

February 8, 2021

Mr. Al Davis
Friends Church
1485 30th Avenue
Fairbanks, Alaska 99701

RE: DECEMBER 2020 AIR SAMPLING SUMMARY, FRIENDS CHURCH, 1485 30TH AVENUE, FAIRBANKS, ALASKA

We have prepared this report to summarize analytical results for indoor air and sub-slab soil gas samples collected in December 2020 at the Friends Church building located at 1485 30th Avenue in Fairbanks, Alaska (Figure 1). The Friends Church property is included in the Miller Salvage contaminated site (Alaska Department of Environmental Conservation [DEC] File Number 102.23.017). We understand Friends Church is interested in requesting a “cleanup complete with institutional controls” site-closure designation for the Friends Church property. Per our teleconference discussion with Mr. Eric Gettinger and Alaska Department of Environmental Conservation (DEC) project manager Robert Burgess on November 3, 2020, we understand DEC will consider granting site closure with data provided on potential vapor intrusion at Friends Church.

PROJECT SUMMARY

Previous sampling results at the site indicate there is potential for a complete vapor intrusion pathway at the church due to the presence of volatile organic compounds (VOCs) in the subsurface near the building. The project objective was to investigate the presence of volatiles in sub-slab soil gas and indoor air at the church structure to better inform our understanding of vapor intrusion risk. Towards this objective, we collected indoor air samples and sub-slab soil gas samples from the three locations depicted in Figure 2.

Samples were collected in accordance with our December 2020 *Sub-Slab and Indoor Air Sampling Work Plan* and the November 2017 DEC *Vapor Intrusion Guidance for Contaminated Sites* (DEC Vapor Intrusion Guidance).

SITE DESCRIPTION

The Miller Salvage contaminated site comprises two parcels, each approximately 11 acres in size, located at 1407 and 1485 30th Avenue in Fairbanks, Alaska (latitude 64.8182° north, longitude -147.7379° west). According to the Fairbanks North Star Borough Geographical

Information System, the legal descriptions and current property owners of the two properties are as follows:

- Tract A1 of the Laurel Park Subdivision 4th Addition in Fairbanks North Star Borough, located at 1407 30th Avenue, and owned by Laverna M. Miller.
- Tract A2 of the Laurel Park Subdivision 4th Addition in Fairbanks North Star Borough, located at 1485 30th Avenue, and owned by the Friends Community Church.

The Miller Salvage site was known to have operated as a salvage yard from the 1980s through part of the 1990s, accumulating surplus debris and drums, and was likely operated similarly as early as the 1950s. Damaged and leaking containers, distressed vegetation, and animal carcasses have been observed at the site. Our review of historical aerial photographs indicates that cars, drums, and other potential contaminant sources may have moved to various locations on the property during operation of the salvage yard.

PREVIOUS SAMPLING

We were contracted by DEC to perform site characterization activities at the Miller Salvage site in 2017 and 2018. These activities included sampling soil and groundwater on Tract A1 and Tract A2 and collecting indoor air samples at Friends Church. Contaminants of potential concern (COPCs) identified in our 2017-2018 site characterization activities include petroleum constituents and chlorinated solvents.

2017-2018 Groundwater Sampling Results

Figures 3 through 5 summarize groundwater sample results for benzene, chlorinated solvents, and petroleum (diesel range organics [DRO], gasoline range organics [GRO], and residual range organics [RRO]) detected in the 2017 and 2018 temporary well points sampled at the site. The analytical groundwater sample results from 2017 and 2018 indicate VOCs, including trichloroethene (TCE) and benzene, may be potentially present in the subsurface within 100 horizontal feet of the church and may present a potential vapor intrusion risk.

Groundwater was observed at approximately 10 feet below ground surface (bgs) in the church vicinity. We calculated a groundwater flow direction of 277 degrees clockwise from north (roughly west) using data collected from six temporary well point locations in May 2018. Based on our understanding of regional trends, groundwater flow direction may fluctuate seasonally to include a stronger northwestern component.

March 2018 Indoor Air Sampling Results

We collected indoor-air samples at the church in March 2018. Analytical results indicated detectable concentrations of VOCs in the samples, but at concentrations less than DEC residential target levels for indoor air (target levels). Though indoor air results were below target levels, there is potential for vapor intrusion risk to vary seasonally with changing temperatures, ground conditions, and building heating practices.

Additionally, several analytes in the indoor air results were reported as not detected but had reporting limits (RLs) greater than the DEC target levels. In cases where the RLs for not-detected analytes exceeded DEC target levels, the analytes could have been present in the samples at concentrations less than the RLs but greater than the target levels.

DECEMBER 2020 SAMPLING

We collected air samples from three locations at Friends Church on December 29-30, 2020. Sample locations were selected based on their proximity to groundwater contamination identified in the 2017-2018 temporary well point sampling results. Sub-slab soil gas samples were co-located with indoor air samples to assess whether VOCs in indoor air are attributable to subsurface sources. Sampling locations are presented in Figure 2.

Sub-Slab Soil Gas Sampling

Sub-slab soil gas sampling points were installed using a handheld electric drill to make a one-inch diameter hole through the concrete slab foundation of the church building. We installed sample ports into the holes and sealed the annulus around the sample port with non-swelling grout. The grout was allowed to set approximately 24 hours prior to sampling.

At each sub-slab soil gas sampling location, we assessed the sampling train for potential leaks prior to sampling using helium tracer-tests and shut-in tests. Once testing indicated a leak-free sampling train, we purged one volume from the sample train, connected the 1-liter Summa® canister, and opened the canister valve to begin sampling soil-gas. After five minutes, we closed the canister valve; the canister vacuums measured approximately 5 inches Hg after sampling. Following sampling, the ports were capped and left in-place for possible future sampling activities.

Indoor Air Sampling

We collected indoor-air samples from three locations inside the church over a 24-hour period using 6-liter Summa® canisters equipped with flow controllers supplied by the analytical laboratory. The canisters were positioned within the breathing space (between 3 to 5 feet off the ground) and the canister valves opened for sample collection. After 24 hours, we closed the canister valves and verified the canister vacuum measured between 5 to 10 inches Hg.

Barometric Pressure Monitoring

We obtained meteorological data from the National Weather Service Fairbanks International Airport weather station to monitor barometric pressure and outside air temperature for the period prior to, during, and after sampling; the airport is located approximately 3.5 miles from the church.

The meteorological data indicate barometric pressure generally rose over the indoor-air sampling period with readings ranging from 29.54 to 29.76 inches Hg. Outside air temperatures increased from 10 degrees Fahrenheit (°F) to 18 °F in the first seven hours of sampling, then decreased to 1°F at the end of the sampling period. Barometric pressure and outside air temperature data are presented in Figure 6.

According to the DEC Vapor Intrusion Guidance, “Elevated (greater than 30 inches) and/or rising barometric pressure is associated with increasing vapor intrusion,” and “indoor air concentrations of VOCs are expected to be high when the weather is getting colder but not necessarily during a sustained period of cold weather.” Meteorological conditions observed during the sampling period are generally consistent with these indicator conditions of high vapor intrusion potential.

Airflow Analysis

We used a TSI Series 4100 High Performance Linear OEM Mass Flowmeter to assess the flowrate between the sub-slab sampling locations to the interior of the church. Observed flowrates ranged from 0.01 L/min to 0.031 L/min. Though the instrument does not differentiate between flow direction, a marked decrease in flowrate was observed when the church’s air-handling system switched on. This indicates the positive pressure produced by the air handling system counteracted a pressure gradient that would otherwise induce the flow of soil-gas into the church structure through the sampling port and potentially other routes such as cracks in the concrete slab.

ANALYTICAL RESULTS

We submitted air samples to Eurofins Air Toxics, Inc (Eurofins) for analysis of 64 VOCs by Environmental Protection Agency (EPA) Method TO-15. To evaluate sample results, we compared VOC concentrations reported in the indoor-air and sub-slab soil gas samples to the residential target levels in Appendix D and Appendix E of the November 2017 DEC *Vapor Intrusion Guidance for Contaminated Sites*.

Benzene was detected at concentrations above the DEC residential indoor air target level in all the indoor air samples collected for the project. Additionally, 1,3-butadiene was detected in indoor air sample IA20-02 and field-duplicate sample IA20-102 at concentrations above the DEC residential indoor air target level.

No other requested analytes were detected above the applicable DEC target levels in either the indoor air or sub-slab soil gas samples.

QUALITY ASSURANCE/ QUALITY CONTROL (QA/QC)

We reviewed the analytical results provided by Eurofins for laboratory QC samples and conducted our own QA assessment for this project. We reviewed chain-of-custody records and laboratory sample-receipt forms to check that we followed proper custody procedures and met sample-holding times. Our QA-review procedures allow us to document accuracy and precision of the analytical data and check that the analyses were sufficiently sensitive to detect analytes at levels below regulatory standards.

Our review of the data reveals that some of the analytical samples experienced method and laboratory data-quality failures (insufficient analytical method sensitivities, relative percent difference [RPD] failures, analyte concentrations exceeding instrumentation calibration range, etc.). Details regarding the results of our QA analyses are presented in the enclosed ADEC laboratory data-review checklists along with a copy of the original Eurofins laboratory reports.

Eurofins reported several instances where an analyte's reporting limit (RL) exceeded its applicable DEC target level (insufficient analytical method sensitivities). In cases where the RL exceeds the target level, we cannot assess whether the analyte is present at concentrations greater than target level but less than the laboratory's RL.

Except as noted above, we consider the analytical results reported by Eurofins to be acceptable and representative for assessing site conditions for the requested analytes at the

time and locations they were collected. Analytical results that are considered affected by method and laboratory data-quality failures are flagged in the enclosed analytical results tables.

DISCUSSION

Benzene and 1,3-butadiene were the only COPCs detected in indoor air samples at concentrations above DEC indoor air target levels. These analytes were not detected in the co-located sub-slab soil gas samples, indicating concentrations of benzene and 1,3-butadiene observed in indoor air were not attributable to subsurface conditions at the locations sampled.

Analytical results for benzene and 1,3-butadiene in indoor air and sub-slab soil gas samples are summarized in Exhibit 1 below.

Exhibit 1: Benzene and 1,3-Butadiene Concentrations in Indoor-Air and Soil-Gas Samples

Sample Type	Sample	Benzene (ug/m ³)	1-3, Butadiene (ug/m ³)
Indoor Air	IA20-01	7.20	<0.870
	IA20-02	7.20	1.00
	IA20-102	7.10	1.00
	IA20-03	6.40	0.840
Sub-Slab Soil Gas	SS20-01	<3.90	<2.70
	SS20-02	<0.790	<0.550
	SS20-102	<0.820	<0.570
	SS20-03	<0.770	<0.540
<i>DEC Indoor Air Target Level</i>		3.6	0.94
<i>DEC Sub-Slab Soil-Gas Target Level</i>		36	9.4

NOTES:

- ug/m³ micrograms per cubic meter
- < Analyte not detected; listed as less than the reporting limit.
- Bold** Concentration detected exceeds residential target level for indoor air from the November 2017 *DEC Vapor Intrusion Guidance for Contaminated Sites - Appendix D*

Air sampling locations were selected based on the proximity to groundwater contamination identified in the 2017-2018 temporary well point sampling. Since COPCs were not detected above DEC target levels in the sub-slab soil gas samples, the vapor intrusion pathway due to volatilization of VOCs from groundwater migrating beneath the church structure does

not appear to present a significant risk. Additionally, aerial photos taken during construction of the church indicate soil was excavated to the depth of the water table during construction, potentially removing contaminated soil that may have previously been present at the church location. Since groundwater was measured at approximately 10 feet bgs in the church vicinity in the 2017-2018 temporary well points, the thickness of soil underlying the church exceeds the required thickness listed in Table 6 of the DEC Vapor Intrusion Guidance for mitigating vapor intrusion risk for the concentrations of petroleum contaminants observed in groundwater samples from the site.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of this vapor intrusion assessment, VOCs detected in indoor air at the church do not appear to be related to COPCs in soil-gas at the locations sampled. The enclosed Conceptual Site Model (CSM) has been updated to note that analytical results from this investigation indicate the vapor intrusion pathway is likely insignificant. As noted in the DEC Vapor Intrusion guidance, "Volatile chemicals are often present in a building due to both indoor and outdoor air quality problems that are not associated with vapor intrusion. While these problems can result in health effects, DEC only has the authority to regulate vapor intrusion problems."

We do not recommend any further investigation of the potential for vapor intrusion at the site. We do recommend that Friends Church personnel assess the need to store solvents and other chemicals in the church interior that could potentially be contributing to the VOCs detected in the indoor air samples and remove the chemicals if practicable.

LIMITATIONS

This report was prepared for the exclusive use of Friends Church (the Client) and their representatives for indoor-air and sub-slab soil-gas sampling at the church. This report should not be used for other purposes without Shannon & Wilson's review. We have prepared the document "*Important Information about Your Geotechnical/Environmental Report*" to help you and others understand the use and limitations of this report.

Our observations represent site conditions as they existed during our sampling activities on December 29 and 30, 2020. Our observations are specific to the locations and times noted herein and may not be applicable to all areas of the site. No number of indoor-air and sub-

slab soil-gas samples along with analytical testing can precisely predict the characteristics, quality, or distribution of site conditions. Potential variations include, but are not limited to:

- The conditions between sampling points may be different.
- The passage of time or intervening causes (natural and manmade) may result in changes to site conditions.
- Contaminant concentrations may change in response to natural conditions, chemical reactions, and/or other events.
- The presence, distribution, and concentration of contaminants may vary from our sampling locations. Our tests may not represent the highest contaminant concentrations at the site.

The report should not be used without our approval if any of the following occurs:

- Conditions change due to natural forces or human activity under, at, or adjacent to the site.
- Project details change or new information becomes available such that our analyses, conclusion, and recommendations may be affected.
- If the site ownership or land use has changed.
- More than six months have passed since the date of this summary letter report.
- Regulations, laws, or cleanup levels change.
- If the site's regulatory status has changed.

If any of these occur, we should be retained to review the applicability of our analyses, conclusions, and recommendations.

State and/or federal agencies may require reporting of the information included in this report. Shannon & Wilson does not assume the responsibility for reporting these findings and therefore has not, and will not, disclose the results of this study unless specifically requested and authorized by the Client or as required by law. Regulatory agencies may reach different conclusions than Shannon & Wilson.

CLOSURE

We are pleased to have had the opportunity to assist you with this project. Please contact me if you have any questions.

Sincerely,

SHANNON & WILSON

Andrew Frick
Environmental Scientist

ALF:MSL:CBD/alf

- Enc. Figure 1 – Site Map
Figure 2 – Air Sample Locations
Figures 3 through 5 – 2017-2018 Temporary Well Point Sampling Results
Figure 6 – Barometric Pressure and Outside Air Temperatures During Sampling Period
Table 1 – Indoor Air Sampling Results
Table 2 – Sub-Slab Soil Gas Sampling Results
Eurofins Analytical Laboratory Reports and DEC Laboratory Data Review Checklists
Scanned Sampling Logs
DEC Conceptual Site Model Scoping and Graphic Forms
Important Information About Your Environmental/Geotechnical Report

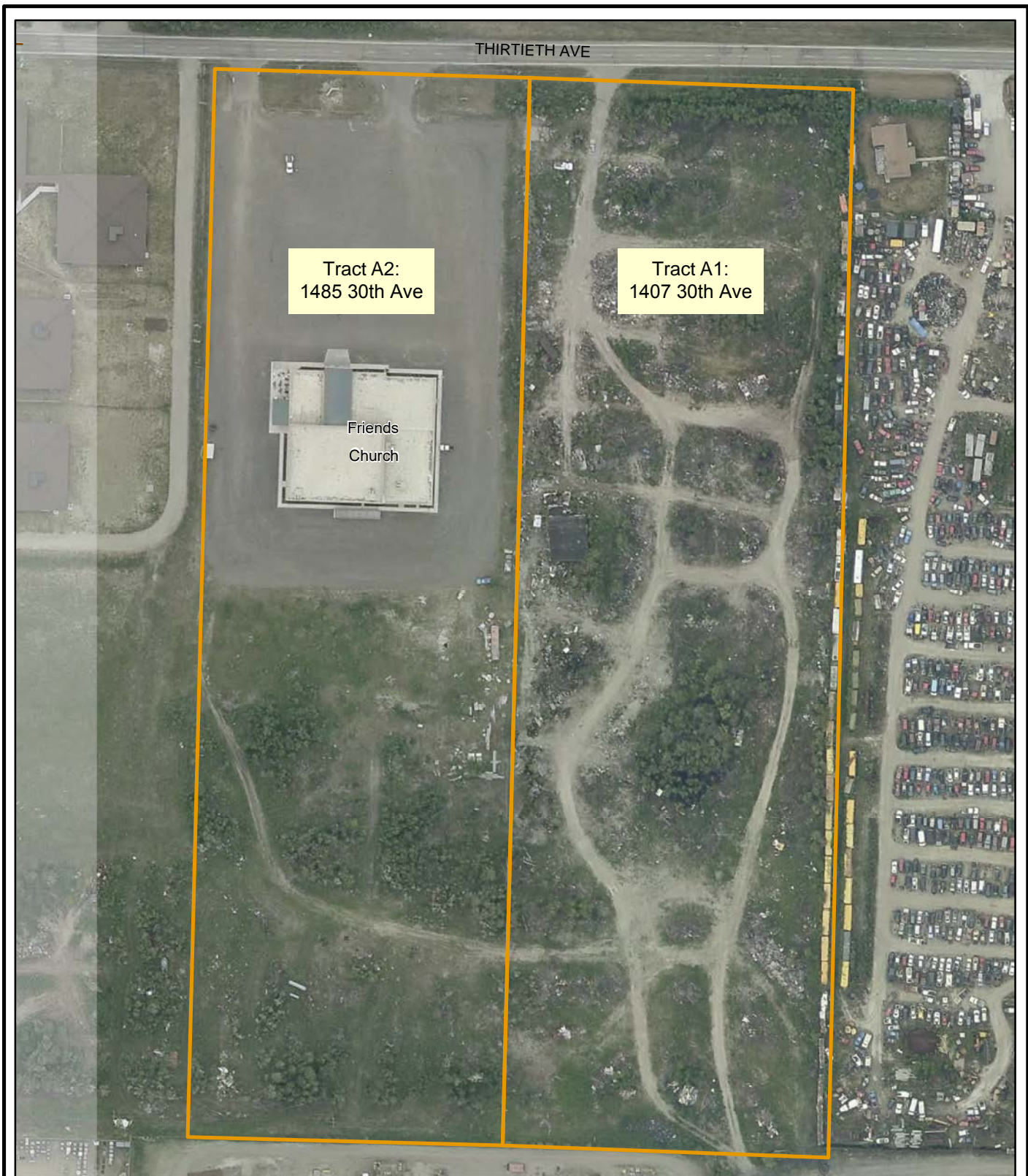
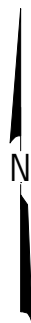
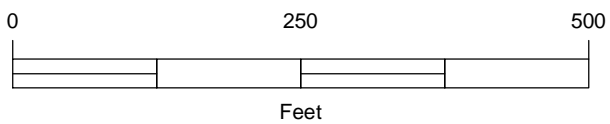


Image provided courtesy of Pictometry International 2012.

LEGEND

 Site



Friends Church Air Sampling
 Fairbanks, Alaska

SITE MAP

February 2021

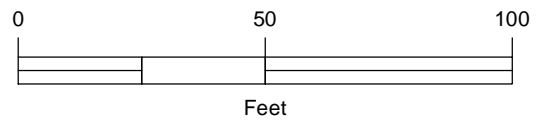
106339-001

 **SHANNON & WILSON, INC.**
 GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Figure 1

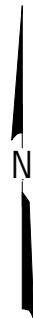


Map adapted from aerial and satellite imagery provided through the Alaska Department of Natural Resources.
 (Satellite Imagery: Spot 5 © CNES, SPOT 6 & 7 © Airbus DS)



LEGEND

- Indoor Air Sample
- ▲ Sub-slab Air Sample
- 2018 Indoor-Air Sample Locations



Friends Church Air Sampling
 Fairbanks, Alaska

AIR SAMPLE LOCATIONS

February 2021

106339-001

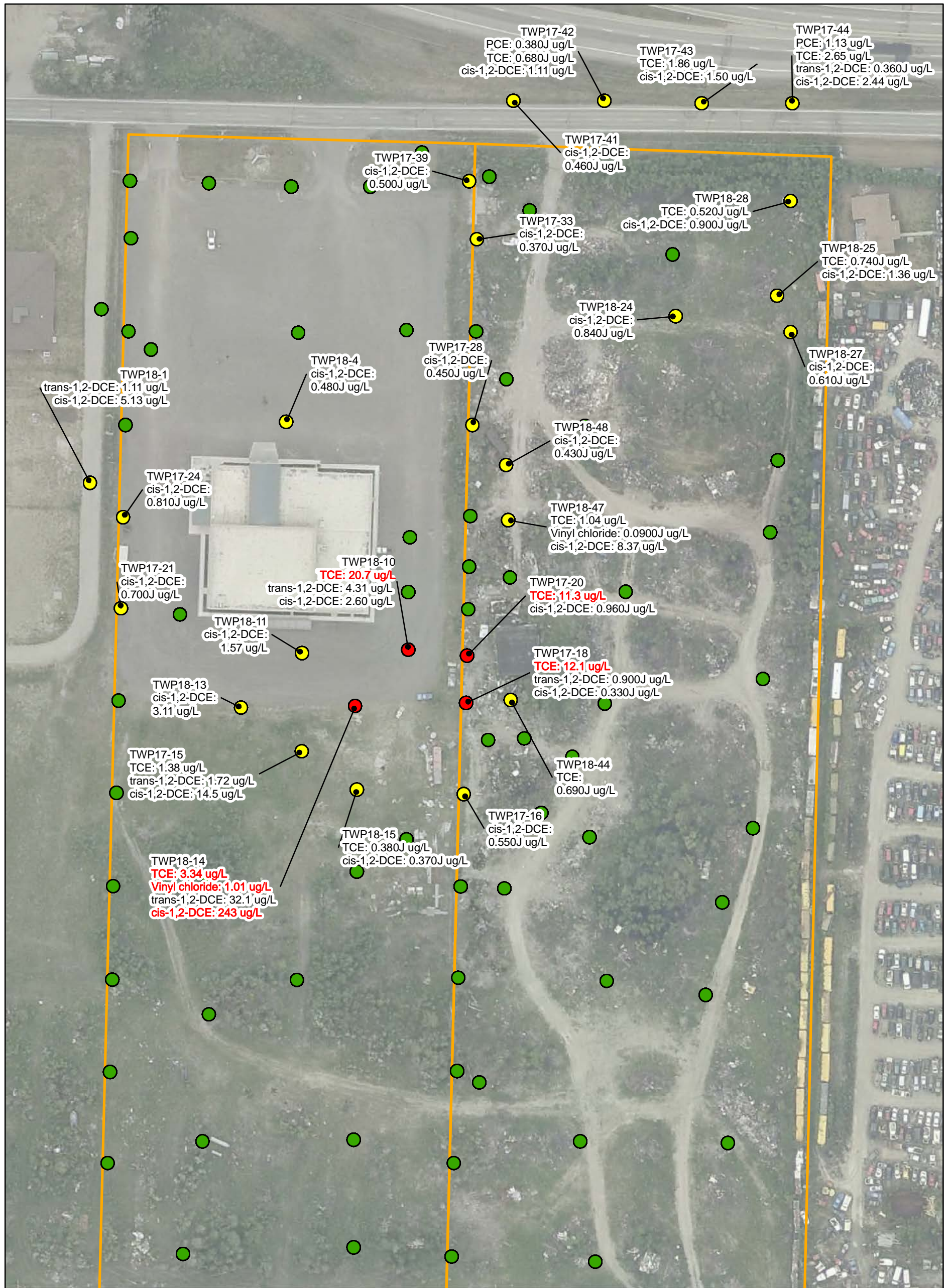
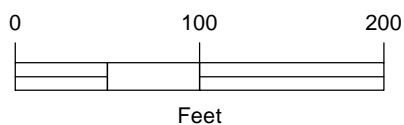


Image provided courtesy of Pictometry International 2012



LEGEND

Chlorinated Solvents

- Not Detected
- Detected Below ADEC Cleanup Level
- Detected Above ADEC Cleanup Level

Note: Analytical detections for PCE, TCE, cis- and trans-1,2-DCE, and vinyl chloride only are presented.
Red Text: Analyte concentration exceeds ADEC Groundwater Cleanup Level.



