4.4	Not Detected	14	Not Detected
3-Chloropropene	4.4	Not Detected	14	Not Detected
Methylene Chloride	11	Not Detected	38	Not Detected
Methyl tert-butyl ether	4.4	Not Detected	16	Not Detected
trans-1,2-Dichloroethene	1.1	Not Detected	4.4	Not Detected
Hexane	1.1	Not Detected	3.9	Not Detected
1,1-Dichloroethane	1.1	Not Detected	4.4	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.4	Not Detected	13	Not Detected
cis-1,2-Dichloroethene	1.1	Not Detected	4.4	Not Detected
Tetrahydrofuran	1.1	Not Detected	3.2	Not Detected
Chloroform	1.1	Not Detected	5.4	Not Detected
1,1,1-Trichloroethane	1.1	Not Detected	6.0	Not Detected
Cyclohexane	1.1	Not Detected	3.8	Not Detected
Carbon Tetrachloride	1.1	Not Detected	6.9	Not Detected
2,2,4-Trimethylpentane	1.1	0.41 J	5.1	1.9 J
Benzene	1.1	Not Detected	3.5	Not Detected
1,2-Dichloroethane	1.1	Not Detected	4.4	Not Detected
Heptane	1.1	Not Detected	4.5	Not Detected
Trichloroethene	1.1	0.90 J	5.9	4.9 J
1,2-Dichloropropane	1.1	Not Detected	5.1	Not Detected
1,4-Dioxane	4.4	Not Detected	16	Not Detected
Bromodichloromethane	1.1	Not Detected	7.4	Not Detected
cis-1,3-Dichloropropene	1.1	Not Detected	5.0	Not Detected
4-Methyl-2-pentanone	1.1	Not Detected	4.5	Not Detected
Toluene	1.1	Not Detected	4.1	Not Detected
trans-1,3-Dichloropropene	1.1	Not Detected	5.0	Not Detected
1,1,2-Trichloroethane	1.1	Not Detected	6.0	Not Detected
Tetrachloroethene	1.1	Not Detected	7.5	Not Detected
2-Hexanone	4.4	Not Detected	18	Not Detected

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Client Sample ID: VMP-15-21.5-072822-DUP

Lab ID#: 2208042A-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080422**	**Date of Collection:**	**7/28/22 10:20:00 AM**
Dil. Factor:	**2.20**	**Date of Analysis:**	**8/5/22 01:02 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.1	Not Detected	9.4	Not Detected
1,2-Dibromoethane (EDB)	1.1	Not Detected	8.4	Not Detected
Chlorobenzene	1.1	Not Detected	5.1	Not Detected
Ethyl Benzene	1.1	Not Detected	4.8	Not Detected
m,p-Xylene	1.1	Not Detected	4.8	Not Detected
o-Xylene	1.1	Not Detected	4.8	Not Detected
Styrene	1.1	Not Detected	4.7	Not Detected
Bromoform	1.1	Not Detected	11	Not Detected
Cumene	1.1	Not Detected	5.4	Not Detected
1,1,2,2-Tetrachloroethane	1.1	Not Detected	7.6	Not Detected
Propylbenzene	1.1	Not Detected	5.4	Not Detected
4-Ethyltoluene	1.1	Not Detected	5.4	Not Detected
1,3,5-Trimethylbenzene	1.1	Not Detected	5.4	Not Detected
1,2,4-Trimethylbenzene	1.1	Not Detected	5.4	Not Detected
1,3-Dichlorobenzene	1.1	Not Detected	6.6	Not Detected
1,4-Dichlorobenzene	1.1	Not Detected	6.6	Not Detected
alpha-Chlorotoluene	1.1	Not Detected	5.7	Not Detected
1,2-Dichlorobenzene	1.1	Not Detected	6.6	Not Detected
1,2,4-Trichlorobenzene	4.4	Not Detected	33	Not Detected
Hexachlorobutadiene	4.4	Not Detected	47	Not Detected
Butane	4.4	Not Detected	10	Not Detected
Isopentane	4.4	Not Detected	13	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	100	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: VMP-15-25.5-072822

Lab ID#: 2208042A-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080817**	**Date of Collection:**	**7/28/22 10:40:00 AM**
Dil. Factor:	**2.26**	**Date of Analysis:**	**8/8/22 10:04 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.1	Not Detected	5.6	Not Detected
Freon 114	1.1	Not Detected	7.9	Not Detected
Chloromethane	11	Not Detected	23	Not Detected
Vinyl Chloride	1.1	Not Detected	2.9	Not Detected
1,3-Butadiene	1.1	Not Detected	2.5	Not Detected
Bromomethane	11	Not Detected	44	Not Detected
Chloroethane	4.5	Not Detected	12	Not Detected
Freon 11	1.1	Not Detected	6.3	Not Detected
Ethanol	11	Not Detected	21	Not Detected
Freon 113	1.1	Not Detected	8.7	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.5	Not Detected
Acetone	11	8.7 J	27	21 J
2-Propanol	4.5	Not Detected	11	Not Detected
Carbon Disulfide	4.5	Not Detected	14	Not Detected
3-Chloropropene	4.5	Not Detected	14	Not Detected
Methylene Chloride	11	Not Detected	39	Not Detected
Methyl tert-butyl ether	4.5	Not Detected	16	Not Detected
trans-1,2-Dichloroethene	1.1	Not Detected	4.5	Not Detected
Hexane	1.1	Not Detected	4.0	Not Detected
1,1-Dichloroethane	1.1	Not Detected	4.6	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.5	Not Detected	13	Not Detected
cis-1,2-Dichloroethene	1.1	Not Detected	4.5	Not Detected
Tetrahydrofuran	1.1	Not Detected	3.3	Not Detected
Chloroform	1.1	Not Detected	5.5	Not Detected
1,1,1-Trichloroethane	1.1	Not Detected	6.2	Not Detected
Cyclohexane	1.1	Not Detected	3.9	Not Detected
Carbon Tetrachloride	1.1	Not Detected	7.1	Not Detected
2,2,4-Trimethylpentane	1.1	160	5.3	750
Benzene	1.1	Not Detected	3.6	Not Detected
1,2-Dichloroethane	1.1	Not Detected	4.6	Not Detected
Heptane	1.1	Not Detected	4.6	Not Detected
Trichloroethene	1.1	Not Detected	6.1	Not Detected
1,2-Dichloropropane	1.1	Not Detected	5.2	Not Detected
1,4-Dioxane	4.5	Not Detected	16	Not Detected
Bromodichloromethane	1.1	Not Detected	7.6	Not Detected
cis-1,3-Dichloropropene	1.1	Not Detected	5.1	Not Detected
4-Methyl-2-pentanone	1.1	Not Detected	4.6	Not Detected
Toluene	1.1	Not Detected	4.2	Not Detected
trans-1,3-Dichloropropene	1.1	Not Detected	5.1	Not Detected
1,1,2-Trichloroethane	1.1	Not Detected	6.2	Not Detected
Tetrachloroethene	1.1	0.38 J	7.7	2.6 J
2-Hexanone	4.5	Not Detected	18	Not Detected

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Client Sample ID: VMP-15-25.5-072822

Lab ID#: 2208042A-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080817**	**Date of Collection: 7/28/22 10:40:00 AM**	
Dil. Factor:	**2.26**	**Date of Analysis: 8/8/22 10:04 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.1	Not Detected	9.6	Not Detected
1,2-Dibromoethane (EDB)	1.1	Not Detected	8.7	Not Detected
Chlorobenzene	1.1	Not Detected	5.2	Not Detected
Ethyl Benzene	1.1	Not Detected	4.9	Not Detected
m,p-Xylene	1.1	Not Detected	4.9	Not Detected
o-Xylene	1.1	Not Detected	4.9	Not Detected
Styrene	1.1	Not Detected	4.8	Not Detected
Bromoform	1.1	Not Detected	12	Not Detected
Cumene	1.1	Not Detected	5.6	Not Detected
1,1,2,2-Tetrachloroethane	1.1	Not Detected	7.8	Not Detected
Propylbenzene	1.1	Not Detected	5.6	Not Detected
4-Ethyltoluene	1.1	Not Detected	5.6	Not Detected
1,3,5-Trimethylbenzene	1.1	Not Detected	5.6	Not Detected
1,2,4-Trimethylbenzene	1.1	Not Detected	5.6	Not Detected
1,3-Dichlorobenzene	1.1	Not Detected	6.8	Not Detected
1,4-Dichlorobenzene	1.1	Not Detected	6.8	Not Detected
alpha-Chlorotoluene	1.1	Not Detected	5.8	Not Detected
1,2-Dichlorobenzene	1.1	Not Detected	6.8	Not Detected
1,2,4-Trichlorobenzene	4.5	Not Detected	34	Not Detected
Hexachlorobutadiene	4.5	Not Detected	48	Not Detected
Butane	4.5	19	11	45
Isopentane	4.5	7.7	13	23

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	115	70-130
1,2-Dichloroethane-d4	105	70-130
4-Bromofluorobenzene	93	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2208042A-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080405d**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/4/22 12:59 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	5.0	Not Detected	9.4	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

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Client Sample ID: Lab Blank

Lab ID#: 2208042A-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080405d**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/4/22 12:59 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	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

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	99	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2208042A-06B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080505a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/5/22 02:45 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	5.0	Not Detected	9.4	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

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Client Sample ID: Lab Blank

Lab ID#: 2208042A-06B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080505a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/5/22 02:45 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	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

Container Type: NA - Not Applicable

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

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Client Sample ID: Lab Blank

Lab ID#: 2208042A-06C

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080805a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/8/22 12:38 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	5.0	Not Detected	9.4	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

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Client Sample ID: Lab Blank

Lab ID#: 2208042A-06C

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080805a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/8/22 12:38 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	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

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	96	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	94	70-130

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Client Sample ID: CCV

Lab ID#: 2208042A-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080402**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/4/22 11:20 AM**	

Compound	%Recovery
Freon 12	99
Freon 114	98
Chloromethane	103
Vinyl Chloride	100
1,3-Butadiene	102
Bromomethane	109
Chloroethane	98
Freon 11	100
Ethanol	90
Freon 113	101
1,1-Dichloroethene	106
Acetone	100
2-Propanol	100
Carbon Disulfide	101
3-Chloropropene	101
Methylene Chloride	99
Methyl tert-butyl ether	110
trans-1,2-Dichloroethene	108
Hexane	107
1,1-Dichloroethane	100
2-Butanone (Methyl Ethyl Ketone)	105
cis-1,2-Dichloroethene	111
Tetrahydrofuran	110
Chloroform	100
1,1,1-Trichloroethane	100
Cyclohexane	120
Carbon Tetrachloride	103
2,2,4-Trimethylpentane	119
Benzene	99
1,2-Dichloroethane	97
Heptane	118
Trichloroethene	99
1,2-Dichloropropane	99
1,4-Dioxane	110
Bromodichloromethane	96
cis-1,3-Dichloropropene	111
4-Methyl-2-pentanone	113
Toluene	102
trans-1,3-Dichloropropene	109
1,1,2-Trichloroethane	102
Tetrachloroethene	105
2-Hexanone	112

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Client Sample ID: CCV

Lab ID#: 2208042A-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080402**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/4/22 11:20 AM**	

Compound	%Recovery
Dibromochloromethane	104
1,2-Dibromoethane (EDB)	104
Chlorobenzene	101
Ethyl Benzene	113
m,p-Xylene	118
o-Xylene	124
Styrene	125
Bromoform	107
Cumene	127
1,1,2,2-Tetrachloroethane	100
Propylbenzene	116
4-Ethyltoluene	122
1,3,5-Trimethylbenzene	117
1,2,4-Trimethylbenzene	126
1,3-Dichlorobenzene	113
1,4-Dichlorobenzene	115
alpha-Chlorotoluene	120
1,2-Dichlorobenzene	114
1,2,4-Trichlorobenzene	120
Hexachlorobutadiene	114
Butane	103
Isopentane	98