Friends Church Air Sampling Fairbanks, Alaska	
2017-2018 CHLORINATED SOLVENTS GROUNDWATER SAMPLE RESULTS SUMMARY	
February 2021	106339-001
SHANNON & WILSON, INC. <small>GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS</small>	
Figure 3	

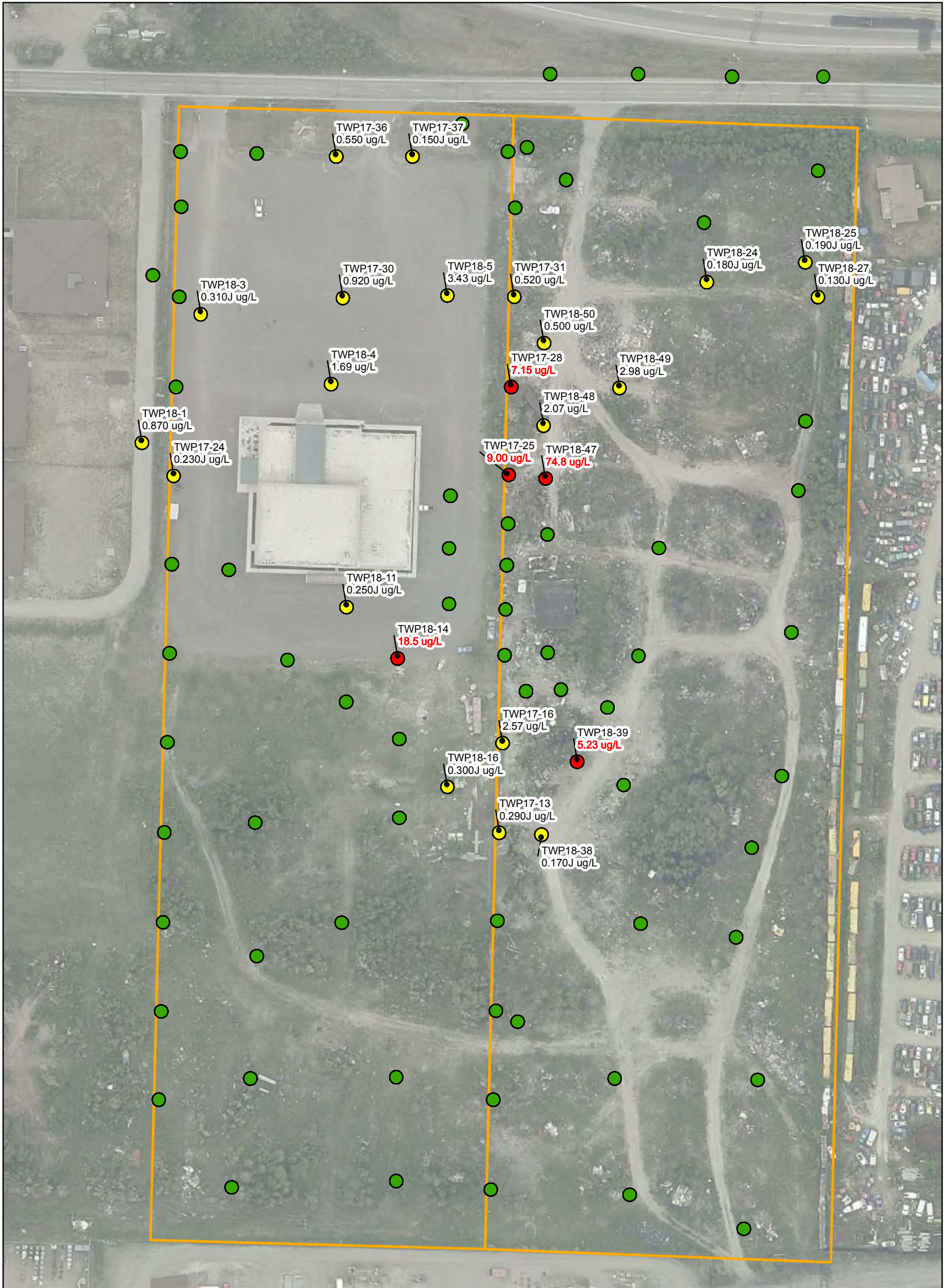


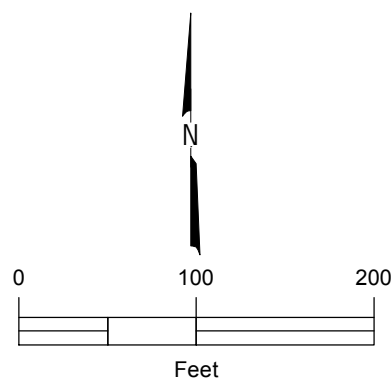
Image provided courtesy of Pictometry International 2012

LEGEND

Benzene Results

- Not Detected
- Detected Below ADEC Cleanup Level
- Detected Above ADEC Cleanup Level

Notes:
Red Text: Analyte concentration exceeds ADEC Groundwater Cleanup Level.



Friends Church Air Sampling
 Fairbanks, Alaska

**2017-2018 BENZENE
 GROUNDWATER SAMPLE
 RESULTS SUMMARY**

February 2021

106339-001

SHANNON & WILSON, INC.
 GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Figure 7



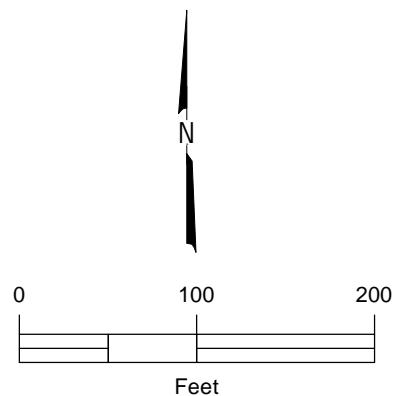
Image provided courtesy of Pictometry International 2012

LEGEND

GRO, DRO, RRO

- Not Detected
- One or More Analytes Detected Below ADEC Cleanup Levels
- One or More Analytes Detected Above ADEC Cleanup Levels

Notes: Labels only include detections above the Limit of Quantification.
Red Text: Analyte concentration exceeds ADEC Groundwater Cleanup Level.



Friends Church Air Sampling Fairbanks, Alaska	
2017-2018 GRO, DRO, AND RRO GROUNDWATER SAMPLE RESULTS SUMMARY	
February 2021	106339-001
SHANNON & WILSON, INC. <small>GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS</small>	
Figure 8	

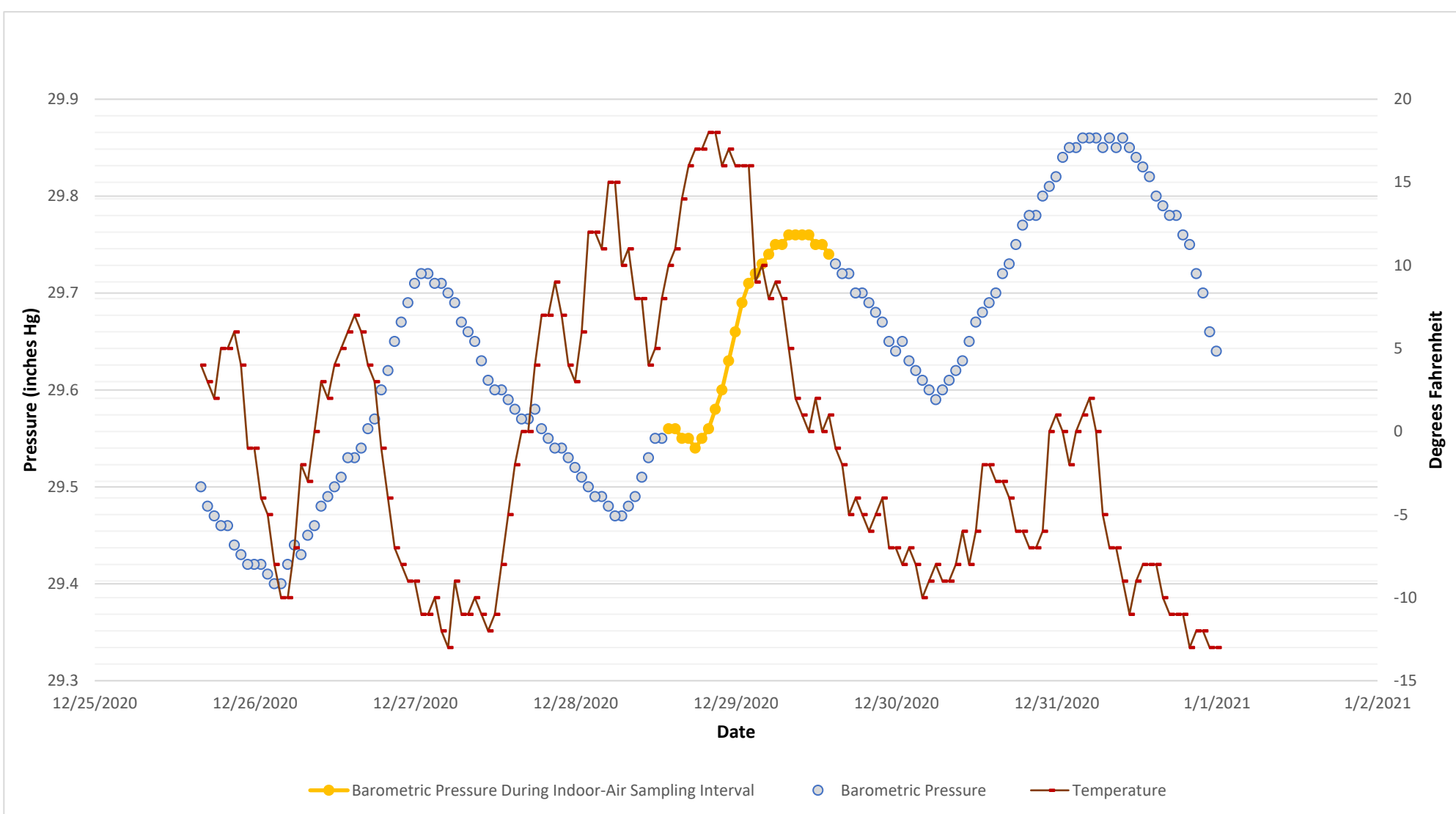


FIG. 6

Friends Church Air Sampling
Fairbanks, Alaska

**BAROMETRIC PRESSURE AND
OUTSIDE AIR TEMPERATURES
DURING SAMPLING PERIOD**

February 2021

106339-001



Figure 6

Table 1 - Indoor Air Sample Results

Analytical Method	Analyte	ADEC Target Level†	Units	IA20-01	IA20-02		IA20-03
					IA20-02	IA20-102	
TO-15	1,1,1-Trichloroethane	3800	ug/m3	<0.180	<0.180	<0.180	<0.180
	1,1,2,2-Tetrachloroethane	0.48	ug/m3	<0.220	<0.230	<0.220	<0.230
	1,1,2-Trichloroethane	0.21	ug/m3	<0.180	<0.180	<0.180	<0.180
	1,1-Dichloroethane	18	ug/m3	<0.130	<0.130	<0.130	<0.140
	1,1-Dichloroethene	79	ug/m3	<0.0650	<0.0650	<0.0640	<0.0670
	1,2,4-Trichlorobenzene	2.1	ug/m3	<6.00	<6.10	<6.00	<6.20
	1,2,4-Trimethylbenzene	7.3	ug/m3	2.70	2.40	2.60	1.90
	1,2-Dibromoethane	0.047	ug/m3	<0.250	<0.250	<0.250	<0.260
	1,2-Dichlorobenzene	210	ug/m3	<0.980	<0.990	<0.970	<1.00
	1,2-Dichloroethane	1.1	ug/m3	<0.130	0.150	0.150	<0.140
	1,2-Dichloropropane	2.8	ug/m3	<0.750	<0.760	<0.740	<0.780
	1,3,5-Trimethylbenzene	—	ug/m3	0.890	0.850	0.890	<0.820
	1,3-Dichlorobenzene	210	ug/m3	<0.980	<0.990	<0.970	<1.00
	1,4-Dichlorobenzene	2.6	ug/m3	<0.200	<0.200	<0.190	<0.200
	1,4-Dioxane	5.6	ug/m3	<0.590	<0.590	<0.580	<0.600
	2,2,4-Trimethylpentane	—	ug/m3	<3.80	<3.80	<3.80	<3.90
	2-Butanone (MEK)	5200	ug/m3	<2.40	<2.40	<2.40	2.80
	2-Hexanone	31	ug/m3	<3.30	<3.40	<3.30	<3.40
	4-Ethyltoluene	—	ug/m3	3.30	3.10	3.40	2.60
	4-Methyl-2-pentanone (MIBK)	3100	ug/m3	<0.670	<0.680	<0.660	<0.690
	Acetone	31000	ug/m3	28.0	19.0	20.0	19.0
	Allyl chloride	—	ug/m3	<2.60	<2.60	<2.50	<2.60
	Alpha-Chlorotoluene	—	ug/m3	<0.840	<0.850	<0.830	<0.870
	Benzene	3.6	ug/m3	7.20	7.20	7.10	6.40
	Bromodichloromethane	0.76	ug/m3	<1.10	<1.10	<1.10	<1.10
	Bromoform	26	ug/m3	<1.70	<1.70	<1.70	<1.70
	Bromomethane	5.2	ug/m3	<3.20	<3.20	<3.10	<3.30
	Butadiene, 1,3-	0.94	ug/m3	0.870	1.00	1.00	0.840
	Carbon disulfide	730	ug/m3	<2.50	<2.60	<2.50	<2.60
	Carbon tetrachloride	4.7	ug/m3	0.390	0.380	0.410	0.420
	Chlorobenzene	52	ug/m3	<0.750	<0.760	<0.740	<0.770
	Chloroethane	10000	ug/m3	<0.220	<0.220	<0.210	<0.220
	Chloroform	1.2	ug/m3	0.320	0.270	0.260	0.200
	Chloromethane	94	ug/m3	2.00	<1.70	<1.70	<1.70
	cis-1,2-Dichloroethene	—	ug/m3	<0.130	<0.130	<0.130	<0.130
	cis-1,3-Dichloropropene	—	ug/m3	<0.740	<0.750	<0.730	<0.760
	Cyclohexane	6300	ug/m3	<2.80	<2.80	<2.80	<2.90
	Dibromochloromethane	—	ug/m3	<1.40	<1.40	<1.40	<1.40
	Dichlorodifluoromethane	100	ug/m3	2.40	2.50	2.50	2.50
	Ethanol	—	ug/m3	270J*	140J*	130J*	83.0J*
	Ethylbenzene	11	ug/m3	3.90	4.10	4.20	3.60
	Freon 114	—	ug/m3	<0.230	<0.230	<0.220	<0.230
	Heptane	—	ug/m3	5.10	4.90	5.10	5.00
	Hexachlorobutadiene	1.3	ug/m3	<8.70	<8.80	<8.60	<9.00
	Isopropyl Alcohol	210	ug/m3	37.0	14.0	15.0	6.40
Isopropylbenzene	420	ug/m3	<0.800	<0.810	<0.790	<0.820	
Methylene chloride	630	ug/m3	<1.10	<1.10	<1.10	<1.20	
Methyl-t-butyl ether	110	ug/m3	<0.590	<0.590	<0.580	<0.600	
Naphthalene	0.83	ug/m3	<0.430	<0.430	<0.420	<0.440	
n-Hexane	730	ug/m3	<2.90	<2.90	<2.80	<3.00	
n-Propylbenzene	1000	ug/m3	1.00	0.960	0.940	0.980	
m,p-Xylenes	100 (total)	ug/m3	16.0	17.0	17.0	14.0	
o-Xylene		ug/m3	5.50	5.90	6.00	5.10	
Styrene	850	ug/m3	<0.690	<0.700	<0.680	<0.720	
Tetrachloroethene	41	ug/m3	2.10	2.40	2.30	2.10	
Tetrahydrofuran	—	ug/m3	<2.40	<2.40	<2.40	<2.50	
Toluene	3800	ug/m3	27.0	28.0	28.0	24.0	
trans-1,2-Dichloroethene	790	ug/m3	<0.650	<0.650	<0.640	<0.670	
trans-1,3-Dichloropropene	—	ug/m3	<0.740	<0.750	<0.730	<0.760	
Trichloroethene	2	ug/m3	<0.180	<0.180	<0.170	<0.180	
Trichlorofluoromethane	—	ug/m3	1.60	1.80	1.90	1.70	
Trichlorotrifluoroethane	31000	ug/m3	<1.20	<1.30	<1.20	<1.30	
Vinyl chloride	1.7	ug/m3	<0.0420	<0.0420	<0.0410	<0.0430	

Notes:

- Sample IA20-102 is a field-duplicate of sample IA20-02.
- † Residential target levels for indoor air from the November 2017 ADEC Vapor Intrusion Guidance for Contaminated Sites - Appendix D
- ADEC Alaska Department of Environmental Conservation.
- µg/m³ microgram per cubic meter
- Not applicable; ADEC Target Level not established.
- < Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control failures.
- J* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc.
- <Bold** The reporting limit exceeds the ADEC target level for the non-detected analyte.
- Bold** Detected concentration exceeds applicable target level.

Table 2 - Sub-Slab Soil Gas Sample Results

Analytical Method	Analyte	ADEC Target Level†	Units	SS20-01	SS20-02		SS20-03
					SS20-02	SS20-102	
TO-15	1,1,1-Trichloroethane	52000	ug/m ³	<6.70	<1.30	<1.40	<1.30
	1,1,2,2-Tetrachloroethane	4.8	ug/m ³	<8.50	<1.70	<1.80	<1.70
	1,1,2-Trichloroethane	2.1	ug/m ³	<6.70	<1.30	<1.40	<1.30
	1,1-Dichloroethane	180	ug/m ³	<5.00	<1.00	<1.00	<0.980
	1,1-Dichloroethene	2100	ug/m ³	<4.90	<0.980	<1.00	<0.960
	1,2,4-Trichlorobenzene	21	ug/m ³	<46.0	<9.20	<9.60	<9.00
	1,2,4-Trimethylbenzene	73	ug/m ³	<6.10	<1.20	<1.30	<1.20
	1,2-Dibromoethane	0.47	ug/m ³	<9.50	<1.90	<2.00	<1.80
	1,2-Dichlorobenzene	2100	ug/m ³	<7.40	<1.50	<1.60	<1.40
	1,2-Dichloroethane	11	ug/m ³	<5.00	<1.00	<1.00	<0.980
	1,2-Dichloropropane	28	ug/m ³	<5.70	<1.10	<1.20	<1.10
	1,3,5-Trimethylbenzene	—	ug/m ³	<6.10	<1.20	<1.30	<1.20
	1,3-Dichlorobenzene	2100	ug/m ³	<7.40	<1.50	<1.60	<1.40
	1,4-Dichlorobenzene	26	ug/m ³	<7.40	<1.50	<1.60	<1.40
	1,4-Dioxane	56	ug/m ³	<4.40	<0.890	4.50	<0.870
	2,2,4-Trimethylpentane	—	ug/m ³	<29.0	<5.80	<6.00	<5.60
	2-Butanone (MEK)	52000	ug/m ³	<18.0	<3.60	7.60	<3.60
	2-Hexanone	310	ug/m ³	<25.0	<5.00	<5.30	<5.00
	4-Ethyltoluene	—	ug/m ³	<6.10	<1.20	<1.30	<1.20
	4-Methyl-2-pentanone (MIBK)	31000	ug/m ³	<5.00	<1.00	<1.00	<0.990
	Acetone	320000	ug/m ³	41.0	28.0J*	230J*	30.0
	Allyl chloride	—	ug/m ³	<19.0	<3.90	<4.00	<3.80
	Alpha-Chlorotoluene	—	ug/m ³	<6.40	<1.30	<1.30	<1.20
	Benzene	36	ug/m ³	<3.90	<0.790	<0.820	<0.770
	Bromodichloromethane	7.6	ug/m ³	<8.30	<1.60	<1.70	<1.60
	Bromoform	260	ug/m ³	<13.0	<2.60	<2.70	<2.50
	Bromomethane	52	ug/m ³	<24.0	<4.80	<5.00	<4.70
	Butadiene, 1,3-	9.4	ug/m ³	<2.70	<0.550	<0.570	<0.540
	Carbon disulfide	7300	ug/m ³	<19.0	<3.80	<4.00	<3.80
	Carbon tetrachloride	47	ug/m ³	<7.80	<1.60	<1.60	<1.50
	Chlorobenzene	520	ug/m ³	<5.70	<1.10	<1.20	<1.10
	Chloroethane	100000	ug/m ³	<16.0	<3.20	<3.40	<3.20
	Chloroform	12	ug/m ³	<6.00	2.80	2.90	<1.20
	Chloromethane	940	ug/m ³	<13.0	<2.60	<2.70	<2.50
	cis-1,2-Dichloroethene	—	ug/m ³	<4.90	<0.980	<1.00	<0.960
	cis-1,3-Dichloropropene	—	ug/m ³	<5.60	<1.10	<1.20	<1.10
	Cyclohexane	63000	ug/m ³	<21.0	<4.20	<4.40	<4.20
	Dibromochloromethane	—	ug/m ³	<10.0	<2.10	<2.20	<2.10
	Dichlorodifluoromethane	1000	ug/m ³	<30.0	<6.10	<6.40	<6.00
	Ethanol	—	ug/m ³	<12.0	<2.30	<2.40	57.0
	Ethylbenzene	110	ug/m ³	<5.40	<1.10	<1.10	<1.00
	Freon 114	—	ug/m ³	<8.60	<1.70	<1.80	<1.70
	Heptane	—	ug/m ³	<25.0	<5.10	<5.30	<5.00
	Hexachlorobutadiene	13	ug/m ³	<66.0	<13.0	<14.0	<13.0
	Isopropyl Alcohol	2100	ug/m ³	<15.0	8.50J*	11.0J*	24.0
	Isopropylbenzene	4200	ug/m ³	<6.10	<1.20	<1.30	<1.20
	Methylene chloride	6300	ug/m ³	<8.60	<1.70	<1.80	<1.70
	Methyl-t-butyl ether	1100	ug/m ³	<4.40	<0.890	<0.930	<0.870
	Naphthalene	8.3	ug/m ³	<32.0	<6.50	<6.80	<6.30
	n-Hexane	7300	ug/m ³	<22.0	<4.40	<4.50	<4.30
n-Propylbenzene	10000	ug/m ³	<6.10	<1.20	<1.30	<1.20	
m,p-Xylenes	1000 (total)	ug/m ³	<5.40	<1.10	<1.10	<1.00	
o-Xylene	—	ug/m ³	<5.40	<1.10	<1.10	<1.00	
Styrene	10000	ug/m ³	<5.30	<1.00	<1.10	<1.00	
Tetrachloroethene	410	ug/m ³	<8.40	5.50	4.80	<1.60	
Tetrahydrofuran	—	ug/m ³	<18.0	<3.60	14.0	<3.60	
Toluene	52000	ug/m ³	<4.60	<0.930	<0.970	1.10	
trans-1,2-Dichloroethene	—	ug/m ³	<4.90	<0.980	<1.00	<0.960	
trans-1,3-Dichloropropene	—	ug/m ³	<5.60	<1.10	<1.20	<1.10	
Trichloroethene	20	ug/m ³	<6.60	<1.30	<1.40	<1.30	
Trichlorofluoromethane	—	ug/m ³	9.70	9.90	8.90	9.00	
Trichlorotrifluoroethane	310000	ug/m ³	<9.50	3.40	3.30	<1.80	
Vinyl chloride	17	ug/m ³	<3.20	<0.630	<0.660	<0.620	

Notes:

Sample SS20-102 is a field-duplicate of sample SS20-02.

† Residential target levels for subslab soil gas from the November 2017 ADEC Vapor Intrusion Guidance for Contaminated Sites - Appendix E
ADEC Alaska Department of Environmental Conservation.

ug/m³ microgram per cubic meter

— Not applicable; ADEC Target Level not established.

< Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control failures.

J* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc.

<Bold RL exceeds the ADEC target level, for the non-detected analyte.

1/20/2021

Andrew Frick
Shannon & Wilson, Inc.
2355 Hill Road

Fairbanks AK 99709

Project Name: Friends Church

Project #: 106339-001

Workorder #: 2101094A

Dear Andrew Frick

The following report includes the data for the above referenced project for sample(s) received on 1/7/2021 at Eurofins Air Toxics LLC.

The data and associated QC analyzed by Modified 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: Alexandra Winslow at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Alexandra Winslow
Project Manager

WORK ORDER #: 2101094A

Work Order Summary

CLIENT: Andrew Frick
Shannon & Wilson, Inc.
2355 Hill Road
Fairbanks, AK 99709

BILL TO: Andrew Frick
Shannon & Wilson, Inc.
2355 Hill Road
Fairbanks, AK 99709

PHONE: 907-479-0600
FAX: 907-479-5691
DATE RECEIVED: 01/07/2021
DATE COMPLETED: 01/20/2021

P.O. #
PROJECT # 106339-001 Friends Church
CONTACT: Alexandra Winslow

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	SS20-01	Modified TO-15	5.5 "Hg	15 psi
02A	SS20-02	Modified TO-15	5.5 "Hg	15 psi
03A	SS20-102	Modified TO-15	6.5 "Hg	15 psi
04A	SS20-03	Modified TO-15	5.0 "Hg	15 psi
05A	Lab Blank	Modified TO-15	NA	NA
05B	Lab Blank	Modified TO-15	NA	NA
06A	CCV	Modified TO-15	NA	NA
06B	CCV	Modified TO-15	NA	NA
07A	LCS	Modified TO-15	NA	NA
07AA	LCSD	Modified TO-15	NA	NA
07B	LCS	Modified TO-15	NA	NA
07BB	LCSD	Modified TO-15	NA	NA

CERTIFIED BY: 

Technical Director

DATE: 01/20/21 _____

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209220, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-20-16, UT NELAP – CA009332020-12, VA NELAP - 10615, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-014, Effective date: 10/18/2020, Expiration date: 10/17/2021.

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

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

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

LABORATORY NARRATIVE
Modified TO-15
Shannon & Wilson, Inc.
Workorder# 2101094A

Four 1 Liter Silco Canister (100% Certified) samples were received on January 07, 2021. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the full scan mode.

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

<i>Requirement</i>	<i>TO-15</i>	<i>ATL Modifications</i>
Initial Calibration	</=30% RSD with 2 compounds allowed out to < 40% RSD	</=30% RSD with 4 compounds allowed out to < 40% RSD
Blank and standards	Zero Air	UHP Nitrogen provides a higher purity gas matrix than zero air

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

Dilution was performed on sample SS20-01 due to the presence of high level non-target species.

All Quality Control Limit exceedances and affected sample results are noted by flags. Each flag is defined at the bottom of this Case Narrative and on each Sample Result Summary page. Target compound non-detects in the samples that are associated with high bias in QC analyses have not been flagged.

Definition of Data Qualifying Flags

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

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

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

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

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

N - The identification is based on presumptive evidence.

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

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

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

Client Sample ID: SS20-01

Lab ID#: 2101094A-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	1.2	1.7	6.9	9.7
Acetone	12	17	29	41

Client Sample ID: SS20-02

Lab ID#: 2101094A-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.25	1.8	1.4	9.9
Freon 113	0.25	0.45	1.9	3.4
Acetone	2.5	12	5.9	28
2-Propanol	1.2	3.5	3.0	8.5
Chloroform	0.25	0.58	1.2	2.8
Tetrachloroethene	0.25	0.81	1.7	5.5

Client Sample ID: SS20-102

Lab ID#: 2101094A-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.26	1.6	1.4	8.9
Freon 113	0.26	0.43	2.0	3.3
Acetone	2.6	98 E	6.1	230 E
2-Propanol	1.3	4.5	3.2	11
2-Butanone (Methyl Ethyl Ketone)	1.3	2.6	3.8	7.6
Tetrahydrofuran	1.3	4.6	3.8	14
Chloroform	0.26	0.60	1.2	2.9
1,4-Dioxane	0.26	1.2	0.93	4.5
Tetrachloroethene	0.26	0.71	1.8	4.8

Client Sample ID: SS20-03

Lab ID#: 2101094A-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
----------	-------------------	---------------	--------------------	----------------

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

Client Sample ID: SS20-03

Lab ID#: 2101094A-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.24	1.6	1.4	9.0
Ethanol	1.2	30	2.3	57
Acetone	2.4	13	5.7	30
2-Propanol	1.2	10	3.0	24
Toluene	0.24	0.30	0.91	1.1



Air Toxics

Client Sample ID: SS20-01

Lab ID#: 2101094A-01A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	v011107	Date of Collection:	12/30/20 11:23:00 A
Dil. Factor:	12.4	Date of Analysis:	1/11/21 11:50 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	6.2	Not Detected	30	Not Detected
Freon 114	1.2	Not Detected	8.6	Not Detected
Chloromethane	6.2	Not Detected	13	Not Detected
Vinyl Chloride	1.2	Not Detected	3.2	Not Detected
1,3-Butadiene	1.2	Not Detected	2.7	Not Detected
Bromomethane	6.2	Not Detected	24	Not Detected
Chloroethane	6.2	Not Detected	16	Not Detected
Freon 11	1.2	1.7	6.9	9.7
Ethanol	6.2	Not Detected	12	Not Detected
Freon 113	1.2	Not Detected	9.5	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.9	Not Detected
Acetone	12	17	29	41
2-Propanol	6.2	Not Detected	15	Not Detected
Carbon Disulfide	6.2	Not Detected	19	Not Detected
3-Chloropropene	6.2	Not Detected	19	Not Detected
Methylene Chloride	2.5	Not Detected	8.6	Not Detected
Methyl tert-butyl ether	1.2	Not Detected	4.4	Not Detected
trans-1,2-Dichloroethene	1.2	Not Detected	4.9	Not Detected
Hexane	6.2	Not Detected	22	Not Detected
1,1-Dichloroethane	1.2	Not Detected	5.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	6.2	Not Detected	18	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	4.9	Not Detected
Tetrahydrofuran	6.2	Not Detected	18	Not Detected
Chloroform	1.2	Not Detected	6.0	Not Detected
1,1,1-Trichloroethane	1.2	Not Detected	6.7	Not Detected
Cyclohexane	6.2	Not Detected	21	Not Detected
Carbon Tetrachloride	1.2	Not Detected	7.8	Not Detected
2,2,4-Trimethylpentane	6.2	Not Detected	29	Not Detected
Benzene	1.2	Not Detected	3.9	Not Detected
1,2-Dichloroethane	1.2	Not Detected	5.0	Not Detected
Heptane	6.2	Not Detected	25	Not Detected
Trichloroethene	1.2	Not Detected	6.6	Not Detected
1,2-Dichloropropane	1.2	Not Detected	5.7	Not Detected
1,4-Dioxane	1.2	Not Detected	4.4	Not Detected
Bromodichloromethane	1.2	Not Detected	8.3	Not Detected
cis-1,3-Dichloropropene	1.2	Not Detected	5.6	Not Detected
4-Methyl-2-pentanone	1.2	Not Detected	5.0	Not Detected
Toluene	1.2	Not Detected	4.6	Not Detected
trans-1,3-Dichloropropene	1.2	Not Detected	5.6	Not Detected
1,1,2-Trichloroethane	1.2	Not Detected	6.7	Not Detected
Tetrachloroethene	1.2	Not Detected	8.4	Not Detected
2-Hexanone	6.2	Not Detected	25	Not Detected



Air Toxics

Client Sample ID: SS20-01

Lab ID#: 2101094A-01A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	v011107	Date of Collection:	12/30/20 11:23:00 A
Dil. Factor:	12.4	Date of Analysis:	1/11/21 11:50 AM

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	9.5	Not Detected
Chlorobenzene	1.2	Not Detected	5.7	Not Detected
Ethyl Benzene	1.2	Not Detected	5.4	Not Detected
m,p-Xylene	1.2	Not Detected	5.4	Not Detected
o-Xylene	1.2	Not Detected	5.4	Not Detected
Styrene	1.2	Not Detected	5.3	Not Detected
Bromoform	1.2	Not Detected	13	Not Detected
Cumene	1.2	Not Detected	6.1	Not Detected
1,1,2,2-Tetrachloroethane	1.2	Not Detected	8.5	Not Detected
Propylbenzene	1.2	Not Detected	6.1	Not Detected
4-Ethyltoluene	1.2	Not Detected	6.1	Not Detected
1,3,5-Trimethylbenzene	1.2	Not Detected	6.1	Not Detected
1,2,4-Trimethylbenzene	1.2	Not Detected	6.1	Not Detected
1,3-Dichlorobenzene	1.2	Not Detected	7.4	Not Detected
1,4-Dichlorobenzene	1.2	Not Detected	7.4	Not Detected
alpha-Chlorotoluene	1.2	Not Detected	6.4	Not Detected
1,2-Dichlorobenzene	1.2	Not Detected	7.4	Not Detected
1,2,4-Trichlorobenzene	6.2	Not Detected	46	Not Detected
Hexachlorobutadiene	6.2	Not Detected	66	Not Detected
Naphthalene	6.2	Not Detected	32	Not Detected

Container Type: 1 Liter Silco Canister (100% Certified)

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



Air Toxics

Client Sample ID: SS20-02

Lab ID#: 2101094A-02A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	v011108	Date of Collection:	12/30/20 12:20:00 P
Dil. Factor:	2.47	Date of Analysis:	1/11/21 12:47 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	Not Detected	6.1	Not Detected
Freon 114	0.25	Not Detected	1.7	Not Detected
Chloromethane	1.2	Not Detected	2.6	Not Detected
Vinyl Chloride	0.25	Not Detected	0.63	Not Detected
1,3-Butadiene	0.25	Not Detected	0.55	Not Detected
Bromomethane	1.2	Not Detected	4.8	Not Detected
Chloroethane	1.2	Not Detected	3.2	Not Detected
Freon 11	0.25	1.8	1.4	9.9
Ethanol	1.2	Not Detected	2.3	Not Detected
Freon 113	0.25	0.45	1.9	3.4
1,1-Dichloroethene	0.25	Not Detected	0.98	Not Detected
Acetone	2.5	12	5.9	28
2-Propanol	1.2	3.5	3.0	8.5
Carbon Disulfide	1.2	Not Detected	3.8	Not Detected
3-Chloropropene	1.2	Not Detected	3.9	Not Detected
Methylene Chloride	0.49	Not Detected	1.7	Not Detected
Methyl tert-butyl ether	0.25	Not Detected	0.89	Not Detected
trans-1,2-Dichloroethene	0.25	Not Detected	0.98	Not Detected
Hexane	1.2	Not Detected	4.4	Not Detected
1,1-Dichloroethane	0.25	Not Detected	1.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	1.2	Not Detected	3.6	Not Detected
cis-1,2-Dichloroethene	0.25	Not Detected	0.98	Not Detected
Tetrahydrofuran	1.2	Not Detected	3.6	Not Detected
Chloroform	0.25	0.58	1.2	2.8
1,1,1-Trichloroethane	0.25	Not Detected	1.3	Not Detected
Cyclohexane	1.2	Not Detected	4.2	Not Detected
Carbon Tetrachloride	0.25	Not Detected	1.6	Not Detected
2,2,4-Trimethylpentane	1.2	Not Detected	5.8	Not Detected
Benzene	0.25	Not Detected	0.79	Not Detected
1,2-Dichloroethane	0.25	Not Detected	1.0	Not Detected
Heptane	1.2	Not Detected	5.1	Not Detected
Trichloroethene	0.25	Not Detected	1.3	Not Detected
1,2-Dichloropropane	0.25	Not Detected	1.1	Not Detected
1,4-Dioxane	0.25	Not Detected	0.89	Not Detected
Bromodichloromethane	0.25	Not Detected	1.6	Not Detected
cis-1,3-Dichloropropene	0.25	Not Detected	1.1	Not Detected
4-Methyl-2-pentanone	0.25	Not Detected	1.0	Not Detected
Toluene	0.25	Not Detected	0.93	Not Detected
trans-1,3-Dichloropropene	0.25	Not Detected	1.1	Not Detected
1,1,2-Trichloroethane	0.25	Not Detected	1.3	Not Detected
Tetrachloroethene	0.25	0.81	1.7	5.5
2-Hexanone	1.2	Not Detected	5.0	Not Detected



Air Toxics

Client Sample ID: SS20-02

Lab ID#: 2101094A-02A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	v011108	Date of Collection:	12/30/20 12:20:00 P
Dil. Factor:	2.47	Date of Analysis:	1/11/21 12:47 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	0.25	Not Detected	2.1	Not Detected
1,2-Dibromoethane (EDB)	0.25	Not Detected	1.9	Not Detected
Chlorobenzene	0.25	Not Detected	1.1	Not Detected
Ethyl Benzene	0.25	Not Detected	1.1	Not Detected
m,p-Xylene	0.25	Not Detected	1.1	Not Detected
o-Xylene	0.25	Not Detected	1.1	Not Detected
Styrene	0.25	Not Detected	1.0	Not Detected
Bromoform	0.25	Not Detected	2.6	Not Detected
Cumene	0.25	Not Detected	1.2	Not Detected
1,1,2,2-Tetrachloroethane	0.25	Not Detected	1.7	Not Detected
Propylbenzene	0.25	Not Detected	1.2	Not Detected
4-Ethyltoluene	0.25	Not Detected	1.2	Not Detected
1,3,5-Trimethylbenzene	0.25	Not Detected	1.2	Not Detected
1,2,4-Trimethylbenzene	0.25	Not Detected	1.2	Not Detected
1,3-Dichlorobenzene	0.25	Not Detected	1.5	Not Detected
1,4-Dichlorobenzene	0.25	Not Detected	1.5	Not Detected
alpha-Chlorotoluene	0.25	Not Detected	1.3	Not Detected
1,2-Dichlorobenzene	0.25	Not Detected	1.5	Not Detected
1,2,4-Trichlorobenzene	1.2	Not Detected	9.2	Not Detected
Hexachlorobutadiene	1.2	Not Detected	13	Not Detected
Naphthalene	1.2	Not Detected	6.5	Not Detected

Container Type: 1 Liter Silco Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	103	70-130



Air Toxics

Client Sample ID: SS20-102

Lab ID#: 2101094A-03A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	v011124	Date of Collection:	12/30/20 12:20:00 P
Dil. Factor:	2.58	Date of Analysis:	1/12/21 06:07 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.3	Not Detected	6.4	Not Detected
Freon 114	0.26	Not Detected	1.8	Not Detected
Chloromethane	1.3	Not Detected	2.7	Not Detected
Vinyl Chloride	0.26	Not Detected	0.66	Not Detected
1,3-Butadiene	0.26	Not Detected	0.57	Not Detected
Bromomethane	1.3	Not Detected	5.0	Not Detected
Chloroethane	1.3	Not Detected	3.4	Not Detected
Freon 11	0.26	1.6	1.4	8.9
Ethanol	1.3	Not Detected	2.4	Not Detected
Freon 113	0.26	0.43	2.0	3.3
1,1-Dichloroethene	0.26	Not Detected	1.0	Not Detected
Acetone	2.6	98 E	6.1	230 E
2-Propanol	1.3	4.5	3.2	11
Carbon Disulfide	1.3	Not Detected	4.0	Not Detected
3-Chloropropene	1.3	Not Detected	4.0	Not Detected
Methylene Chloride	0.52	Not Detected	1.8	Not Detected
Methyl tert-butyl ether	0.26	Not Detected	0.93	Not Detected
trans-1,2-Dichloroethene	0.26	Not Detected	1.0	Not Detected
Hexane	1.3	Not Detected	4.5	Not Detected
1,1-Dichloroethane	0.26	Not Detected	1.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	1.3	2.6	3.8	7.6
cis-1,2-Dichloroethene	0.26	Not Detected	1.0	Not Detected
Tetrahydrofuran	1.3	4.6	3.8	14
Chloroform	0.26	0.60	1.2	2.9
1,1,1-Trichloroethane	0.26	Not Detected	1.4	Not Detected
Cyclohexane	1.3	Not Detected	4.4	Not Detected
Carbon Tetrachloride	0.26	Not Detected	1.6	Not Detected
2,2,4-Trimethylpentane	1.3	Not Detected	6.0	Not Detected
Benzene	0.26	Not Detected	0.82	Not Detected
1,2-Dichloroethane	0.26	Not Detected	1.0	Not Detected
Heptane	1.3	Not Detected	5.3	Not Detected
Trichloroethene	0.26	Not Detected	1.4	Not Detected
1,2-Dichloropropane	0.26	Not Detected	1.2	Not Detected
1,4-Dioxane	0.26	1.2	0.93	4.5
Bromodichloromethane	0.26	Not Detected	1.7	Not Detected
cis-1,3-Dichloropropene	0.26	Not Detected	1.2	Not Detected
4-Methyl-2-pentanone	0.26	Not Detected	1.0	Not Detected
Toluene	0.26	Not Detected	0.97	Not Detected
trans-1,3-Dichloropropene	0.26	Not Detected	1.2	Not Detected
1,1,2-Trichloroethane	0.26	Not Detected	1.4	Not Detected
Tetrachloroethene	0.26	0.71	1.8	4.8
2-Hexanone	1.3	Not Detected	5.3	Not Detected



Air Toxics

Client Sample ID: SS20-102

Lab ID#: 2101094A-03A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	v011124	Date of Collection:	12/30/20 12:20:00 P
Dil. Factor:	2.58	Date of Analysis:	1/12/21 06:07 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	0.26	Not Detected	2.2	Not Detected
1,2-Dibromoethane (EDB)	0.26	Not Detected	2.0	Not Detected
Chlorobenzene	0.26	Not Detected	1.2	Not Detected
Ethyl Benzene	0.26	Not Detected	1.1	Not Detected
m,p-Xylene	0.26	Not Detected	1.1	Not Detected
o-Xylene	0.26	Not Detected	1.1	Not Detected
Styrene	0.26	Not Detected	1.1	Not Detected
Bromoform	0.26	Not Detected	2.7	Not Detected
Cumene	0.26	Not Detected	1.3	Not Detected
1,1,2,2-Tetrachloroethane	0.26	Not Detected	1.8	Not Detected
Propylbenzene	0.26	Not Detected	1.3	Not Detected
4-Ethyltoluene	0.26	Not Detected	1.3	Not Detected
1,3,5-Trimethylbenzene	0.26	Not Detected	1.3	Not Detected
1,2,4-Trimethylbenzene	0.26	Not Detected	1.3	Not Detected
1,3-Dichlorobenzene	0.26	Not Detected	1.6	Not Detected
1,4-Dichlorobenzene	0.26	Not Detected	1.6	Not Detected
alpha-Chlorotoluene	0.26	Not Detected	1.3	Not Detected
1,2-Dichlorobenzene	0.26	Not Detected	1.6	Not Detected
1,2,4-Trichlorobenzene	1.3	Not Detected	9.6	Not Detected
Hexachlorobutadiene	1.3	Not Detected	14	Not Detected
Naphthalene	1.3	Not Detected	6.8	Not Detected

E = Exceeds instrument calibration range.