Container Type: NA - Not Applicable

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

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Client Sample ID: CCV

Lab ID#: 2208042A-07B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080502**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 8/5/22 12:59 PM**

Compound	%Recovery
Freon 12	100
Freon 114	98
Chloromethane	99
Vinyl Chloride	99
1,3-Butadiene	101
Bromomethane	109
Chloroethane	98
Freon 11	99
Ethanol	88
Freon 113	101
1,1-Dichloroethene	107
Acetone	98
2-Propanol	97
Carbon Disulfide	100
3-Chloropropene	102
Methylene Chloride	95
Methyl tert-butyl ether	110
trans-1,2-Dichloroethene	108
Hexane	116
1,1-Dichloroethane	99
2-Butanone (Methyl Ethyl Ketone)	106
cis-1,2-Dichloroethene	112
Tetrahydrofuran	106
Chloroform	101
1,1,1-Trichloroethane	101
Cyclohexane	120
Carbon Tetrachloride	104
2,2,4-Trimethylpentane	123
Benzene	100
1,2-Dichloroethane	96
Heptane	120
Trichloroethene	100
1,2-Dichloropropane	97
1,4-Dioxane	110
Bromodichloromethane	98
cis-1,3-Dichloropropene	113
4-Methyl-2-pentanone	114
Toluene	103
trans-1,3-Dichloropropene	111
1,1,2-Trichloroethane	103
Tetrachloroethene	107
2-Hexanone	113

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Client Sample ID: CCV

Lab ID#: 2208042A-07B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080502**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/5/22 12:59 PM**	

Compound	%Recovery
Dibromochloromethane	106
1,2-Dibromoethane (EDB)	106
Chlorobenzene	102
Ethyl Benzene	116
m,p-Xylene	121
o-Xylene	125
Styrene	127
Bromoform	107
Cumene	130
1,1,2,2-Tetrachloroethane	100
Propylbenzene	117
4-Ethyltoluene	124
1,3,5-Trimethylbenzene	120
1,2,4-Trimethylbenzene	129
1,3-Dichlorobenzene	115
1,4-Dichlorobenzene	116
alpha-Chlorotoluene	121
1,2-Dichlorobenzene	115
1,2,4-Trichlorobenzene	119
Hexachlorobutadiene	114
Butane	101
Isopentane	94

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	97	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: CCV

Lab ID#: 2208042A-07C

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080802**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 8/8/22 10:27 AM**

Compound	%Recovery
Freon 12	102
Freon 114	100
Chloromethane	98
Vinyl Chloride	101
1,3-Butadiene	100
Bromomethane	110
Chloroethane	97
Freon 11	100
Ethanol	86
Freon 113	101
1,1-Dichloroethene	104
Acetone	97
2-Propanol	95
Carbon Disulfide	100
3-Chloropropene	97
Methylene Chloride	96
Methyl tert-butyl ether	108
trans-1,2-Dichloroethene	108
Hexane	106
1,1-Dichloroethane	99
2-Butanone (Methyl Ethyl Ketone)	104
cis-1,2-Dichloroethene	111
Tetrahydrofuran	104
Chloroform	100
1,1,1-Trichloroethane	101
Cyclohexane	120
Carbon Tetrachloride	105
2,2,4-Trimethylpentane	119
Benzene	101
1,2-Dichloroethane	98
Heptane	118
Trichloroethene	102
1,2-Dichloropropane	99
1,4-Dioxane	113
Bromodichloromethane	98
cis-1,3-Dichloropropene	112
4-Methyl-2-pentanone	111
Toluene	105
trans-1,3-Dichloropropene	111
1,1,2-Trichloroethane	104
Tetrachloroethene	108
2-Hexanone	114

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Client Sample ID: CCV

Lab ID#: 2208042A-07C

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080802**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/8/22 10:27 AM**	

Compound	%Recovery
Dibromochloromethane	108
1,2-Dibromoethane (EDB)	108
Chlorobenzene	104
Ethyl Benzene	118
m,p-Xylene	123
o-Xylene	129
Styrene	130
Bromoform	111
Cumene	133 Q
1,1,2,2-Tetrachloroethane	104
Propylbenzene	121
4-Ethyltoluene	129
1,3,5-Trimethylbenzene	124
1,2,4-Trimethylbenzene	132 Q
1,3-Dichlorobenzene	119
1,4-Dichlorobenzene	121
alpha-Chlorotoluene	124
1,2-Dichlorobenzene	121
1,2,4-Trichlorobenzene	125
Hexachlorobutadiene	121
Butane	103
Isopentane	94

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: LCS

Lab ID#: 2208042A-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080403**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/4/22 11:51 AM**	

Compound	%Recovery	Method Limits
Freon 12	100	70-130
Freon 114	98	70-130
Chloromethane	99	70-130
Vinyl Chloride	103	70-130
1,3-Butadiene	104	70-130
Bromomethane	109	70-130
Chloroethane	102	70-130
Freon 11	99	70-130
Ethanol	99	70-130
Freon 113	100	70-130
1,1-Dichloroethene	107	70-130
Acetone	97	70-130
2-Propanol	109	70-130
Carbon Disulfide	102	70-130
3-Chloropropene	104	70-130
Methylene Chloride	95	70-130
Methyl tert-butyl ether	110	70-130
trans-1,2-Dichloroethene	110	70-130
Hexane	109	70-130
1,1-Dichloroethane	100	70-130
2-Butanone (Methyl Ethyl Ketone)	106	70-130
cis-1,2-Dichloroethene	111	70-130
Tetrahydrofuran	108	70-130
Chloroform	97	70-130
1,1,1-Trichloroethane	101	70-130
Cyclohexane	122	70-130
Carbon Tetrachloride	101	70-130
2,2,4-Trimethylpentane	118	70-130
Benzene	100	70-130
1,2-Dichloroethane	97	70-130
Heptane	121	70-130
Trichloroethene	100	70-130
1,2-Dichloropropane	98	70-130
1,4-Dioxane	110	70-130
Bromodichloromethane	95	70-130
cis-1,3-Dichloropropene	115	70-130
4-Methyl-2-pentanone	113	70-130
Toluene	100	70-130
trans-1,3-Dichloropropene	112	70-130
1,1,2-Trichloroethane	106	70-130
Tetrachloroethene	107	70-130
2-Hexanone	116	70-130

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Client Sample ID: LCS

Lab ID#: 2208042A-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080403**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/4/22 11:51 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	106	70-130
1,2-Dibromoethane (EDB)	106	70-130
Chlorobenzene	101	70-130
Ethyl Benzene	114	70-130
m,p-Xylene	119	70-130
o-Xylene	123	70-130
Styrene	126	70-130
Bromoform	108	70-130
Cumene	128	70-130
1,1,2,2-Tetrachloroethane	103	70-130
Propylbenzene	116	70-130
4-Ethyltoluene	122	70-130
1,3,5-Trimethylbenzene	117	70-130
1,2,4-Trimethylbenzene	126	70-130
1,3-Dichlorobenzene	111	70-130
1,4-Dichlorobenzene	112	70-130
alpha-Chlorotoluene	119	70-130
1,2-Dichlorobenzene	113	70-130
1,2,4-Trichlorobenzene	123	70-130
Hexachlorobutadiene	115	70-130
Butane	104	60-140
Isopentane	99	60-140

Container Type: NA - Not Applicable

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

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Client Sample ID: LCSD

Lab ID#: 2208042A-08AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080404**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/4/22 12:21 PM**	

Compound	%Recovery	Method Limits
Freon 12	98	70-130
Freon 114	96	70-130
Chloromethane	97	70-130
Vinyl Chloride	100	70-130
1,3-Butadiene	100	70-130
Bromomethane	109	70-130
Chloroethane	98	70-130
Freon 11	97	70-130
Ethanol	92	70-130
Freon 113	99	70-130
1,1-Dichloroethene	107	70-130
Acetone	95	70-130
2-Propanol	106	70-130
Carbon Disulfide	100	70-130
3-Chloropropene	103	70-130
Methylene Chloride	92	70-130
Methyl tert-butyl ether	111	70-130
trans-1,2-Dichloroethene	109	70-130
Hexane	108	70-130
1,1-Dichloroethane	100	70-130
2-Butanone (Methyl Ethyl Ketone)	107	70-130
cis-1,2-Dichloroethene	110	70-130
Tetrahydrofuran	107	70-130
Chloroform	95	70-130
1,1,1-Trichloroethane	100	70-130
Cyclohexane	123	70-130
Carbon Tetrachloride	101	70-130
2,2,4-Trimethylpentane	118	70-130
Benzene	100	70-130
1,2-Dichloroethane	95	70-130
Heptane	120	70-130
Trichloroethene	99	70-130
1,2-Dichloropropane	97	70-130
1,4-Dioxane	111	70-130
Bromodichloromethane	93	70-130
cis-1,3-Dichloropropene	114	70-130
4-Methyl-2-pentanone	112	70-130
Toluene	99	70-130
trans-1,3-Dichloropropene	111	70-130
1,1,2-Trichloroethane	104	70-130
Tetrachloroethene	104	70-130
2-Hexanone	115	70-130

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Client Sample ID: LCSD

Lab ID#: 2208042A-08AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080404**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/4/22 12:21 PM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	104	70-130
1,2-Dibromoethane (EDB)	105	70-130
Chlorobenzene	99	70-130
Ethyl Benzene	114	70-130
m,p-Xylene	118	70-130
o-Xylene	122	70-130
Styrene	125	70-130
Bromoform	107	70-130
Cumene	126	70-130
1,1,2,2-Tetrachloroethane	100	70-130
Propylbenzene	114	70-130
4-Ethyltoluene	120	70-130
1,3,5-Trimethylbenzene	115	70-130
1,2,4-Trimethylbenzene	124	70-130
1,3-Dichlorobenzene	109	70-130
1,4-Dichlorobenzene	110	70-130
alpha-Chlorotoluene	117	70-130
1,2-Dichlorobenzene	111	70-130
1,2,4-Trichlorobenzene	124	70-130
Hexachlorobutadiene	114	70-130
Butane	101	60-140
Isopentane	95	60-140

Container Type: NA - Not Applicable

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

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Client Sample ID: LCS

Lab ID#: 2208042A-08B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080503**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/5/22 01:30 PM**	

Compound	%Recovery	Method Limits
Freon 12	99	70-130
Freon 114	98	70-130
Chloromethane	94	70-130
Vinyl Chloride	100	70-130
1,3-Butadiene	98	70-130
Bromomethane	109	70-130
Chloroethane	98	70-130
Freon 11	98	70-130
Ethanol	95	70-130
Freon 113	99	70-130
1,1-Dichloroethene	106	70-130
Acetone	95	70-130
2-Propanol	106	70-130
Carbon Disulfide	99	70-130
3-Chloropropene	102	70-130
Methylene Chloride	93	70-130
Methyl tert-butyl ether	110	70-130
trans-1,2-Dichloroethene	107	70-130
Hexane	112	70-130
1,1-Dichloroethane	100	70-130
2-Butanone (Methyl Ethyl Ketone)	105	70-130
cis-1,2-Dichloroethene	112	70-130
Tetrahydrofuran	106	70-130
Chloroform	98	70-130
1,1,1-Trichloroethane	102	70-130
Cyclohexane	124	70-130
Carbon Tetrachloride	103	70-130
2,2,4-Trimethylpentane	122	70-130
Benzene	101	70-130
1,2-Dichloroethane	94	70-130
Heptane	121	70-130
Trichloroethene	100	70-130
1,2-Dichloropropane	97	70-130
1,4-Dioxane	111	70-130
Bromodichloromethane	95	70-130
cis-1,3-Dichloropropene	114	70-130
4-Methyl-2-pentanone	112	70-130
Toluene	102	70-130
trans-1,3-Dichloropropene	113	70-130
1,1,2-Trichloroethane	107	70-130
Tetrachloroethene	108	70-130
2-Hexanone	118	70-130