Container Type: 1 Liter Silco Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	93	70-130
Toluene-d8	95	70-130
4-Bromofluorobenzene	99	70-130



Air Toxics

Client Sample ID: SS20-03

Lab ID#: 2101094A-04A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	v011223	Date of Collection:	12/30/20 12:55:00 P
Dil. Factor:	2.42	Date of Analysis:	1/13/21 06:38 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	Not Detected	6.0	Not Detected
Freon 114	0.24	Not Detected	1.7	Not Detected
Chloromethane	1.2	Not Detected	2.5	Not Detected
Vinyl Chloride	0.24	Not Detected	0.62	Not Detected
1,3-Butadiene	0.24	Not Detected	0.54	Not Detected
Bromomethane	1.2	Not Detected	4.7	Not Detected
Chloroethane	1.2	Not Detected	3.2	Not Detected
Freon 11	0.24	1.6	1.4	9.0
Ethanol	1.2	30	2.3	57
Freon 113	0.24	Not Detected	1.8	Not Detected
1,1-Dichloroethene	0.24	Not Detected	0.96	Not Detected
Acetone	2.4	13	5.7	30
2-Propanol	1.2	10	3.0	24
Carbon Disulfide	1.2	Not Detected	3.8	Not Detected
3-Chloropropene	1.2	Not Detected	3.8	Not Detected
Methylene Chloride	0.48	Not Detected	1.7	Not Detected
Methyl tert-butyl ether	0.24	Not Detected	0.87	Not Detected
trans-1,2-Dichloroethene	0.24	Not Detected	0.96	Not Detected
Hexane	1.2	Not Detected	4.3	Not Detected
1,1-Dichloroethane	0.24	Not Detected	0.98	Not Detected
2-Butanone (Methyl Ethyl Ketone)	1.2	Not Detected	3.6	Not Detected
cis-1,2-Dichloroethene	0.24	Not Detected	0.96	Not Detected
Tetrahydrofuran	1.2	Not Detected	3.6	Not Detected
Chloroform	0.24	Not Detected	1.2	Not Detected
1,1,1-Trichloroethane	0.24	Not Detected	1.3	Not Detected
Cyclohexane	1.2	Not Detected	4.2	Not Detected
Carbon Tetrachloride	0.24	Not Detected	1.5	Not Detected
2,2,4-Trimethylpentane	1.2	Not Detected	5.6	Not Detected
Benzene	0.24	Not Detected	0.77	Not Detected
1,2-Dichloroethane	0.24	Not Detected	0.98	Not Detected
Heptane	1.2	Not Detected	5.0	Not Detected
Trichloroethene	0.24	Not Detected	1.3	Not Detected
1,2-Dichloropropane	0.24	Not Detected	1.1	Not Detected
1,4-Dioxane	0.24	Not Detected	0.87	Not Detected
Bromodichloromethane	0.24	Not Detected	1.6	Not Detected
cis-1,3-Dichloropropene	0.24	Not Detected	1.1	Not Detected
4-Methyl-2-pentanone	0.24	Not Detected	0.99	Not Detected
Toluene	0.24	0.30	0.91	1.1
trans-1,3-Dichloropropene	0.24	Not Detected	1.1	Not Detected
1,1,2-Trichloroethane	0.24	Not Detected	1.3	Not Detected
Tetrachloroethene	0.24	Not Detected	1.6	Not Detected
2-Hexanone	1.2	Not Detected	5.0	Not Detected



Air Toxics

Client Sample ID: SS20-03

Lab ID#: 2101094A-04A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	v011223	Date of Collection:	12/30/20 12:55:00 P
Dil. Factor:	2.42	Date of Analysis:	1/13/21 06:38 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	0.24	Not Detected	2.1	Not Detected
1,2-Dibromoethane (EDB)	0.24	Not Detected	1.8	Not Detected
Chlorobenzene	0.24	Not Detected	1.1	Not Detected
Ethyl Benzene	0.24	Not Detected	1.0	Not Detected
m,p-Xylene	0.24	Not Detected	1.0	Not Detected
o-Xylene	0.24	Not Detected	1.0	Not Detected
Styrene	0.24	Not Detected	1.0	Not Detected
Bromoform	0.24	Not Detected	2.5	Not Detected
Cumene	0.24	Not Detected	1.2	Not Detected
1,1,2,2-Tetrachloroethane	0.24	Not Detected	1.7	Not Detected
Propylbenzene	0.24	Not Detected	1.2	Not Detected
4-Ethyltoluene	0.24	Not Detected	1.2	Not Detected
1,3,5-Trimethylbenzene	0.24	Not Detected	1.2	Not Detected
1,2,4-Trimethylbenzene	0.24	Not Detected	1.2	Not Detected
1,3-Dichlorobenzene	0.24	Not Detected	1.4	Not Detected
1,4-Dichlorobenzene	0.24	Not Detected	1.4	Not Detected
alpha-Chlorotoluene	0.24	Not Detected	1.2	Not Detected
1,2-Dichlorobenzene	0.24	Not Detected	1.4	Not Detected
1,2,4-Trichlorobenzene	1.2	Not Detected	9.0	Not Detected
Hexachlorobutadiene	1.2	Not Detected	13	Not Detected
Naphthalene	1.2	Not Detected	6.3	Not Detected

Container Type: 1 Liter Silco Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	99	70-130
Toluene-d8	92	70-130
4-Bromofluorobenzene	97	70-130



Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 2101094A-05A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	v011106	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	1/11/21 10:28 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	0.10	Not Detected	0.70	Not Detected
Chloromethane	0.50	Not Detected	1.0	Not Detected
Vinyl Chloride	0.10	Not Detected	0.26	Not Detected
1,3-Butadiene	0.10	Not Detected	0.22	Not Detected
Bromomethane	0.50	Not Detected	1.9	Not Detected
Chloroethane	0.50	Not Detected	1.3	Not Detected
Freon 11	0.10	Not Detected	0.56	Not Detected
Ethanol	0.50	Not Detected	0.94	Not Detected
Freon 113	0.10	Not Detected	0.77	Not Detected
1,1-Dichloroethene	0.10	Not Detected	0.40	Not Detected
Acetone	1.0	Not Detected	2.4	Not Detected
2-Propanol	0.50	Not Detected	1.2	Not Detected
Carbon Disulfide	0.50	Not Detected	1.6	Not Detected
3-Chloropropene	0.50	Not Detected	1.6	Not Detected
Methylene Chloride	0.20	Not Detected	0.69	Not Detected
Methyl tert-butyl ether	0.10	Not Detected	0.36	Not Detected
trans-1,2-Dichloroethene	0.10	Not Detected	0.40	Not Detected
Hexane	0.50	Not Detected	1.8	Not Detected
1,1-Dichloroethane	0.10	Not Detected	0.40	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.50	Not Detected	1.5	Not Detected
cis-1,2-Dichloroethene	0.10	Not Detected	0.40	Not Detected
Tetrahydrofuran	0.50	Not Detected	1.5	Not Detected
Chloroform	0.10	Not Detected	0.49	Not Detected
1,1,1-Trichloroethane	0.10	Not Detected	0.54	Not Detected
Cyclohexane	0.50	Not Detected	1.7	Not Detected
Carbon Tetrachloride	0.10	Not Detected	0.63	Not Detected
2,2,4-Trimethylpentane	0.50	Not Detected	2.3	Not Detected
Benzene	0.10	Not Detected	0.32	Not Detected
1,2-Dichloroethane	0.10	Not Detected	0.40	Not Detected
Heptane	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.10	Not Detected	0.54	Not Detected
1,2-Dichloropropane	0.10	Not Detected	0.46	Not Detected
1,4-Dioxane	0.10	Not Detected	0.36	Not Detected
Bromodichloromethane	0.10	Not Detected	0.67	Not Detected
cis-1,3-Dichloropropene	0.10	Not Detected	0.45	Not Detected
4-Methyl-2-pentanone	0.10	Not Detected	0.41	Not Detected
Toluene	0.10	Not Detected	0.38	Not Detected
trans-1,3-Dichloropropene	0.10	Not Detected	0.45	Not Detected
1,1,2-Trichloroethane	0.10	Not Detected	0.54	Not Detected
Tetrachloroethene	0.10	Not Detected	0.68	Not Detected
2-Hexanone	0.50	Not Detected	2.0	Not Detected



Client Sample ID: Lab Blank

Lab ID#: 2101094A-05A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	v011106	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	1/11/21 10:28 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	0.10	Not Detected	0.85	Not Detected
1,2-Dibromoethane (EDB)	0.10	Not Detected	0.77	Not Detected
Chlorobenzene	0.10	Not Detected	0.46	Not Detected
Ethyl Benzene	0.10	Not Detected	0.43	Not Detected
m,p-Xylene	0.10	Not Detected	0.43	Not Detected
o-Xylene	0.10	Not Detected	0.43	Not Detected
Styrene	0.10	Not Detected	0.42	Not Detected
Bromoform	0.10	Not Detected	1.0	Not Detected
Cumene	0.10	Not Detected	0.49	Not Detected
1,1,2,2-Tetrachloroethane	0.10	Not Detected	0.69	Not Detected
Propylbenzene	0.10	Not Detected	0.49	Not Detected
4-Ethyltoluene	0.10	Not Detected	0.49	Not Detected
1,3,5-Trimethylbenzene	0.10	Not Detected	0.49	Not Detected
1,2,4-Trimethylbenzene	0.10	Not Detected	0.49	Not Detected
1,3-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
1,4-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
alpha-Chlorotoluene	0.10	Not Detected	0.52	Not Detected
1,2-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
1,2,4-Trichlorobenzene	0.50	Not Detected	3.7	Not Detected
Hexachlorobutadiene	0.50	Not Detected	5.3	Not Detected
Naphthalene	0.50	Not Detected	2.6	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	95	70-130



Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 2101094A-05B

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	v011206	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	1/12/21 11:15 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	0.10	Not Detected	0.70	Not Detected
Chloromethane	0.50	Not Detected	1.0	Not Detected
Vinyl Chloride	0.10	Not Detected	0.26	Not Detected
1,3-Butadiene	0.10	Not Detected	0.22	Not Detected
Bromomethane	0.50	Not Detected	1.9	Not Detected
Chloroethane	0.50	Not Detected	1.3	Not Detected
Freon 11	0.10	Not Detected	0.56	Not Detected
Ethanol	0.50	Not Detected	0.94	Not Detected
Freon 113	0.10	Not Detected	0.77	Not Detected
1,1-Dichloroethene	0.10	Not Detected	0.40	Not Detected
Acetone	1.0	Not Detected	2.4	Not Detected
2-Propanol	0.50	Not Detected	1.2	Not Detected
Carbon Disulfide	0.50	Not Detected	1.6	Not Detected
3-Chloropropene	0.50	Not Detected	1.6	Not Detected
Methylene Chloride	0.20	Not Detected	0.69	Not Detected
Methyl tert-butyl ether	0.10	Not Detected	0.36	Not Detected
trans-1,2-Dichloroethene	0.10	Not Detected	0.40	Not Detected
Hexane	0.50	Not Detected	1.8	Not Detected
1,1-Dichloroethane	0.10	Not Detected	0.40	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.50	Not Detected	1.5	Not Detected
cis-1,2-Dichloroethene	0.10	Not Detected	0.40	Not Detected
Tetrahydrofuran	0.50	Not Detected	1.5	Not Detected
Chloroform	0.10	Not Detected	0.49	Not Detected
1,1,1-Trichloroethane	0.10	Not Detected	0.54	Not Detected
Cyclohexane	0.50	Not Detected	1.7	Not Detected
Carbon Tetrachloride	0.10	Not Detected	0.63	Not Detected
2,2,4-Trimethylpentane	0.50	Not Detected	2.3	Not Detected
Benzene	0.10	Not Detected	0.32	Not Detected
1,2-Dichloroethane	0.10	Not Detected	0.40	Not Detected
Heptane	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.10	Not Detected	0.54	Not Detected
1,2-Dichloropropane	0.10	Not Detected	0.46	Not Detected
1,4-Dioxane	0.10	Not Detected	0.36	Not Detected
Bromodichloromethane	0.10	Not Detected	0.67	Not Detected
cis-1,3-Dichloropropene	0.10	Not Detected	0.45	Not Detected
4-Methyl-2-pentanone	0.10	Not Detected	0.41	Not Detected
Toluene	0.10	Not Detected	0.38	Not Detected
trans-1,3-Dichloropropene	0.10	Not Detected	0.45	Not Detected
1,1,2-Trichloroethane	0.10	Not Detected	0.54	Not Detected
Tetrachloroethene	0.10	Not Detected	0.68	Not Detected
2-Hexanone	0.50	Not Detected	2.0	Not Detected



Client Sample ID: Lab Blank

Lab ID#: 2101094A-05B

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	v011206	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	1/12/21 11:15 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	0.10	Not Detected	0.85	Not Detected
1,2-Dibromoethane (EDB)	0.10	Not Detected	0.77	Not Detected
Chlorobenzene	0.10	Not Detected	0.46	Not Detected
Ethyl Benzene	0.10	Not Detected	0.43	Not Detected
m,p-Xylene	0.10	Not Detected	0.43	Not Detected
o-Xylene	0.10	Not Detected	0.43	Not Detected
Styrene	0.10	Not Detected	0.42	Not Detected
Bromoform	0.10	Not Detected	1.0	Not Detected
Cumene	0.10	Not Detected	0.49	Not Detected
1,1,2,2-Tetrachloroethane	0.10	Not Detected	0.69	Not Detected
Propylbenzene	0.10	Not Detected	0.49	Not Detected
4-Ethyltoluene	0.10	Not Detected	0.49	Not Detected
1,3,5-Trimethylbenzene	0.10	Not Detected	0.49	Not Detected
1,2,4-Trimethylbenzene	0.10	Not Detected	0.49	Not Detected
1,3-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
1,4-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
alpha-Chlorotoluene	0.10	Not Detected	0.52	Not Detected
1,2-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
1,2,4-Trichlorobenzene	0.50	Not Detected	3.7	Not Detected
Hexachlorobutadiene	0.50	Not Detected	5.3	Not Detected
Naphthalene	0.50	Not Detected	2.6	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	104	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	92	70-130



Air Toxics

Client Sample ID: CCV

Lab ID#: 2101094A-06A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	v011102	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 1/11/21 07:26 AM

Compound	%Recovery
Freon 12	96
Freon 114	91
Chloromethane	89
Vinyl Chloride	90
1,3-Butadiene	94
Bromomethane	135 Q
Chloroethane	99
Freon 11	104
Ethanol	106
Freon 113	95
1,1-Dichloroethene	98
Acetone	96
2-Propanol	111
Carbon Disulfide	103
3-Chloropropene	106
Methylene Chloride	101
Methyl tert-butyl ether	110
trans-1,2-Dichloroethene	102
Hexane	108
1,1-Dichloroethane	102
2-Butanone (Methyl Ethyl Ketone)	107
cis-1,2-Dichloroethene	99
Tetrahydrofuran	101
Chloroform	102
1,1,1-Trichloroethane	98
Cyclohexane	116
Carbon Tetrachloride	86
2,2,4-Trimethylpentane	113
Benzene	98
1,2-Dichloroethane	88
Heptane	105
Trichloroethene	100
1,2-Dichloropropane	96
1,4-Dioxane	118
Bromodichloromethane	99
cis-1,3-Dichloropropene	100
4-Methyl-2-pentanone	103
Toluene	102
trans-1,3-Dichloropropene	108
1,1,2-Trichloroethane	96
Tetrachloroethene	102
2-Hexanone	107

Client Sample ID: CCV

Lab ID#: 2101094A-06A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	v011102	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 1/11/21 07:26 AM

Compound	%Recovery
Dibromochloromethane	100
1,2-Dibromoethane (EDB)	104
Chlorobenzene	102
Ethyl Benzene	111
m,p-Xylene	114
o-Xylene	106
Styrene	113
Bromoform	102
Cumene	109
1,1,2,2-Tetrachloroethane	96
Propylbenzene	113
4-Ethyltoluene	108
1,3,5-Trimethylbenzene	113
1,2,4-Trimethylbenzene	120
1,3-Dichlorobenzene	102
1,4-Dichlorobenzene	94
alpha-Chlorotoluene	102
1,2-Dichlorobenzene	94
1,2,4-Trichlorobenzene	97
Hexachlorobutadiene	99
Naphthalene	88

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	105	70-130
4-Bromofluorobenzene	109	70-130



Air Toxics

Client Sample ID: CCV

Lab ID#: 2101094A-06B

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	v011202	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 1/12/21 08:16 AM

Compound	%Recovery
Freon 12	88
Freon 114	84
Chloromethane	86
Vinyl Chloride	80
1,3-Butadiene	89
Bromomethane	110
Chloroethane	92
Freon 11	98
Ethanol	100
Freon 113	88
1,1-Dichloroethene	90
Acetone	91
2-Propanol	96
Carbon Disulfide	94
3-Chloropropene	101
Methylene Chloride	92
Methyl tert-butyl ether	103
trans-1,2-Dichloroethene	95
Hexane	102
1,1-Dichloroethane	93
2-Butanone (Methyl Ethyl Ketone)	100
cis-1,2-Dichloroethene	92
Tetrahydrofuran	93
Chloroform	94
1,1,1-Trichloroethane	90
Cyclohexane	105
Carbon Tetrachloride	80
2,2,4-Trimethylpentane	100
Benzene	101
1,2-Dichloroethane	92
Heptane	104
Trichloroethene	105
1,2-Dichloropropane	99
1,4-Dioxane	122
Bromodichloromethane	98
cis-1,3-Dichloropropene	100
4-Methyl-2-pentanone	102
Toluene	103
trans-1,3-Dichloropropene	105
1,1,2-Trichloroethane	94
Tetrachloroethene	101
2-Hexanone	104

Client Sample ID: CCV

Lab ID#: 2101094A-06B

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	v011202	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 1/12/21 08:16 AM

Compound	%Recovery
Dibromochloromethane	101
1,2-Dibromoethane (EDB)	105
Chlorobenzene	101
Ethyl Benzene	110
m,p-Xylene	107
o-Xylene	102
Styrene	105
Bromoform	101
Cumene	102
1,1,1,2-Tetrachloroethane	95
Propylbenzene	110
4-Ethyltoluene	112
1,3,5-Trimethylbenzene	115
1,2,4-Trimethylbenzene	120
1,3-Dichlorobenzene	98
1,4-Dichlorobenzene	91
alpha-Chlorotoluene	93
1,2-Dichlorobenzene	92
1,2,4-Trichlorobenzene	102
Hexachlorobutadiene	104
Naphthalene	89

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	94	70-130
Toluene-d8	109	70-130
4-Bromofluorobenzene	103	70-130

Client Sample ID: LCS

Lab ID#: 2101094A-07A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	v011103	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 1/11/21 08:16 AM

Compound	%Recovery	Method Limits
Freon 12	99	70-130
Freon 114	92	70-130
Chloromethane	91	70-130
Vinyl Chloride	88	70-130
1,3-Butadiene	94	70-130
Bromomethane	117	70-130
Chloroethane	101	70-130
Freon 11	103	70-130
Ethanol	95	70-130
Freon 113	92	70-130
1,1-Dichloroethene	98	70-130
Acetone	98	70-130
2-Propanol	113	70-130
Carbon Disulfide	99	70-130
3-Chloropropene	120	70-130
Methylene Chloride	96	70-130
Methyl tert-butyl ether	110	70-130
trans-1,2-Dichloroethene	95	70-130
Hexane	105	70-130
1,1-Dichloroethane	96	70-130
2-Butanone (Methyl Ethyl Ketone)	105	70-130
cis-1,2-Dichloroethene	95	70-130
Tetrahydrofuran	98	70-130
Chloroform	95	70-130
1,1,1-Trichloroethane	92	70-130
Cyclohexane	110	70-130
Carbon Tetrachloride	92	70-130
2,2,4-Trimethylpentane	105	70-130
Benzene	99	70-130
1,2-Dichloroethane	89	70-130
Heptane	104	70-130
Trichloroethene	102	70-130
1,2-Dichloropropane	96	70-130
1,4-Dioxane	122	70-130
Bromodichloromethane	95	70-130
cis-1,3-Dichloropropene	101	70-130
4-Methyl-2-pentanone	103	70-130
Toluene	100	70-130
trans-1,3-Dichloropropene	105	70-130
1,1,2-Trichloroethane	90	70-130
Tetrachloroethene	98	70-130
2-Hexanone	105	70-130

Client Sample ID: LCS

Lab ID#: 2101094A-07A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	v011103	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 1/11/21 08:16 AM

Compound	%Recovery	Method Limits
Dibromochloromethane	97	70-130
1,2-Dibromoethane (EDB)	100	70-130
Chlorobenzene	99	70-130
Ethyl Benzene	106	70-130
m,p-Xylene	110	70-130
o-Xylene	103	70-130
Styrene	108	70-130
Bromoform	95	70-130
Cumene	102	70-130
1,1,2,2-Tetrachloroethane	92	70-130
Propylbenzene	108	70-130
4-Ethyltoluene	106	70-130
1,3,5-Trimethylbenzene	111	70-130
1,2,4-Trimethylbenzene	120	70-130
1,3-Dichlorobenzene	98	70-130
1,4-Dichlorobenzene	93	70-130
alpha-Chlorotoluene	98	70-130
1,2-Dichlorobenzene	91	70-130
1,2,4-Trichlorobenzene	107	70-130
Hexachlorobutadiene	110	70-130
Naphthalene	104	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	95	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	99	70-130



Air Toxics

Client Sample ID: LCSD

Lab ID#: 2101094A-07AA

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	v011104	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	1/11/21 08:55 AM

Compound	%Recovery	Method Limits
Freon 12	97	70-130
Freon 114	91	70-130
Chloromethane	89	70-130
Vinyl Chloride	89	70-130
1,3-Butadiene	92	70-130
Bromomethane	114	70-130
Chloroethane	96	70-130
Freon 11	101	70-130
Ethanol	119	70-130
Freon 113	90	70-130
1,1-Dichloroethene	94	70-130
Acetone	94	70-130
2-Propanol	111	70-130
Carbon Disulfide	98	70-130
3-Chloropropene	116	70-130
Methylene Chloride	93	70-130
Methyl tert-butyl ether	107	70-130
trans-1,2-Dichloroethene	95	70-130
Hexane	105	70-130
1,1-Dichloroethane	94	70-130
2-Butanone (Methyl Ethyl Ketone)	101	70-130
cis-1,2-Dichloroethene	92	70-130
Tetrahydrofuran	96	70-130
Chloroform	91	70-130
1,1,1-Trichloroethane	91	70-130
Cyclohexane	106	70-130
Carbon Tetrachloride	89	70-130
2,2,4-Trimethylpentane	102	70-130
Benzene	96	70-130
1,2-Dichloroethane	86	70-130
Heptane	100	70-130
Trichloroethene	99	70-130
1,2-Dichloropropane	91	70-130
1,4-Dioxane	113	70-130
Bromodichloromethane	101	70-130
cis-1,3-Dichloropropene	100	70-130
4-Methyl-2-pentanone	102	70-130
Toluene	96	70-130
trans-1,3-Dichloropropene	111	70-130
1,1,2-Trichloroethane	94	70-130
Tetrachloroethene	101	70-130
2-Hexanone	113	70-130

Client Sample ID: LCSD

Lab ID#: 2101094A-07AA

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	v011104	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 1/11/21 08:55 AM

Compound	%Recovery	Method Limits
Dibromochloromethane	102	70-130
1,2-Dibromoethane (EDB)	106	70-130
Chlorobenzene	105	70-130
Ethyl Benzene	113	70-130
m,p-Xylene	111	70-130
o-Xylene	108	70-130
Styrene	113	70-130
Bromoform	101	70-130
Cumene	106	70-130
1,1,2,2-Tetrachloroethane	98	70-130
Propylbenzene	111	70-130
4-Ethyltoluene	112	70-130
1,3,5-Trimethylbenzene	118	70-130
1,2,4-Trimethylbenzene	128	70-130
1,3-Dichlorobenzene	102	70-130
1,4-Dichlorobenzene	96	70-130
alpha-Chlorotoluene	104	70-130
1,2-Dichlorobenzene	95	70-130
1,2,4-Trichlorobenzene	115	70-130
Hexachlorobutadiene	114	70-130
Naphthalene	106	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	91	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	101	70-130

Client Sample ID: LCS

Lab ID#: 2101094A-07B

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	v011203	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 1/12/21 09:03 AM

Compound	%Recovery	Method Limits
Freon 12	94	70-130
Freon 114	87	70-130
Chloromethane	88	70-130
Vinyl Chloride	84	70-130
1,3-Butadiene	87	70-130
Bromomethane	109	70-130
Chloroethane	98	70-130
Freon 11	96	70-130
Ethanol	110	70-130
Freon 113	86	70-130
1,1-Dichloroethene	92	70-130
Acetone	92	70-130
2-Propanol	107	70-130
Carbon Disulfide	93	70-130
3-Chloropropene	114	70-130
Methylene Chloride	90	70-130
Methyl tert-butyl ether	103	70-130
trans-1,2-Dichloroethene	91	70-130
Hexane	99	70-130
1,1-Dichloroethane	93	70-130
2-Butanone (Methyl Ethyl Ketone)	98	70-130
cis-1,2-Dichloroethene	89	70-130
Tetrahydrofuran	93	70-130
Chloroform	90	70-130
1,1,1-Trichloroethane	89	70-130
Cyclohexane	105	70-130
Carbon Tetrachloride	86	70-130
2,2,4-Trimethylpentane	98	70-130
Benzene	99	70-130
1,2-Dichloroethane	89	70-130
Heptane	104	70-130
Trichloroethene	105	70-130
1,2-Dichloropropane	97	70-130
1,4-Dioxane	118	70-130
Bromodichloromethane	100	70-130
cis-1,3-Dichloropropene	104	70-130
4-Methyl-2-pentanone	104	70-130
Toluene	102	70-130
trans-1,3-Dichloropropene	111	70-130
1,1,2-Trichloroethane	93	70-130
Tetrachloroethene	101	70-130
2-Hexanone	110	70-130

Client Sample ID: LCS

Lab ID#: 2101094A-07B

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	v011203	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 1/12/21 09:03 AM

Compound	%Recovery	Method Limits
Dibromochloromethane	100	70-130
1,2-Dibromoethane (EDB)	108	70-130
Chlorobenzene	103	70-130
Ethyl Benzene	114	70-130
m,p-Xylene	112	70-130
o-Xylene	104	70-130
Styrene	110	70-130
Bromoform	99	70-130
Cumene	105	70-130
1,1,2,2-Tetrachloroethane	94	70-130
Propylbenzene	111	70-130
4-Ethyltoluene	110	70-130
1,3,5-Trimethylbenzene	116	70-130
1,2,4-Trimethylbenzene	124	70-130
1,3-Dichlorobenzene	102	70-130
1,4-Dichlorobenzene	97	70-130
alpha-Chlorotoluene	99	70-130
1,2-Dichlorobenzene	94	70-130
1,2,4-Trichlorobenzene	105	70-130
Hexachlorobutadiene	111	70-130
Naphthalene	93	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	92	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	98	70-130



Air Toxics

Client Sample ID: LCSD

Lab ID#: 2101094A-07BB

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	v011204	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	1/12/21 09:42 AM

Compound	%Recovery	Method Limits
Freon 12	94	70-130
Freon 114	89	70-130
Chloromethane	86	70-130
Vinyl Chloride	85	70-130
1,3-Butadiene	91	70-130
Bromomethane	106	70-130
Chloroethane	97	70-130
Freon 11	99	70-130
Ethanol	110	70-130
Freon 113	87	70-130
1,1-Dichloroethene	91	70-130
Acetone	94	70-130
2-Propanol	105	70-130
Carbon Disulfide	95	70-130
3-Chloropropene	106	70-130
Methylene Chloride	90	70-130
Methyl tert-butyl ether	107	70-130
trans-1,2-Dichloroethene	93	70-130
Hexane	101	70-130
1,1-Dichloroethane	92	70-130
2-Butanone (Methyl Ethyl Ketone)	99	70-130
cis-1,2-Dichloroethene	89	70-130
Tetrahydrofuran	95	70-130
Chloroform	90	70-130
1,1,1-Trichloroethane	88	70-130
Cyclohexane	105	70-130
Carbon Tetrachloride	87	70-130
2,2,4-Trimethylpentane	97	70-130
Benzene	97	70-130
1,2-Dichloroethane	88	70-130
Heptane	100	70-130
Trichloroethene	101	70-130
1,2-Dichloropropane	94	70-130
1,4-Dioxane	119	70-130
Bromodichloromethane	102	70-130
cis-1,3-Dichloropropene	101	70-130
4-Methyl-2-pentanone	100	70-130
Toluene	97	70-130
trans-1,3-Dichloropropene	112	70-130
1,1,2-Trichloroethane	96	70-130
Tetrachloroethene	98	70-130
2-Hexanone	109	70-130

Client Sample ID: LCSD

Lab ID#: 2101094A-07BB

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	v011204	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 1/12/21 09:42 AM

Compound	%Recovery	Method Limits
Dibromochloromethane	102	70-130
1,2-Dibromoethane (EDB)	107	70-130
Chlorobenzene	103	70-130
Ethyl Benzene	108	70-130
m,p-Xylene	106	70-130
o-Xylene	99	70-130
Styrene	102	70-130
Bromoform	102	70-130
Cumene	101	70-130
1,1,2,2-Tetrachloroethane	98	70-130
Propylbenzene	106	70-130
4-Ethyltoluene	104	70-130
1,3,5-Trimethylbenzene	114	70-130
1,2,4-Trimethylbenzene	125	70-130
1,3-Dichlorobenzene	95	70-130
1,4-Dichlorobenzene	90	70-130
alpha-Chlorotoluene	99	70-130
1,2-Dichlorobenzene	89	70-130
1,2,4-Trichlorobenzene	120	70-130
Hexachlorobutadiene	118	70-130
Naphthalene	114	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	90	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	97	70-130



Air Toxics

Analysis Request /Canister Chain of Custody

180 Blue Ravine Rd. Suite B, Folsom, CA 95630
Phone (800) 985-5955; Fax (916) 351-8279

PID: _____
Workorder #: 2101094

For Laboratory Use Only

page 1 of 1

Client: Shannon & Wilson
Project Name: Friends Church
Project Manager: Drew Frick Project # 106339-001
Sampler: Drew Frick and Dana Fare
Site Name: _____

Special Instructions/Notes:

See attached analyte list. Request naphthalene analysis.

Lab ID	Field Sample Identification(Location)	Can #	Flow Controller #	Start Sampling Information		Stop Sampling Information		Initial (in Hg)	Final (in Hg)	Receipt	Final (psig) Gas: N ₂ / He	Requested Analyses
				Date	Time	Date	Time					
DA	SS20-01	1L1758	24078	12/30/20	1118	12/30/20	1123	-29	-5			
DA	SS20-02	SLC015	24076		1215		1220	-29	-5			
DA	SS20-102	1L1883	24064		1215		1220	-28	-5			
DA	SS20-03	1L2059	24054		1249		1255	-26	-5			
	IA20-01	6L1823	21481	12/24/20	1257	12/30/20	1300	-28	-6			
	IA20-02	6L0141	21388		1313		1313	-29	-5			
	IA20-102	6L2660	20720		1313		1313	-29	-4			
	IA20-03	6L2868	21772		1318		1318	-21	-5			
Relinquished by: (Signature/Affiliation)				Date	Time	Received by: (Signature/Affiliation)		Date	Time			
<u>Shannon & Wilson, Inc.</u>				12/30/20	1510	<u>[Signature]</u>		1/7/21	1133			
Relinquished by: (Signature/Affiliation)				Date	Time	Received by: (Signature/Affiliation)		Date	Time			
Relinquished by: (Signature/Affiliation)				Date	Time	Received by: (Signature/Affiliation)		Date	Time			

Shipper Name: Central Custody Seals Intact? Yes No None

Lab Use Only

Turnaround Time (Rush surcharges may apply) _____
Standard Rush (Specify)

Canister Vacuum/Pressure _____
Lab Use Only
Receipt
Final (psig) Gas: N₂ / He
Requested Analyses
TD-15 H₂O SIM
TD-15 Low Level

Sample Transportation Notice: Relinquishing signature on this document indicates that samples are shipped in compliance with all applicable local, State, Federal, and international laws, regulations, and ordinances of any kind. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Eurofins Air Toxics against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T Hotline (800) 467-4922

1 L canisters low-level (soil gas)

Method: ~~Modified TO-15~~ ~~HA~~ (LL Full List)-Std 25 RLs + Naphthalene

Compound	Rpt.Limit(ppbv)
Freon 12	0.020
Freon 114	0.020
Chloromethane	0.50
Vinyl Chloride	0.010
Chloroethane	0.050
1,1-Dichloroethene	0.010
trans-1,2-Dichloroethene	0.10
Methyl tert-butyl ether	0.10
1,1-Dichloroethane	0.020
cis-1,2-Dichloroethene	0.020
Chloroform	0.020
1,1,1-Trichloroethane	0.020
Carbon Tetrachloride	0.020
Benzene	0.050
1,2-Dichloroethane	0.020
Trichloroethene	0.020
Toluene	0.050
1,1,2-Trichloroethane	0.020
Tetrachloroethene	0.020
1,2-Dibromoethane (EDB)	0.020
Ethyl Benzene	0.020
m,p-Xylene	0.040
o-Xylene	0.020
1,1,2,2-Tetrachloroethane	0.020
1,4-Dichlorobenzene	0.020
1,3-Butadiene	0.10
Bromomethane	0.50
Freon 11	0.10
Ethanol	0.50
Freon 113	0.10
Acetone	1.0
2-Propanol	0.50
Carbon Disulfide	0.50
3-Chloropropene	0.50
Methylene Chloride	0.20
Hexane	0.50
2-Butanone (Methyl Ethyl Ketone)	0.50
Tetrahydrofuran	0.50
Cyclohexane	0.50
2,2,4-Trimethylpentane	0.50
Heptane	0.50
1,2-Dichloropropane	0.10
1,4-Dioxane	0.10
Bromodichloromethane	0.10
cis-1,3-Dichloropropene	0.10
4-Methyl-2-pentanone	0.10
trans-1,3-Dichloropropene	0.10
2-Hexanone	0.50
Dibromochloromethane	0.10
Chlorobenzene	0.10
Styrene	0.10

Reporting limits cited do not take into account sample dilution due to canister pressurization.

Method: _Modified TO-15 Hi/Lo (LL Full List)-Std 25 RLs

Bromoform	0.10
Cumene	0.10
Propylbenzene	0.10
4-Ethyltoluene	0.10
1,3,5-Trimethylbenzene	0.10
1,2,4-Trimethylbenzene	0.10
1,3-Dichlorobenzene	0.10
alpha-Chlorotoluene	0.10
1,2-Dichlorobenzene	0.10
1,2,4-Trichlorobenzene	0.50
Hexachlorobutadiene	0.50

Surrogate	Method Limits
1,2-Dichloroethane-d4	70-130
Toluene-d8	70-130
4-Bromofluorobenzene	70-130

Reporting limits cited do not take into account sample dilution due to canister pressurization.

Laboratory Data Review Checklist for Air Samples

Completed by:	Andrew Frick		
Title:	Environmental Scientist	Date:	January 20, 2021
CS Report Name:	Miller Salvage	Report Date:	January 20, 2021
Consultant Firm:	Shannon & Wilson, Inc.		
Laboratory Name:	Eurofins Air Toxics, Inc	Laboratory Report Number:	2101094A
ADEC File Number:	102.23.017	ADEC Haz ID:	726

1. Laboratory

a. Did a NELAP certified laboratory receive and perform all of the submitted sample analyses?

Yes No NA (Please explain.) Comments:

Samples were analyzed by Eurofins Air Toxics Ltd. in Folsom, CA.

b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses NELAP approved?

Yes No NA (Please explain.) Comments:

Samples were not transferred to another 'network' or sub-contracted laboratory.

2. Chain of Custody (COC)

a. COC information completed, signed, and dated (including released/received by)?

Yes No NA (Please explain.) Comments:

b. Correct analyses requested?

Yes No NA (Please explain) Comments:

3. Laboratory Sample Receipt Documentation

a. Sample condition documented -Samples collected in gas tight, opaque/dark Summa canisters or other ADEC approved container? Canister vacuum/pressure checked, recorded upon receipt and contained no open valves?

Yes No NA (Please explain) Comments:

The laboratory noted that there were no receiving discrepancies.

b. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, canister not holding a vacuum etc.?

Yes No NA (Please explain) Comments:

The laboratory noted that there were no receiving discrepancies.

c. Data quality or usability affected? (Please explain.)

Yes No NA (Please explain) Comments:

The data quality and usability were not affected; see above.

4. Case Narrative

a. Present and understandable?

Yes No NA (Please explain) Comments:

The case narrative notes dilution was performed on sample SS20-01 due to the presence of high level non-target species.

b. Discrepancies, errors or QC failures identified by the lab?

Yes No NA (Please explain) Comments:

The laboratory did not note any discrepancies, errors, or QC failures.

c. Were all corrective actions documented?

Yes No NA (Please explain) Comments:

Corrective actions were not required.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The case narrative does not note an effect on data quality or usability.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes No NA (Please explain) Comments:

b. Samples analyzed within 30 days of collection or within the time required by the method?

Yes No NA (Please explain) Comments:

c. Are the reported PQLs less than the Target Screening Level or the minimum required detection level for the project?

Yes No NA (Please explain) Comments:

The reporting limits (RLs) for 1,1,2,2-tetrachloroethane, 1,1,2-trichloroethane, 1,2,4-trichlorobenzene, bromodichloromethane, and naphtalene were elevated in project sample SS20-01. The RLs for 1,2-dibromoethane and hexachlorobutadiene were elevated in project samples SS20-01, SS20-02, SS20-102 and SS20-03

d. Data quality or usability affected?

Comments:

In cases where the RLs for not-detected analytes exceeded DEC target levels, the analytes could have been present in the samples at concentrations less than the RLs but greater than the target levels. The affected sample results are presented in bold text in the analytical summary table.

6. QC Samples

a. Method Blank

i. One method blank reported per analysis and 20 samples?

Yes No NA (Please explain)

Comments:

ii. All method blank results less than PQL?

Yes No NA (Please explain)

Comments:

iii. If above PQL, what samples are affected?

Comments:

None; the target analytes were not detected in the method blank.

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?

Yes No NA (Please explain)

Comments:

No samples are affected; target analytes were not detected in the method blank.

v. Data quality or usability affected? (Please explain.)

Comments:

The data quality and/or usability are not affected; see above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. One LCS/LCSD or one LCS and a sample/sample duplicate pair reported per analysis and 20 samples?

Yes No NA (Please explain)

Comments:

ii. Accuracy - All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable.

Yes No NA (Please explain)

Comments:

iii. Precision - All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable.

Yes No NA (Please explain)

Comments:

iv. If %R or RPD is outside of acceptable limits, what samples are affected?

Yes No NA (Please explain) Comments:

None; analytical accuracy and precision were demonstrated to be within acceptable limits for the requested method.

v. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No NA (Please explain) Comments:

No qualification was required; see above.

vi. Data quality or usability affected? (Please explain.)

Comments:

The data quality and/or usability is not affected; see above.

c. Surrogates

i. Are surrogate recoveries reported for field, QC and laboratory samples?

Yes No NA (Please explain) Comments:

ii. Accuracy - All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable.

Yes No NA (Please explain) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

Yes No NA (Please explain) Comments:

There are no surrogate recovery failures associated with this work order.

iv. Data quality or usability affected? (Please explain.)

Comments:

The data quality and/or usability are not affected; see above.

d. Field Duplicate

i. One field duplicate submitted per analysis and 10 type (soil gas, indoor air etc.) samples?

Yes No NA (Please explain) Comments:

ii. Submitted blind to lab?

Yes No NA (Please explain) Comments:

The field duplicate samples SS20-02 and SS20-102 were submitted with this work order.

iii. Precision - All relative percent differences (RPD) less than specified DQOs? (Recommended: 25 %)

$$\text{RPD (\%)} = \text{Absolute Value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Yes No NA (Please explain)

Comments:

The RPDs for acetone and isopropyl alcohol exceeded 25%.

iv. Data quality or usability affected? (Please explain.)

Comments:

We consider the results for acetone and isopropyl alcohol to be estimated concentrations and have flagged the results J* in the analytical results table.

e. Field Blank (If not used explain why).

Yes No NA (Please explain)

Comments:

A field blank was not required for this project.

i. All results less than PQL?

Yes No NA (Please explain)

Comments:

Field blanks were not used; see above.

ii. If above PQL, what samples are affected?

Comments:

Field blanks were not used.

iii. Data quality or usability affected? (Please explain.)

Comments:

Data quality and usability were not affected; see above.

7. Other Data Flags/Qualifiers

a. Defined and appropriate?

Yes No NA (Please explain)

Comments:

Acetone was detected above the calibration range of the laboratory's instrumentation in project samples SS20-102. The acetone result was already considered estimated and flagged J* on the analytical results table due to the field-duplicate RPD failure. No further qualification is necessary.

Reset Form

1/20/2021

Andrew Frick
Shannon & Wilson, Inc.
2355 Hill Road

Fairbanks AK 99709

Project Name: Friends Church
Project #: 106339-001
Workorder #: 2101094B

Dear Andrew Frick

The following report includes the data for the above referenced project for sample(s) received on 1/7/2021 at Eurofins Air Toxics LLC.

The data and associated QC analyzed by Modified 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: Alexandra Winslow at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Alexandra Winslow
Project Manager

WORK ORDER #: 2101094B

Work Order Summary

CLIENT: Andrew Frick
Shannon & Wilson, Inc.
2355 Hill Road
Fairbanks, AK 99709

BILL TO: Andrew Frick
Shannon & Wilson, Inc.
2355 Hill Road
Fairbanks, AK 99709

PHONE: 907-479-0600
FAX: 907-479-5691
DATE RECEIVED: 01/07/2021
DATE COMPLETED: 01/20/2021

P.O. #
PROJECT # 106339-001 Friends Church
CONTACT: Alexandra Winslow

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
05A	IA20-01	Modified TO-15	5.5 "Hg	4.9 psi
05B	IA20-01	Modified TO-15	5.5 "Hg	4.9 psi
06A	IA20-02	Modified TO-15	5.9 "Hg	4.8 psi
06B	IA20-02	Modified TO-15	5.9 "Hg	4.8 psi
07A	IA20-102	Modified TO-15	5.1 "Hg	4.9 psi
07B	IA20-102	Modified TO-15	5.1 "Hg	4.9 psi
08A	IA20-103	Modified TO-15	6.1 "Hg	5 psi
08B	IA20-103	Modified TO-15	6.1 "Hg	5 psi
09A	Lab Blank	Modified TO-15	NA	NA
09B	Lab Blank	Modified TO-15	NA	NA
10A	CCV	Modified TO-15	NA	NA
10B	CCV	Modified TO-15	NA	NA
11A	LCS	Modified TO-15	NA	NA
11AA	LCSD	Modified TO-15	NA	NA
11B	LCS	Modified TO-15	NA	NA
11BB	LCSD	Modified TO-15	NA	NA

CERTIFIED BY: 

Technical Director

DATE: 01/20/21 _____

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209220, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-20-16, UT NELAP – CA009332020-12, VA NELAP - 10615, WA NELAP - C935

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

Accreditation number: CA300005-014, Effective date: 10/18/2020, Expiration date: 10/17/2021.

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

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

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

**LABORATORY NARRATIVE
Modified TO-15 Full Scan/SIM
Shannon & Wilson, Inc.
Workorder# 2101094B**

Four 6 Liter Summa Canister (100% SIM Ambient) samples were received on January 07, 2021. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the Full Scan and SIM acquisition modes. The method involves concentrating up to 1.0 liters of air. The concentrated aliquot is then flash vaporized and swept through a water management system to remove water vapor. Following dehumidification, the sample passes directly into the GC/MS for analysis.

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

<i>Requirement</i>	<i>TO-15</i>	<i>ATL Modifications</i>
ICAL %RSD acceptance criteria	$\leq 30\%$ RSD with 2 compounds allowed out to <math>< 40\%</math> RSD	For Full Scan: 30% RSD with 4 compounds allowed out to <math>< 40\%</math> RSD For SIM: Project specific; default criteria is $\leq 30\%$ RSD with 10% of compounds allowed out to <math>< 40\%</math> RSD
Daily Calibration	+/- 30% Difference	For Full Scan: $\leq 30\%$ Difference with four allowed out up to $\leq 40\%$; flag and narrate outliers For SIM: Project specific; default criteria is $\leq 30\%$ Difference with 10% of compounds allowed out up to $\leq 40\%$; flag and narrate outliers
Blank and standards	Zero air	Nitrogen
Method Detection Limit	Follow 40CFR Pt.136 App. B	The MDL met all relevant requirements in Method TO-15 (statistical MDL less than the LOQ). The concentration of the spiked replicate may have exceeded 10X the calculated MDL in some cases

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

The results for each sample in this report were acquired from two separate data files originating from the same analytical run. The two data files have the same base file name and are differentiated with a "sim" extension on the SIM data file.