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Client Sample ID: LCS

Lab ID#: 2208042A-08B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080503**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/5/22 01:30 PM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	107	70-130
1,2-Dibromoethane (EDB)	108	70-130
Chlorobenzene	102	70-130
Ethyl Benzene	117	70-130
m,p-Xylene	120	70-130
o-Xylene	126	70-130
Styrene	129	70-130
Bromoform	110	70-130
Cumene	129	70-130
1,1,2,2-Tetrachloroethane	103	70-130
Propylbenzene	117	70-130
4-Ethyltoluene	123	70-130
1,3,5-Trimethylbenzene	118	70-130
1,2,4-Trimethylbenzene	127	70-130
1,3-Dichlorobenzene	112	70-130
1,4-Dichlorobenzene	115	70-130
alpha-Chlorotoluene	120	70-130
1,2-Dichlorobenzene	114	70-130
1,2,4-Trichlorobenzene	126	70-130
Hexachlorobutadiene	118	70-130
Butane	102	60-140
Isopentane	96	60-140

Container Type: NA - Not Applicable

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

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Client Sample ID: LCSD

Lab ID#: 2208042A-08BB

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080504**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/5/22 02:00 PM**	

Compound	%Recovery	Method Limits
Freon 12	98	70-130
Freon 114	95	70-130
Chloromethane	92	70-130
Vinyl Chloride	100	70-130
1,3-Butadiene	98	70-130
Bromomethane	109	70-130
Chloroethane	98	70-130
Freon 11	97	70-130
Ethanol	94	70-130
Freon 113	98	70-130
1,1-Dichloroethene	105	70-130
Acetone	93	70-130
2-Propanol	106	70-130
Carbon Disulfide	99	70-130
3-Chloropropene	101	70-130
Methylene Chloride	91	70-130
Methyl tert-butyl ether	110	70-130
trans-1,2-Dichloroethene	107	70-130
Hexane	108	70-130
1,1-Dichloroethane	97	70-130
2-Butanone (Methyl Ethyl Ketone)	105	70-130
cis-1,2-Dichloroethene	111	70-130
Tetrahydrofuran	105	70-130
Chloroform	95	70-130
1,1,1-Trichloroethane	101	70-130
Cyclohexane	125	70-130
Carbon Tetrachloride	101	70-130
2,2,4-Trimethylpentane	121	70-130
Benzene	100	70-130
1,2-Dichloroethane	95	70-130
Heptane	120	70-130
Trichloroethene	99	70-130
1,2-Dichloropropane	96	70-130
1,4-Dioxane	113	70-130
Bromodichloromethane	94	70-130
cis-1,3-Dichloropropene	115	70-130
4-Methyl-2-pentanone	113	70-130
Toluene	100	70-130
trans-1,3-Dichloropropene	114	70-130
1,1,2-Trichloroethane	107	70-130
Tetrachloroethene	109	70-130
2-Hexanone	118	70-130

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Client Sample ID: LCSD

Lab ID#: 2208042A-08BB

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080504**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/5/22 02:00 PM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	107	70-130
1,2-Dibromoethane (EDB)	108	70-130
Chlorobenzene	101	70-130
Ethyl Benzene	117	70-130
m,p-Xylene	121	70-130
o-Xylene	126	70-130
Styrene	128	70-130
Bromoform	110	70-130
Cumene	131 Q	70-130
1,1,2,2-Tetrachloroethane	103	70-130
Propylbenzene	118	70-130
4-Ethyltoluene	123	70-130
1,3,5-Trimethylbenzene	119	70-130
1,2,4-Trimethylbenzene	128	70-130
1,3-Dichlorobenzene	113	70-130
1,4-Dichlorobenzene	114	70-130
alpha-Chlorotoluene	121	70-130
1,2-Dichlorobenzene	114	70-130
1,2,4-Trichlorobenzene	129	70-130
Hexachlorobutadiene	119	70-130
Butane	99	60-140
Isopentane	94	60-140

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

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

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Client Sample ID: LCS

Lab ID#: 2208042A-08C

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080803**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/8/22 11:19 AM**	

Compound	%Recovery	Method Limits
Freon 12	103	70-130
Freon 114	100	70-130
Chloromethane	94	70-130
Vinyl Chloride	96	70-130
1,3-Butadiene	95	70-130
Bromomethane	97	70-130
Chloroethane	95	70-130
Freon 11	98	70-130
Ethanol	101	70-130
Freon 113	98	70-130
1,1-Dichloroethene	101	70-130
Acetone	92	70-130
2-Propanol	102	70-130
Carbon Disulfide	97	70-130
3-Chloropropene	99	70-130
Methylene Chloride	91	70-130
Methyl tert-butyl ether	107	70-130
trans-1,2-Dichloroethene	106	70-130
Hexane	102	70-130
1,1-Dichloroethane	96	70-130
2-Butanone (Methyl Ethyl Ketone)	103	70-130
cis-1,2-Dichloroethene	107	70-130
Tetrahydrofuran	102	70-130
Chloroform	95	70-130
1,1,1-Trichloroethane	100	70-130
Cyclohexane	119	70-130
Carbon Tetrachloride	101	70-130
2,2,4-Trimethylpentane	116	70-130
Benzene	101	70-130
1,2-Dichloroethane	98	70-130
Heptane	120	70-130
Trichloroethene	101	70-130
1,2-Dichloropropane	98	70-130
1,4-Dioxane	113	70-130
Bromodichloromethane	97	70-130
cis-1,3-Dichloropropene	114	70-130
4-Methyl-2-pentanone	113	70-130
Toluene	104	70-130
trans-1,3-Dichloropropene	112	70-130
1,1,2-Trichloroethane	109	70-130
Tetrachloroethene	109	70-130
2-Hexanone	114	70-130

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Client Sample ID: LCS

Lab ID#: 2208042A-08C

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080803**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/8/22 11:19 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	108	70-130
1,2-Dibromoethane (EDB)	108	70-130
Chlorobenzene	103	70-130
Ethyl Benzene	118	70-130
m,p-Xylene	122	70-130
o-Xylene	126	70-130
Styrene	130	70-130
Bromoform	112	70-130
Cumene	130	70-130
1,1,2,2-Tetrachloroethane	107	70-130
Propylbenzene	120	70-130
4-Ethyltoluene	126	70-130
1,3,5-Trimethylbenzene	123	70-130
1,2,4-Trimethylbenzene	131 Q	70-130
1,3-Dichlorobenzene	116	70-130
1,4-Dichlorobenzene	116	70-130
alpha-Chlorotoluene	123	70-130
1,2-Dichlorobenzene	118	70-130
1,2,4-Trichlorobenzene	123	70-130
Hexachlorobutadiene	119	70-130
Butane	95	60-140
Isopentane	96	60-140

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

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

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Client Sample ID: LCSD

Lab ID#: 2208042A-08CC

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080804**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/8/22 11:49 AM**	

Compound	%Recovery	Method Limits
Freon 12	100	70-130
Freon 114	98	70-130
Chloromethane	93	70-130
Vinyl Chloride	94	70-130
1,3-Butadiene	98	70-130
Bromomethane	104	70-130
Chloroethane	97	70-130
Freon 11	98	70-130
Ethanol	99	70-130
Freon 113	100	70-130
1,1-Dichloroethene	105	70-130
Acetone	94	70-130
2-Propanol	105	70-130
Carbon Disulfide	99	70-130
3-Chloropropene	98	70-130
Methylene Chloride	92	70-130
Methyl tert-butyl ether	110	70-130
trans-1,2-Dichloroethene	107	70-130
Hexane	108	70-130
1,1-Dichloroethane	98	70-130
2-Butanone (Methyl Ethyl Ketone)	108	70-130
cis-1,2-Dichloroethene	110	70-130
Tetrahydrofuran	105	70-130
Chloroform	97	70-130
1,1,1-Trichloroethane	102	70-130
Cyclohexane	124	70-130
Carbon Tetrachloride	103	70-130
2,2,4-Trimethylpentane	119	70-130
Benzene	99	70-130
1,2-Dichloroethane	96	70-130
Heptane	120	70-130
Trichloroethene	99	70-130
1,2-Dichloropropane	97	70-130
1,4-Dioxane	110	70-130
Bromodichloromethane	94	70-130
cis-1,3-Dichloropropene	113	70-130
4-Methyl-2-pentanone	111	70-130
Toluene	101	70-130
trans-1,3-Dichloropropene	115	70-130
1,1,2-Trichloroethane	109	70-130
Tetrachloroethene	111	70-130
2-Hexanone	117	70-130

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Client Sample ID: LCSD

Lab ID#: 2208042A-08CC

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j080804**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/8/22 11:49 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	109	70-130
1,2-Dibromoethane (EDB)	109	70-130
Chlorobenzene	104	70-130
Ethyl Benzene	118	70-130
m,p-Xylene	123	70-130
o-Xylene	128	70-130
Styrene	131 Q	70-130
Bromoform	113	70-130
Cumene	133 Q	70-130
1,1,2,2-Tetrachloroethane	106	70-130
Propylbenzene	121	70-130
4-Ethyltoluene	126	70-130
1,3,5-Trimethylbenzene	122	70-130
1,2,4-Trimethylbenzene	131 Q	70-130
1,3-Dichlorobenzene	116	70-130
1,4-Dichlorobenzene	118	70-130
alpha-Chlorotoluene	125	70-130
1,2-Dichlorobenzene	118	70-130
1,2,4-Trichlorobenzene	128	70-130
Hexachlorobutadiene	121	70-130
Butane	93	60-140
Isopentane	98	60-140

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

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

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8/12/2022
Mr. Samuel Fisher
AECOM
100 N. Broadway, 20th Floor

St. Louis MO 63102

Project Name: Roxana Quarterly Soil Vapor
Project #: 60674381 - 4.3.2
Workorder #: 2208042B

Dear Mr. Samuel Fisher

The following report includes the data for the above referenced project for sample(s) received on 8/1/2022 at Eurofins Air Toxics LLC.

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 LLC. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Brian Whittaker

Project Manager

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WORK ORDER #: 2208042B

Work Order Summary

CLIENT:	Mr. Samuel Fisher AECOM 100 N. Broadway, 20th Floor St. Louis, MO 63102	**BILL TO:**	Accounts Payable Austin AECOM PO Box 203970 Austin, TX 78720
PHONE:	314-296-1969	**P.O. #**	141259
FAX:		**PROJECT #**	60674381 - 4.3.2 Roxana Quarterly Soil Vapor
DATE RECEIVED:	08/01/2022	**CONTACT:**	Brian Whittaker
DATE COMPLETED:	08/12/2022		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	VMP-55-20-072822	Modified ASTM D-1946	6.5 "Hg	10.1 psi
02A	VMP-15-5-072822	Modified ASTM D-1946	6.7 "Hg	10 psi
03A	VMP-15-21.5-072822	Modified ASTM D-1946	7.8 "Hg	10 psi
04A	VMP-15-21.5-072822-DUP	Modified ASTM D-1946	7.1 "Hg	10 psi
05A	VMP-15-25.5-072822	Modified ASTM D-1946	7.8 "Hg	9.9 psi
06A	Lab Blank	Modified ASTM D-1946	NA	NA
06B	Lab Blank	Modified ASTM D-1946	NA	NA
07A	CCV	Modified ASTM D-1946	NA	NA
08A	LCS	Modified ASTM D-1946	NA	NA
08AA	LCSD	Modified ASTM D-1946	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 08/12/22

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209221, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-21-17, UT NELAP – CA009332021-13, VA NELAP - 10615, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-015, Effective date: 10/18/2021, Expiration date: 10/17/2022.
Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
Modified ASTM D-1946
AECOM
Workorder# 2208042B

Five 1 Liter Summa Canister samples were received on August 01, 2022. 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.