Definition of Data Qualifying Flags

Nine 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.
- UJ- Non-detected compound associated with low bias in the CCV
- N - The identification is based on presumptive evidence.
- CN - See case narrative explanation

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

- a-File was requantified
- b-File was quantified by a second column and detector
- r1-File was requantified for the purpose of reissue

Summary of Detected Compounds

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

Client Sample ID: IA20-01

Lab ID#: 2101094B-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,3-Butadiene	0.16	0.39	0.36	0.87
Freon 11	0.16	0.29	0.92	1.6
Ethanol	0.82	140 E	1.5	270 E
Acetone	1.6	12	3.9	28
2-Propanol	0.82	15	2.0	37
Heptane	0.82	1.2	3.3	5.1
Propylbenzene	0.16	0.20	0.80	1.0
4-Ethyltoluene	0.16	0.66	0.80	3.3
1,3,5-Trimethylbenzene	0.16	0.18	0.80	0.89
1,2,4-Trimethylbenzene	0.16	0.56	0.80	2.7

Client Sample ID: IA20-01

Lab ID#: 2101094B-05B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.033	0.49	0.16	2.4
Chloromethane	0.82	0.96	1.7	2.0
Chloroform	0.033	0.065	0.16	0.32
Carbon Tetrachloride	0.033	0.063	0.20	0.39
Benzene	0.082	2.3	0.26	7.2
Toluene	0.082	7.3	0.31	27
Tetrachloroethene	0.033	0.31	0.22	2.1
Ethyl Benzene	0.033	0.89	0.14	3.9
m,p-Xylene	0.065	3.7	0.28	16
o-Xylene	0.033	1.3	0.14	5.5

Client Sample ID: IA20-02

Lab ID#: 2101094B-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,3-Butadiene	0.16	0.46	0.36	1.0
Freon 11	0.16	0.31	0.93	1.8
Ethanol	0.82	76 E	1.6	140 E

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

Client Sample ID: IA20-02

Lab ID#: 2101094B-06A

Acetone	1.6	8.0	3.9	19
2-Propanol	0.82	5.8	2.0	14
Heptane	0.82	1.2	3.4	4.9
Propylbenzene	0.16	0.19	0.81	0.96
4-Ethyltoluene	0.16	0.63	0.81	3.1
----- 1,3,5-Trimethylbenzene	0.16	0.17	0.81	0.85
1,2,4-Trimethylbenzene	0.16	0.50	0.81	2.4

Client Sample ID: IA20-02

Lab ID#: 2101094B-06B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.033	0.50	0.16	2.5
Chloroform	0.033	0.055	0.16	0.27
Carbon Tetrachloride	0.033	0.061	0.21	0.38
Benzene	0.082	2.2	0.26	7.2
1,2-Dichloroethane	0.033	0.037	0.13	0.15
----- Toluene	0.082	7.4	0.31	28
Tetrachloroethene	0.033	0.35	0.22	2.4
Ethyl Benzene	0.033	0.94	0.14	4.1
m,p-Xylene	0.066	3.9	0.29	17
o-Xylene	0.033	1.4	0.14	5.9

Client Sample ID: IA20-102

Lab ID#: 2101094B-07A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,3-Butadiene	0.16	0.46	0.36	1.0
Freon 11	0.16	0.33	0.90	1.9
Ethanol	0.80	68 E	1.5	130 E
Acetone	1.6	8.7	3.8	20
2-Propanol	0.80	6.0	2.0	15
----- Heptane	0.80	1.2	3.3	5.1
Propylbenzene	0.16	0.19	0.79	0.94

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

Client Sample ID: IA20-102

Lab ID#: 2101094B-07A

4-Ethyltoluene	0.16	0.70	0.79	3.4
1,3,5-Trimethylbenzene	0.16	0.18	0.79	0.89
1,2,4-Trimethylbenzene	0.16	0.52	0.79	2.6

Client Sample ID: IA20-102

Lab ID#: 2101094B-07B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.032	0.50	0.16	2.5
Chloroform	0.032	0.054	0.16	0.26
Carbon Tetrachloride	0.032	0.065	0.20	0.41
Benzene	0.080	2.2	0.26	7.1
1,2-Dichloroethane	0.032	0.036	0.13	0.15
Toluene	0.080	7.5	0.30	28
Tetrachloroethene	0.032	0.35	0.22	2.3
Ethyl Benzene	0.032	0.96	0.14	4.2
m,p-Xylene	0.064	4.0	0.28	17
o-Xylene	0.032	1.4	0.14	6.0

Client Sample ID: IA20-103

Lab ID#: 2101094B-08A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,3-Butadiene	0.17	0.38	0.37	0.84
Freon 11	0.17	0.31	0.94	1.7
Ethanol	0.84	44 E	1.6	83 E
Acetone	1.7	7.9	4.0	19
2-Propanol	0.84	2.6	2.1	6.4
2-Butanone (Methyl Ethyl Ketone)	0.84	0.94	2.5	2.8
Heptane	0.84	1.2	3.4	5.0
Propylbenzene	0.17	0.20	0.82	0.98
4-Ethyltoluene	0.17	0.53	0.82	2.6
1,2,4-Trimethylbenzene	0.17	0.39	0.82	1.9

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

Client Sample ID: IA20-103

Lab ID#: 2101094B-08B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.034	0.50	0.17	2.5
Chloroform	0.034	0.041	0.16	0.20
Carbon Tetrachloride	0.034	0.066	0.21	0.42
Benzene	0.084	2.0	0.27	6.4
Toluene	0.084	6.5	0.32	24
Tetrachloroethene	0.034	0.31	0.23	2.1
Ethyl Benzene	0.034	0.82	0.14	3.6
m,p-Xylene	0.067	3.3	0.29	14
o-Xylene	0.034	1.2	0.14	5.1



Air Toxics

Client Sample ID: IA20-01

Lab ID#: 2101094B-05A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	v011207	Date of Collection:	12/30/20 1:00:00 PM
Dil. Factor:	1.63	Date of Analysis:	1/12/21 12:20 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,3-Butadiene	0.16	0.39	0.36	0.87
Bromomethane	0.82	Not Detected	3.2	Not Detected
Freon 11	0.16	0.29	0.92	1.6
Ethanol	0.82	140 E	1.5	270 E
Freon 113	0.16	Not Detected	1.2	Not Detected
Acetone	1.6	12	3.9	28
2-Propanol	0.82	15	2.0	37
Carbon Disulfide	0.82	Not Detected	2.5	Not Detected
3-Chloropropene	0.82	Not Detected	2.6	Not Detected
Methylene Chloride	0.33	Not Detected	1.1	Not Detected
Hexane	0.82	Not Detected	2.9	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.82	Not Detected	2.4	Not Detected
Tetrahydrofuran	0.82	Not Detected	2.4	Not Detected
Cyclohexane	0.82	Not Detected	2.8	Not Detected
2,2,4-Trimethylpentane	0.82	Not Detected	3.8	Not Detected
Heptane	0.82	1.2	3.3	5.1
1,2-Dichloropropane	0.16	Not Detected	0.75	Not Detected
1,4-Dioxane	0.16	Not Detected	0.59	Not Detected
Bromodichloromethane	0.16	Not Detected	1.1	Not Detected
cis-1,3-Dichloropropene	0.16	Not Detected	0.74	Not Detected
4-Methyl-2-pentanone	0.16	Not Detected	0.67	Not Detected
trans-1,3-Dichloropropene	0.16	Not Detected	0.74	Not Detected
2-Hexanone	0.82	Not Detected	3.3	Not Detected
Dibromochloromethane	0.16	Not Detected	1.4	Not Detected
Chlorobenzene	0.16	Not Detected	0.75	Not Detected
Styrene	0.16	Not Detected	0.69	Not Detected
Bromoform	0.16	Not Detected	1.7	Not Detected
Cumene	0.16	Not Detected	0.80	Not Detected
Propylbenzene	0.16	0.20	0.80	1.0
4-Ethyltoluene	0.16	0.66	0.80	3.3
1,3,5-Trimethylbenzene	0.16	0.18	0.80	0.89
1,2,4-Trimethylbenzene	0.16	0.56	0.80	2.7
1,3-Dichlorobenzene	0.16	Not Detected	0.98	Not Detected
alpha-Chlorotoluene	0.16	Not Detected	0.84	Not Detected
1,2-Dichlorobenzene	0.16	Not Detected	0.98	Not Detected
1,2,4-Trichlorobenzene	0.82	Not Detected	6.0	Not Detected
Hexachlorobutadiene	0.82	Not Detected	8.7	Not Detected

E = Exceeds instrument calibration range.

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
------------	-----------	---------------

Client Sample ID: IA20-01

Lab ID#: 2101094B-05A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	v011207	Date of Collection: 12/30/20 1:00:00 PM
Dil. Factor:	1.63	Date of Analysis: 1/12/21 12:20 PM

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	90	70-130
Toluene-d8	94	70-130
4-Bromofluorobenzene	97	70-130

Client Sample ID: IA20-01

Lab ID#: 2101094B-05B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	v011207sim	Date of Collection:	12/30/20 1:00:00 PM
Dil. Factor:	1.63	Date of Analysis:	1/12/21 12:20 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.033	0.49	0.16	2.4
Freon 114	0.033	Not Detected	0.23	Not Detected
Chloromethane	0.82	0.96	1.7	2.0
Vinyl Chloride	0.016	Not Detected	0.042	Not Detected
Chloroethane	0.082	Not Detected	0.22	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.065	Not Detected
trans-1,2-Dichloroethene	0.16	Not Detected	0.65	Not Detected
Methyl tert-butyl ether	0.16	Not Detected	0.59	Not Detected
1,1-Dichloroethane	0.033	Not Detected	0.13	Not Detected
cis-1,2-Dichloroethene	0.033	Not Detected	0.13	Not Detected
Chloroform	0.033	0.065	0.16	0.32
1,1,1-Trichloroethane	0.033	Not Detected	0.18	Not Detected
Carbon Tetrachloride	0.033	0.063	0.20	0.39
Benzene	0.082	2.3	0.26	7.2
1,2-Dichloroethane	0.033	Not Detected	0.13	Not Detected
Trichloroethene	0.033	Not Detected	0.18	Not Detected
Toluene	0.082	7.3	0.31	27
1,1,2-Trichloroethane	0.033	Not Detected	0.18	Not Detected
Tetrachloroethene	0.033	0.31	0.22	2.1
1,2-Dibromoethane (EDB)	0.033	Not Detected	0.25	Not Detected
Ethyl Benzene	0.033	0.89	0.14	3.9
m,p-Xylene	0.065	3.7	0.28	16
o-Xylene	0.033	1.3	0.14	5.5
1,1,2,2-Tetrachloroethane	0.033	Not Detected	0.22	Not Detected
1,4-Dichlorobenzene	0.033	Not Detected	0.20	Not Detected
Naphthalene	0.082	Not Detected	0.43	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

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



Air Toxics

Client Sample ID: IA20-02

Lab ID#: 2101094B-06A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	v011208	Date of Collection:	12/30/20 1:13:00 PM
Dil. Factor:	1.65	Date of Analysis:	1/12/21 01:16 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,3-Butadiene	0.16	0.46	0.36	1.0
Bromomethane	0.82	Not Detected	3.2	Not Detected
Freon 11	0.16	0.31	0.93	1.8
Ethanol	0.82	76 E	1.6	140 E
Freon 113	0.16	Not Detected	1.3	Not Detected
Acetone	1.6	8.0	3.9	19
2-Propanol	0.82	5.8	2.0	14
Carbon Disulfide	0.82	Not Detected	2.6	Not Detected
3-Chloropropene	0.82	Not Detected	2.6	Not Detected
Methylene Chloride	0.33	Not Detected	1.1	Not Detected
Hexane	0.82	Not Detected	2.9	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.82	Not Detected	2.4	Not Detected
Tetrahydrofuran	0.82	Not Detected	2.4	Not Detected
Cyclohexane	0.82	Not Detected	2.8	Not Detected
2,2,4-Trimethylpentane	0.82	Not Detected	3.8	Not Detected
Heptane	0.82	1.2	3.4	4.9
1,2-Dichloropropane	0.16	Not Detected	0.76	Not Detected
1,4-Dioxane	0.16	Not Detected	0.59	Not Detected
Bromodichloromethane	0.16	Not Detected	1.1	Not Detected
cis-1,3-Dichloropropene	0.16	Not Detected	0.75	Not Detected
4-Methyl-2-pentanone	0.16	Not Detected	0.68	Not Detected
trans-1,3-Dichloropropene	0.16	Not Detected	0.75	Not Detected
2-Hexanone	0.82	Not Detected	3.4	Not Detected
Dibromochloromethane	0.16	Not Detected	1.4	Not Detected
Chlorobenzene	0.16	Not Detected	0.76	Not Detected
Styrene	0.16	Not Detected	0.70	Not Detected
Bromoform	0.16	Not Detected	1.7	Not Detected
Cumene	0.16	Not Detected	0.81	Not Detected
Propylbenzene	0.16	0.19	0.81	0.96
4-Ethyltoluene	0.16	0.63	0.81	3.1
1,3,5-Trimethylbenzene	0.16	0.17	0.81	0.85
1,2,4-Trimethylbenzene	0.16	0.50	0.81	2.4
1,3-Dichlorobenzene	0.16	Not Detected	0.99	Not Detected
alpha-Chlorotoluene	0.16	Not Detected	0.85	Not Detected
1,2-Dichlorobenzene	0.16	Not Detected	0.99	Not Detected
1,2,4-Trichlorobenzene	0.82	Not Detected	6.1	Not Detected
Hexachlorobutadiene	0.82	Not Detected	8.8	Not Detected

E = Exceeds instrument calibration range.

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
------------	-----------	---------------

Client Sample ID: IA20-02

Lab ID#: 2101094B-06A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	v011208	Date of Collection: 12/30/20 1:13:00 PM
Dil. Factor:	1.65	Date of Analysis: 1/12/21 01:16 PM

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



Client Sample ID: IA20-02

Lab ID#: 2101094B-06B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	v011208sim	Date of Collection:	12/30/20 1:13:00 PM
Dil. Factor:	1.65	Date of Analysis:	1/12/21 01:16 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.033	0.50	0.16	2.5
Freon 114	0.033	Not Detected	0.23	Not Detected
Chloromethane	0.82	Not Detected	1.7	Not Detected
Vinyl Chloride	0.016	Not Detected	0.042	Not Detected
Chloroethane	0.082	Not Detected	0.22	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.065	Not Detected
trans-1,2-Dichloroethene	0.16	Not Detected	0.65	Not Detected
Methyl tert-butyl ether	0.16	Not Detected	0.59	Not Detected
1,1-Dichloroethane	0.033	Not Detected	0.13	Not Detected
cis-1,2-Dichloroethene	0.033	Not Detected	0.13	Not Detected
Chloroform	0.033	0.055	0.16	0.27
1,1,1-Trichloroethane	0.033	Not Detected	0.18	Not Detected
Carbon Tetrachloride	0.033	0.061	0.21	0.38
Benzene	0.082	2.2	0.26	7.2
1,2-Dichloroethane	0.033	0.037	0.13	0.15
Trichloroethene	0.033	Not Detected	0.18	Not Detected
Toluene	0.082	7.4	0.31	28
1,1,2-Trichloroethane	0.033	Not Detected	0.18	Not Detected
Tetrachloroethene	0.033	0.35	0.22	2.4
1,2-Dibromoethane (EDB)	0.033	Not Detected	0.25	Not Detected
Ethyl Benzene	0.033	0.94	0.14	4.1
m,p-Xylene	0.066	3.9	0.29	17
o-Xylene	0.033	1.4	0.14	5.9
1,1,2,2-Tetrachloroethane	0.033	Not Detected	0.23	Not Detected
1,4-Dichlorobenzene	0.033	Not Detected	0.20	Not Detected
Naphthalene	0.082	Not Detected	0.43	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	96	70-130
Toluene-d8	93	70-130
4-Bromofluorobenzene	94	70-130



Client Sample ID: IA20-102

Lab ID#: 2101094B-07A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	v011209	Date of Collection:	12/30/20 1:13:00 PM
Dil. Factor:	1.61	Date of Analysis:	1/12/21 02:50 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,3-Butadiene	0.16	0.46	0.36	1.0
Bromomethane	0.80	Not Detected	3.1	Not Detected
Freon 11	0.16	0.33	0.90	1.9
Ethanol	0.80	68 E	1.5	130 E
Freon 113	0.16	Not Detected	1.2	Not Detected
Acetone	1.6	8.7	3.8	20
2-Propanol	0.80	6.0	2.0	15
Carbon Disulfide	0.80	Not Detected	2.5	Not Detected
3-Chloropropene	0.80	Not Detected	2.5	Not Detected
Methylene Chloride	0.32	Not Detected	1.1	Not Detected
Hexane	0.80	Not Detected	2.8	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.80	Not Detected	2.4	Not Detected
Tetrahydrofuran	0.80	Not Detected	2.4	Not Detected
Cyclohexane	0.80	Not Detected	2.8	Not Detected
2,2,4-Trimethylpentane	0.80	Not Detected	3.8	Not Detected
Heptane	0.80	1.2	3.3	5.1
1,2-Dichloropropane	0.16	Not Detected	0.74	Not Detected
1,4-Dioxane	0.16	Not Detected	0.58	Not Detected
Bromodichloromethane	0.16	Not Detected	1.1	Not Detected
cis-1,3-Dichloropropene	0.16	Not Detected	0.73	Not Detected
4-Methyl-2-pentanone	0.16	Not Detected	0.66	Not Detected
trans-1,3-Dichloropropene	0.16	Not Detected	0.73	Not Detected
2-Hexanone	0.80	Not Detected	3.3	Not Detected
Dibromochloromethane	0.16	Not Detected	1.4	Not Detected
Chlorobenzene	0.16	Not Detected	0.74	Not Detected
Styrene	0.16	Not Detected	0.68	Not Detected
Bromoform	0.16	Not Detected	1.7	Not Detected
Cumene	0.16	Not Detected	0.79	Not Detected
Propylbenzene	0.16	0.19	0.79	0.94
4-Ethyltoluene	0.16	0.70	0.79	3.4
1,3,5-Trimethylbenzene	0.16	0.18	0.79	0.89
1,2,4-Trimethylbenzene	0.16	0.52	0.79	2.6
1,3-Dichlorobenzene	0.16	Not Detected	0.97	Not Detected
alpha-Chlorotoluene	0.16	Not Detected	0.83	Not Detected
1,2-Dichlorobenzene	0.16	Not Detected	0.97	Not Detected
1,2,4-Trichlorobenzene	0.80	Not Detected	6.0	Not Detected
Hexachlorobutadiene	0.80	Not Detected	8.6	Not Detected

E = Exceeds instrument calibration range.

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
------------	-----------	---------------

Client Sample ID: IA20-102
Lab ID#: 2101094B-07A
MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	v011209	Date of Collection: 12/30/20 1:13:00 PM
Dil. Factor:	1.61	Date of Analysis: 1/12/21 02:50 PM

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	93	70-130
4-Bromofluorobenzene	100	70-130

Client Sample ID: IA20-102

Lab ID#: 2101094B-07B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	v011209sim	Date of Collection: 12/30/20 1:13:00 PM
Dil. Factor:	1.61	Date of Analysis: 1/12/21 02:50 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.032	0.50	0.16	2.5
Freon 114	0.032	Not Detected	0.22	Not Detected
Chloromethane	0.80	Not Detected	1.7	Not Detected
Vinyl Chloride	0.016	Not Detected	0.041	Not Detected
Chloroethane	0.080	Not Detected	0.21	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.064	Not Detected
trans-1,2-Dichloroethene	0.16	Not Detected	0.64	Not Detected
Methyl tert-butyl ether	0.16	Not Detected	0.58	Not Detected
1,1-Dichloroethane	0.032	Not Detected	0.13	Not Detected
cis-1,2-Dichloroethene	0.032	Not Detected	0.13	Not Detected
Chloroform	0.032	0.054	0.16	0.26
1,1,1-Trichloroethane	0.032	Not Detected	0.18	Not Detected
Carbon Tetrachloride	0.032	0.065	0.20	0.41
Benzene	0.080	2.2	0.26	7.1
1,2-Dichloroethane	0.032	0.036	0.13	0.15
Trichloroethene	0.032	Not Detected	0.17	Not Detected
Toluene	0.080	7.5	0.30	28
1,1,2-Trichloroethane	0.032	Not Detected	0.18	Not Detected
Tetrachloroethene	0.032	0.35	0.22	2.3
1,2-Dibromoethane (EDB)	0.032	Not Detected	0.25	Not Detected
Ethyl Benzene	0.032	0.96	0.14	4.2
m,p-Xylene	0.064	4.0	0.28	17
o-Xylene	0.032	1.4	0.14	6.0
1,1,2,2-Tetrachloroethane	0.032	Not Detected	0.22	Not Detected
1,4-Dichlorobenzene	0.032	Not Detected	0.19	Not Detected
Naphthalene	0.080	Not Detected	0.42	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

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



Air Toxics

Client Sample ID: IA20-103

Lab ID#: 2101094B-08A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	v011210	Date of Collection:	12/30/20 1:18:00 PM
Dil. Factor:	1.68	Date of Analysis:	1/12/21 03:30 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,3-Butadiene	0.17	0.38	0.37	0.84
Bromomethane	0.84	Not Detected	3.3	Not Detected
Freon 11	0.17	0.31	0.94	1.7
Ethanol	0.84	44 E	1.6	83 E
Freon 113	0.17	Not Detected	1.3	Not Detected
Acetone	1.7	7.9	4.0	19
2-Propanol	0.84	2.6	2.1	6.4
Carbon Disulfide	0.84	Not Detected	2.6	Not Detected
3-Chloropropene	0.84	Not Detected	2.6	Not Detected
Methylene Chloride	0.34	Not Detected	1.2	Not Detected
Hexane	0.84	Not Detected	3.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.84	0.94	2.5	2.8
Tetrahydrofuran	0.84	Not Detected	2.5	Not Detected
Cyclohexane	0.84	Not Detected	2.9	Not Detected
2,2,4-Trimethylpentane	0.84	Not Detected	3.9	Not Detected
Heptane	0.84	1.2	3.4	5.0
1,2-Dichloropropane	0.17	Not Detected	0.78	Not Detected
1,4-Dioxane	0.17	Not Detected	0.60	Not Detected
Bromodichloromethane	0.17	Not Detected	1.1	Not Detected
cis-1,3-Dichloropropene	0.17	Not Detected	0.76	Not Detected
4-Methyl-2-pentanone	0.17	Not Detected	0.69	Not Detected
trans-1,3-Dichloropropene	0.17	Not Detected	0.76	Not Detected
2-Hexanone	0.84	Not Detected	3.4	Not Detected
Dibromochloromethane	0.17	Not Detected	1.4	Not Detected
Chlorobenzene	0.17	Not Detected	0.77	Not Detected
Styrene	0.17	Not Detected	0.72	Not Detected
Bromoform	0.17	Not Detected	1.7	Not Detected
Cumene	0.17	Not Detected	0.82	Not Detected
Propylbenzene	0.17	0.20	0.82	0.98
4-Ethyltoluene	0.17	0.53	0.82	2.6
1,3,5-Trimethylbenzene	0.17	Not Detected	0.82	Not Detected
1,2,4-Trimethylbenzene	0.17	0.39	0.82	1.9
1,3-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
alpha-Chlorotoluene	0.17	Not Detected	0.87	Not Detected
1,2-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
1,2,4-Trichlorobenzene	0.84	Not Detected	6.2	Not Detected
Hexachlorobutadiene	0.84	Not Detected	9.0	Not Detected

E = Exceeds instrument calibration range.