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 requirements, 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-55-20-072822

Lab ID#: 2208042B-01A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.22	1.5
Nitrogen	0.22	81
Methane	0.00022	1.4
Carbon Dioxide	0.022	16
Ethane	0.0022	0.00051 J
Helium	0.11	0.039 J

Client Sample ID: VMP-15-5-072822

Lab ID#: 2208042B-02A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.22	8.0
Nitrogen	0.22	88
Methane	0.00022	0.000087 J
Carbon Dioxide	0.022	4.5

Client Sample ID: VMP-15-21.5-072822

Lab ID#: 2208042B-03A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	1.8
Nitrogen	0.23	85
Methane	0.00023	0.010
Carbon Dioxide	0.023	13

Client Sample ID: VMP-15-21.5-072822-DUP

Lab ID#: 2208042B-04A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.22	1.6
Nitrogen	0.22	85
Methane	0.00022	0.010

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

Client Sample ID: VMP-15-21.5-072822-DUP

Lab ID#: 2208042B-04A

Carbon Dioxide	0.022	13

Client Sample ID: VMP-15-25.5-072822

Lab ID#: 2208042B-05A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.30	1.5
Nitrogen	0.30	82
Methane	0.00030	0.28
Carbon Dioxide	0.030	16

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Client Sample ID: VMP-55-20-072822

Lab ID#: 2208042B-01A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**11081013**	**Date of Collection:**	**7/28/22 9:24:00 AM**
Dil. Factor:	**2.16**	**Date of Analysis:**	**8/10/22 10:28 AM**

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.22	1.5
Nitrogen	0.22	81
Carbon Monoxide	0.022	Not Detected
Methane	0.00022	1.4
Carbon Dioxide	0.022	16
Ethane	0.0022	0.00051 J
Ethene	0.0022	Not Detected
Helium	0.11	0.039 J

J = Estimated value.

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-15-5-072822

Lab ID#: 2208042B-02A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**11081010**	**Date of Collection: 7/28/22 10:00:00 AM**	
Dil. Factor:	**2.17**	**Date of Analysis: 8/10/22 08:52 AM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.22	8.0
Nitrogen	0.22	88
Carbon Monoxide	0.022	Not Detected
Methane	0.00022	0.000087 J
Carbon Dioxide	0.022	4.5
Ethane	0.0022	Not Detected
Ethene	0.0022	Not Detected
Helium	0.11	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-15-21.5-072822

Lab ID#: 2208042B-03A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**11081011**	**Date of Collection: 7/28/22 10:20:00 AM**	
Dil. Factor:	**2.27**	**Date of Analysis: 8/10/22 09:24 AM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	1.8
Nitrogen	0.23	85
Carbon Monoxide	0.023	Not Detected
Methane	0.00023	0.010
Carbon Dioxide	0.023	13
Ethane	0.0023	Not Detected
Ethene	0.0023	Not Detected
Helium	0.11	Not Detected

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-15-21.5-072822-DUP

Lab ID#: 2208042B-04A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**11081012**	**Date of Collection:**	**7/28/22 10:20:00 AM**
Dil. Factor:	**2.20**	**Date of Analysis:**	**8/10/22 09:50 AM**

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.22	1.6
Nitrogen	0.22	85
Carbon Monoxide	0.022	Not Detected
Methane	0.00022	0.010
Carbon Dioxide	0.022	13
Ethane	0.0022	Not Detected
Ethene	0.0022	Not Detected
Helium	0.11	Not Detected

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-15-25.5-072822

Lab ID#: 2208042B-05A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**11081016**	**Date of Collection:**	**7/28/22 10:40:00 AM**
Dil. Factor:	**2.98**	**Date of Analysis:**	**8/10/22 12:08 PM**

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.30	1.5
Nitrogen	0.30	82
Carbon Monoxide	0.030	Not Detected
Methane	0.00030	0.28
Carbon Dioxide	0.030	16
Ethane	0.0030	Not Detected
Ethene	0.0030	Not Detected
Helium	0.15	Not Detected

Container Type: 1 Liter Summa Canister

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Client Sample ID: Lab Blank

Lab ID#: 2208042B-06A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**11081007a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/9/22 10:26 PM**	

Compound	**Rpt. Limit (%)**	**Amount (%)**
Oxygen	0.10	0.0027 J
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

J = Estimated value.

Container Type: NA - Not Applicable

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Client Sample ID: Lab Blank

Lab ID#: 2208042B-06B

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**11081008c**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/9/22 10:56 PM**	

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

Container Type: NA - Not Applicable

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Client Sample ID: CCV

Lab ID#: 2208042B-07A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**11081001**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/9/22 07:38 PM**	

Compound	%Recovery
Oxygen	101
Nitrogen	95
Carbon Monoxide	95
Methane	95
Carbon Dioxide	99
Ethane	93
Ethene	96
Helium	94

Container Type: NA - Not Applicable

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Client Sample ID: LCS

Lab ID#: 2208042B-08A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**11081002**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/9/22 08:05 PM**	

Compound	%Recovery	Method Limits
Oxygen	101	85-115
Nitrogen	94	85-115
Carbon Monoxide	96	85-115
Methane	96	85-115
Carbon Dioxide	100	85-115
Ethane	93	85-115
Ethene	94	85-115
Helium	111	85-115

Container Type: NA - Not Applicable

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Client Sample ID: LCSD

Lab ID#: 2208042B-08AA

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**11081003**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/9/22 08:30 PM**	

Compound	%Recovery	Method Limits
Oxygen	101	85-115
Nitrogen	94	85-115
Carbon Monoxide	95	85-115
Methane	95	85-115
Carbon Dioxide	100	85-115
Ethane	93	85-115
Ethene	94	85-115
Helium	111	85-115

Container Type: NA - Not Applicable

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11/29/2022
Mr. Samuel Fisher
AECOM
100 N. Broadway, 20th Floor

St. Louis MO 63102

Project Name: Roxana Quarterly Soil Vapor
Project #: 60674381-4.4.2
Workorder #: 2211366A

Dear Mr. Samuel Fisher

The following report includes the data for the above referenced project for sample(s) received on 11/14/2022 at Eurofins Air Toxics LLC.

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 LLC. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Brian Whittaker

Project Manager

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WORK ORDER #: 2211366A

Work Order Summary

CLIENT:	Mr. Samuel Fisher AECOM 100 N. Broadway, 20th Floor St. Louis, MO 63102	**BILL TO:**	Accounts Payable Austin AECOM PO Box 203970 Austin, TX 78720
PHONE:	314-296-1969	**P.O. #**	141259
FAX:		**PROJECT #**	60674381-4.4.2 Roxana Quarterly Soil Vapor
DATE RECEIVED:	11/14/2022	**CONTACT:**	Brian Whittaker
DATE COMPLETED:	11/29/2022		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	VMP-55-20-110922	TO-15	7.1 "Hg	9.9 psi
02A	VMP-15-5-110922	TO-15	6.5 "Hg	9.9 psi
03A	VMP-15-21.5-110922	TO-15	7.6 "Hg	10 psi
04A	VMP-15-25.5-110922	TO-15	7.1 "Hg	9.6 psi
05A	VMP-15-29-110922	TO-15	5.9 "Hg	9.7 psi
06A	Lab Blank	TO-15	NA	NA
06B	Lab Blank	TO-15	NA	NA
07A	CCV	TO-15	NA	NA
07B	CCV	TO-15	NA	NA
08A	LCS	TO-15	NA	NA
08AA	LCSD	TO-15	NA	NA
08B	LCS	TO-15	NA	NA
08BB	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 11/29/22

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209221, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-21-17, UT NELAP – CA009332021-13, VA NELAP - 10615, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-015, Effective date: 10/18/2021, Expiration date: 10/17/2022.
Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
EPA Method TO-15
AECOM
Workorder# 2211366A

Five 1 Liter Summa Canister samples were received on November 14, 2022. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

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

Dilution was performed on sample VMP-55-20-110922 due to the presence of high level target species.

Definition of Data Qualifying Flags

Ten 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.

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

CN - See Case Narrative.

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-55-20-110922

Lab ID#: 2211366A-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethanol	7300	7000 J	14000	13000 J
Acetone	7300	3000 J	17000	7200 J
2-Propanol	2900	5200	7200	13000
Methylene Chloride	7300	1300 J	25000	4400 J
Cyclohexane	730	9100	2500	31000
2,2,4-Trimethylpentane	730	20000	3400	92000
Benzene	730	200 J	2300	620 J
Toluene	730	1800	2800	6900
Butane	2900	24000	6900	56000
Isopentane	2900	170000	8600	490000

Client Sample ID: VMP-15-5-110922

Lab ID#: 2211366A-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.1	0.50 J	5.3	2.5 J
Ethanol	11	5.5 J	20	10 J
Acetone	11	12	25	28
2-Propanol	4.3	1.7 J	10	4.3 J
2-Butanone (Methyl Ethyl Ketone)	4.3	0.64 J	13	1.9 J
Chloroform	1.1	0.24 J	5.2	1.2 J

Client Sample ID: VMP-15-21.5-110922

Lab ID#: 2211366A-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.1	0.46 J	5.6	2.3 J
Chloroform	1.1	0.75 J	5.5	3.7 J

Client Sample ID: VMP-15-25.5-110922

Lab ID#: 2211366A-04A

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

Client Sample ID: VMP-15-25.5-110922

Lab ID#: 2211366A-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.1	0.51 J	5.3	2.5 J
Acetone	11	4.6 J	26	11 J
Chloroform	1.1	2.6	5.3	12

Client Sample ID: VMP-15-29-110922

Lab ID#: 2211366A-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.0	0.52 J	5.1	2.6 J
Acetone	10	4.2 J	24	10 J
Chloroform	1.0	6.1	5.0	30
Benzene	1.0	0.24 J	3.3	0.77 J
Bromodichloromethane	1.0	0.17 J	6.9	1.1 J

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Client Sample ID: VMP-55-20-110922

Lab ID#: 2211366A-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a112220**	**Date of Collection:**	**11/9/22 9:30:00 AM**
Dil. Factor:	**1460**	**Date of Analysis:**	**11/22/22 10:26 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	730	Not Detected	3600	Not Detected
Freon 114	730	Not Detected	5100	Not Detected
Chloromethane	7300	Not Detected	15000	Not Detected
Vinyl Chloride	730	Not Detected	1900	Not Detected
1,3-Butadiene	730	Not Detected	1600	Not Detected
Bromomethane	7300	Not Detected	28000	Not Detected
Chloroethane	2900	Not Detected	7700	Not Detected
Freon 11	730	Not Detected	4100	Not Detected
Ethanol	7300	7000 J	14000	13000 J
Freon 113	730	Not Detected	5600	Not Detected
1,1-Dichloroethene	730	Not Detected	2900	Not Detected
Acetone	7300	3000 J	17000	7200 J
2-Propanol	2900	5200	7200	13000
Carbon Disulfide	2900	Not Detected	9100	Not Detected
3-Chloropropene	2900	Not Detected	9100	Not Detected
Methylene Chloride	7300	1300 J	25000	4400 J
Methyl tert-butyl ether	2900	Not Detected	10000	Not Detected
trans-1,2-Dichloroethene	730	Not Detected	2900	Not Detected
Hexane	730	Not Detected	2600	Not Detected
1,1-Dichloroethane	730	Not Detected	3000	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2900	Not Detected	8600	Not Detected
cis-1,2-Dichloroethene	730	Not Detected	2900	Not Detected
Tetrahydrofuran	730	Not Detected	2200	Not Detected
Chloroform	730	Not Detected	3600	Not Detected
1,1,1-Trichloroethane	730	Not Detected	4000	Not Detected
Cyclohexane	730	9100	2500	31000
Carbon Tetrachloride	730	Not Detected	4600	Not Detected
2,2,4-Trimethylpentane	730	20000	3400	92000
Benzene	730	200 J	2300	620 J
1,2-Dichloroethane	730	Not Detected	3000	Not Detected
Heptane	730	Not Detected	3000	Not Detected
Trichloroethene	730	Not Detected	3900	Not Detected
1,2-Dichloropropane	730	Not Detected	3400	Not Detected
1,4-Dioxane	2900	Not Detected	10000	Not Detected
Bromodichloromethane	730	Not Detected	4900	Not Detected
cis-1,3-Dichloropropene	730	Not Detected	3300	Not Detected
4-Methyl-2-pentanone	730	Not Detected	3000	Not Detected
Toluene	730	1800	2800	6900
trans-1,3-Dichloropropene	730	Not Detected	3300	Not Detected
1,1,2-Trichloroethane	730	Not Detected	4000	Not Detected
Tetrachloroethene	730	Not Detected	5000	Not Detected
2-Hexanone	2900	Not Detected	12000	Not Detected

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Client Sample ID: VMP-55-20-110922

Lab ID#: 2211366A-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a112220**	**Date of Collection: 11/9/22 9:30:00 AM**	
Dil. Factor:	**1460**	**Date of Analysis: 11/22/22 10:26 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	730	Not Detected	6200	Not Detected
1,2-Dibromoethane (EDB)	730	Not Detected	5600	Not Detected
Chlorobenzene	730	Not Detected	3400	Not Detected
Ethyl Benzene	730	Not Detected	3200	Not Detected
m,p-Xylene	730	Not Detected	3200	Not Detected
o-Xylene	730	Not Detected	3200	Not Detected
Styrene	730	Not Detected	3100	Not Detected
Bromoform	730	Not Detected	7500	Not Detected
Cumene	730	Not Detected	3600	Not Detected
1,1,2,2-Tetrachloroethane	730	Not Detected	5000	Not Detected
Propylbenzene	730	Not Detected	3600	Not Detected
4-Ethyltoluene	730	Not Detected	3600	Not Detected
1,3,5-Trimethylbenzene	730	Not Detected	3600	Not Detected
1,2,4-Trimethylbenzene	730	Not Detected	3600	Not Detected
1,3-Dichlorobenzene	730	Not Detected	4400	Not Detected
1,4-Dichlorobenzene	730	Not Detected	4400	Not Detected
alpha-Chlorotoluene	730	Not Detected	3800	Not Detected
1,2-Dichlorobenzene	730	Not Detected	4400	Not Detected
1,2,4-Trichlorobenzene	2900	Not Detected	22000	Not Detected
Hexachlorobutadiene	2900	Not Detected	31000	Not Detected
Butane	2900	24000	6900	56000
Isopentane	2900	170000	8600	490000

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	99	70-130
4-Bromofluorobenzene	108	70-130

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Client Sample ID: VMP-15-5-110922

Lab ID#: 2211366A-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a112118**	**Date of Collection:**	**11/9/22 10:11:00 AM**
Dil. Factor:	**2.14**	**Date of Analysis:**	**11/21/22 09:02 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.1	0.50 J	5.3	2.5 J
Freon 114	1.1	Not Detected	7.5	Not Detected
Chloromethane	11	Not Detected	22	Not Detected
Vinyl Chloride	1.1	Not Detected	2.7	Not Detected
1,3-Butadiene	1.1	Not Detected	2.4	Not Detected
Bromomethane	11	Not Detected	42	Not Detected
Chloroethane	4.3	Not Detected	11	Not Detected
Freon 11	1.1	Not Detected	6.0	Not Detected
Ethanol	11	5.5 J	20	10 J
Freon 113	1.1	Not Detected	8.2	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.2	Not Detected
Acetone	11	12	25	28
2-Propanol	4.3	1.7 J	10	4.3 J
Carbon Disulfide	4.3	Not Detected	13	Not Detected
3-Chloropropene	4.3	Not Detected	13	Not Detected
Methylene Chloride	11	Not Detected	37	Not Detected
Methyl tert-butyl ether	4.3	Not Detected	15	Not Detected
trans-1,2-Dichloroethene	1.1	Not Detected	4.2	Not Detected
Hexane	1.1	Not Detected	3.8	Not Detected
1,1-Dichloroethane	1.1	Not Detected	4.3	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.3	0.64 J	13	1.9 J
cis-1,2-Dichloroethene	1.1	Not Detected	4.2	Not Detected
Tetrahydrofuran	1.1	Not Detected	3.2	Not Detected
Chloroform	1.1	0.24 J	5.2	1.2 J
1,1,1-Trichloroethane	1.1	Not Detected	5.8	Not Detected
Cyclohexane	1.1	Not Detected	3.7	Not Detected
Carbon Tetrachloride	1.1	Not Detected	6.7	Not Detected
2,2,4-Trimethylpentane	1.1	Not Detected	5.0	Not Detected
Benzene	1.1	Not Detected	3.4	Not Detected
1,2-Dichloroethane	1.1	Not Detected	4.3	Not Detected
Heptane	1.1	Not Detected	4.4	Not Detected
Trichloroethene	1.1	Not Detected	5.8	Not Detected
1,2-Dichloropropane	1.1	Not Detected	4.9	Not Detected
1,4-Dioxane	4.3	Not Detected	15	Not Detected
Bromodichloromethane	1.1	Not Detected	7.2	Not Detected
cis-1,3-Dichloropropene	1.1	Not Detected	4.8	Not Detected
4-Methyl-2-pentanone	1.1	Not Detected	4.4	Not Detected
Toluene	1.1	Not Detected	4.0	Not Detected
trans-1,3-Dichloropropene	1.1	Not Detected	4.8	Not Detected
1,1,2-Trichloroethane	1.1	Not Detected	5.8	Not Detected
Tetrachloroethene	1.1	Not Detected	7.2	Not Detected
2-Hexanone	4.3	Not Detected	18	Not Detected

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Client Sample ID: VMP-15-5-110922

Lab ID#: 2211366A-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a112118**	**Date of Collection:**	**11/9/22 10:11:00 AM**
Dil. Factor:	**2.14**	**Date of Analysis:**	**11/21/22 09:02 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.1	Not Detected	9.1	Not Detected
1,2-Dibromoethane (EDB)	1.1	Not Detected	8.2	Not Detected
Chlorobenzene	1.1	Not Detected	4.9	Not Detected
Ethyl Benzene	1.1	Not Detected	4.6	Not Detected
m,p-Xylene	1.1	Not Detected	4.6	Not Detected
o-Xylene	1.1	Not Detected	4.6	Not Detected
Styrene	1.1	Not Detected	4.6	Not Detected
Bromoform	1.1	Not Detected	11	Not Detected
Cumene	1.1	Not Detected	5.2	Not Detected
1,1,2,2-Tetrachloroethane	1.1	Not Detected	7.3	Not Detected
Propylbenzene	1.1	Not Detected	5.3	Not Detected
4-Ethyltoluene	1.1	Not Detected	5.3	Not Detected
1,3,5-Trimethylbenzene	1.1	Not Detected	5.3	Not Detected
1,2,4-Trimethylbenzene	1.1	Not Detected	5.2	Not Detected
1,3-Dichlorobenzene	1.1	Not Detected	6.4	Not Detected
1,4-Dichlorobenzene	1.1	Not Detected	6.4	Not Detected
alpha-Chlorotoluene	1.1	Not Detected	5.5	Not Detected
1,2-Dichlorobenzene	1.1	Not Detected	6.4	Not Detected
1,2,4-Trichlorobenzene	4.3	Not Detected	32	Not Detected
Hexachlorobutadiene	4.3	Not Detected	46	Not Detected
Butane	4.3	Not Detected	10	Not Detected
Isopentane	4.3	Not Detected	13	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	95	70-130

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Client Sample ID: VMP-15-21.5-110922

Lab ID#: 2211366A-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a112120**	**Date of Collection:**	**11/9/22 10:28:00 AM**
Dil. Factor:	**2.25**	**Date of Analysis:**	**11/21/22 11:04 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.1	0.46 J	5.6	2.3 J
Freon 114	1.1	Not Detected	7.9	Not Detected
Chloromethane	11	Not Detected	23	Not Detected
Vinyl Chloride	1.1	Not Detected	2.9	Not Detected
1,3-Butadiene	1.1	Not Detected	2.5	Not Detected
Bromomethane	11	Not Detected	44	Not Detected
Chloroethane	4.5	Not Detected	12	Not Detected
Freon 11	1.1	Not Detected	6.3	Not Detected
Ethanol	11	Not Detected	21	Not Detected
Freon 113	1.1	Not Detected	8.6	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.5	Not Detected
Acetone	11	Not Detected	27	Not Detected
2-Propanol	4.5	Not Detected	11	Not Detected
Carbon Disulfide	4.5	Not Detected	14	Not Detected
3-Chloropropene	4.5	Not Detected	14	Not Detected
Methylene Chloride	11	Not Detected	39	Not Detected
Methyl tert-butyl ether	4.5	Not Detected	16	Not Detected
trans-1,2-Dichloroethene	1.1	Not Detected	4.5	Not Detected
Hexane	1.1	Not Detected	4.0	Not Detected
1,1-Dichloroethane	1.1	Not Detected	4.6	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.5	Not Detected	13	Not Detected
cis-1,2-Dichloroethene	1.1	Not Detected	4.5	Not Detected
Tetrahydrofuran	1.1	Not Detected	3.3	Not Detected
Chloroform	1.1	0.75 J	5.5	3.7 J
1,1,1-Trichloroethane	1.1	Not Detected	6.1	Not Detected
Cyclohexane	1.1	Not Detected	3.9	Not Detected
Carbon Tetrachloride	1.1	Not Detected	7.1	Not Detected
2,2,4-Trimethylpentane	1.1	Not Detected	5.2	Not Detected
Benzene	1.1	Not Detected	3.6	Not Detected
1,2-Dichloroethane	1.1	Not Detected	4.6	Not Detected
Heptane	1.1	Not Detected	4.6	Not Detected
Trichloroethene	1.1	Not Detected	6.0	Not Detected
1,2-Dichloropropane	1.1	Not Detected	5.2	Not Detected
1,4-Dioxane	4.5	Not Detected	16	Not Detected
Bromodichloromethane	1.1	Not Detected	7.5	Not Detected
cis-1,3-Dichloropropene	1.1	Not Detected	5.1	Not Detected
4-Methyl-2-pentanone	1.1	Not Detected	4.6	Not Detected
Toluene	1.1	Not Detected	4.2	Not Detected
trans-1,3-Dichloropropene	1.1	Not Detected	5.1	Not Detected
1,1,2-Trichloroethane	1.1	Not Detected	6.1	Not Detected
Tetrachloroethene	1.1	Not Detected	7.6	Not Detected
2-Hexanone	4.5	Not Detected	18	Not Detected

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Client Sample ID: VMP-15-21.5-110922