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
------------	-----------	---------------

Client Sample ID: IA20-103

Lab ID#: 2101094B-08A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	v011210	Date of Collection: 12/30/20 1:18:00 PM
Dil. Factor:	1.68	Date of Analysis: 1/12/21 03:30 PM

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	99	70-130
Toluene-d8	91	70-130
4-Bromofluorobenzene	96	70-130



Client Sample ID: IA20-103

Lab ID#: 2101094B-08B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	v011210sim	Date of Collection:	12/30/20 1:18:00 PM
Dil. Factor:	1.68	Date of Analysis:	1/12/21 03:30 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.034	0.50	0.17	2.5
Freon 114	0.034	Not Detected	0.23	Not Detected
Chloromethane	0.84	Not Detected	1.7	Not Detected
Vinyl Chloride	0.017	Not Detected	0.043	Not Detected
Chloroethane	0.084	Not Detected	0.22	Not Detected
1,1-Dichloroethene	0.017	Not Detected	0.067	Not Detected
trans-1,2-Dichloroethene	0.17	Not Detected	0.67	Not Detected
Methyl tert-butyl ether	0.17	Not Detected	0.60	Not Detected
1,1-Dichloroethane	0.034	Not Detected	0.14	Not Detected
cis-1,2-Dichloroethene	0.034	Not Detected	0.13	Not Detected
Chloroform	0.034	0.041	0.16	0.20
1,1,1-Trichloroethane	0.034	Not Detected	0.18	Not Detected
Carbon Tetrachloride	0.034	0.066	0.21	0.42
Benzene	0.084	2.0	0.27	6.4
1,2-Dichloroethane	0.034	Not Detected	0.14	Not Detected
Trichloroethene	0.034	Not Detected	0.18	Not Detected
Toluene	0.084	6.5	0.32	24
1,1,2-Trichloroethane	0.034	Not Detected	0.18	Not Detected
Tetrachloroethene	0.034	0.31	0.23	2.1
1,2-Dibromoethane (EDB)	0.034	Not Detected	0.26	Not Detected
Ethyl Benzene	0.034	0.82	0.14	3.6
m,p-Xylene	0.067	3.3	0.29	14
o-Xylene	0.034	1.2	0.14	5.1
1,1,2,2-Tetrachloroethane	0.034	Not Detected	0.23	Not Detected
1,4-Dichlorobenzene	0.034	Not Detected	0.20	Not Detected
Naphthalene	0.084	Not Detected	0.44	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	96	70-130
Toluene-d8	93	70-130
4-Bromofluorobenzene	95	70-130



Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 2101094B-09A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	v011206	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	1/12/21 11:15 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,3-Butadiene	0.10	Not Detected	0.22	Not Detected
Bromomethane	0.50	Not Detected	1.9	Not Detected
Freon 11	0.10	Not Detected	0.56	Not Detected
Ethanol	0.50	Not Detected	0.94	Not Detected
Freon 113	0.10	Not Detected	0.77	Not Detected
Acetone	1.0	Not Detected	2.4	Not Detected
2-Propanol	0.50	Not Detected	1.2	Not Detected
Carbon Disulfide	0.50	Not Detected	1.6	Not Detected
3-Chloropropene	0.50	Not Detected	1.6	Not Detected
Methylene Chloride	0.20	Not Detected	0.69	Not Detected
Hexane	0.50	Not Detected	1.8	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.50	Not Detected	1.5	Not Detected
Tetrahydrofuran	0.50	Not Detected	1.5	Not Detected
Cyclohexane	0.50	Not Detected	1.7	Not Detected
2,2,4-Trimethylpentane	0.50	Not Detected	2.3	Not Detected
Heptane	0.50	Not Detected	2.0	Not Detected
1,2-Dichloropropane	0.10	Not Detected	0.46	Not Detected
1,4-Dioxane	0.10	Not Detected	0.36	Not Detected
Bromodichloromethane	0.10	Not Detected	0.67	Not Detected
cis-1,3-Dichloropropene	0.10	Not Detected	0.45	Not Detected
4-Methyl-2-pentanone	0.10	Not Detected	0.41	Not Detected
trans-1,3-Dichloropropene	0.10	Not Detected	0.45	Not Detected
2-Hexanone	0.50	Not Detected	2.0	Not Detected
Dibromochloromethane	0.10	Not Detected	0.85	Not Detected
Chlorobenzene	0.10	Not Detected	0.46	Not Detected
Styrene	0.10	Not Detected	0.42	Not Detected
Bromoform	0.10	Not Detected	1.0	Not Detected
Cumene	0.10	Not Detected	0.49	Not Detected
Propylbenzene	0.10	Not Detected	0.49	Not Detected
4-Ethyltoluene	0.10	Not Detected	0.49	Not Detected
1,3,5-Trimethylbenzene	0.10	Not Detected	0.49	Not Detected
1,2,4-Trimethylbenzene	0.10	Not Detected	0.49	Not Detected
1,3-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
alpha-Chlorotoluene	0.10	Not Detected	0.52	Not Detected
1,2-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
1,2,4-Trichlorobenzene	0.50	Not Detected	3.7	Not Detected
Hexachlorobutadiene	0.50	Not Detected	5.3	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	104	70-130

Client Sample ID: Lab Blank

Lab ID#: 2101094B-09A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	v011206	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	1/12/21 11:15 AM

Surrogates	%Recovery	Method Limits
Toluene-d8	96	70-130
4-Bromofluorobenzene	92	70-130



Client Sample ID: Lab Blank

Lab ID#: 2101094B-09B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	v011206sim	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	1/12/21 11:15 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.020	Not Detected	0.099	Not Detected
Freon 114	0.020	Not Detected	0.14	Not Detected
Chloromethane	0.50	Not Detected	1.0	Not Detected
Vinyl Chloride	0.010	Not Detected	0.026	Not Detected
Chloroethane	0.050	Not Detected	0.13	Not Detected
1,1-Dichloroethene	0.010	Not Detected	0.040	Not Detected
trans-1,2-Dichloroethene	0.10	Not Detected	0.40	Not Detected
Methyl tert-butyl ether	0.10	Not Detected	0.36	Not Detected
1,1-Dichloroethane	0.020	Not Detected	0.081	Not Detected
cis-1,2-Dichloroethene	0.020	Not Detected	0.079	Not Detected
Chloroform	0.020	Not Detected	0.098	Not Detected
1,1,1-Trichloroethane	0.020	Not Detected	0.11	Not Detected
Carbon Tetrachloride	0.020	Not Detected	0.12	Not Detected
Benzene	0.050	Not Detected	0.16	Not Detected
1,2-Dichloroethane	0.020	Not Detected	0.081	Not Detected
Trichloroethene	0.020	Not Detected	0.11	Not Detected
Toluene	0.050	Not Detected	0.19	Not Detected
1,1,2-Trichloroethane	0.020	Not Detected	0.11	Not Detected
Tetrachloroethene	0.020	Not Detected	0.14	Not Detected
1,2-Dibromoethane (EDB)	0.020	Not Detected	0.15	Not Detected
Ethyl Benzene	0.020	Not Detected	0.087	Not Detected
m,p-Xylene	0.040	Not Detected	0.17	Not Detected
o-Xylene	0.020	Not Detected	0.087	Not Detected
1,1,2,2-Tetrachloroethane	0.020	Not Detected	0.14	Not Detected
1,4-Dichlorobenzene	0.020	Not Detected	0.12	Not Detected
Naphthalene	0.050	Not Detected	0.26	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	93	70-130



Air Toxics

Client Sample ID: CCV

Lab ID#: 2101094B-10A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	v011202	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 1/12/21 08:16 AM

Compound	%Recovery
1,3-Butadiene	89
Bromomethane	110
Freon 11	98
Ethanol	100
Freon 113	88
Acetone	91
2-Propanol	96
Carbon Disulfide	94
3-Chloropropene	101
Methylene Chloride	92
Hexane	102
2-Butanone (Methyl Ethyl Ketone)	100
Tetrahydrofuran	93
Cyclohexane	105
2,2,4-Trimethylpentane	100
Heptane	104
1,2-Dichloropropane	99
1,4-Dioxane	122
Bromodichloromethane	98
cis-1,3-Dichloropropene	100
4-Methyl-2-pentanone	102
trans-1,3-Dichloropropene	105
2-Hexanone	104
Dibromochloromethane	101
Chlorobenzene	101
Styrene	105
Bromoform	101
Cumene	102
Propylbenzene	110
4-Ethyltoluene	112
1,3,5-Trimethylbenzene	115
1,2,4-Trimethylbenzene	120
1,3-Dichlorobenzene	98
alpha-Chlorotoluene	93
1,2-Dichlorobenzene	92
1,2,4-Trichlorobenzene	102
Hexachlorobutadiene	104

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	94	70-130



Air Toxics

Client Sample ID: CCV

Lab ID#: 2101094B-10A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	v011202	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	1/12/21 08:16 AM

Surrogates	%Recovery	Method Limits
Toluene-d8	109	70-130
4-Bromofluorobenzene	103	70-130

Client Sample ID: CCV

Lab ID#: 2101094B-10B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	v011202sim	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 1/12/21 08:16 AM

Compound	%Recovery
Freon 12	80
Freon 114	82
Chloromethane	83
Vinyl Chloride	78
Chloroethane	88
1,1-Dichloroethene	89
trans-1,2-Dichloroethene	88
Methyl tert-butyl ether	103
1,1-Dichloroethane	89
cis-1,2-Dichloroethene	94
Chloroform	86
1,1,1-Trichloroethane	93
Carbon Tetrachloride	85
Benzene	93
1,2-Dichloroethane	88
Trichloroethene	89
Toluene	99
1,1,2-Trichloroethane	92
Tetrachloroethene	94
1,2-Dibromoethane (EDB)	92
Ethyl Benzene	105
m,p-Xylene	100
o-Xylene	95
1,1,2,2-Tetrachloroethane	77
1,4-Dichlorobenzene	86
Naphthalene	78

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	96	70-130
Toluene-d8	107	70-130
4-Bromofluorobenzene	99	70-130



Air Toxics

Client Sample ID: LCS

Lab ID#: 2101094B-11A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	v011203	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 1/12/21 09:03 AM

Compound	%Recovery	Method Limits
1,3-Butadiene	87	70-130
Bromomethane	109	70-130
Freon 11	96	70-130
Ethanol	110	70-130
Freon 113	86	70-130
Acetone	92	70-130
2-Propanol	107	70-130
Carbon Disulfide	93	70-130
3-Chloropropene	114	70-130
Methylene Chloride	90	70-130
Hexane	99	70-130
2-Butanone (Methyl Ethyl Ketone)	98	70-130
Tetrahydrofuran	93	70-130
Cyclohexane	105	70-130
2,2,4-Trimethylpentane	98	70-130
Heptane	104	70-130
1,2-Dichloropropane	97	70-130
1,4-Dioxane	118	70-130
Bromodichloromethane	100	70-130
cis-1,3-Dichloropropene	104	70-130
4-Methyl-2-pentanone	104	70-130
trans-1,3-Dichloropropene	111	70-130
2-Hexanone	110	70-130
Dibromochloromethane	100	70-130
Chlorobenzene	103	70-130
Styrene	110	70-130
Bromoform	99	70-130
Cumene	105	70-130
Propylbenzene	111	70-130
4-Ethyltoluene	110	70-130
1,3,5-Trimethylbenzene	116	70-130
1,2,4-Trimethylbenzene	124	70-130
1,3-Dichlorobenzene	102	70-130
alpha-Chlorotoluene	99	70-130
1,2-Dichlorobenzene	94	70-130
1,2,4-Trichlorobenzene	105	70-130
Hexachlorobutadiene	111	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	92	70-130



Air Toxics

Client Sample ID: LCS

Lab ID#: 2101094B-11A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	v011203	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	1/12/21 09:03 AM

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130
4-Bromofluorobenzene	98	70-130



Air Toxics

Client Sample ID: LCSD

Lab ID#: 2101094B-11AA

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	v011204	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 1/12/21 09:42 AM

Compound	%Recovery	Method Limits
1,3-Butadiene	91	70-130
Bromomethane	106	70-130
Freon 11	99	70-130
Ethanol	110	70-130
Freon 113	87	70-130
Acetone	94	70-130
2-Propanol	105	70-130
Carbon Disulfide	95	70-130
3-Chloropropene	106	70-130
Methylene Chloride	90	70-130
Hexane	101	70-130
2-Butanone (Methyl Ethyl Ketone)	99	70-130
Tetrahydrofuran	95	70-130
Cyclohexane	105	70-130
2,2,4-Trimethylpentane	97	70-130
Heptane	100	70-130
1,2-Dichloropropane	94	70-130
1,4-Dioxane	119	70-130
Bromodichloromethane	102	70-130
cis-1,3-Dichloropropene	101	70-130
4-Methyl-2-pentanone	100	70-130
trans-1,3-Dichloropropene	112	70-130
2-Hexanone	109	70-130
Dibromochloromethane	102	70-130
Chlorobenzene	103	70-130
Styrene	102	70-130
Bromoform	102	70-130
Cumene	101	70-130
Propylbenzene	106	70-130
4-Ethyltoluene	104	70-130
1,3,5-Trimethylbenzene	114	70-130
1,2,4-Trimethylbenzene	125	70-130
1,3-Dichlorobenzene	95	70-130
alpha-Chlorotoluene	99	70-130
1,2-Dichlorobenzene	89	70-130
1,2,4-Trichlorobenzene	120	70-130
Hexachlorobutadiene	118	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	90	70-130

Client Sample ID: LCSD

Lab ID#: 2101094B-11AA

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	v011204	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	1/12/21 09:42 AM

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
4-Bromofluorobenzene	97	70-130

Client Sample ID: LCS

Lab ID#: 2101094B-11B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	v011203sim	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 1/12/21 09:03 AM

Compound	%Recovery	Method Limits
Freon 12	90	70-130
Freon 114	90	70-130
Chloromethane	90	70-130
Vinyl Chloride	85	70-130
Chloroethane	94	70-130
1,1-Dichloroethene	94	70-130
trans-1,2-Dichloroethene	92	70-130
Methyl tert-butyl ether	110	70-130
1,1-Dichloroethane	92	70-130
cis-1,2-Dichloroethene	97	70-130
Chloroform	87	70-130
1,1,1-Trichloroethane	96	70-130
Carbon Tetrachloride	96	60-140
Benzene	94	70-130
1,2-Dichloroethane	89	70-130
Trichloroethene	91	70-130
Toluene	98	70-130
1,1,2-Trichloroethane	94	70-130
Tetrachloroethene	94	70-130
1,2-Dibromoethane (EDB)	94	70-130
Ethyl Benzene	108	70-130
m,p-Xylene	104	70-130
o-Xylene	99	70-130
1,1,2,2-Tetrachloroethane	77	70-130
1,4-Dichlorobenzene	89	70-130
Naphthalene	87	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	96	70-130
Toluene-d8	105	70-130
4-Bromofluorobenzene	98	70-130

Client Sample ID: LCSD

Lab ID#: 2101094B-11BB

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	v011204sim	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 1/12/21 09:42 AM

Compound	%Recovery	Method Limits
Freon 12	91	70-130
Freon 114	92	70-130
Chloromethane	93	70-130
Vinyl Chloride	86	70-130
Chloroethane	94	70-130
1,1-Dichloroethene	94	70-130
trans-1,2-Dichloroethene	92	70-130
Methyl tert-butyl ether	112	70-130
1,1-Dichloroethane	92	70-130
cis-1,2-Dichloroethene	97	70-130
Chloroform	87	70-130
1,1,1-Trichloroethane	96	70-130
Carbon Tetrachloride	96	60-140
Benzene	93	70-130
1,2-Dichloroethane	87	70-130
Trichloroethene	89	70-130
Toluene	95	70-130
1,1,2-Trichloroethane	93	70-130
Tetrachloroethene	94	70-130
1,2-Dibromoethane (EDB)	95	70-130
Ethyl Benzene	106	70-130
m,p-Xylene	98	70-130
o-Xylene	93	70-130
1,1,2,2-Tetrachloroethane	79	70-130
1,4-Dichlorobenzene	82	70-130
Naphthalene	101	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	97	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	96	70-130



Air Toxics

Analysis Request / Canister Chain of Custody

For Laboratory Use Only

180 Blue Ravine Rd. Suite B, Folsom, CA 95630
Phone (800) 985-5955; Fax (916) 351-8279

PID: _____ Workorder #: 21094

page 1 of 1

Turnaround Time (Rush surcharges may apply)

Client: Shannon & Wilson
Project Name: Friends Church

Project # 106335-001

Special Instructions/Notes:

See attached analyte list, Request Naphtfluene analysis.

Sampler: Drew Frick and Drew Fare
Site Name: _____

Standard Canister Vacuum/Pressure

(specify)

Lab Use Only

Requested Analyses

Lab ID	Field Sample Identification (Location)	Can #	Flow Controller #	Start Sampling Information		Stop Sampling Information		Initial (in Hg)	Final (in Hg)	Receipt	Final (psig) Gas: N ₂ / He	Requested Analyses
				Date	Time	Date	Time					
	SS20-01	1L1758	24098	12/30/20	1118	1/30/20	1123	-29	-5			
	SS20-02	SLC015	24046		1215		1220	-29	-5			
	SS20-102	1L1883	24064		1215		1220	-28.5	-5			
	SS20-03	1L3059	24054		1249		1255	-26	-5			
	SA IA20-01	6L1823	21481	12/25/20	1257	12/30/20	1300	-28.5	-6			X
	SA IA20-02	6L0141	21388		1313		1313	-29	-5.5			X
	SA IA20-102	6L2660	30720		1313		1313	-29	-4.5			X
	SA IA20-03	6L2868	24777		1318		1318	-22	-5			X
Relinquished by: (Signature/Affiliation)				Date	Time	Received by: (Signature/Affiliation)		Date	Time			
<i>Shannon & Wilson, Inc.</i>				12/31/20	1510	<i>[Signature]</i>		1/7/21	1433			
Relinquished by: (Signature/Affiliation)				Date	Time	Received by: (Signature/Affiliation)		Date	Time			
Relinquished by: (Signature/Affiliation)				Date	Time	Received by: (Signature/Affiliation)		Date	Time			

Shipper Name: CAFE Custody Seals Intact? Yes No None

Sample Transportation Notice: Relinquishing signature on this document indicates that samples are shipped in compliance with all applicable local, State, Federal, and international laws, regulations, and ordinances of any kind. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Eurofins Air Toxics against any claim, demand, or action, of any kind, related to the collection, handling, of shipping of samples. D.O.T Hotline (800) 467-4922

6L Canisters (Indoor Air)

Method: Modified TO-15 Hi/Lo (LL Full List)-Std 25 RLs SIM + Naphthalene

Compound	Rpt.Limit(ppbv)
Freon 12	0.020
Freon 114	0.020
Chloromethane	0.50
Vinyl Chloride	0.010
Chloroethane	0.050
1,1-Dichloroethene	0.010
trans-1,2-Dichloroethene	0.10
Methyl tert-butyl ether	0.10
1,1-Dichloroethane	0.020
cis-1,2-Dichloroethene	0.020
Chloroform	0.020
1,1,1-Trichloroethane	0.020
Carbon Tetrachloride	0.020
Benzene	0.050
1,2-Dichloroethane	0.020
Trichloroethene	0.020
Toluene	0.050
1,1,2-Trichloroethane	0.020
Tetrachloroethene	0.020
1,2-Dibromoethane (EDB)	0.020
Ethyl Benzene	0.020
m,p-Xylene	0.040
o-Xylene	0.020
1,1,2,2-Tetrachloroethane	0.020
1,4-Dichlorobenzene	0.020
1,3-Butadiene	0.10
Bromomethane	0.50
Freon 11	0.10
Ethanol	0.50
Freon 113	0.10
Acetone	1.0
2-Propanol	0.50
Carbon Disulfide	0.50
3-Chloropropene	0.50
Methylene Chloride	0.20
Hexane	0.50
2-Butanone (Methyl Ethyl Ketone)	0.50
Tetrahydrofuran	0.50
Cyclohexane	0.50
2,2,4-Trimethylpentane	0.50
Heptane	0.50
1,2-Dichloropropane	0.10
1,4-Dioxane	0.10
Bromodichloromethane	0.10
cis-1,3-Dichloropropene	0.10
4-Methyl-2-pentanone	0.10
trans-1,3-Dichloropropene	0.10
2-Hexanone	0.50
Dibromochloromethane	0.10
Chlorobenzene	0.10
Styrene	0.10

Reporting limits cited do not take into account sample dilution due to canister pressurization.

Method: _Modified TO-15 Hi/Lo (LL Full List)-Std 25 RLs

Bromoform	0.10
Cumene	0.10
Propylbenzene	0.10
4-Ethyltoluene	0.10
1,3,5-Trimethylbenzene	0.10
1,2,4-Trimethylbenzene	0.10
1,3-Dichlorobenzene	0.10
alpha-Chlorotoluene	0.10
1,2-Dichlorobenzene	0.10
1,2,4-Trichlorobenzene	0.50
Hexachlorobutadiene	0.50

Surrogate	Method Limits
1,2-Dichloroethane-d4	70-130
Toluene-d8	70-130
4-Bromofluorobenzene	70-130

Reporting limits cited do not take into account sample dilution due to canister pressurization.

Laboratory Data Review Checklist for Air Samples

Completed by:	Andrew Frick		
Title:	Environmental Scientist	Date:	January 21, 2021
CS Report Name:	Miller Salvage	Report Date:	January 20, 2021
Consultant Firm:	Shannon & Wilson, Inc.		
Laboratory Name:	Eurofins Air Toxics, Inc	Laboratory Report Number:	2101094B
ADEC File Number:	102.23.017	ADEC Haz ID:	726

1. Laboratory

a. Did a NELAP certified laboratory receive and perform all of the submitted sample analyses?

Yes No NA (Please explain.) Comments:

Samples were analyzed by Eurofins Air Toxics Ltd. in Folsom, CA.

b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses NELAP approved?

Yes No NA (Please explain.) Comments:

Samples were not transferred to another 'network' or sub-contracted laboratory.

2. Chain of Custody (COC)

a. COC information completed, signed, and dated (including released/received by)?

Yes No NA (Please explain.) Comments:

b. Correct analyses requested?

Yes No NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation

a. Sample condition documented -Samples collected in gas tight, opaque/dark Summa canisters or other ADEC approved container? Canister vacuum/pressure checked, recorded upon receipt and contained no open valves?

Yes No NA (Please explain.) Comments:

The laboratory noted that there were no receiving discrepancies.

b. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, canister not holding a vacuum etc.?

Yes No NA (Please explain) Comments:

The laboratory noted that there were no receiving discrepancies.

c. Data quality or usability affected? (Please explain.)

Yes No NA (Please explain) Comments:

The data quality and usability were not affected; see above.

4. Case Narrative

a. Present and understandable?

Yes No NA (Please explain) Comments:

b. Discrepancies, errors or QC failures identified by the lab?

Yes No NA (Please explain) Comments:

The laboratory did not note any discrepancies, errors, or QC failures.

c. Were all corrective actions documented?

Yes No NA (Please explain) Comments:

Corrective actions were not required.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The case narrative does not note an effect on data quality or usability.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes No NA (Please explain) Comments:

b. Samples analyzed within 30 days of collection or within the time required by the method?

Yes No NA (Please explain) Comments:

c. Are the reported PQLs less than the Target Screening Level or the minimum required detection level for the project?

Yes No NA (Please explain) Comments:

The reporting limits (RLs) for 1,2,4-trichlorobenzene, 1,2-dibromoethane, bromodichloromethane, and hexachlorobutadiene were elevated in project samples IA20-01, IA20-02, IA20-102, and IA20-03.

d. Data quality or usability affected?