Lab ID#: 2211366A-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a112120**	**Date of Collection:**	**11/9/22 10:28:00 AM**
Dil. Factor:	**2.25**	**Date of Analysis:**	**11/21/22 11:04 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.1	Not Detected	9.6	Not Detected
1,2-Dibromoethane (EDB)	1.1	Not Detected	8.6	Not Detected
Chlorobenzene	1.1	Not Detected	5.2	Not Detected
Ethyl Benzene	1.1	Not Detected	4.9	Not Detected
m,p-Xylene	1.1	Not Detected	4.9	Not Detected
o-Xylene	1.1	Not Detected	4.9	Not Detected
Styrene	1.1	Not Detected	4.8	Not Detected
Bromoform	1.1	Not Detected	12	Not Detected
Cumene	1.1	Not Detected	5.5	Not Detected
1,1,2,2-Tetrachloroethane	1.1	Not Detected	7.7	Not Detected
Propylbenzene	1.1	Not Detected	5.5	Not Detected
4-Ethyltoluene	1.1	Not Detected	5.5	Not Detected
1,3,5-Trimethylbenzene	1.1	Not Detected	5.5	Not Detected
1,2,4-Trimethylbenzene	1.1	Not Detected	5.5	Not Detected
1,3-Dichlorobenzene	1.1	Not Detected	6.8	Not Detected
1,4-Dichlorobenzene	1.1	Not Detected	6.8	Not Detected
alpha-Chlorotoluene	1.1	Not Detected	5.8	Not Detected
1,2-Dichlorobenzene	1.1	Not Detected	6.8	Not Detected
1,2,4-Trichlorobenzene	4.5	Not Detected	33	Not Detected
Hexachlorobutadiene	4.5	Not Detected	48	Not Detected
Butane	4.5	Not Detected	11	Not Detected
Isopentane	4.5	Not Detected	13	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	92	70-130

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Client Sample ID: VMP-15-25.5-110922

Lab ID#: 2211366A-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a112121**	**Date of Collection:**	**11/9/22 10:49:00 AM**
Dil. Factor:	**2.16**	**Date of Analysis:**	**11/21/22 11:31 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.1	0.51 J	5.3	2.5 J
Freon 114	1.1	Not Detected	7.6	Not Detected
Chloromethane	11	Not Detected	22	Not Detected
Vinyl Chloride	1.1	Not Detected	2.8	Not Detected
1,3-Butadiene	1.1	Not Detected	2.4	Not Detected
Bromomethane	11	Not Detected	42	Not Detected
Chloroethane	4.3	Not Detected	11	Not Detected
Freon 11	1.1	Not Detected	6.1	Not Detected
Ethanol	11	Not Detected	20	Not Detected
Freon 113	1.1	Not Detected	8.3	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.3	Not Detected
Acetone	11	4.6 J	26	11 J
2-Propanol	4.3	Not Detected	11	Not Detected
Carbon Disulfide	4.3	Not Detected	13	Not Detected
3-Chloropropene	4.3	Not Detected	14	Not Detected
Methylene Chloride	11	Not Detected	38	Not Detected
Methyl tert-butyl ether	4.3	Not Detected	16	Not Detected
trans-1,2-Dichloroethene	1.1	Not Detected	4.3	Not Detected
Hexane	1.1	Not Detected	3.8	Not Detected
1,1-Dichloroethane	1.1	Not Detected	4.4	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.3	Not Detected	13	Not Detected
cis-1,2-Dichloroethene	1.1	Not Detected	4.3	Not Detected
Tetrahydrofuran	1.1	Not Detected	3.2	Not Detected
Chloroform	1.1	2.6	5.3	12
1,1,1-Trichloroethane	1.1	Not Detected	5.9	Not Detected
Cyclohexane	1.1	Not Detected	3.7	Not Detected
Carbon Tetrachloride	1.1	Not Detected	6.8	Not Detected
2,2,4-Trimethylpentane	1.1	Not Detected	5.0	Not Detected
Benzene	1.1	Not Detected	3.4	Not Detected
1,2-Dichloroethane	1.1	Not Detected	4.4	Not Detected
Heptane	1.1	Not Detected	4.4	Not Detected
Trichloroethene	1.1	Not Detected	5.8	Not Detected
1,2-Dichloropropane	1.1	Not Detected	5.0	Not Detected
1,4-Dioxane	4.3	Not Detected	16	Not Detected
Bromodichloromethane	1.1	Not Detected	7.2	Not Detected
cis-1,3-Dichloropropene	1.1	Not Detected	4.9	Not Detected
4-Methyl-2-pentanone	1.1	Not Detected	4.4	Not Detected
Toluene	1.1	Not Detected	4.1	Not Detected
trans-1,3-Dichloropropene	1.1	Not Detected	4.9	Not Detected
1,1,2-Trichloroethane	1.1	Not Detected	5.9	Not Detected
Tetrachloroethene	1.1	Not Detected	7.3	Not Detected
2-Hexanone	4.3	Not Detected	18	Not Detected

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Client Sample ID: VMP-15-25.5-110922

Lab ID#: 2211366A-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a112121**	**Date of Collection:**	**11/9/22 10:49:00 AM**
Dil. Factor:	**2.16**	**Date of Analysis:**	**11/21/22 11:31 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.1	Not Detected	9.2	Not Detected
1,2-Dibromoethane (EDB)	1.1	Not Detected	8.3	Not Detected
Chlorobenzene	1.1	Not Detected	5.0	Not Detected
Ethyl Benzene	1.1	Not Detected	4.7	Not Detected
m,p-Xylene	1.1	Not Detected	4.7	Not Detected
o-Xylene	1.1	Not Detected	4.7	Not Detected
Styrene	1.1	Not Detected	4.6	Not Detected
Bromoform	1.1	Not Detected	11	Not Detected
Cumene	1.1	Not Detected	5.3	Not Detected
1,1,2,2-Tetrachloroethane	1.1	Not Detected	7.4	Not Detected
Propylbenzene	1.1	Not Detected	5.3	Not Detected
4-Ethyltoluene	1.1	Not Detected	5.3	Not Detected
1,3,5-Trimethylbenzene	1.1	Not Detected	5.3	Not Detected
1,2,4-Trimethylbenzene	1.1	Not Detected	5.3	Not Detected
1,3-Dichlorobenzene	1.1	Not Detected	6.5	Not Detected
1,4-Dichlorobenzene	1.1	Not Detected	6.5	Not Detected
alpha-Chlorotoluene	1.1	Not Detected	5.6	Not Detected
1,2-Dichlorobenzene	1.1	Not Detected	6.5	Not Detected
1,2,4-Trichlorobenzene	4.3	Not Detected	32	Not Detected
Hexachlorobutadiene	4.3	Not Detected	46	Not Detected
Butane	4.3	Not Detected	10	Not Detected
Isopentane	4.3	Not Detected	13	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	94	70-130

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Client Sample ID: VMP-15-29-110922

Lab ID#: 2211366A-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a112122**	**Date of Collection:**	**11/9/22 11:08:00 AM**
Dil. Factor:	**2.07**	**Date of Analysis:**	**11/21/22 11:58 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.0	0.52 J	5.1	2.6 J
Freon 114	1.0	Not Detected	7.2	Not Detected
Chloromethane	10	Not Detected	21	Not Detected
Vinyl Chloride	1.0	Not Detected	2.6	Not Detected
1,3-Butadiene	1.0	Not Detected	2.3	Not Detected
Bromomethane	10	Not Detected	40	Not Detected
Chloroethane	4.1	Not Detected	11	Not Detected
Freon 11	1.0	Not Detected	5.8	Not Detected
Ethanol	10	Not Detected	20	Not Detected
Freon 113	1.0	Not Detected	7.9	Not Detected
1,1-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Acetone	10	4.2 J	24	10 J
2-Propanol	4.1	Not Detected	10	Not Detected
Carbon Disulfide	4.1	Not Detected	13	Not Detected
3-Chloropropene	4.1	Not Detected	13	Not Detected
Methylene Chloride	10	Not Detected	36	Not Detected
Methyl tert-butyl ether	4.1	Not Detected	15	Not Detected
trans-1,2-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Hexane	1.0	Not Detected	3.6	Not Detected
1,1-Dichloroethane	1.0	Not Detected	4.2	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.1	Not Detected	12	Not Detected
cis-1,2-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Tetrahydrofuran	1.0	Not Detected	3.0	Not Detected
Chloroform	1.0	6.1	5.0	30
1,1,1-Trichloroethane	1.0	Not Detected	5.6	Not Detected
Cyclohexane	1.0	Not Detected	3.6	Not Detected
Carbon Tetrachloride	1.0	Not Detected	6.5	Not Detected
2,2,4-Trimethylpentane	1.0	Not Detected	4.8	Not Detected
Benzene	1.0	0.24 J	3.3	0.77 J
1,2-Dichloroethane	1.0	Not Detected	4.2	Not Detected
Heptane	1.0	Not Detected	4.2	Not Detected
Trichloroethene	1.0	Not Detected	5.6	Not Detected
1,2-Dichloropropane	1.0	Not Detected	4.8	Not Detected
1,4-Dioxane	4.1	Not Detected	15	Not Detected
Bromodichloromethane	1.0	0.17 J	6.9	1.1 J
cis-1,3-Dichloropropene	1.0	Not Detected	4.7	Not Detected
4-Methyl-2-pentanone	1.0	Not Detected	4.2	Not Detected
Toluene	1.0	Not Detected	3.9	Not Detected
trans-1,3-Dichloropropene	1.0	Not Detected	4.7	Not Detected
1,1,2-Trichloroethane	1.0	Not Detected	5.6	Not Detected
Tetrachloroethene	1.0	Not Detected	7.0	Not Detected
2-Hexanone	4.1	Not Detected	17	Not Detected

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Client Sample ID: VMP-15-29-110922

Lab ID#: 2211366A-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a112122**	**Date of Collection:**	**11/9/22 11:08:00 AM**
Dil. Factor:	**2.07**	**Date of Analysis:**	**11/21/22 11:58 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.0	Not Detected	8.8	Not Detected
1,2-Dibromoethane (EDB)	1.0	Not Detected	8.0	Not Detected
Chlorobenzene	1.0	Not Detected	4.8	Not Detected
Ethyl Benzene	1.0	Not Detected	4.5	Not Detected
m,p-Xylene	1.0	Not Detected	4.5	Not Detected
o-Xylene	1.0	Not Detected	4.5	Not Detected
Styrene	1.0	Not Detected	4.4	Not Detected
Bromoform	1.0	Not Detected	11	Not Detected
Cumene	1.0	Not Detected	5.1	Not Detected
1,1,2,2-Tetrachloroethane	1.0	Not Detected	7.1	Not Detected
Propylbenzene	1.0	Not Detected	5.1	Not Detected
4-Ethyltoluene	1.0	Not Detected	5.1	Not Detected
1,3,5-Trimethylbenzene	1.0	Not Detected	5.1	Not Detected
1,2,4-Trimethylbenzene	1.0	Not Detected	5.1	Not Detected
1,3-Dichlorobenzene	1.0	Not Detected	6.2	Not Detected
1,4-Dichlorobenzene	1.0	Not Detected	6.2	Not Detected
alpha-Chlorotoluene	1.0	Not Detected	5.4	Not Detected
1,2-Dichlorobenzene	1.0	Not Detected	6.2	Not Detected
1,2,4-Trichlorobenzene	4.1	Not Detected	31	Not Detected
Hexachlorobutadiene	4.1	Not Detected	44	Not Detected
Butane	4.1	Not Detected	9.8	Not Detected
Isopentane	4.1	Not Detected	12	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	104	70-130
4-Bromofluorobenzene	95	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2211366A-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a112105a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/21/22 11:39 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	5.0	Not Detected	9.4	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

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Client Sample ID: Lab Blank

Lab ID#: 2211366A-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a112105a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/21/22 11:39 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	0.25 J	2.4	1.2 J
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	0.21 J	2.4	1.0 J
1,2,4-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
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	99	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2211366A-06B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a112205c**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/22/22 12:50 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	5.0	Not Detected	9.4	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

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Client Sample ID: Lab Blank

Lab ID#: 2211366A-06B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a112205c**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/22/22 12:50 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	0.12 J	2.2	0.53 J
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	0.97 J
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	0.20 J	2.4	1.0 J
1,2,4-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
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	95	70-130
4-Bromofluorobenzene	94	70-130

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Client Sample ID: CCV

Lab ID#: 2211366A-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a112102**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 11/21/22 09:45 AM**

Compound	%Recovery
Freon 12	92
Freon 114	97
Chloromethane	87
Vinyl Chloride	84
1,3-Butadiene	76
Bromomethane	88
Chloroethane	92
Freon 11	92
Ethanol	80
Freon 113	95
1,1-Dichloroethene	95
Acetone	91
2-Propanol	87
Carbon Disulfide	91
3-Chloropropene	90
Methylene Chloride	92
Methyl tert-butyl ether	91
trans-1,2-Dichloroethene	89
Hexane	89
1,1-Dichloroethane	89
2-Butanone (Methyl Ethyl Ketone)	92
cis-1,2-Dichloroethene	93
Tetrahydrofuran	86
Chloroform	93
1,1,1-Trichloroethane	93
Cyclohexane	93
Carbon Tetrachloride	97
2,2,4-Trimethylpentane	92
Benzene	93
1,2-Dichloroethane	90
Heptane	91
Trichloroethene	96
1,2-Dichloropropane	88
1,4-Dioxane	91
Bromodichloromethane	95
cis-1,3-Dichloropropene	97
4-Methyl-2-pentanone	86
Toluene	96
trans-1,3-Dichloropropene	94
1,1,2-Trichloroethane	94
Tetrachloroethene	95
2-Hexanone	88

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Client Sample ID: CCV

Lab ID#: 2211366A-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a112102**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/21/22 09:45 AM**	

Compound	%Recovery
Dibromochloromethane	100
1,2-Dibromoethane (EDB)	94
Chlorobenzene	96
Ethyl Benzene	94
m,p-Xylene	94
o-Xylene	95
Styrene	94
Bromoform	105
Cumene	96
1,1,2,2-Tetrachloroethane	90
Propylbenzene	94
4-Ethyltoluene	94
1,3,5-Trimethylbenzene	92
1,2,4-Trimethylbenzene	93
1,3-Dichlorobenzene	97
1,4-Dichlorobenzene	95
alpha-Chlorotoluene	95
1,2-Dichlorobenzene	97
1,2,4-Trichlorobenzene	83
Hexachlorobutadiene	86
Butane	78
Isopentane	80

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	91	70-130
4-Bromofluorobenzene	103	70-130

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Client Sample ID: CCV

Lab ID#: 2211366A-07B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a112202**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 11/22/22 10:53 AM**

Compound	%Recovery
Freon 12	93
Freon 114	97
Chloromethane	89
Vinyl Chloride	84
1,3-Butadiene	78
Bromomethane	89
Chloroethane	90
Freon 11	92
Ethanol	77
Freon 113	96
1,1-Dichloroethene	95
Acetone	90
2-Propanol	85
Carbon Disulfide	91
3-Chloropropene	89
Methylene Chloride	92
Methyl tert-butyl ether	91
trans-1,2-Dichloroethene	90
Hexane	89
1,1-Dichloroethane	88
2-Butanone (Methyl Ethyl Ketone)	90
cis-1,2-Dichloroethene	93
Tetrahydrofuran	84
Chloroform	93
1,1,1-Trichloroethane	94
Cyclohexane	94
Carbon Tetrachloride	96
2,2,4-Trimethylpentane	93
Benzene	94
1,2-Dichloroethane	93
Heptane	91
Trichloroethene	98
1,2-Dichloropropane	88
1,4-Dioxane	92
Bromodichloromethane	96
cis-1,3-Dichloropropene	96
4-Methyl-2-pentanone	86
Toluene	97
trans-1,3-Dichloropropene	95
1,1,2-Trichloroethane	96
Tetrachloroethene	97
2-Hexanone	91

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Client Sample ID: CCV

Lab ID#: 2211366A-07B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a112202**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/22/22 10:53 AM**	

Compound	%Recovery
Dibromochloromethane	99
1,2-Dibromoethane (EDB)	95
Chlorobenzene	97
Ethyl Benzene	97
m,p-Xylene	96
o-Xylene	96
Styrene	97
Bromoform	105
Cumene	98
1,1,2,2-Tetrachloroethane	92
Propylbenzene	97
4-Ethyltoluene	96
1,3,5-Trimethylbenzene	95
1,2,4-Trimethylbenzene	96
1,3-Dichlorobenzene	101
1,4-Dichlorobenzene	99
alpha-Chlorotoluene	96
1,2-Dichlorobenzene	100
1,2,4-Trichlorobenzene	82
Hexachlorobutadiene	85
Butane	78
Isopentane	78

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	94	70-130
4-Bromofluorobenzene	103	70-130

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Client Sample ID: LCS

Lab ID#: 2211366A-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a112103**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/21/22 10:09 AM**	

Compound	%Recovery	Method Limits
Freon 12	91	70-130
Freon 114	97	70-130
Chloromethane	81	70-130
Vinyl Chloride	83	70-130
1,3-Butadiene	75	70-130
Bromomethane	84	70-130
Chloroethane	90	70-130
Freon 11	90	70-130
Ethanol	80	70-130
Freon 113	96	70-130
1,1-Dichloroethene	93	70-130
Acetone	87	70-130
2-Propanol	90	70-130
Carbon Disulfide	90	70-130
3-Chloropropene	88	70-130
Methylene Chloride	88	70-130
Methyl tert-butyl ether	90	70-130
trans-1,2-Dichloroethene	89	70-130
Hexane	86	70-130
1,1-Dichloroethane	87	70-130
2-Butanone (Methyl Ethyl Ketone)	90	70-130
cis-1,2-Dichloroethene	90	70-130
Tetrahydrofuran	84	70-130
Chloroform	89	70-130
1,1,1-Trichloroethane	93	70-130
Cyclohexane	94	70-130
Carbon Tetrachloride	95	70-130
2,2,4-Trimethylpentane	90	70-130
Benzene	92	70-130
1,2-Dichloroethane	90	70-130
Heptane	92	70-130
Trichloroethene	96	70-130
1,2-Dichloropropane	87	70-130
1,4-Dioxane	92	70-130
Bromodichloromethane	92	70-130
cis-1,3-Dichloropropene	96	70-130
4-Methyl-2-pentanone	86	70-130
Toluene	94	70-130
trans-1,3-Dichloropropene	94	70-130
1,1,2-Trichloroethane	99	70-130
Tetrachloroethene	99	70-130
2-Hexanone	90	70-130

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Client Sample ID: LCS

Lab ID#: 2211366A-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a112103**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/21/22 10:09 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	101	70-130
1,2-Dibromoethane (EDB)	95	70-130
Chlorobenzene	96	70-130
Ethyl Benzene	97	70-130
m,p-Xylene	95	70-130
o-Xylene	96	70-130
Styrene	97	70-130
Bromoform	107	70-130
Cumene	97	70-130
1,1,2,2-Tetrachloroethane	93	70-130
Propylbenzene	96	70-130
4-Ethyltoluene	95	70-130
1,3,5-Trimethylbenzene	94	70-130
1,2,4-Trimethylbenzene	94	70-130
1,3-Dichlorobenzene	98	70-130
1,4-Dichlorobenzene	96	70-130
alpha-Chlorotoluene	96	70-130
1,2-Dichlorobenzene	99	70-130
1,2,4-Trichlorobenzene	77	70-130
Hexachlorobutadiene	82	70-130
Butane	78	60-140
Isopentane	78	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	91	70-130
4-Bromofluorobenzene	104	70-130

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Client Sample ID: LCSD

Lab ID#: 2211366A-08AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a112104**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/21/22 10:33 AM**	

Compound	%Recovery	Method Limits
Freon 12	92	70-130
Freon 114	98	70-130
Chloromethane	80	70-130
Vinyl Chloride	83	70-130
1,3-Butadiene	76	70-130
Bromomethane	84	70-130
Chloroethane	89	70-130
Freon 11	91	70-130
Ethanol	80	70-130
Freon 113	97	70-130
1,1-Dichloroethene	92	70-130
Acetone	88	70-130
2-Propanol	91	70-130
Carbon Disulfide	90	70-130
3-Chloropropene	87	70-130
Methylene Chloride	88	70-130
Methyl tert-butyl ether	91	70-130
trans-1,2-Dichloroethene	89	70-130
Hexane	87	70-130
1,1-Dichloroethane	88	70-130
2-Butanone (Methyl Ethyl Ketone)	90	70-130
cis-1,2-Dichloroethene	91	70-130
Tetrahydrofuran	84	70-130
Chloroform	90	70-130
1,1,1-Trichloroethane	92	70-130
Cyclohexane	93	70-130
Carbon Tetrachloride	96	70-130
2,2,4-Trimethylpentane	90	70-130
Benzene	92	70-130
1,2-Dichloroethane	90	70-130
Heptane	91	70-130
Trichloroethene	96	70-130
1,2-Dichloropropane	86	70-130
1,4-Dioxane	92	70-130
Bromodichloromethane	93	70-130
cis-1,3-Dichloropropene	97	70-130
4-Methyl-2-pentanone	86	70-130
Toluene	94	70-130
trans-1,3-Dichloropropene	94	70-130
1,1,2-Trichloroethane	99	70-130
Tetrachloroethene	100	70-130
2-Hexanone	91	70-130

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Client Sample ID: LCSD

Lab ID#: 2211366A-08AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a112104**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/21/22 10:33 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	102	70-130
1,2-Dibromoethane (EDB)	96	70-130
Chlorobenzene	97	70-130
Ethyl Benzene	97	70-130
m,p-Xylene	96	70-130
o-Xylene	97	70-130
Styrene	97	70-130
Bromoform	108	70-130
Cumene	98	70-130
1,1,2,2-Tetrachloroethane	94	70-130
Propylbenzene	97	70-130
4-Ethyltoluene	95	70-130
1,3,5-Trimethylbenzene	96	70-130
1,2,4-Trimethylbenzene	95	70-130
1,3-Dichlorobenzene	101	70-130
1,4-Dichlorobenzene	98	70-130
alpha-Chlorotoluene	98	70-130
1,2-Dichlorobenzene	101	70-130
1,2,4-Trichlorobenzene	98	70-130
Hexachlorobutadiene	100	70-130
Butane	76	60-140
Isopentane	79	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	90	70-130
4-Bromofluorobenzene	105	70-130

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Client Sample ID: LCS

Lab ID#: 2211366A-08B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a112203**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/22/22 11:17 AM**	

Compound	%Recovery	Method Limits
Freon 12	92	70-130
Freon 114	100	70-130
Chloromethane	80	70-130
Vinyl Chloride	82	70-130
1,3-Butadiene	75	70-130
Bromomethane	87	70-130
Chloroethane	88	70-130
Freon 11	92	70-130
Ethanol	78	70-130
Freon 113	97	70-130
1,1-Dichloroethene	94	70-130
Acetone	85	70-130
2-Propanol	88	70-130
Carbon Disulfide	88	70-130
3-Chloropropene	87	70-130
Methylene Chloride	86	70-130
Methyl tert-butyl ether	88	70-130
trans-1,2-Dichloroethene	89	70-130
Hexane	85	70-130
1,1-Dichloroethane	86	70-130
2-Butanone (Methyl Ethyl Ketone)	88	70-130
cis-1,2-Dichloroethene	91	70-130
Tetrahydrofuran	82	70-130
Chloroform	89	70-130
1,1,1-Trichloroethane	93	70-130
Cyclohexane	92	70-130
Carbon Tetrachloride	94	70-130
2,2,4-Trimethylpentane	90	70-130
Benzene	92	70-130
1,2-Dichloroethane	90	70-130
Heptane	90	70-130
Trichloroethene	97	70-130
1,2-Dichloropropane	85	70-130
1,4-Dioxane	91	70-130
Bromodichloromethane	92	70-130
cis-1,3-Dichloropropene	94	70-130
4-Methyl-2-pentanone	84	70-130
Toluene	93	70-130
trans-1,3-Dichloropropene	93	70-130
1,1,2-Trichloroethane	98	70-130
Tetrachloroethene	98	70-130
2-Hexanone	89	70-130

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Client Sample ID: LCS

Lab ID#: 2211366A-08B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a112203**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/22/22 11:17 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	100	70-130
1,2-Dibromoethane (EDB)	94	70-130
Chlorobenzene	95	70-130
Ethyl Benzene	97	70-130
m,p-Xylene	95	70-130
o-Xylene	95	70-130
Styrene	96	70-130
Bromoform	106	70-130
Cumene	97	70-130
1,1,2,2-Tetrachloroethane	93	70-130
Propylbenzene	96	70-130
4-Ethyltoluene	96	70-130
1,3,5-Trimethylbenzene	94	70-130
1,2,4-Trimethylbenzene	95	70-130
1,3-Dichlorobenzene	100	70-130
1,4-Dichlorobenzene	97	70-130
alpha-Chlorotoluene	95	70-130
1,2-Dichlorobenzene	99	70-130
1,2,4-Trichlorobenzene	75	70-130
Hexachlorobutadiene	80	70-130
Butane	76	60-140
Isopentane	77	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	91	70-130
4-Bromofluorobenzene	103	70-130

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Client Sample ID: LCSD

Lab ID#: 2211366A-08BB

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a112204**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/22/22 11:41 AM**	

Compound	%Recovery	Method Limits
Freon 12	88	70-130
Freon 114	97	70-130
Chloromethane	78	70-130
Vinyl Chloride	79	70-130
1,3-Butadiene	72	70-130
Bromomethane	83	70-130
Chloroethane	87	70-130
Freon 11	89	70-130
Ethanol	75	70-130
Freon 113	96	70-130
1,1-Dichloroethene	91	70-130
Acetone	83	70-130
2-Propanol	85	70-130
Carbon Disulfide	86	70-130
3-Chloropropene	84	70-130
Methylene Chloride	84	70-130
Methyl tert-butyl ether	86	70-130
trans-1,2-Dichloroethene	86	70-130
Hexane	82	70-130
1,1-Dichloroethane	83	70-130
2-Butanone (Methyl Ethyl Ketone)	88	70-130
cis-1,2-Dichloroethene	89	70-130
Tetrahydrofuran	79	70-130
Chloroform	86	70-130
1,1,1-Trichloroethane	90	70-130
Cyclohexane	90	70-130
Carbon Tetrachloride	93	70-130
2,2,4-Trimethylpentane	87	70-130
Benzene	92	70-130
1,2-Dichloroethane	88	70-130
Heptane	89	70-130
Trichloroethene	95	70-130
1,2-Dichloropropane	85	70-130
1,4-Dioxane	91	70-130
Bromodichloromethane	91	70-130
cis-1,3-Dichloropropene	93	70-130
4-Methyl-2-pentanone	85	70-130
Toluene	92	70-130
trans-1,3-Dichloropropene	92	70-130
1,1,2-Trichloroethane	97	70-130
Tetrachloroethene	97	70-130
2-Hexanone	89	70-130

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Client Sample ID: LCSD

Lab ID#: 2211366A-08BB

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a112204**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/22/22 11:41 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	100	70-130
1,2-Dibromoethane (EDB)	94	70-130
Chlorobenzene	95	70-130
Ethyl Benzene	95	70-130
m,p-Xylene	94	70-130
o-Xylene	95	70-130
Styrene	95	70-130
Bromoform	106	70-130
Cumene	96	70-130
1,1,2,2-Tetrachloroethane	92	70-130
Propylbenzene	95	70-130
4-Ethyltoluene	93	70-130
1,3,5-Trimethylbenzene	94	70-130
1,2,4-Trimethylbenzene	94	70-130
1,3-Dichlorobenzene	100	70-130
1,4-Dichlorobenzene	97	70-130
alpha-Chlorotoluene	95	70-130
1,2-Dichlorobenzene	99	70-130
1,2,4-Trichlorobenzene	95	70-130
Hexachlorobutadiene	97	70-130
Butane	74	60-140
Isopentane	74	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	88	70-130
4-Bromofluorobenzene	102	70-130

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11/29/2022
Mr. Samuel Fisher
AECOM
100 N. Broadway, 20th Floor

St. Louis MO 63102

Project Name: Roxana Quarterly Soil Vapor
Project #: 60674381-4.4.2
Workorder #: 2211366B

Dear Mr. Samuel Fisher

The following report includes the data for the above referenced project for sample(s) received on 11/14/2022 at Eurofins Air Toxics LLC.

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 LLC. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Brian Whittaker

Project Manager

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WORK ORDER #: 2211366B

Work Order Summary

CLIENT:	Mr. Samuel Fisher AECOM 100 N. Broadway, 20th Floor St. Louis, MO 63102	**BILL TO:**	Accounts Payable Austin AECOM PO Box 203970 Austin, TX 78720
PHONE:	314-296-1969	**P.O. #**	141259
FAX:		**PROJECT #**	60674381-4.4.2 Roxana Quarterly Soil Vapor
DATE RECEIVED:	11/14/2022	**CONTACT:**	Brian Whittaker
DATE COMPLETED:	11/29/2022		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	VMP-55-20-110922	Modified ASTM D-1946	7.1 "Hg	9.9 psi
02A	VMP-15-5-110922	Modified ASTM D-1946	6.5 "Hg	9.9 psi
03A	VMP-15-21.5-110922	Modified ASTM D-1946	7.6 "Hg	10 psi
04A	VMP-15-25.5-110922	Modified ASTM D-1946	7.1 "Hg	9.6 psi
05A	VMP-15-29-110922	Modified ASTM D-1946	5.9 "Hg	9.7 psi
06A	Lab Blank	Modified ASTM D-1946	NA	NA
06B	Lab Blank	Modified ASTM D-1946	NA	NA
07A	CCV	Modified ASTM D-1946	NA	NA
08A	LCS	Modified ASTM D-1946	NA	NA
08AA	LCSD	Modified ASTM D-1946	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 11/29/22

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209221, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-21-17, UT NELAP – CA009332021-13, VA NELAP - 10615, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-015, Effective date: 10/18/2021, Expiration date: 10/17/2022.
Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

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LABORATORY NARRATIVE
Modified ASTM D-1946
AECOM
Workorder# 2211366B

Five 1 Liter Summa Canister samples were received on November 14, 2022. 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.

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-55-20-110922

Lab ID#: 2211366B-01A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.22	1.6
Nitrogen	0.22	78
Methane	0.00022	4.6
Carbon Dioxide	0.022	16
Ethane	0.0022	0.0017 J
Helium	0.11	0.032 J

Client Sample ID: VMP-15-5-110922

Lab ID#: 2211366B-02A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.21	16
Nitrogen	0.21	81
Methane	0.00021	0.000090 J
Carbon Dioxide	0.021	3.3

Client Sample ID: VMP-15-21.5-110922

Lab ID#: 2211366B-03A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.22	2.8
Nitrogen	0.22	82
Carbon Dioxide	0.022	15

Client Sample ID: VMP-15-25.5-110922

Lab ID#: 2211366B-04A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.22	3.4
Nitrogen	0.22	81
Carbon Dioxide	0.022	16

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

Client Sample ID: VMP-15-29-110922

Lab ID#: 2211366B-05A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.21	3.5
Nitrogen	0.21	80
Carbon Dioxide	0.021	16
Helium	0.10	0.0067 J

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Client Sample ID: VMP-55-20-110922

Lab ID#: 2211366B-01A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**11112210**	**Date of Collection: 11/9/22 9:30:00 AM**	
Dil. Factor:	**2.20**	**Date of Analysis: 11/22/22 11:54 AM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.22	1.6
Nitrogen	0.22	78
Carbon Monoxide	0.022	Not Detected
Methane	0.00022	4.6
Carbon Dioxide	0.022	16
Ethane	0.0022	0.0017 J
Ethene	0.0022	Not Detected
Helium	0.11	0.032 J

J = Estimated value.

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-15-5-110922

Lab ID#: 2211366B-02A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**11112211**	**Date of Collection: 11/9/22 10:11:00 AM**	
Dil. Factor:	**2.14**	**Date of Analysis: 11/22/22 12:18 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.21	16
Nitrogen	0.21	81
Carbon Monoxide	0.021	Not Detected
Methane	0.00021	0.000090 J
Carbon Dioxide	0.021	3.3
Ethane	0.0021	Not Detected
Ethene	0.0021	Not Detected
Helium	0.11	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-15-21.5-110922

Lab ID#: 2211366B-03A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**11112212**	**Date of Collection: 11/9/22 10:28:00 AM**	
Dil. Factor:	**2.24**	**Date of Analysis: 11/22/22 01:07 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.22	2.8
Nitrogen	0.22	82
Carbon Monoxide	0.022	Not Detected
Methane	0.00022	Not Detected
Carbon Dioxide	0.022	15
Ethane	0.0022	Not Detected
Ethene	0.0022	Not Detected
Helium	0.11	Not Detected

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-15-25.5-110922

Lab ID#: 2211366B-04A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**11112213**	**Date of Collection: 11/9/22 10:49:00 AM**	
Dil. Factor:	**2.17**	**Date of Analysis: 11/22/22 01:31 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.22	3.4
Nitrogen	0.22	81
Carbon Monoxide	0.022	Not Detected
Methane	0.00022	Not Detected
Carbon Dioxide	0.022	16
Ethane	0.0022	Not Detected
Ethene	0.0022	Not Detected
Helium	0.11	Not Detected

Container Type: 1 Liter Summa Canister

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Client Sample ID: VMP-15-29-110922

Lab ID#: 2211366B-05A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**11112214**	**Date of Collection: 11/9/22 11:08:00 AM**	
Dil. Factor:	**2.07**	**Date of Analysis: 11/22/22 01:54 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.21	3.5
Nitrogen	0.21	80
Carbon Monoxide	0.021	Not Detected
Methane	0.00021	Not Detected
Carbon Dioxide	0.021	16
Ethane	0.0021	Not Detected
Ethene	0.0021	Not Detected
Helium	0.10	0.0067 J

J = Estimated value.

Container Type: 1 Liter Summa Canister

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Client Sample ID: Lab Blank

Lab ID#: 2211366B-06A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**11112203**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/22/22 07:58 AM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.10	0.0046 J
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

J = Estimated value.

Container Type: NA - Not Applicable

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Client Sample ID: Lab Blank

Lab ID#: 2211366B-06B

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**11112204c**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/22/22 08:32 AM**	

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

Container Type: NA - Not Applicable

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Client Sample ID: CCV

Lab ID#: 2211366B-07A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**11112201**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 11/22/22 07:04 AM**

Compound	%Recovery
Oxygen	101
Nitrogen	95
Carbon Monoxide	95
Methane	95
Carbon Dioxide	100
Ethane	94
Ethene	97
Helium	96

Container Type: NA - Not Applicable

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Client Sample ID: LCS

Lab ID#: 2211366B-08A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**11112202**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/22/22 07:33 AM**	

Compound	%Recovery	Method Limits
Oxygen	101	85-115
Nitrogen	95	85-115
Carbon Monoxide	96	85-115
Methane	96	85-115
Carbon Dioxide	101	85-115
Ethane	93	85-115
Ethene	94	85-115
Helium	112	85-115

Container Type: NA - Not Applicable

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Client Sample ID: LCSD

Lab ID#: 2211366B-08AA

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**11112225**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/22/22 06:48 PM**	

Compound	%Recovery	Method Limits
Oxygen	101	85-115
Nitrogen	95	85-115
Carbon Monoxide	95	85-115
Methane	95	85-115
Carbon Dioxide	100	85-115
Ethane	93	85-115
Ethene	94	85-115
Helium	112	85-115

Container Type: NA - Not Applicable