Comments:

In cases where the RLs for not-detected analytes exceeded DEC target levels, the analytes could have been present in the samples at concentrations less than the RLs but greater than the target levels. The affected sample results are presented in bold text in the analytical summary table.

6. QC Samples

a. Method Blank

i. One method blank reported per analysis and 20 samples?

Yes No NA (Please explain)

Comments:

ii. All method blank results less than PQL?

Yes No NA (Please explain)

Comments:

iii. If above PQL, what samples are affected?

Comments:

None; the target analytes were not detected in the method blank.

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?

Yes No NA (Please explain)

Comments:

No samples are affected; target analytes were not detected in the method blank.

v. Data quality or usability affected? (Please explain.)

Comments:

The data quality and/or usability are not affected; see above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. One LCS/LCSD or one LCS and a sample/sample duplicate pair reported per analysis and 20 samples?

Yes No NA (Please explain)

Comments:

ii. Accuracy - All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable.

Yes No NA (Please explain)

Comments:

iii. Precision - All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable.

Yes No NA (Please explain)

Comments:

iv. If %R or RPD is outside of acceptable limits, what samples are affected?

Yes No NA (Please explain) Comments:

None; analytical accuracy and precision were demonstrated to be within acceptable limits for the requested method.

v. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No NA (Please explain) Comments:

No qualification was required; see above.

vi. Data quality or usability affected? (Please explain.)

Comments:

The data quality and/or usability is not affected; see above.

c. Surrogates

i. Are surrogate recoveries reported for field, QC and laboratory samples?

Yes No NA (Please explain) Comments:

ii. Accuracy - All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable.

Yes No NA (Please explain) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

Yes No NA (Please explain) Comments:

There are no surrogate recovery failures associated with this work order.

iv. Data quality or usability affected? (Please explain.)

Comments:

The data quality and/or usability are not affected; see above.

d. Field Duplicate

i. One field duplicate submitted per analysis and 10 type (soil gas, indoor air etc.) samples?

Yes No NA (Please explain) Comments:

ii. Submitted blind to lab?

Yes No NA (Please explain) Comments:

The field duplicate samples IA20-02 and IA20-102 were submitted with this work order.

iii. Precision - All relative percent differences (RPD) less than specified DQOs? (Recommended: 25 %)

$$\text{RPD (\%)} = \text{Absolute Value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Yes No NA (Please explain)

Comments:

The relative precision demonstrated between the detected analyte concentrations of the field duplicate samples was within the recommended DQO of 25%, where calculable.

iv. Data quality or usability affected? (Please explain.)

Comments:

Data quality was not affected; see above.

e. Field Blank (If not used explain why).

Yes No NA (Please explain)

Comments:

A field blank was not required for this project.

i. All results less than PQL?

Yes No NA (Please explain)

Comments:

Field blanks were not used; see above.

ii. If above PQL, what samples are affected?

Comments:

Field blanks were not used.

iii. Data quality or usability affected? (Please explain.)

Comments:

Data quality and usability were not affected; see above.

7. Other Data Flags/Qualifiers

a. Defined and appropriate?

Yes No NA (Please explain)

Comments:

Ethanol was detected above the calibration range of the laboratory's instrumentation in project samples IA20-01, IA20-02, IA20-102, and IA20-03. The ethanol results have been flagged J* on the analytical results table to indicate the results are considered estimated.

Reset Form

INDOOR AIR SAMPLING LOG

SHANNON & WILSON, INC.

Client Friends Church, Eric Gettinger
Location 1485 30th Ave
Fairbanks, AK 99701
Mailing Address Same as above
Weather Sunny Temp (°F) 50° outside

Project Number 106339-001
Project Name Friends Church
Date 12/29/20
Time 1230
Sampling Personnel DHF & ALF

Sample No. IA20-01
Duplicate —

Date (start) 12/29/20 Time (start) 1257
Date (end) 12/30/20 Time (end) 1300
Date (start) — Time (start) —
Date (end) — Time (end) —

Sample Location: On snack bar table in the Ministry coordinator's office

Sample Height (ft.) 47" Above Ground Surface

Canister ID 6L1823
Canister Volume (L) 6

Relative Humidity 79% / 79%
Barometric Pressure 29.75 in / 29.68 in

Initial Canister Vacuum (inHg) -28.5
Final Canister Vacuum (inHg) -6

Laboratory Eurofins
Analysis TO-15 + Naphthalene
Hi/Lo SUM

Notes: Flow controller # 21901? Difficult to read because label partly destroyed

INDOOR AIR SAMPLING LOG

Client Friends Church, Eric Gettinger
 Location 1485 30th Ave
Fairbanks, AK 99701
 Mailing Address Same as above
 Weather sunny Temp (°F) 5 outside

Project Number 108339-001
 Project Name Friends Church
 Date 12/29/20
 Time 1300
 Sampling Personnel DHP and ALF

Sample No. IA20-02

Date (start) 12/29/20 Time (start) 1313
 Date (end) 12/30/20 Time (end) 1313

Duplicate IA20-102

Date (start) 12/29/20 Time (start) 1313
 Date (end) 12/30/20 Time (end) 1313

Sample Location: In ~~warship~~ worship office on desk

Sample Height (ft.) 52" Above Ground Surface

Canister ID 6L0141/6L2660
 Canister Volume (L) 6 / 6

Relative Humidity 79% / 79%
 Barometric Pressure 29.75 in / 29.68 in

Initial Canister Vacuum (inHg) -29 / -29
 Final Canister Vacuum (inHg) -5.5 / ~~2.5~~ -4.5

Laboratory Eurofins
 Analysis TO-15 + Naphthalene
Hi/Lo SIM

Notes: Brakleen (with PCE) observed in closet next to main room, where
sub-slab part is.
flow controller #21388 and #20720

SOIL-GAS SAMPLING LOG

SHANNON & WILSON, INC.

Client Friends Church, Eric Gettinger
 Location 1485 30th Ave
Fairbanks AK 99701
 Weather mostly sunny Temp (°F) -8

Project Number 106339-001
 Project Name Friends Church
 Date and Time 12/30/20 1100
 Sampling Personnel DHF & ALF

Sample No. ~~5520~~ 5520-01
 Duplicate —

Time (start) 1118 Time (end) 1123
 Time (start) — Time (end) —

Soil-Gas Port Type ~~SSS~~ Teflon
 Installation Depth 4 inches feet bgs
 Canister ID 1L1758
 Canister Volume (L) 1
 Initial Canister Vacuum (inHg) -29
 Final Canister Vacuum (inHg) -5

Date Installed 12/29/20
 Time Installed 1230
 Laboratory Eurofins
 Analysis TD-15 modified Hi-Lo and naphthalene

Leak Detection Tests: Pass Fail

Shut-in Test:

Vacuum applied to sample train -28 inHg
 Drop in vacuum after one minute 0 inHg

Note: vacuum applied to sample train = evacuating sample train to ~ 7.35 inHg. Any observable loss after 1 minute is considered a leak.

Tracer Test:

Helium applied at probe interface (shroud) 3.6 % or ppm
 Probe and sampling line purge rate 200 mL/min.
 Sample train length 6.6 ft
 Sample train volume per foot (3/16" tubing) 5.43 mL/ft
 Sample train volume 35.7 mL
 One sample train volume (purge time) 11 seconds

Note: Helium detected at > 10% the helium applied under the shroud is considered a leak.

Time (hh:mm:ss)	Helium (% or ppm)
00:02	0
00:04	0
00:06	0
00:11	0

Notes: Flow controller #24048

30" + 19" + 26" = 4" + 75" = 79"

Probe location is under carpet next to bathroom door in Ministry office!

Slab flow measured at 0.008 L/min

SOIL-GAS SAMPLING LOG

SHANNON & WILSON, INC.

Client Friends Church, Eric Gettinger
 Location 1485 30th Ave
Fairbanks AK 99701
 Weather mostly sunny Temp (°F) -8
 Sample No. ~~8502~~ SS20-02
 Duplicate SS20-102

Project Number 106339-001
 Project Name Friends Church
 Date and Time 12/30/20
 Sampling Personnel DHP & ALF
 Time (start) 1215 Time (end) 1220
 Time (start) 1215 Time (end) 1220

Soil-Gas Port Type Teflon
 Installation Depth 4 inches feet bgs
 Canister ID SL 0015 / 1L 1883
 Canister Volume (L) 1 / 1
 Initial Canister Vacuum (inHg) -29 / -28.5
 Final Canister Vacuum (inHg) -5 / -5

Date Installed 12/29/20
 Time Installed 1120
 Laboratory Eurofins
 Analysis 10-15 Modified Hi/Lo and naphthalene

Leak Detection Tests:

Pass / Fail

Shut-in Test:

Vacuum applied to sample train -28 inHg
 Drop in vacuum after one minute 0 inHg

Note: vacuum applied to sample train = evacuating sample train to ~ 7.35 inHg. Any observable loss after 1 minute is considered a leak.

Tracer Test:

Helium applied at probe interface (shroud) 3.4 % or ppm
 Probe and sampling line purge rate 200 mL/min.
 Sample train length 6.4 ft
 Sample train volume per foot (3/16" tubing) 5.43 mL/ft
 Sample train volume 35 mL
 One sample train volume (purge time) 11 seconds

Note: Helium detected at > 10% the helium applied under the shroud is considered a leak.

Notes: flow controller #24046 and 24064

Time (hh:mm:ss)	Helium (% or ppm)
00:02	0
00:04	0
00:06	0
00:08	0
00:11	0

30" + 4" + 18" + 25" = 77"

Probe location is inside closet in worship office

Slab flow measured at 0:005 L/min

SOIL-GAS SAMPLING LOG

SHANNON & WILSON, INC.

Client Friends Church, Eric Gettinger
 Location 1485 30th Ave
Fairbanks, AK 99701
 Weather Mostly Sunny Temp (°F) -8
 Sample No. ~~SS03~~ SS20-03
 Duplicate —

Project Number 106339-001
 Project Name Friends Church
 Date and Time 12/30/20 1235
 Sampling Personnel DHF + ALF
 Time (start) 1249 Time (end) 1255
 Time (start) — Time (end) —

Soil-Gas Port Type Teflon
 Installation Depth 6 inches feet bgs
 Canister ID 1L2059
 Canister Volume (L) 1
 Initial Canister Vacuum (inHg) -26
 Final Canister Vacuum (inHg) -5

Date Installed 12/29/20
 Time Installed —
 Laboratory Eurofins
 Analysis TO-15 + naphthalene
Hi/Lo

Leak Detection Tests: Pass / Fail

Shut-in Test:
 Vacuum applied to sample train -28 inHg
 Drop in vacuum after one minute 0 inHg
 Note: vacuum applied to sample train = evacuating sample train to ~ 7.35 inHg. Any observable loss after 1 minute is considered a leak.

Tracer Test:
 Helium applied at probe interface (shroud) 28.4 % or ppm
 Probe and sampling line purge rate 200 mL/min.
 Sample train length 7.6 ft
 Sample train volume per foot (3/16" tubing) 5.43 mL/ft
 Sample train volume 41 mL
 One sample train volume (purge time) 12 seconds

Note: Helium detected at > 10% the helium applied under the shroud is considered a leak.

Notes: Flow controller #24054

Time (hh:mm:ss)	Helium (% or ppm)
00:02	0
00:04	0
00:06	0
00:08	0
00:10	0
00:12	0

6" + 30" + 12" + 18" + 25" = 91

Sample port location is inside west stage storage room

Slab flow measured at 0.047 L/min

Appendix A - Human Health Conceptual Site Model Scoping Form and Standardized Graphic

Site Name:

File Number:

Completed by:

Introduction

The form should be used to reach agreement with the Alaska Department of Environmental Conservation (DEC) about which exposure pathways should be further investigated during site characterization. From this information, summary text about the CSM and a graphic depicting exposure pathways should be submitted with the site characterization work plan and updated as needed in later reports.

General Instructions: Follow the italicized instructions in each section below.

1. General Information:

Sources (*check potential sources at the site*)

- | | |
|--|--|
| <input type="checkbox"/> USTs | <input type="checkbox"/> Vehicles |
| <input type="checkbox"/> ASTs | <input type="checkbox"/> Landfills |
| <input type="checkbox"/> Dispensers/fuel loading racks | <input type="checkbox"/> Transformers |
| <input type="checkbox"/> Drums | <input type="checkbox"/> Other: <input type="text"/> |

Release Mechanisms (*check potential release mechanisms at the site*)

- | | |
|---------------------------------|--|
| <input type="checkbox"/> Spills | <input type="checkbox"/> Direct discharge |
| <input type="checkbox"/> Leaks | <input type="checkbox"/> Burning |
| | <input type="checkbox"/> Other: <input type="text"/> |

Impacted Media (*check potentially-impacted media at the site*)

- | | |
|--|--|
| <input type="checkbox"/> Surface soil (0-2 feet bgs*) | <input type="checkbox"/> Groundwater |
| <input type="checkbox"/> Subsurface soil (>2 feet bgs) | <input type="checkbox"/> Surface water |
| <input type="checkbox"/> Air | <input type="checkbox"/> Biota |
| <input type="checkbox"/> Sediment | <input type="checkbox"/> Other: <input type="text"/> |

Receptors (*check receptors that could be affected by contamination at the site*)

- | | |
|--|--|
| <input type="checkbox"/> Residents (adult or child) | <input type="checkbox"/> Site visitor |
| <input type="checkbox"/> Commercial or industrial worker | <input type="checkbox"/> Trespasser |
| <input type="checkbox"/> Construction worker | <input type="checkbox"/> Recreational user |
| <input type="checkbox"/> Subsistence harvester (i.e. gathers wild foods) | <input type="checkbox"/> Farmer |
| <input type="checkbox"/> Subsistence consumer (i.e. eats wild foods) | <input type="checkbox"/> Other: <input type="text"/> |

* bgs - below ground surface

2. Exposure Pathways: *(The answers to the following questions will identify complete exposure pathways at the site. Check each box where the answer to the question is "yes".)*

a) Direct Contact -

1. Incidental Soil Ingestion

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site-specific basis.)

If the box is checked, label this pathway complete:

Comments:

2. Dermal Absorption of Contaminants from Soil

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.)

Can the soil contaminants permeate the skin (see Appendix B in the guidance document)?

If both boxes are checked, label this pathway complete:

Comments:

b) Ingestion -

1. Ingestion of Groundwater

Have contaminants been detected or are they expected to be detected in the groundwater, or are contaminants expected to migrate to groundwater in the future?

Could the potentially affected groundwater be used as a current or future drinking water source? Please note, only leave the box unchecked if DEC has determined the groundwater is not a currently or reasonably expected future source of drinking water according to 18 AAC 75.350.

If both boxes are checked, label this pathway complete:

Comments:

2. Ingestion of Surface Water

Have contaminants been detected or are they expected to be detected in surface water, or are contaminants expected to migrate to surface water in the future?

Could potentially affected surface water bodies be used, currently or in the future, as a drinking water source? Consider both public water systems and private use (i.e., during residential, recreational or subsistence activities).

If both boxes are checked, label this pathway complete:

Comments:

3. Ingestion of Wild and Farmed Foods

Is the site in an area that is used or reasonably could be used for hunting, fishing, or harvesting of wild or farmed foods?

Do the site contaminants have the potential to bioaccumulate (see Appendix C in the guidance document)?

Are site contaminants located where they would have the potential to be taken up into biota? (i.e. soil within the root zone for plants or burrowing depth for animals, in groundwater that could be connected to surface water, etc.)

If all of the boxes are checked, label this pathway complete:

Comments:

c) Inhalation-

1. Inhalation of Outdoor Air

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.)

Are the contaminants in soil volatile (see Appendix D in the guidance document)?

If both boxes are checked, label this pathway complete:

Comments:

2. Inhalation of Indoor Air

Are occupied buildings on the site or reasonably expected to be occupied or placed on the site in an area that could be affected by contaminant vapors? (within 30 horizontal or vertical feet of petroleum contaminated soil or groundwater; within 100 feet of non-petroleum contaminated soil or groundwater; or subject to "preferential pathways," which promote easy airflow like utility conduits or rock fractures)

Are volatile compounds present in soil or groundwater (see Appendix D in the guidance document)?

If both boxes are checked, label this pathway complete:

Comments:

3. Additional Exposure Pathways: *(Although there are no definitive questions provided in this section, these exposure pathways should also be considered at each site. Use the guidelines provided below to determine if further evaluation of each pathway is warranted.)*

Dermal Exposure to Contaminants in Groundwater and Surface Water

Dermal exposure to contaminants in groundwater and surface water may be a complete pathway if:

- Climate permits recreational use of waters for swimming.
- Climate permits exposure to groundwater during activities, such as construction.
- Groundwater or surface water is used for household purposes, such as bathing or cleaning.

Generally, DEC groundwater cleanup levels in 18 AAC 75, Table C, are deemed protective of this pathway because dermal absorption is incorporated into the groundwater exposure equation for residential uses.

Check the box if further evaluation of this pathway is needed:

Comments:

Inhalation of Volatile Compounds in Tap Water

Inhalation of volatile compounds in tap water may be a complete pathway if:

- The contaminated water is used for indoor household purposes such as showering, laundering, and dish washing.
- The contaminants of concern are volatile (common volatile contaminants are listed in Appendix D in the guidance document.)

DEC groundwater cleanup levels in 18 AAC 75, Table C are protective of this pathway because the inhalation of vapors during normal household activities is incorporated into the groundwater exposure equation.

Check the box if further evaluation of this pathway is needed:

Comments:

Inhalation of Fugitive Dust

Inhalation of fugitive dust may be a complete pathway if:

- Nonvolatile compounds are found in the top 2 centimeters of soil. The top 2 centimeters of soil are likely to be dispersed in the wind as dust particles.
- Dust particles are less than 10 micrometers (Particulate Matter - PM₁₀). Particles of this size are called respirable particles and can reach the pulmonary parts of the lungs when inhaled.

DEC human health soil cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway because the inhalation of particulates is incorporated into the soil exposure equation.

Check the box if further evaluation of this pathway is needed:

Comments:

Direct Contact with Sediment

This pathway involves people's hands being exposed to sediment, such as during some recreational, subsistence, or industrial activity. People then incidentally ingest sediment from normal hand-to-mouth activities. In addition, dermal absorption of contaminants may be of concern if the the contaminants are able to permeate the skin (see Appendix B in the guidance document). This type of exposure should be investigated if:

- Climate permits recreational activities around sediment.
- The community has identified subsistence or recreational activities that would result in exposure to the sediment, such as clam digging.

Generally, DEC direct contact soil cleanup levels in 18 AAC 75, Table B1, are assumed to be protective of direct contact with sediment.

Check the box if further evaluation of this pathway is needed:

Comments:

4. Other Comments *(Provide other comments as necessary to support the information provided in this form.)*

HUMAN HEALTH CONCEPTUAL SITE MODEL GRAPHIC FORM

Site: _____

Completed By: _____
 Date Completed: _____

Instructions: Follow the numbered directions below. Do not consider contaminant concentrations or engineering/land use controls when describing pathways.

(1) Media	(2) Transport Mechanisms
<input type="checkbox"/> Surface Soil (0-2 ft bgs)	<input type="checkbox"/> Direct release to surface soil <i>check soil</i> <input type="checkbox"/> Migration to subsurface <i>check soil</i> <input type="checkbox"/> Migration to groundwater <i>check groundwater</i> <input type="checkbox"/> Volatilization <i>check air</i> <input type="checkbox"/> Runoff or erosion <i>check surface water</i> <input type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____
<input type="checkbox"/> Subsurface Soil (2-15 ft bgs)	<input type="checkbox"/> Direct release to subsurface soil <i>check soil</i> <input type="checkbox"/> Migration to groundwater <i>check groundwater</i> <input type="checkbox"/> Volatilization <i>check air</i> <input type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____
<input type="checkbox"/> Ground-water	<input type="checkbox"/> Direct release to groundwater <i>check groundwater</i> <input type="checkbox"/> Volatilization <i>check air</i> <input type="checkbox"/> Flow to surface water body <i>check surface water</i> <input type="checkbox"/> Flow to sediment <i>check sediment</i> <input type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____
<input type="checkbox"/> Surface Water	<input type="checkbox"/> Direct release to surface water <i>check surface water</i> <input type="checkbox"/> Volatilization <i>check air</i> <input type="checkbox"/> Sedimentation <i>check sediment</i> <input type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____
<input type="checkbox"/> Sediment	<input type="checkbox"/> Direct release to sediment <i>check sediment</i> <input type="checkbox"/> Resuspension, runoff, or erosion <i>check surface water</i> <input type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____

(3) Check all exposure media identified in (2).

Exposure Media

soil

groundwater

air

surface water

sediment

biota

(4) Check all pathways that could be complete. The pathways identified in this column **must** agree with Sections 2 and 3 of the Human Health CSM Scoping Form.

Exposure Pathway/Route

Incidental Soil Ingestion

Dermal Absorption of Contaminants from Soil

Inhalation of Fugitive Dust

Ingestion of Groundwater

Dermal Absorption of Contaminants in Groundwater

Inhalation of Volatile Compounds in Tap Water

Inhalation of Outdoor Air

Inhalation of Indoor Air

Inhalation of Fugitive Dust

Ingestion of Surface Water

Dermal Absorption of Contaminants in Surface Water

Inhalation of Volatile Compounds in Tap Water

Direct Contact with Sediment

Ingestion of Wild or Farmed Foods

(5) Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, "C/F" for both current and future receptors, or "I" for insignificant exposure.

Current & Future Receptors

	Residents (adults or children)	Commercial or Industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Farmers or subsistence harvesters	Subsistence consumers	Other
<input type="checkbox"/> Incidental Soil Ingestion							
<input type="checkbox"/> Dermal Absorption of Contaminants from Soil							
<input type="checkbox"/> Inhalation of Fugitive Dust							
<input type="checkbox"/> Ingestion of Groundwater							
<input type="checkbox"/> Dermal Absorption of Contaminants in Groundwater							
<input type="checkbox"/> Inhalation of Volatile Compounds in Tap Water							
<input type="checkbox"/> Inhalation of Outdoor Air							
<input type="checkbox"/> Inhalation of Indoor Air							
<input type="checkbox"/> Inhalation of Fugitive Dust							
<input type="checkbox"/> Ingestion of Surface Water							
<input type="checkbox"/> Dermal Absorption of Contaminants in Surface Water							
<input type="checkbox"/> Inhalation of Volatile Compounds in Tap Water							
<input type="checkbox"/> Direct Contact with Sediment							
<input type="checkbox"/> Ingestion of Wild or Farmed Foods							

Important Information About Your Geotechnical/Environmental Report

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors that were considered in the development of the report have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events and should be consulted to determine if additional tests are necessary.

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary, because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports, and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

The preceding paragraphs are based on information provided by the ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland