



8976 Wellington Road
Manassas, VA 20109

March 05, 2020

R. Scott Deyette
New York State Department of Environmental Conservation
Division of Environmental Remediation, Remedial Bureau C
625 Broadway, 11th Floor
Albany, New York 12233-7014

Re: Subslab Depressurization System Shutdown Testing Results – December 2019 Sampling
Former IBM Leased Building 982 (Neptune Commerce Center)
Poughkeepsie, Dutchess County, New York
NYSDEC Site No. 314076

Dear Mr. Deyette:

The enclosed document presents the results of the December 2019 shutdown testing associated with the subslab depressurization system at the former IBM leased Building 982 located at the Neptune Commerce Center on Neptune Road, Poughkeepsie, New York. The work described herein was conducted as a follow up to the initial round of shut down sampling, the results of which were submitted on May 2, 2019.

If you have any questions, please contact me at (703) 257-2586.

Sincerely,
International Business Machines Corporation

A handwritten signature in black ink, appearing to read 'M. Kominek', with a horizontal line underneath.

Michael J. Kominek
Program Manager, Corporate Environmental Affairs

Enclosure: Letter Report

cc: T. Perretta (NYSDOH)
D. Kaminski (NCI)

**Subslab Depressurization System Shutdown
Testing Results
December 2019 Sampling
Former IBM Leased Building 982 (Neptune Commerce Center)**

*Poughkeepsie, NY
NYSDEC Site No. 314076*

"I, David Shea, certify that I am currently a NYS registered professional engineer and that this report was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10)."

*Prepared for IBM Corporation
File No. 4593.00
March 2020*



Michael J. Kominek
IBM Corporation
8976 Wellington Road
Manassas, VA 20109

March 05, 2020
File No. 4593.00

Re: Subslab Depressurization System Shutdown Testing Results – December 2019
Sampling
Former IBM Leased Building 982 (Neptune Commerce Center)
Poughkeepsie, Dutchess County, New York
NYSDEC Site No. 314076

Dear Mr. Kominek:

This letter documents the results of indoor air and subslab vapor sampling that was conducted in December 2019 to evaluate potential permanent shutdown of the subslab depressurization system (SSDS) at the former IBM leased Building 982 located at the Neptune Commerce Center in Poughkeepsie, New York (the site). IBM elected to install the SSD system in 2013 as a pro-active, pre-emptive mitigation measure to address potential soil vapor intrusion. Although IBM is not the owner of the site, IBM is conducting the remediation activities for the site. We understand this letter will be submitted to the New York State Department of Environmental Conservation (NYSDEC) and the Department of Health (NYSDOH) (the Departments) for review and comment.

The work described herein was conducted on behalf of IBM by Sanborn, Head Engineering P.C. in general accordance with the February 15, 2019 Work Plan¹ submitted to the Departments, which incorporated responses to Department comments received by IBM on February 15, 2019. The December 2019 sampling event described herein was conducted subsequent to the initial trial SSDS shutdown testing completed in March 2019, the results of which were documented in a May 2019 report² submitted to the Departments. The services conducted, and this letter, are subject to the standard limitations for this type of work described in Attachment 1.

BACKGROUND

The former IBM leased Building 982 at the current Neptune Commerce Center on Neptune Rd, Poughkeepsie, NY was redeveloped in 2013-2014 by its current owner, Neptune Capital Investors, LLC. It houses Bounce, a commercial indoor trampoline recreational facility, in

¹ *Work Plan for Subslab Depressurization System Shutdown Testing, Former IBM Leased Building 982 (Neptune Commerce Center), Poughkeepsie, Dutchess County, New York, NYSDEC Site No. 314076, IBM Corporation and Sanborn, Head Engineering P.C., February 15, 2019.*

² *Subslab Depressurization System Shutdown Testing Results, Former IBM Leased Building 982 (Neptune Commerce Center), Poughkeepsie, Dutchess County, New York, NYSDEC Site No. 314076, IBM Corporation and Sanborn, Head Engineering P.C., May 2, 2019.*

the western half of the building, and Crunch, a commercial gymnasium, in the eastern half of the building.

The SSDS for the entire building was installed in the fall of 2013 and put into operation on December 13, 2013. The SSDS installation and start-up was completed in accordance with IBM's 2013 SSDS Work Plan³ and 2013 SSDS Design Report⁴ for these activities. The start-up and performance testing of the SSDS was documented in a February 2014 report (2014 SSDS Startup Report),⁵ which was approved by the Departments in an April 25, 2014 letter to IBM.

As documented in the 2014 SSDS Startup Report, the results of indoor air sampling prior to the installation of the SSDS indicated that indoor air had not been affected by soil vapor intrusion; the SSDS was installed by IBM as a pre-emptive measure to facilitate building redevelopment by its owner. The SSDS Startup Report also indicated that IBM, in consultation with the Departments, may conduct a temporary shut-down of the SSDS to evaluate the need for continued operations to mitigate potential soil vapor intrusion.

A recent evaluation of the volatile organic compound (VOC) mass captured by the SSDS, which was included with the May 2019 report, indicates that VOC mass capture rates have been consistently low for the past four years. The rate of VOC capture is less than thresholds that would require VOC emissions controls (the SSDS is equipped with vapor-phase granular activated carbon treatment). Furthermore, the consistently low VOC capture rate by the SSDS is such that this mass, if uncaptured and allowed to enter the building, would be unlikely to result in exceedances of NYSDOH's indoor air concentration guidelines.

Given these evaluations, and consistent with Section 4.5 of NYSDOH's "Guidance for Evaluating Soil Vapor Intrusion in the State of New York" dated October 2006, IBM elected to perform an initial trial shutdown of the SSDS to evaluate whether the SSDS is needed to address current or potential exposures to VOCs in indoor air related to soil vapor intrusion. The results of the initial trial SSDS shutdown testing were documented in the May 2019 report.

As described in the May 2019 report, IBM conducted the trial shutdown of the SSDS beginning in February 2019, including collection of paired indoor air and subslab vapor samples in March 2019 approximately one month following the trial shutdown. When evaluated in comparison to the concentration thresholds in the NYSDOH May 2017 Soil Vapor/Indoor Air matrices, the results of the initial trial SSDS shutdown sampling indicated that the SSDS is not needed to mitigate the vapor intrusion pathway.

³ *Subslab Depressurization System (SSDS) Design Work Plan, Former Building 982 – Neptune Road, Poughkeepsie, New York, NYSDEC Site No. 314076, IBM Corporation and Sanborn, Head Engineering P.C., September 26, 2013.*

⁴ *Subslab Depressurization System (SSDS) Design Report, Former Building 982 – Neptune Road, Poughkeepsie, New York, NYSDEC Site No. 314076, IBM Corporation and Sanborn, Head Engineering P.C., September 24, 2013.*

⁵ *Subslab Depressurization System Start-up and Performance Testing Report, Former Building 982 – Neptune Road, Poughkeepsie, New York, NYSDEC Site No. 314076, IBM Corporation and Sanborn, Head Engineering P.C., February 2014.*

Based on the favorable results of the March 2019 sampling, IBM elected to conduct a longer-term trial shutdown of the SSDS, including repeat indoor air and subslab vapor sampling in the 2019-2020 heating season, to confirm that the SSDS is no longer needed to mitigate soil vapor intrusion and can be permanently shut down. This report summarizes the results of the longer-term SSDS shutdown test and documents IBM's intention to permanently shut down the SSDS, contingent on the review and approval of the Departments.

SUBSLAB VAPOR AND INDOOR AIR SAMPLING

On July 2, 2019, the SSDS was shut down for the longer-term test. On December 12, 2019, 163 days following shutdown, subslab vapor and indoor air sample pairs were collected from the same six locations sampled in March 2019: three in the Bounce trampoline business on the west side of the building, and three in the Crunch gymnasium on the east side. The indoor air and subslab vapor sample pair locations, which are shown on Figure 1, provide building-wide representative coverage.

The subslab vapor and indoor air samples were collected concurrently using individually certified-clean, 6-liter, pre-evacuated, stainless-steel canisters (Summa® canisters) equipped with flow controllers to obtain 8-hour time-averaged samples. The samples were collected with the HVAC system operating consistent with normal business operations. Subslab vapor samples were collected from the existing subslab vapor (SSV) ports using Teflon® tubing. Indoor air samples were collected from a height of three to four feet above the floor. A summary of field sampling information is provided in Table 1.

For quality assurance/quality control purposes, several samples were collected concurrently with the subslab vapor and indoor air samples, including: one outdoor air sample (AA-1); one blind duplicate indoor air sample collected at location IA-1017 (FD-02); one blind duplicate subslab vapor sample collected at location SSV-1017 (FD-01); and one field blank sample (FB-01) consisting of a sample canister filled on-site with laboratory-grade nitrogen. Outdoor air sample AA-01 was collected in the parking to the north of B982 to assess the presence of background conditions that could impact indoor air quality.

The samples were submitted to Eurofins/Air Toxics of Folsom, California for analysis of 23 site-specific VOCs listed in the 2013 SSDS Work Plan using USEPA Method TO-15 in selective ion monitoring (SIM) mode. The laboratory reports are included as Attachment 2.

SAMPLING RESULTS

The indoor air and subslab vapor sample results are presented in Tables 2 and 3, respectively, and summarized on Figure 1. The tables include the results of samples collected in September 2013 prior to SSDS startup, and March 2019 following the initial trial SSDS shutdown test.

As described in Section 3.4 of the October 2006 NYSDOH Soil Vapor Intrusion guidance document, subslab vapor/indoor air matrices were developed by NYSDOH to summarize recommended actions to address potential soil vapor intrusion in the event certain guideline

concentrations are exceeded. Matrices A, B, and C were updated in May 2017 to include eight VOCs with guideline concentrations for subslab vapor and indoor air. Each matrix and the associated VOCs are listed in the table below:

Subslab Vapor/Indoor Air Matrix	VOC
Matrix A	Carbon tetrachloride 1,1-dichloroethene Cis-1,2-dichloroethene trichloroethene
Matrix B	Methylene chloride* Tetrachloroethene 1,1,1-trichlorethane
Matrix C	Vinyl chloride

*not analyzed because this compound is not a historical site contaminant

The results of the subslab vapor/indoor air sample pairs were evaluated in comparison to the guidelines concentrations on each matrix. According to the matrices, the subslab vapor/indoor air concentrations for each of the VOCs for each of the six sample pairs fall under the “no further action” category, with only one exception: in sample SSV-1001, trichloroethene (TCE) was detected at 62 $\mu\text{g}/\text{m}^3$ in subslab vapor, slightly greater than the threshold of 60 $\mu\text{g}/\text{m}^3$ that according to Matrix A yields a recommendation of “mitigate”, despite TCE not being detected in indoor air.

Other key observations about the sample results are as follows:

- TCE was not detected in any of the December 2019 indoor air samples, which is consistent with the 2013 results and all but one of the March 2019 samples, in which a single low-level detection of 0.3 $\mu\text{g}/\text{m}^3$ was detected at location IA-1017. However, TCE was not detected at IA-1017 in the December 2019 samples.
- The TCE concentration in the 6 subslab vapor samples ranged between <0.17 and 62 $\mu\text{g}/\text{m}^3$ compared to a range of <0.17 to 39 $\mu\text{g}/\text{m}^3$ in March 2019. In 2013, the maximum subslab vapor TCE concentration was 378 $\mu\text{g}/\text{m}^3$.
- Consistent with the 2013 and March 2019 results, 1,1,1-Trichlorethane (TCA) was not detected in any of the December 2019 indoor air samples. The TCA concentrations in the 6 subslab vapor samples ranged between 4.4 and 120 $\mu\text{g}/\text{m}^3$. For comparison, in 2013, the maximum subslab vapor TCA concentration was 3,020 $\mu\text{g}/\text{m}^3$.
- Other VOCs not specified in the NYSDOH matrices that were detected in indoor air were at concentrations less than 3.3 $\mu\text{g}/\text{m}^3$, with the exception of acetone, which was detected at a range of 7.7 to 31 $\mu\text{g}/\text{m}^3$, and isopropanol, which was detected at a range of 17 to 20 $\mu\text{g}/\text{m}^3$. Compared to the 2013 indoor air sample results, the maximum acetone concentration decreased from 390 $\mu\text{g}/\text{m}^3$ to 31 $\mu\text{g}/\text{m}^3$. Isopropanol was not

detected in the 2013 samples either in subslab vapor or indoor air. The December 2019 sample concentrations of acetone and isopropanol in subslab vapor were generally less than their corresponding indoor air samples, which suggests that the presence of acetone and isopropanol in indoor is not attributable to vapor intrusion.

- Low-level concentrations of other VOCs detected in indoor air were similar in concentration to those in outdoor air, which indicates those VOCs were likely present as background conditions.
- Concentrations of other VOCs detected in subslab vapor were generally similar to those from the March 2019 sampling event.

Overall, the December 2019 subslab vapor and indoor air sample results confirm the March 2019 results, which indicate that indoor air has not been affected by soil vapor intrusion, even without the operation of the SSDS for an extended period (163 days).

Quality Assurance/Quality Control

The analytical data were provided to New Environmental Horizons, Inc. (NEH) of Skillman, NJ for an independent, third-party data usability review (i.e., data validation) in accordance with the Work Plan. The data usability summary reports (DUSRs) are provided in Attachment 3. The review found that all results were considered usable for the project objectives/decisions.

CONCLUSIONS AND NEXT STEPS


A long-term trial SSDS shutdown test was conducted to evaluate whether the SSDS is needed to address current or potential exposures to VOCs in indoor air related to soil vapor intrusion. The SSDS was shut down for 163 days, followed by concurrent sampling of subslab vapor and indoor air in December 2017.

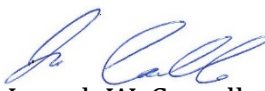
When evaluated in comparison to the concentration thresholds in the NYSDOH May 2017 Soil Vapor/Indoor Air matrices, all of the sample pairs for all VOCs fall under the category of “no further action”, except one pair: at location SSV-1001, the subslab vapor TCE concentration was slightly above the threshold for the “mitigate” category. Subslab samples are typically used as an indicator of the potential for vapor intrusion and whether indoor air sampling is warranted. However, indoor air samples provide the most direct indication of indoor air quality. By this metric, the indoor air samples at the site do not indicate vapor intrusion. Given that TCE was not detected in any of the 6 indoor air samples, and considering that 5 out of 6 subslab-indoor air sample pairs collected building-wide fall under the “no further action” category for TCE, , the weight of evidence indicates that soil vapor intrusion is not of concern and that the SSDS is not needed to mitigate the vapor intrusion pathway.

Given the favorable results of the SSDS shutdown test, the SSDS remains shut down, and pending the review and approval of the Departments, IBM intends to keep the SSDS shut down permanently.

The subslab vapor and indoor air sampling results presented in this report will be provided to the site owner for communication to its tenants consistent with the requirements of New York Environmental Conservation Law ENV Section 27-2405.

Very truly yours,
SANBORN, HEAD ENGINEERING, P.C.


David Shea, P.E.
Sr. Vice President


Joseph W. Corsello
Project Manager

Encl. Figure 1 – Summary of 8-Hour Indoor Air & Subslab Vapor Sampling Results
Table 1 – Summary of Indoor Air Sample Information
Table 2 – Summary of 8-Hour Indoor Air Sampling Results
Table 3 – Summary of 8-Hour Subslab Vapor Sampling Results
Attachment 1 – Limitations
Attachment 2 – Analytical Laboratory Reports
Attachment 3 – Data Usability Summary Reports

\\bosserv1\shdata\SHDATA\4500s\4593.00\Source Files\Neptune Rd Shutdown Report No. 2\20200305 Final SSDS Shutdown Letter Report.docx

FIGURE

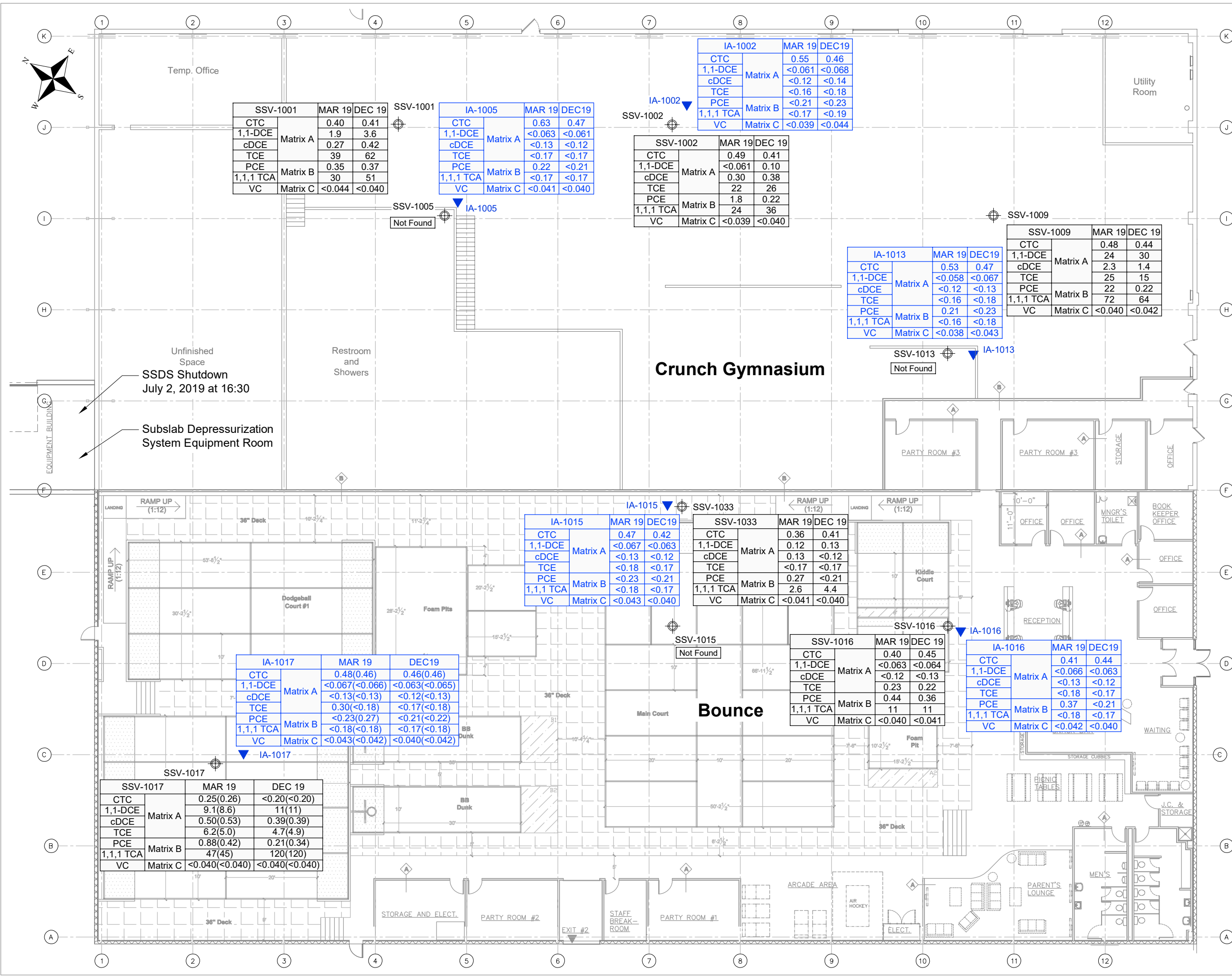


Figure 1
Summary of 8-Hour Indoor Air & Subslab Vapor Sampling Results

SSDS Shutdown Testing

Former Building 982 - Neptune Road
 Poughkeepsie, New York

Drawn By: E. Wright
 Designed By: J. Corsello
 Reviewed By: D. Shea
 Project No: 4593.00
 Date: February 2020

Figure Narrative
 This figure shows the results of indoor air and subslab vapor sampling conducted on December 12, 2019, 163 days after a trial shutdown of the subslab depressurization system (SSDS). The samples were collected as 8-hour time-averaged samples using 6-L SUMMA canisters. Results are shown in micrograms per cubic meter (µg/m³). The results of the samples collected in March 2019 are shown for comparison.

Notes
 1. The exploration locations were surveyed by Berger Engineering and Land Surveying, PLLC.
 2. Proposed building layout details were provided by the site owner (Neptune Capital Investors, LLC).

Legend

SSV-1002 Subslab vapor sampling location

IA-1016 Indoor air monitoring location

SSV-1016		
CTC		0.40
1,1-DCE	Matrix A	<0.063
cDCE		<0.12
TCE		0.23
PCE	Matrix B	0.44
1,1,1 TCA	Matrix B	11
VC	Matrix C	<0.040

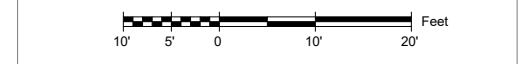
() indicates duplicate sample

IA-1016		
CTC		0.41
1,1-DCE	Matrix A	<0.066
cDCE		<0.13
TCE		<0.18
PCE	Matrix B	0.37
1,1,1 TCA	Matrix B	<0.18
VC	Matrix C	<0.042

() indicates duplicate sample

Matrix A, B, and C refer to the May 2017 NYSDOH tables (matrices) on which the VOCs are listed with their guideline concentrations. Refer to Tables 2 and 3 for the results of all VOCs analyzed.

Abbreviations
 PCE = Tetrachloroethene
 TCE = Trichloroethene
 cDCE = cis-1,2-Dichloroethene
 1,1-DCE = 1,1-Dichloroethene
 VC = Vinyl Chloride
 1,1,1-TCA = 1,1,1-Trichloroethane
 CTC = Carbon Tetrachloride



TABLES

TABLE 1
Summary of Indoor Air Sample Information
Former IBM Leased Building 982
Poughkeepsie, New York

Sample Location	Sample Date	Building	Sample Matrix	Canister Number	Sample Height (ft above floor)	Start Time (hours)	Start Pressure (mm Hg)	Stop Time (hours)	Stop Pressure (mm Hg)	Temperature (°F)	Location Description	Notes
IA-1002	12/12/2019	B982	Indoor Air	6L1666	3.5	5:17	-26.0	13:17	-7.0	65	Crunch, near entrance	
IA-1005				6L1625	3.5	5:16	-30.0	13:16	-6.5	65	Crunch, near treadmills	
IA-1013				6L0583	3.5	5:18	-29.0	13:18	-5.5	65	Crunch, near free weights	
IA-1016				6L1607	3.5	5:30	-30.0	13:30	-7.0	65	Bounce, near kiddie court	
IA-1017				34463	3.5	5:34	-30.0	13:34	-7.0	65	Bounce, near dodgeball	
IA-1033				6L1269	3.5	5:31	-27.0	13:31	-5.0	65	Bounce, near main court	
FD-01				6L1825	3.5	5:34	-30.0	13:34	-5.0	65	IA-1017	Field Duplicate Sample
AA-01				Exterior	Ambient Air	23317	0.0	5:25	-30.0	14:30	-9.0	40
Field Blank		Interior	Nitrogen	23298	0.0	5:26	-29.0	9:45	-5.0	40	Parking lot, near car dealership	Equipment Blank Sample

Notes:

1. Samples were collected by Sanborn Head personnel on the dates indicated.
2. Samples were collected into 6-liter, stainless steel, pre-evacuated SUMMA® canisters using 8-hour metering regulators. Each canister and regulator was laboratory-certified clean (100% certification). The samples were submitted to Eurofins/Air Toxics of Folsom, California for analysis of the 23 project-specific analytes using modified USEPA Method TO-15 using a combination of full scan and selective ion monitoring (SIM) mode.

TABLE 2
Summary of 8-Hour Indoor Air Sampling Results
Former IBM Leased Building 982
Poughkeepsie, New York

Analyte	Concentrations in µg/m ³																																																											
	AA-1									IA-1002									IA-1005									IA-1013									IA-1015									IA-1016														
	AA1			AA1			AA1			IA1002			IA1002			IA1002			IA1005			IA1005			IA1005			IA1013			IA1013			IA1013			IA1015			IA1015			IA1015			IA1016			IA1016			IA1016								
	09/06/13	03/28/19	12/12/19	09/06/13	03/28/19	12/12/19	09/06/13	03/28/19	12/12/19	09/06/13	03/28/19	12/12/19	09/06/13	03/28/19	12/12/19	09/06/13	03/28/19	12/12/19	09/06/13	03/28/19	12/12/19	09/06/13	03/28/19	12/12/19	09/06/13	03/28/19	12/12/19	09/06/13	03/28/19	12/12/19	09/06/13	03/28/19	12/12/19	09/06/13	03/28/19	12/12/19	09/06/13	03/28/19	12/12/19																					
Result	Qual	Bias	Result	Qual	Bias	Result	Qual	Bias	Result	Qual	Bias	Result	Qual	Bias	Result	Qual	Bias	Result	Qual	Bias	Result	Qual	Bias	Result	Qual	Bias	Result	Qual	Bias	Result	Qual	Bias	Result	Qual	Bias	Result	Qual	Bias	Result	Qual	Bias																			
Acetone	6.79			3.0			<4.0	U				148			61			31			161			61			30			137			57			30			166			172			24			8.0			213			13			19			
Butanone (2-) (MEK)	<1.47	U		<2.1	U		<2.5	U		<1.47	U		<2.3	U		3.3			3.1			<1.47	U		<2.3	U		3.1			<1.47	U		<2.5	U		<2.3	U		<2.5	U		<1.47	U		<2.4	U		<2.3	U		<2.5	U							
Carbon disulfide	0.791			<2.2	U		<2.6	U		<0.623	U		<2.4	U		<2.7	U		<0.623	U		<2.5	U		<2.4	U		<0.623	U		<2.3	U		<2.6	U		<2.5	U		<0.623	U		<2.6	U		<2.5	U		<2.6	U		<2.5	U							
Carbon tetrachloride	0.396			0.42			0.41			0.365			0.55			0.46			0.359			0.63			0.47			0.346			0.53			0.47			0.384			0.352			0.47			0.42			0.346			0.41			0.44					
Chloroform (Trichloromethane)	0.122			<0.14	U		<0.16	U		0.400			0.24			0.171			0.26			<0.15	U		0.181			0.25			<0.16	U		0.190			0.244			<0.17	U		<0.15	U		0.166			<0.16	U		<0.15	U							
Dichlorodifluoromethane (CFC12)	1.60			2.4			2.5			1.26	J	I	2.4			2.4			1.65			2.4			2.5			1.14			2.4			2.5			1.47	J	I	1.19	J	I	2.3			2.5			1.25			2.3			2.5					
Dichloroethane (1,1-)	<0.081	U		<0.12	U		<0.14	U		<0.081	U		<0.12	U		<0.14	U		<0.081	U		<0.13	U		<0.12	U		<0.081	U		<0.12	U		<0.14	U		<0.081	U		<0.081	U		<0.14	U		<0.13	U		<0.081	U		<0.13	U		<0.13	U				
Dichloroethene (1,1-)	<0.079	U		<0.057	U		<0.067	U		<0.079	U		<0.061	U		<0.068	U		<0.079	U		<0.063	U		<0.061	U		<0.079	U		<0.058	U		<0.067	U		<0.079	U		<0.079	U		<0.067	U		<0.063	U		<0.079	U		<0.066	U		<0.063	U				
Dichloroethene (cis-1,2-)	<0.079	U		<0.11	U		<0.13	U		<0.079	U		<0.12	U		<0.14	U		<0.079	U		<0.13	U		<0.12	U		<0.079	U		<0.12	U		<0.13	U		<0.079	U		<0.079	U		<0.13	U		<0.13	U		<0.13	U		<0.12	U		<0.12	U				
Ethane, 1,1,2-trichloro-1,2,2-trifluoro- (CFC113)	0.552			<1.1	U		<1.3	U		0.537			<1.2	U		<1.3	U		0.544			<1.2	U		<1.2	U		0.544			<1.1	U		<1.3	U		0.544			<1.3	U		<1.2	U		0.537			<1.3	U		<1.2	U		<1.2	U				
Ethylbenzene	0.096	EB	H	<0.12	U		<0.14	U		0.334	EB	H	0.17			0.18			0.343	EB	H	0.16			0.18			0.317	EB	H	0.19			0.18			0.326	EB	H	0.321	EB	H	0.16			<0.14	U		0.304	EB	H	0.16			<0.14	U				
Isopropyl Alcohol (Isopropanol)	<1.23	U		<1.8	U		<2.1	U		<1.23	U		30			20			<1.23	U		33			17			<1.23	U		28			17			<1.23	U		<1.23	U		6.8			19			<1.23	U		7.6			18					
Methyl-2-pentanone (4-) (MIBK)	<2.05	U		<0.59	U		<0.69	U		<2.05	U		0.70			<0.70	U		<2.05	U		0.76			<0.63	U		<2.05	U		0.70			<0.69	U		<2.05	U		<2.05	U		<0.70	U		<0.65	U		<2.05	U		<0.68	U		<0.65	U				
Propene	<0.861	U		<2.5	U		<2.9	U		<0.861	U		<2.6	U		<2.9	U		<0.861	U		<2.7	U		<2.7	U		<0.861	U		<2.5	U		<2.9	U		<0.861	U		<0.861	U		<2.9	U		<2.7	U		<0.861	U		<2.8	U		<2.7	U				
Tetrachloroethene (PCE)	<0.136	U		<0.20	U		<0.23	U		<0.136	U		<0.21	U		<0.23	U		<0.136	U		0.22			<0.21	U		<0.136	U		0.21			<0.23	U		<0.136	U		0.183			<0.23	U		<0.21	U		<0.136	U		0.37			<0.21	U				
Toluene	0.607			0.71			0.82			1.15			1.1			0.77			1.20			1.2			0.77			1.10			1.70			0.80			1.06			1.07			0.92			0.60			1.07			1.0			0.70					
Trichloroethane (1,1,1-)	<0.109	U		<0.16	U		<0.18	U		<0.109	U		<0.17	U		<0.19	U		<0.109	U		<0.17	U		<0.17	U		<0.109	U		<0.16	U		<0.18	U		<0.109	U		<0.109	U		<0.18	U		<0.17	U		<0.109	U		<0.18	U		<0.17	U				
Trichloroethene (TCE)	<0.107	U		<0.16	U		<0.18	U		<0.107	U		<0.16	U		<0.18	U		<0.107	U		<0.17	U		<0.17	U		<0.107	U		<0.16	U		<0.18	U		<0.107	U		<0.107	U		<0.18	U		<0.17	U		<0.107	U		<0.18	U		<0.17	U				
Trichlorofluoromethane	1.27			1.2			1.3			1.23			1.2			1.3			1.25			1.3			1.3			1.24			1.2			1.3			1.25			1.25			1.2			1.3			1.24			1.2			1.2					
Trimethylbenzene (1,2,4-)	0.133	EB	H	<0.71	U		<0.82	U		0.324	EB	H	<0.76	U		<0.84	U		0.320	EB	H	<0.78	U		<0.76	U		0.305	EB	H	<0.72	U		<0.82	U		0.334	EB	H	0.310	EB	H	<0.84	U		<0.78	U		0.320	EB	H	<0.82	U		<0.78	U				
Vinyl chloride	<0.051	U		<0.037	U		<0.043	U		<0.039	U		<0.039	U		<0.044	U		<0.051	U		<0.041	U		<0.040	U		<0.051	U		<0.038	U		<0.043	U		<0.051	U		<0.051	U		<0.043	U		<0.040	U		<0.040	U		<0.051	U		<0.042	U		<0.040	U	
Xylene (m,p-)	0.295			0.28			<0.29	U		1.48			0.45			0.43			1.55			0.47			0.42			1.39			0.50			0.42			1.42			1.42			0.50			<0.27	U		1.34			0.50			0.28					
Xylene (o-)	0.117			0.15			<0.14	U		0.608			0.18			0.19			0.652			0.22			0.18			0.573			0.20			0.18			0.591			0.586			0.25			<0.14	U		0.565			0.24			<0.14	U				

Analyte	Concentrations in µg/m ³														
	IA-1017														
	IA1017			IA1017			FD-01			IA1017			FD-02		
	09/06/13	03/28/19	12/12/19	09/06/13	03/28/19	12/12/19	09/06/13	03/28/19	12/12/19	09/06/13	03/28/19	12/12/19	09/06/13	03/28/19	12/12/19
Result	Qual	Bias	Result	Qual	Bias	Result	Qual	Bias	Result	Qual	Bias	Result	Qual	Bias	
Acetone	198			14			14			10			7.7		
Butanone (2-) (MEK)	<1.47	U		<2.5	U		<2.4	U		<2.3	U		<2.4</		

TABLE 3
Summary of 8-Hour Subslab Vapor Sampling Results
Former IBM Leased Building 982
Poughkeepsie, New York

Analyte	Concentrations in µg/m ³																																																		
	Field Blank									SSV-1001									SSV-1002									SSV-1005						SSV-1009						SSV-1013			SSV-1015			SSV-1016					
	FB1			FB1			FB1			SSV1001			SSV1001			SSV1002			SSV1002			SSV1005			SSV1009			SSV1009			SSV1013			SSV1015			SSV1016			SSV1016											
	09/06/13	03/28/19	12/12/19	03/28/19	12/12/19	09/06/13	03/28/19	12/12/19	09/06/13	03/28/19	12/12/19	09/06/13	03/28/19	12/12/19	09/06/13	03/28/19	12/12/19	09/06/13	03/28/19	12/12/19	09/06/13	03/28/19	12/12/19	09/06/13	03/28/19	12/12/19	09/06/13	03/28/19	12/12/19	09/06/13	03/28/19	12/12/19	09/06/13	03/28/19	12/12/19	09/06/13	03/28/19	12/12/19													
Result	Qual	Bias	Result	Qual	Bias	Result	Qual	Bias	Result	Qual	Bias	Result	Qual	Bias	Result	Qual	Bias	Result	Qual	Bias	Result	Qual	Bias	Result	Qual	Bias	Result	Qual	Bias	Result	Qual	Bias	Result	Qual	Bias	Result	Qual	Bias	Result	Qual	Bias										
Acetone	<13.1	U	<2.6	U	<3.5	U	7.4		9.6		33.7		8.5	J	H	5.3		<39.2	U	9.4		6.2		<23.6	U	16.9		75.8		10		5.4																			
Butanone (2-) (MEK)	<4.07	U	<3.2	U	<2.2	U	<2.5	U	<2.3	U	14.3		<2.2	U	<2.3	U		15.5		<2.3	U	<2.4	U	<7.31	U	6.49		22.0		<2.3	U	<2.4	U																		
Carbon disulfide	<1.71	U	<3.4	U	<2.3	U	<2.7	U	<2.5	U	2.59		<2.4	U	<2.4	U		<5.14	U	<2.4	U	<2.6	U	<3.09	U	2.45		4.83		<2.5	U	<2.5	U																		
Carbon tetrachloride	<0.346	U	<0.27	U	<0.19	U	0.40		0.41		<0.506	U	0.49	J	H	0.41		<1.04	U	0.48		0.44		<0.625	U	<0.300	U	<0.969	U	0.40		0.45																			
Chloroform (Trichloromethane)	<0.269	U	<0.21	U	<0.14	U	0.69		1.4		22.3		0.47	J	H	0.82		12.9		4.1		2.8		13.4		5.42		5.71		0.21		0.18																			
Dichlorodifluoromethane (CFC12)	<0.682	U	<0.22	U	<0.15	U	2.8		2.4		21.0	J	I	2.7	J	H	2.4		6.68		2.7		2.4		6.18		12.5		8.06		2.7		2.0																		
Dichloroethane (1,1-)	<0.223	U	<0.18	U	<0.12	U	0.63		1.3		26.6		0.70	J	H	1.3		56.3		5.4		3.4		8.90		0.242		9.71		0.26		0.28																			
Dichloroethene (1,1-)	<0.218	U	<0.086	U	<0.059	U	1.9		3.6		53.1		<0.061	U	0.10			303		24		30		1.55		0.208		19.3		<0.063	U	<0.064	U																		
Dichloroethene (cis-1,2-)	<0.218	U	<0.17	U	<0.12	U	0.27		0.42		21.6		0.30	J	H	0.38		0.916		2.3		1.4		<0.394	U	<0.189	U	<0.611	U	<0.12	U	<0.13	U																		
Ethane, 1,1,2-trichloro-1,2,2-trifluoro- (CFC113)	<1.06	U	<1.7	U	<1.1	U	2.8		3.7		17.6		1.5	J	H	1.5		63.2		<1.2	U	<1.2	U	5.75		18.2		5.91		<1.2	U	<1.2	U																		
Ethylbenzene	0.452		<0.19	U	<0.13	U	<0.15	U	<0.14	U	0.873	EB	H	<0.13	U	<0.13	U	0.969	EB	H	0.19		0.15		0.691	EB	H	5.39	EB	H	0.669	EB	H	<0.14	U	<0.14	U														
Isopropyl Alcohol (Isopropanol)	<3.39	U	<2.7	U	<1.8	U	<2.1	U	<1.9	U	<4.94	U	<1.9	U	<1.9	U		<10.1	U	<1.9	U	<2.0	U	<6.10	U	<2.93	U	<9.46	U	<1.9	U	<2.0	U																		
Methyl-2-pentanone (4-) (MIBK)	<5.66	U	<0.89	U	<0.61	U	<0.70	U	<0.65	U	<8.24	U	<0.63	U	<0.63	U		<16.9	U	<0.64	U	<0.67	U	<10.2	U	<4.88	U	<15.8	U	<0.65	U	<0.66	U																		
Propene	<2.38	U	<3.8	U	<2.6	U	<2.9	U	<2.7	U	<3.46	U	<2.6	U	<2.7	U		<7.09	U	<2.7	U	<2.8	U	<4.27	U	<2.05	U	<6.63	U	<2.7	U	<2.8	U																		
Tetrachloroethene (PCE)	<0.373	U	<0.30	U	<0.20	U	0.35		0.37		4.75		1.8	J	H	0.22		3.69		22		0.22		1.52		6.59		5.07		0.44		0.36																			
Toluene	<0.520	U	0.18		<0.28	U	0.17		0.72		3.02		<0.12	U	0.53			1.68		0.40		<0.31	U	<0.935	U	7.20		4.37		0.14		<0.30	U																		
Trichloroethane (1,1,1-)	<0.300	U	<0.24	U	<0.16	U	30		51		726		24	J	H	36		1,640		72		64		1,280		414		1,520		11		11																			
Trichloroethene (TCE)	<0.296	U	<0.23	U	<0.16	U	39		62		378		22	J	H	26		65.0		25		15		2.64		<0.256	U	1.28		0.23		0.22																			
Trichlorofluoromethane	<0.776	U	<1.2	U	<0.84	U	1.2		1.3		3.71		1.2	J	H	1.3		3.99		1.5		1.6		9.05		5.03		6.57		1.0		1.2																			
Trimethylbenzene (1,2,4-)	0.311		<1.1	U	<0.73	U	<0.84	U	<0.78	U	1.86	EB	H	<0.75	U	<0.76	U	1.10	EB	H	<0.77	U	<0.81	U	<0.488	U	2.12	EB	H	0.983	EB	H	<0.78	U	<0.79	U															
Vinyl chloride	<0.141	U	<0.056	U	<0.033	U	<0.044	U	<0.040	U	<0.206	U	<0.039	U	<0.040	U		<0.422	U	<0.040	U	<0.042	U	<0.254	U	<0.122	U	<0.394	U	<0.040	U	<0.041	U																		
Xylene (m,p-)	<0.478	U	<0.38	U	<0.26	U	<0.30	U	0.33		4.82		<0.26	U	<0.27	U		4.60		0.38		0.29		3.47		5.39		1.77		<0.27	U	<0.28	U																		
Xylene (o-)	<0.239	U	0.19	J	I	<0.13	U	<0.15	U	<0.14	U	<0.13	U	<0.13	U			2.22		<0.14	U	<0.14	U	1.60		2.65		0.838		<0.14	U	<0.14	U																		
Total VOCs	0.763		0.37		0.0		88		139		1,340		64		76		2,180		170		128		1,330		511		1,690		26		21																				

Analyte	Concentrations in µg/m ³															
	SSV-1017												SSV-1033			
	SSV1017			FD-02			SSV1017			FD-01			SSV1033		SSV1033	
	09/06/13	03/28/19	03/28/19	03/28/19	12/12/19	12/12/19	03/28/19	12/12/19	03/28/19	12/12/19	03/28/19	12/12/19	03/28/19	12/12/19		
Result	Qual	Bias	Result	Qual	Bias	Result	Qual	Bias	Result	Qual	Bias	Result	Qual	Bias		
Acetone	<58.2	U	9.0	J	I	48	J	I	4.8		<3.8	U	7.5		13	
Butanone (2-) (MEK)	<18.0	U	<2.3	U	I	11	J	I	<2.3	U	<2.3	U	<2.4	U	<2.3	U
Carbon disulfide	<7.63	U	<2.5	U	I	<2.4	U	<2.5	U	<2.5	U	<2.4	U	<2.4	U	
Carbon tetrachloride	<1.54	U	0.25	J	I	0.26		<0.20	U	<0.20	U	0.36		0.41		
Chloroform (Trichloromethane)	37.2		2.9	J	I	2.8		3.3		3.4		0.16		0.18		
Dichlorodifluoromethane (CFC12)	7.81		2.7	J	I	2.6		2.4		2.4		2.6		2.1		
Dichloroethane (1,1-)	15.5		0.57	J	I	0.53		1.0		1.1		<0.13	U	<0.12	U	
Dichloroethene (1,1-)	351		9.1	J	I	8.6		11		11		0.12		0.13		
Dichloroethene (cis-1,2-)	<0.971	U	0.50	J	I	0.53		0.39		0.39		0.13		<0.12	U	
Ethane, 1,1,2-trichloro-1,2,2-trifluoro- (CFC113)	62.2		4.8	J	I	3.6		6.6		6.6		<1.2	U	<1.2	U	
Ethylbenzene	<1.06	U	<0.14	U	I	0.20		<0.14	U	<0.14	U	<0.14	U	<0.13	U	
Isopropyl Alcohol (Isopropanol)	<15.0	U	<1.9	U	I	2.4		<1.9	U	<1.9	U	<2.0	U	<1.9	U	
Methyl-2-pentanone (4-) (MIBK)	<25.1	U	<0.65	U	I	0.82		<0.65	U	<0.65	U	<0.66	U	<0.63	U	
Propene	<10.5	U	<2.7	U	I	<2.7	U	<2.7	U	<2.7	U	<2.8	U			

ATTACHMENT 1
LIMITATIONS

ATTACHMENT 1

SHPC LIMITATIONS

1. The findings and conclusions described in this report are based in part on the data obtained from a finite number of samples from widely spaced locations. The figures are intended to depict inferred conditions during a given period of time, consistent with available information. The actual conditions will vary from that shown, both spatially and temporally. Other interpretations are possible. The nature and extent of variations between sampling locations may not become evident until further investigation is initiated. If variations or other latent conditions then appear evident, it may be necessary to re-evaluate the conclusions of this report.
2. Quantitative laboratory testing was performed by others as part of the investigation as noted within the report. It must be noted that additional compounds not searched for during the current study may be present in indoor air at the site. Moreover, it should be noted that variations in the types and concentrations of contaminants and variations in their distribution within the indoor air may occur due to the passage of time, seasonal fluctuations, and other factors.
3. This report has been prepared for the exclusive use of the IBM Corporation for specific application to the former IBM leased Building 982 in accordance with generally accepted hydrogeologic and engineering practices. No warranty, expressed or implied, is made. The contents of this report should not be relied on by any other party without the express written consent of SHPC.
4. In preparing this report, SHPC has endeavored to conform to generally accepted practices of other consultants undertaking similar studies at the same time and in the same geographical area. SHPC has attempted to observe a degree of care and skill generally exercised by the technical community under similar circumstances and conditions.

P:\4500s\4593.00\Source Files\Neptune Rd Shutdown Report No. 2\Attachment 1 - Limitations\Attachment 1 - Limitations.doc

ATTACHMENT 2
ANALYTICAL LABORATORY REPORTS

1/21/2020

Mr. Joe Corsello
Sanborn, Head & Associates
20 Foundry Street

Concord NH 03301

Project Name: Neptune Road
Project #: 4593.00
Workorder #: 1912375AR1

Dear Mr. Joe Corsello

The following report includes the data for the above referenced project for sample(s) received on 12/14/2019 at Air Toxics Ltd.

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 Inc. 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: Ausha Scott at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Ausha Scott
Project Manager

WORK ORDER #: 1912375AR1

Work Order Summary

CLIENT:	Mr. Joe Corsello Sanborn, Head & Associates 20 Foundry Street Concord, NH 03301	BILL TO:	Accounts Payable Sanborn, Head & Associates 20 Foundry Street Concord, NH 03301
PHONE:	603-229-1900	P.O. #	
FAX:	603-229-1919	PROJECT #	4593.00 Neptune Road
DATE RECEIVED:	12/14/2019	CONTACT:	Ausha Scott
DATE COMPLETED:	12/31/2019		
DATE REISSUED:	01/21/2020		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	SSV-1001_20191212	Modified TO-15	4.5 "Hg	5 psi
01B	SSV-1001_20191212	Modified TO-15	4.5 "Hg	5 psi
02A	SSV-1002_20191212	Modified TO-15	4.0 "Hg	5 psi
02B	SSV-1002_20191212	Modified TO-15	4.0 "Hg	5 psi
03A	SSV-1009_20191212	Modified TO-15	5.5 "Hg	5 psi
03B	SSV-1009_20191212	Modified TO-15	5.5 "Hg	5 psi
04A	SSV-1016_20191212	Modified TO-15	5.0 "Hg	5 psi
04B	SSV-1016_20191212	Modified TO-15	5.0 "Hg	5 psi
05A	SSV-1017_20191212	Modified TO-15	4.5 "Hg	5 psi
05B	SSV-1017_20191212	Modified TO-15	4.5 "Hg	5 psi
06A	SSV-1033_20191212	Modified TO-15	4.0 "Hg	5 psi
06B	SSV-1033_20191212	Modified TO-15	4.0 "Hg	5 psi
15A	FD-01_20191212	Modified TO-15	4.5 "Hg	5 psi
15B	FD-01_20191212	Modified TO-15	4.5 "Hg	5 psi
16A	Lab Blank	Modified TO-15	NA	NA
16B	Lab Blank	Modified TO-15	NA	NA
17A	CCV	Modified TO-15	NA	NA
17B	CCV	Modified TO-15	NA	NA
18A	LCS	Modified TO-15	NA	NA
18AA	LCSD	Modified TO-15	NA	NA
18B	LCS	Modified TO-15	NA	NA
18BB	LCSD	Modified TO-15	NA	NA

CERTIFIED BY: 

 Technical Director

DATE: 01/21/20

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP – CA009332019-11, VA NELAP - 460197, WA NELAP - C935
 Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
 Accreditation number: CA300005-011, Effective date: 10/18/2019, Expiration date: 10/17/2020.

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
Sanborn, Head & Associates
Workorder# 1912375AR1

Seven 6 Liter Summa Canister (SIM Certified) samples were received on December 14, 2019. 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

A revised Chain of Custody (COC) was provided by the client on 12/19/19.

Due to omission of the sampling date from the ID format on the sample tag, the information on the Chain of Custody (COC) for samples 01A-06A and 15A was used to process and report the sample.

The workorder was reissued on 1/21/2020 to correct sample collection time, per client request.

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: SSV-1001_20191212

Lab ID#: 1912375AR1-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	0.23	0.89	1.3
Freon 113	0.16	0.48	1.2	3.7
Acetone	1.6	4.0	3.8	9.6

Client Sample ID: SSV-1001_20191212

Lab ID#: 1912375AR1-01B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.032	0.48	0.16	2.4
1,1-Dichloroethene	0.016	0.92	0.063	3.6
1,1-Dichloroethane	0.032	0.33	0.13	1.3
cis-1,2-Dichloroethene	0.032	0.10	0.12	0.42
Chloroform	0.032	0.28	0.15	1.4
1,1,1-Trichloroethane	0.032	9.4	0.17	51
Carbon Tetrachloride	0.032	0.065	0.20	0.41
Trichloroethene	0.032	12	0.17	62
Toluene	0.079	0.19	0.30	0.72
Tetrachloroethene	0.032	0.054	0.21	0.37
m,p-Xylene	0.063	0.077	0.27	0.33

Client Sample ID: SSV-1002_20191212

Lab ID#: 1912375AR1-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	0.23	0.87	1.3
Freon 113	0.16	0.20	1.2	1.5
Acetone	1.6	2.2	3.7	5.3

Client Sample ID: SSV-1002_20191212

Lab ID#: 1912375AR1-02B

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

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

Client Sample ID: SSV-1002_20191212

Lab ID#: 1912375AR1-02B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.031	0.48	0.15	2.4
1,1-Dichloroethene	0.016	0.025	0.061	0.10
1,1-Dichloroethane	0.031	0.32	0.12	1.3
cis-1,2-Dichloroethene	0.031	0.097	0.12	0.38
Chloroform	0.031	0.17	0.15	0.82
1,1,1-Trichloroethane	0.031	6.6	0.17	36
Carbon Tetrachloride	0.031	0.065	0.20	0.41
Trichloroethene	0.031	4.9	0.17	26
Toluene	0.078	0.14	0.29	0.53
Tetrachloroethene	0.031	0.032	0.21	0.22

Client Sample ID: SSV-1009_20191212

Lab ID#: 1912375AR1-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	0.29	0.92	1.6
Acetone	1.6	2.6	3.9	6.2

Client Sample ID: SSV-1009_20191212

Lab ID#: 1912375AR1-03B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.033	0.48	0.16	2.4
1,1-Dichloroethene	0.016	7.5	0.065	30
1,1-Dichloroethane	0.033	0.83	0.13	3.4
cis-1,2-Dichloroethene	0.033	0.36	0.13	1.4
Chloroform	0.033	0.56	0.16	2.8
1,1,1-Trichloroethane	0.033	12	0.18	64
Carbon Tetrachloride	0.033	0.070	0.21	0.44
Trichloroethene	0.033	2.8	0.18	15
Tetrachloroethene	0.033	0.033	0.22	0.22
Ethyl Benzene	0.033	0.036	0.14	0.15
m,p-Xylene	0.066	0.068	0.28	0.29

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

Client Sample ID: SSV-1009_20191212

Lab ID#: 1912375AR1-03B

Client Sample ID: SSV-1016_20191212

Lab ID#: 1912375AR1-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	0.22	0.90	1.2
Acetone	1.6	2.3	3.8	5.4

Client Sample ID: SSV-1016_20191212

Lab ID#: 1912375AR1-04B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.032	0.41	0.16	2.0
1,1-Dichloroethane	0.032	0.068	0.13	0.28
Chloroform	0.032	0.038	0.16	0.18
1,1,1-Trichloroethane	0.032	2.0	0.18	11
Carbon Tetrachloride	0.032	0.071	0.20	0.45
Trichloroethene	0.032	0.040	0.17	0.22
Tetrachloroethene	0.032	0.052	0.22	0.36

Client Sample ID: SSV-1017_20191212

Lab ID#: 1912375AR1-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	0.22	0.89	1.2
Freon 113	0.16	0.86	1.2	6.6
Acetone	1.6	2.0	3.8	4.8

Client Sample ID: SSV-1017_20191212

Lab ID#: 1912375AR1-05B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.032	0.48	0.16	2.4
1,1-Dichloroethene	0.016	2.7	0.063	11

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

Client Sample ID: SSV-1017_20191212

Lab ID#: 1912375AR1-05B

1,1-Dichloroethane	0.032	0.26	0.13	1.0
cis-1,2-Dichloroethene	0.032	0.099	0.12	0.39
Chloroform	0.032	0.68	0.15	3.3
1,1,1-Trichloroethane	0.032	22	0.17	120
Trichloroethene	0.032	0.87	0.17	4.7

Toluene	0.079	0.28	0.30	1.0
Tetrachloroethene	0.032	0.031 J	0.21	0.21 J
m,p-Xylene	0.063	0.084	0.27	0.37

Client Sample ID: SSV-1033_20191212

Lab ID#: 1912375AR1-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	0.21	0.87	1.2
Acetone	1.6	5.3	3.7	13

Client Sample ID: SSV-1033_20191212

Lab ID#: 1912375AR1-06B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.031	0.42	0.15	2.1
1,1-Dichloroethene	0.016	0.033	0.061	0.13
Chloroform	0.031	0.037	0.15	0.18
1,1,1-Trichloroethane	0.031	0.80	0.17	4.4
Carbon Tetrachloride	0.031	0.066	0.20	0.41

Toluene	0.078	0.12	0.29	0.46

Client Sample ID: FD-01_20191212

Lab ID#: 1912375AR1-15A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	0.22	0.89	1.2
Freon 113	0.16	0.86	1.2	6.6

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

Client Sample ID: FD-01_20191212

Lab ID#: 1912375AR1-15B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.032	0.48	0.16	2.4
1,1-Dichloroethene	0.016	2.7	0.063	11
1,1-Dichloroethane	0.032	0.26	0.13	1.1
cis-1,2-Dichloroethene	0.032	0.097	0.12	0.39
Chloroform	0.032	0.69	0.15	3.4
1,1,1-Trichloroethane	0.032	22	0.17	120
Trichloroethene	0.032	0.91	0.17	4.9
Toluene	0.079	0.28	0.30	1.1
Tetrachloroethene	0.032	0.050	0.21	0.34
m,p-Xylene	0.063	0.075	0.27	0.32



Air Toxics

Client Sample ID: SSV-1001_20191212

Lab ID#: 1912375AR1-01A

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

File Name:	22122007	Date of Collection:	12/12/19 1:13:00 PM
Dil. Factor:	1.58	Date of Analysis:	12/20/19 12:10 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	0.23	0.89	1.3
Freon 113	0.16	0.48	1.2	3.7
Acetone	1.6	4.0	3.8	9.6
2-Propanol	0.79	Not Detected	1.9	Not Detected
Carbon Disulfide	0.79	Not Detected	2.5	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.79	Not Detected	2.3	Not Detected
4-Methyl-2-pentanone	0.16	Not Detected	0.65	Not Detected
1,2,4-Trimethylbenzene	0.16	Not Detected	0.78	Not Detected
Propylene	1.6	Not Detected	2.7	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	111	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	109	70-130

Client Sample ID: SSV-1001_20191212

Lab ID#: 1912375AR1-01B

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

File Name:	22122007sim	Date of Collection: 12/12/19 1:13:00 PM
Dil. Factor:	1.58	Date of Analysis: 12/20/19 12:10 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.032	0.48	0.16	2.4
Vinyl Chloride	0.016	Not Detected	0.040	Not Detected
1,1-Dichloroethene	0.016	0.92	0.063	3.6
1,1-Dichloroethane	0.032	0.33	0.13	1.3
cis-1,2-Dichloroethene	0.032	0.10	0.12	0.42
Chloroform	0.032	0.28	0.15	1.4
1,1,1-Trichloroethane	0.032	9.4	0.17	51
Carbon Tetrachloride	0.032	0.065	0.20	0.41
Trichloroethene	0.032	12	0.17	62
Toluene	0.079	0.19	0.30	0.72
Tetrachloroethene	0.032	0.054	0.21	0.37
Ethyl Benzene	0.032	Not Detected	0.14	Not Detected
m,p-Xylene	0.063	0.077	0.27	0.33
o-Xylene	0.032	Not Detected	0.14	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	110	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	106	70-130

Client Sample ID: SSV-1002_20191212

Lab ID#: 1912375AR1-02A

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

File Name:	22122008	Date of Collection:	12/12/19 1:05:00 PM
Dil. Factor:	1.55	Date of Analysis:	12/20/19 12:49 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	0.23	0.87	1.3
Freon 113	0.16	0.20	1.2	1.5
Acetone	1.6	2.2	3.7	5.3
2-Propanol	0.78	Not Detected	1.9	Not Detected
Carbon Disulfide	0.78	Not Detected	2.4	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.78	Not Detected	2.3	Not Detected
4-Methyl-2-pentanone	0.16	Not Detected	0.63	Not Detected
1,2,4-Trimethylbenzene	0.16	Not Detected	0.76	Not Detected
Propylene	1.6	Not Detected	2.7	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	112	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	108	70-130

Client Sample ID: SSV-1002_20191212

Lab ID#: 1912375AR1-02B

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

File Name:	22122008sim	Date of Collection:	12/12/19 1:05:00 PM
Dil. Factor:	1.55	Date of Analysis:	12/20/19 12:49 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.031	0.48	0.15	2.4
Vinyl Chloride	0.016	Not Detected	0.040	Not Detected
1,1-Dichloroethene	0.016	0.025	0.061	0.10
1,1-Dichloroethane	0.031	0.32	0.12	1.3
cis-1,2-Dichloroethene	0.031	0.097	0.12	0.38
Chloroform	0.031	0.17	0.15	0.82
1,1,1-Trichloroethane	0.031	6.6	0.17	36
Carbon Tetrachloride	0.031	0.065	0.20	0.41
Trichloroethene	0.031	4.9	0.17	26
Toluene	0.078	0.14	0.29	0.53
Tetrachloroethene	0.031	0.032	0.21	0.22
Ethyl Benzene	0.031	Not Detected	0.13	Not Detected
m,p-Xylene	0.062	Not Detected	0.27	Not Detected
o-Xylene	0.031	Not Detected	0.13	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	111	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	104	70-130



Air Toxics

Client Sample ID: SSV-1009_20191212

Lab ID#: 1912375AR1-03A

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

File Name:	22122009	Date of Collection:	12/12/19 1:02:00 PM
Dil. Factor:	1.64	Date of Analysis:	12/20/19 01:35 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	0.29	0.92	1.6
Freon 113	0.16	Not Detected	1.2	Not Detected
Acetone	1.6	2.6	3.9	6.2
2-Propanol	0.82	Not Detected	2.0	Not Detected
Carbon Disulfide	0.82	Not Detected	2.6	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.82	Not Detected	2.4	Not Detected
4-Methyl-2-pentanone	0.16	Not Detected	0.67	Not Detected
1,2,4-Trimethylbenzene	0.16	Not Detected	0.81	Not Detected
Propylene	1.6	Not Detected	2.8	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	110	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	108	70-130



Air Toxics

Client Sample ID: SSV-1009_20191212

Lab ID#: 1912375AR1-03B

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

File Name:	22122009sim	Date of Collection:	12/12/19 1:02:00 PM
Dil. Factor:	1.64	Date of Analysis:	12/20/19 01:35 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.033	0.48	0.16	2.4
Vinyl Chloride	0.016	Not Detected	0.042	Not Detected
1,1-Dichloroethene	0.016	7.5	0.065	30
1,1-Dichloroethane	0.033	0.83	0.13	3.4
cis-1,2-Dichloroethene	0.033	0.36	0.13	1.4
Chloroform	0.033	0.56	0.16	2.8
1,1,1-Trichloroethane	0.033	12	0.18	64
Carbon Tetrachloride	0.033	0.070	0.21	0.44
Trichloroethene	0.033	2.8	0.18	15
Toluene	0.082	Not Detected	0.31	Not Detected
Tetrachloroethene	0.033	0.033	0.22	0.22
Ethyl Benzene	0.033	0.036	0.14	0.15
m,p-Xylene	0.066	0.068	0.28	0.29
o-Xylene	0.033	Not Detected	0.14	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	110	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	107	70-130

Client Sample ID: SSV-1016_20191212

Lab ID#: 1912375AR1-04A

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

File Name:	22122010	Date of Collection:	12/12/19 1:46:00 PM
Dil. Factor:	1.61	Date of Analysis:	12/20/19 02:16 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	0.22	0.90	1.2
Freon 113	0.16	Not Detected	1.2	Not Detected
Acetone	1.6	2.3	3.8	5.4
2-Propanol	0.80	Not Detected	2.0	Not Detected
Carbon Disulfide	0.80	Not Detected	2.5	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.80	Not Detected	2.4	Not Detected
4-Methyl-2-pentanone	0.16	Not Detected	0.66	Not Detected
1,2,4-Trimethylbenzene	0.16	Not Detected	0.79	Not Detected
Propylene	1.6	Not Detected	2.8	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	115	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	112	70-130

Client Sample ID: SSV-1016_20191212

Lab ID#: 1912375AR1-04B

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

File Name:	22122010sim	Date of Collection:	12/12/19 1:46:00 PM
Dil. Factor:	1.61	Date of Analysis:	12/20/19 02:16 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.032	0.41	0.16	2.0
Vinyl Chloride	0.016	Not Detected	0.041	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.064	Not Detected
1,1-Dichloroethane	0.032	0.068	0.13	0.28
cis-1,2-Dichloroethene	0.032	Not Detected	0.13	Not Detected
Chloroform	0.032	0.038	0.16	0.18
1,1,1-Trichloroethane	0.032	2.0	0.18	11
Carbon Tetrachloride	0.032	0.071	0.20	0.45
Trichloroethene	0.032	0.040	0.17	0.22
Toluene	0.080	Not Detected	0.30	Not Detected
Tetrachloroethene	0.032	0.052	0.22	0.36
Ethyl Benzene	0.032	Not Detected	0.14	Not Detected
m,p-Xylene	0.064	Not Detected	0.28	Not Detected
o-Xylene	0.032	Not Detected	0.14	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	114	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	108	70-130

Client Sample ID: SSV-1017_20191212

Lab ID#: 1912375AR1-05A

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

File Name:	22122011	Date of Collection: 12/12/19 1:39:00 PM
Dil. Factor:	1.58	Date of Analysis: 12/20/19 02:54 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	0.22	0.89	1.2
Freon 113	0.16	0.86	1.2	6.6
Acetone	1.6	2.0	3.8	4.8
2-Propanol	0.79	Not Detected	1.9	Not Detected
Carbon Disulfide	0.79	Not Detected	2.5	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.79	Not Detected	2.3	Not Detected
4-Methyl-2-pentanone	0.16	Not Detected	0.65	Not Detected
1,2,4-Trimethylbenzene	0.16	Not Detected	0.78	Not Detected
Propylene	1.6	Not Detected	2.7	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	110	70-130

Client Sample ID: SSV-1017_20191212

Lab ID#: 1912375AR1-05B

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

File Name:	22122011sim	Date of Collection:	12/12/19 1:39:00 PM
Dil. Factor:	1.58	Date of Analysis:	12/20/19 02:54 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.032	0.48	0.16	2.4
Vinyl Chloride	0.016	Not Detected	0.040	Not Detected
1,1-Dichloroethene	0.016	2.7	0.063	11
1,1-Dichloroethane	0.032	0.26	0.13	1.0
cis-1,2-Dichloroethene	0.032	0.099	0.12	0.39
Chloroform	0.032	0.68	0.15	3.3
1,1,1-Trichloroethane	0.032	22	0.17	120
Carbon Tetrachloride	0.032	Not Detected	0.20	Not Detected
Trichloroethene	0.032	0.87	0.17	4.7
Toluene	0.079	0.28	0.30	1.0
Tetrachloroethene	0.032	0.031 J	0.21	0.21 J
Ethyl Benzene	0.032	Not Detected	0.14	Not Detected
m,p-Xylene	0.063	0.084	0.27	0.37
o-Xylene	0.032	Not Detected	0.14	Not Detected

J = Estimated value.

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	105	70-130
4-Bromofluorobenzene	107	70-130



Air Toxics

Client Sample ID: SSV-1033_20191212

Lab ID#: 1912375AR1-06A

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

File Name:	22122012	Date of Collection:	12/12/19 1:44:00 PM
Dil. Factor:	1.55	Date of Analysis:	12/20/19 03:56 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	0.21	0.87	1.2
Freon 113	0.16	Not Detected	1.2	Not Detected
Acetone	1.6	5.3	3.7	13
2-Propanol	0.78	Not Detected	1.9	Not Detected
Carbon Disulfide	0.78	Not Detected	2.4	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.78	Not Detected	2.3	Not Detected
4-Methyl-2-pentanone	0.16	Not Detected	0.63	Not Detected
1,2,4-Trimethylbenzene	0.16	Not Detected	0.76	Not Detected
Propylene	1.6	Not Detected	2.7	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	114	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	104	70-130

Client Sample ID: SSV-1033_20191212

Lab ID#: 1912375AR1-06B

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

File Name:	22122012sim	Date of Collection:	12/12/19 1:44:00 PM
Dil. Factor:	1.55	Date of Analysis:	12/20/19 03:56 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.031	0.42	0.15	2.1
Vinyl Chloride	0.016	Not Detected	0.040	Not Detected
1,1-Dichloroethene	0.016	0.033	0.061	0.13
1,1-Dichloroethane	0.031	Not Detected	0.12	Not Detected
cis-1,2-Dichloroethene	0.031	Not Detected	0.12	Not Detected
Chloroform	0.031	0.037	0.15	0.18
1,1,1-Trichloroethane	0.031	0.80	0.17	4.4
Carbon Tetrachloride	0.031	0.066	0.20	0.41
Trichloroethene	0.031	Not Detected	0.17	Not Detected
Toluene	0.078	0.12	0.29	0.46
Tetrachloroethene	0.031	Not Detected	0.21	Not Detected
Ethyl Benzene	0.031	Not Detected	0.13	Not Detected
m,p-Xylene	0.062	Not Detected	0.27	Not Detected
o-Xylene	0.031	Not Detected	0.13	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	114	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	102	70-130



Air Toxics

Client Sample ID: FD-01_20191212

Lab ID#: 1912375AR1-15A

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

File Name:	22122013	Date of Collection:	12/12/19 1:39:00 PM
Dil. Factor:	1.58	Date of Analysis:	12/20/19 04:32 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	0.22	0.89	1.2
Freon 113	0.16	0.86	1.2	6.6
Acetone	1.6	Not Detected	3.8	Not Detected
2-Propanol	0.79	Not Detected	1.9	Not Detected
Carbon Disulfide	0.79	Not Detected	2.5	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.79	Not Detected	2.3	Not Detected
4-Methyl-2-pentanone	0.16	Not Detected	0.65	Not Detected
1,2,4-Trimethylbenzene	0.16	Not Detected	0.78	Not Detected
Propylene	1.6	Not Detected	2.7	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	111	70-130

Client Sample ID: FD-01_20191212

Lab ID#: 1912375AR1-15B

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

File Name:	22122013sim	Date of Collection: 12/12/19 1:39:00 PM
Dil. Factor:	1.58	Date of Analysis: 12/20/19 04:32 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.032	0.48	0.16	2.4
Vinyl Chloride	0.016	Not Detected	0.040	Not Detected
1,1-Dichloroethene	0.016	2.7	0.063	11
1,1-Dichloroethane	0.032	0.26	0.13	1.1
cis-1,2-Dichloroethene	0.032	0.097	0.12	0.39
Chloroform	0.032	0.69	0.15	3.4
1,1,1-Trichloroethane	0.032	22	0.17	120
Carbon Tetrachloride	0.032	Not Detected	0.20	Not Detected
Trichloroethene	0.032	0.91	0.17	4.9
Toluene	0.079	0.28	0.30	1.1
Tetrachloroethene	0.032	0.050	0.21	0.34
Ethyl Benzene	0.032	Not Detected	0.14	Not Detected
m,p-Xylene	0.063	0.075	0.27	0.32
o-Xylene	0.032	Not Detected	0.14	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	109	70-130



Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 1912375AR1-16A

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

File Name:	22122006	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	12/20/19 11:18 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.10	Not Detected	0.56	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
2-Butanone (Methyl Ethyl Ketone)	0.50	Not Detected	1.5	Not Detected
4-Methyl-2-pentanone	0.10	Not Detected	0.41	Not Detected
1,2,4-Trimethylbenzene	0.10	Not Detected	0.49	Not Detected
Propylene	1.0	Not Detected	1.7	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	112	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	103	70-130

Client Sample ID: Lab Blank

Lab ID#: 1912375AR1-16B

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

File Name:	22122006sim	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/20/19 11:18 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.020	Not Detected	0.099	Not Detected
Vinyl Chloride	0.010	Not Detected	0.026	Not Detected
1,1-Dichloroethene	0.010	Not Detected	0.040	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
Trichloroethene	0.020	Not Detected	0.11	Not Detected
Toluene	0.050	Not Detected	0.19	Not Detected
Tetrachloroethene	0.020	Not Detected	0.14	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

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	111	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	101	70-130

Client Sample ID: CCV

Lab ID#: 1912375AR1-17A

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

File Name:	22122002	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/20/19 08:32 AM

Compound	%Recovery
Freon 11	98
Freon 113	94
Acetone	96
2-Propanol	124
Carbon Disulfide	104
2-Butanone (Methyl Ethyl Ketone)	99
4-Methyl-2-pentanone	109
1,2,4-Trimethylbenzene	124
Propylene	99

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	96	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	92	70-130

Client Sample ID: CCV

Lab ID#: 1912375AR1-17B

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

File Name:	22122002sim	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/20/19 08:32 AM

Compound	%Recovery
Freon 12	93
Vinyl Chloride	96
1,1-Dichloroethene	89
1,1-Dichloroethane	96
cis-1,2-Dichloroethene	94
-----	-----
Chloroform	96
1,1,1-Trichloroethane	95
Carbon Tetrachloride	104
Trichloroethene	98
Toluene	99
-----	-----
Tetrachloroethene	95
Ethyl Benzene	99
m,p-Xylene	101
o-Xylene	101

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	96	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	90	70-130

Client Sample ID: LCS

Lab ID#: 1912375AR1-18A

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

File Name:	22122003	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/20/19 09:17 AM

Compound	%Recovery	Method Limits
Freon 11	100	70-130
Freon 113	95	70-130
Acetone	86	70-130
2-Propanol	80	70-130
Carbon Disulfide	107	70-130
2-Butanone (Methyl Ethyl Ketone)	86	70-130
4-Methyl-2-pentanone	87	70-130
1,2,4-Trimethylbenzene	124	70-130
Propylene	103	70-130

Container Type: NA - Not Applicable

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

Client Sample ID: LCSD

Lab ID#: 1912375AR1-18AA

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

File Name:	22122004	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/20/19 10:01 AM

Compound	%Recovery	Method Limits
Freon 11	102	70-130
Freon 113	95	70-130
Acetone	86	70-130
2-Propanol	88	70-130
Carbon Disulfide	108	70-130
2-Butanone (Methyl Ethyl Ketone)	88	70-130
4-Methyl-2-pentanone	89	70-130
1,2,4-Trimethylbenzene	117	70-130
Propylene	104	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	105	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	91	70-130

Client Sample ID: LCS

Lab ID#: 1912375AR1-18B

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

File Name:	22122003sim	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/20/19 09:17 AM

Compound	%Recovery	Method Limits
Freon 12	98	70-130
Vinyl Chloride	101	70-130
1,1-Dichloroethene	89	70-130
1,1-Dichloroethane	95	70-130
cis-1,2-Dichloroethene	87	70-130
Chloroform	96	70-130
1,1,1-Trichloroethane	97	70-130
Carbon Tetrachloride	101	70-130
Trichloroethene	97	70-130
Toluene	100	70-130
Tetrachloroethene	97	70-130
Ethyl Benzene	102	70-130
m,p-Xylene	105	70-130
o-Xylene	106	70-130

Container Type: NA - Not Applicable

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

Client Sample ID: LCSD

Lab ID#: 1912375AR1-18BB

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

File Name:	22122004sim	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/20/19 10:01 AM

Compound	%Recovery	Method Limits
Freon 12	99	70-130
Vinyl Chloride	102	70-130
1,1-Dichloroethene	89	70-130
1,1-Dichloroethane	96	70-130
cis-1,2-Dichloroethene	88	70-130
Chloroform	97	70-130
1,1,1-Trichloroethane	98	70-130
Carbon Tetrachloride	102	70-130
Trichloroethene	98	70-130
Toluene	101	70-130
Tetrachloroethene	91	70-130
Ethyl Benzene	101	70-130
m,p-Xylene	103	70-130
o-Xylene	103	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	103	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	88	70-130

1/21/2020

Mr. Joe Corsello
Sanborn, Head & Associates
20 Foundry Street

Concord NH 03301

Project Name: Neptune Road
Project #: 4593.00
Workorder #: 1912375BR1

Dear Mr. Joe Corsello

The following report includes the data for the above referenced project for sample(s) received on 12/14/2019 at Air Toxics Ltd.

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 Inc. 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: Ausha Scott at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Ausha Scott
Project Manager

WORK ORDER #: 1912375BR1

Work Order Summary

CLIENT:	Mr. Joe Corsello Sanborn, Head & Associates 20 Foundry Street Concord, NH 03301	BILL TO:	Accounts Payable Sanborn, Head & Associates 20 Foundry Street Concord, NH 03301
PHONE:	603-229-1900	P.O. #	
FAX:	603-229-1919	PROJECT #	4593.00 Neptune Road
DATE RECEIVED:	12/14/2019	CONTACT:	Ausha Scott
DATE COMPLETED:	12/31/2019		
DATE REISSUED:	01/21/2020		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
07A	IA-1002_20191212	Modified TO-15	6.5 "Hg	5 psi
07B	IA-1002_20191212	Modified TO-15	6.5 "Hg	5 psi
08A	IA-1005_20191212	Modified TO-15	4.0 "Hg	5 psi
08B	IA-1005_20191212	Modified TO-15	4.0 "Hg	5 psi
09A	IA-1013_20191212	Modified TO-15	6.0 "Hg	5 psi
09B	IA-1013_20191212	Modified TO-15	6.0 "Hg	5 psi
10A	IA-1016_20191212	Modified TO-15	4.5 "Hg	5 psi
10B	IA-1016_20191212	Modified TO-15	4.5 "Hg	5 psi
11A	IA-1017_20191212	Modified TO-15	4.5 "Hg	5 psi
11B	IA-1017_20191212	Modified TO-15	4.5 "Hg	5 psi
12A	IA-1015_20191212	Modified TO-15	4.5 "Hg	5 psi
12B	IA-1015_20191212	Modified TO-15	4.5 "Hg	5 psi
13A	AA-1_20191212	Modified TO-15	6.0 "Hg	5 psi
13B	AA-1_20191212	Modified TO-15	6.0 "Hg	5 psi
16A	FD-02_20191212	Modified TO-15	5.5 "Hg	5 psi
16B	FD-02_20191212	Modified TO-15	5.5 "Hg	5 psi
17A	Lab Blank	Modified TO-15	NA	NA
17B	Lab Blank	Modified TO-15	NA	NA
18A	CCV	Modified TO-15	NA	NA
18B	CCV	Modified TO-15	NA	NA
19A	LCS	Modified TO-15	NA	NA
19AA	LCS	Modified TO-15	NA	NA
19B	LCS	Modified TO-15	NA	NA

Continued on next page

WORK ORDER #: 1912375BR1

Work Order Summary

CLIENT:	Mr. Joe Corsello Sanborn, Head & Associates 20 Foundry Street Concord, NH 03301	BILL TO:	Accounts Payable Sanborn, Head & Associates 20 Foundry Street Concord, NH 03301
PHONE:	603-229-1900	P.O. #	
FAX:	603-229-1919	PROJECT #	4593.00 Neptune Road
DATE RECEIVED:	12/14/2019	CONTACT:	Ausha Scott
DATE COMPLETED:	12/31/2019		
DATE REISSUED:	01/21/2020		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
19BB	LCSD	Modified TO-15	NA	NA

CERTIFIED BY: 
 Technical Director

DATE: 01/21/20

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP – CA009332019-11, VA NELAP - 460197, WA NELAP - C935
 Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
 Accreditation number: CA300005-011, Effective date: 10/18/2019, Expiration date: 10/17/2020.

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
Sanborn, Head & Associates
Workorder# 1912375BR1**

Eight 6 Liter Summa Canister (SIM Certified) samples were received on December 14, 2019. 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 $< 40\%$ RSD	For Full Scan: 30% RSD with 4 compounds allowed out to $< 40\%$ RSD For SIM: Project specific; default criteria is $\leq 30\%$ RSD with 10% of compounds allowed out to $< 40\%$ RSD
Daily Calibration	$\pm 30\%$ 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

A revised Chain of Custody (COC) was provided by the client on 12/19/19.

Due to omission of the sampling date from the ID format on the sample tag, the information on the Chain of Custody (COC) for samples 07A-13A and 16A was used to process and report the sample.

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.

All Quality Control Limit exceedances and affected sample results are noted by flags. Each flag is defined at the bottom of this Case Narrative and on each Sample Result Summary page.

Definition of Data Qualifying Flags

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: IA-1002_20191212

Lab ID#: 1912375BR1-07A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.17	0.23	0.96	1.3
Acetone	1.7	13	4.1	31
2-Propanol	0.86	8.1	2.1	20
2-Butanone (Methyl Ethyl Ketone)	0.86	1.1	2.5	3.3

Client Sample ID: IA-1002_20191212

Lab ID#: 1912375BR1-07B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.034	0.49	0.17	2.4
Carbon Tetrachloride	0.034	0.074	0.22	0.46
Toluene	0.086	0.20	0.32	0.77
Ethyl Benzene	0.034	0.042	0.15	0.18
m,p-Xylene	0.068	0.10	0.30	0.43
o-Xylene	0.034	0.044	0.15	0.19

Client Sample ID: IA-1005_20191212

Lab ID#: 1912375BR1-08A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	0.23	0.87	1.3
Acetone	1.6	12	3.7	30
2-Propanol	0.78	7.0	1.9	17
2-Butanone (Methyl Ethyl Ketone)	0.78	1.0	2.3	3.1

Client Sample ID: IA-1005_20191212

Lab ID#: 1912375BR1-08B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.031	0.50	0.15	2.5
Carbon Tetrachloride	0.031	0.075	0.20	0.47
Toluene	0.078	0.20	0.29	0.77

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

Client Sample ID: IA-1005_20191212

Lab ID#: 1912375BR1-08B

Ethyl Benzene	0.031	0.041	0.13	0.18
m,p-Xylene	0.062	0.096	0.27	0.42
o-Xylene	0.031	0.042	0.13	0.18

Client Sample ID: IA-1013_20191212

Lab ID#: 1912375BR1-09A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.17	0.23	0.94	1.3
Acetone	1.7	13	4.0	30
2-Propanol	0.84	7.0	2.1	17
2-Butanone (Methyl Ethyl Ketone)	0.84	1.0	2.5	3.1

Client Sample ID: IA-1013_20191212

Lab ID#: 1912375BR1-09B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.034	0.50	0.17	2.5
Carbon Tetrachloride	0.034	0.074	0.21	0.47
Toluene	0.084	0.21	0.32	0.80
Ethyl Benzene	0.034	0.041	0.14	0.18
m,p-Xylene	0.067	0.098	0.29	0.42
o-Xylene	0.034	0.042	0.14	0.18

Client Sample ID: IA-1016_20191212

Lab ID#: 1912375BR1-10A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	0.22	0.89	1.2
Acetone	1.6	7.9	3.8	19
2-Propanol	0.79	7.5	1.9	18

Client Sample ID: IA-1016_20191212

Lab ID#: 1912375BR1-10B

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

Client Sample ID: IA-1016_20191212

Lab ID#: 1912375BR1-10B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.032	0.50	0.16	2.5
Carbon Tetrachloride	0.032	0.070	0.20	0.44
Toluene	0.079	0.18	0.30	0.70
m,p-Xylene	0.063	0.064	0.27	0.28

Client Sample ID: IA-1017_20191212

Lab ID#: 1912375BR1-11A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	0.23	0.89	1.3
Acetone	1.6	4.2	3.8	10
2-Propanol	0.79	7.5	1.9	18

Client Sample ID: IA-1017_20191212

Lab ID#: 1912375BR1-11B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.032	0.51	0.16	2.5
Carbon Tetrachloride	0.032	0.073	0.20	0.46
Toluene	0.079	0.19	0.30	0.71
m,p-Xylene	0.063	0.069	0.27	0.30

Client Sample ID: IA-1015_20191212

Lab ID#: 1912375BR1-12A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	0.22	0.89	1.3
Acetone	1.6	3.4	3.8	8.0
2-Propanol	0.79	7.7	1.9	19

Client Sample ID: IA-1015_20191212

Lab ID#: 1912375BR1-12B

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

Client Sample ID: IA-1015_20191212

Lab ID#: 1912375BR1-12B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.032	0.50	0.16	2.5
Carbon Tetrachloride	0.032	0.066	0.20	0.42
Toluene	0.079	0.16	0.30	0.60

Client Sample ID: AA-1_20191212

Lab ID#: 1912375BR1-13A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.17	0.22	0.94	1.3

Client Sample ID: AA-1_20191212

Lab ID#: 1912375BR1-13B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.034	0.51	0.17	2.5
Carbon Tetrachloride	0.034	0.065	0.21	0.41
Toluene	0.084	0.22	0.32	0.82

Client Sample ID: FD-02_20191212

Lab ID#: 1912375BR1-16A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	0.22	0.92	1.3
Acetone	1.6	3.2	3.9	7.7
2-Propanol	0.82	7.5	2.0	18

Client Sample ID: FD-02_20191212

Lab ID#: 1912375BR1-16B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.033	0.51	0.16	2.5
Carbon Tetrachloride	0.033	0.074	0.21	0.46

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

Client Sample ID: FD-02_20191212

Lab ID#: 1912375BR1-16B

Toluene	0.082	0.18	0.31	0.67
---------	-------	------	------	------

Client Sample ID: IA-1002_20191212

Lab ID#: 1912375BR1-07A

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

File Name:	22122307	Date of Collection:	12/12/19 1:17:00 PM
Dil. Factor:	1.71	Date of Analysis:	12/23/19 11:53 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.17	0.23	0.96	1.3
Freon 113	0.17	Not Detected	1.3	Not Detected
Acetone	1.7	13	4.1	31
2-Propanol	0.86	8.1	2.1	20
Carbon Disulfide	0.86	Not Detected	2.7	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.86	1.1	2.5	3.3
4-Methyl-2-pentanone	0.17	Not Detected	0.70	Not Detected
1,2,4-Trimethylbenzene	0.17	Not Detected	0.84	Not Detected
Propylene	1.7	Not Detected	2.9	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	100	70-130

Client Sample ID: IA-1002_20191212

Lab ID#: 1912375BR1-07B

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

File Name:	22122307sim	Date of Collection: 12/12/19 1:17:00 PM
Dil. Factor:	1.71	Date of Analysis: 12/23/19 11:53 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.034	0.49	0.17	2.4
Vinyl Chloride	0.017	Not Detected	0.044	Not Detected
1,1-Dichloroethene	0.017	Not Detected	0.068	Not Detected
1,1-Dichloroethane	0.034	Not Detected	0.14	Not Detected
cis-1,2-Dichloroethene	0.034	Not Detected	0.14	Not Detected
Chloroform	0.034	Not Detected	0.17	Not Detected
1,1,1-Trichloroethane	0.034	Not Detected	0.19	Not Detected
Carbon Tetrachloride	0.034	0.074	0.22	0.46
Trichloroethene	0.034	Not Detected	0.18	Not Detected
Toluene	0.086	0.20	0.32	0.77
Tetrachloroethene	0.034	Not Detected	0.23	Not Detected
Ethyl Benzene	0.034	0.042	0.15	0.18
m,p-Xylene	0.068	0.10	0.30	0.43
o-Xylene	0.034	0.044	0.15	0.19

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	98	70-130

Client Sample ID: IA-1005_20191212

Lab ID#: 1912375BR1-08A

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

File Name:	22122309	Date of Collection:	12/12/19 1:16:00 PM
Dil. Factor:	1.55	Date of Analysis:	12/23/19 01:15 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	0.23	0.87	1.3
Freon 113	0.16	Not Detected	1.2	Not Detected
Acetone	1.6	12	3.7	30
2-Propanol	0.78	7.0	1.9	17
Carbon Disulfide	0.78	Not Detected	2.4	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.78	1.0	2.3	3.1
4-Methyl-2-pentanone	0.16	Not Detected	0.63	Not Detected
1,2,4-Trimethylbenzene	0.16	Not Detected	0.76	Not Detected
Propylene	1.6	Not Detected	2.7	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

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



Air Toxics

Client Sample ID: IA-1005_20191212

Lab ID#: 1912375BR1-08B

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

File Name:	22122309sim	Date of Collection:	12/12/19 1:16:00 PM
Dil. Factor:	1.55	Date of Analysis:	12/23/19 01:15 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.031	0.50	0.15	2.5
Vinyl Chloride	0.016	Not Detected	0.040	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.061	Not Detected
1,1-Dichloroethane	0.031	Not Detected	0.12	Not Detected
cis-1,2-Dichloroethene	0.031	Not Detected	0.12	Not Detected
Chloroform	0.031	Not Detected	0.15	Not Detected
1,1,1-Trichloroethane	0.031	Not Detected	0.17	Not Detected
Carbon Tetrachloride	0.031	0.075	0.20	0.47
Trichloroethene	0.031	Not Detected	0.17	Not Detected
Toluene	0.078	0.20	0.29	0.77
Tetrachloroethene	0.031	Not Detected	0.21	Not Detected
Ethyl Benzene	0.031	0.041	0.13	0.18
m,p-Xylene	0.062	0.096	0.27	0.42
o-Xylene	0.031	0.042	0.13	0.18

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	109	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	99	70-130

Client Sample ID: IA-1013_20191212

Lab ID#: 1912375BR1-09A

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

File Name:	22122310	Date of Collection:	12/12/19 1:18:00 PM
Dil. Factor:	1.68	Date of Analysis:	12/23/19 01:52 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.17	0.23	0.94	1.3
Freon 113	0.17	Not Detected	1.3	Not Detected
Acetone	1.7	13	4.0	30
2-Propanol	0.84	7.0	2.1	17
Carbon Disulfide	0.84	Not Detected	2.6	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.84	1.0	2.5	3.1
4-Methyl-2-pentanone	0.17	Not Detected	0.69	Not Detected
1,2,4-Trimethylbenzene	0.17	Not Detected	0.82	Not Detected
Propylene	1.7	Not Detected	2.9	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

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

Client Sample ID: IA-1013_20191212

Lab ID#: 1912375BR1-09B

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

File Name:	22122310sim	Date of Collection: 12/12/19 1:18:00 PM
Dil. Factor:	1.68	Date of Analysis: 12/23/19 01:52 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.034	0.50	0.17	2.5
Vinyl Chloride	0.017	Not Detected	0.043	Not Detected
1,1-Dichloroethene	0.017	Not Detected	0.067	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	Not Detected	0.16	Not Detected
1,1,1-Trichloroethane	0.034	Not Detected	0.18	Not Detected
Carbon Tetrachloride	0.034	0.074	0.21	0.47
Trichloroethene	0.034	Not Detected	0.18	Not Detected
Toluene	0.084	0.21	0.32	0.80
Tetrachloroethene	0.034	Not Detected	0.23	Not Detected
Ethyl Benzene	0.034	0.041	0.14	0.18
m,p-Xylene	0.067	0.098	0.29	0.42
o-Xylene	0.034	0.042	0.14	0.18

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	107	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	97	70-130

Client Sample ID: IA-1016_20191212

Lab ID#: 1912375BR1-10A

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

File Name:	22122311	Date of Collection:	12/12/19 1:30:00 PM
Dil. Factor:	1.58	Date of Analysis:	12/23/19 02:29 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	0.22	0.89	1.2
Freon 113	0.16	Not Detected	1.2	Not Detected
Acetone	1.6	7.9	3.8	19
2-Propanol	0.79	7.5	1.9	18
Carbon Disulfide	0.79	Not Detected	2.5	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.79	Not Detected	2.3	Not Detected
4-Methyl-2-pentanone	0.16	Not Detected	0.65	Not Detected
1,2,4-Trimethylbenzene	0.16	Not Detected	0.78	Not Detected
Propylene	1.6	Not Detected	2.7	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	97	70-130

Client Sample ID: IA-1016_20191212

Lab ID#: 1912375BR1-10B

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

File Name:	22122311sim	Date of Collection:	12/12/19 1:30:00 PM
Dil. Factor:	1.58	Date of Analysis:	12/23/19 02:29 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.032	0.50	0.16	2.5
Vinyl Chloride	0.016	Not Detected	0.040	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.063	Not Detected
1,1-Dichloroethane	0.032	Not Detected	0.13	Not Detected
cis-1,2-Dichloroethene	0.032	Not Detected	0.12	Not Detected
Chloroform	0.032	Not Detected	0.15	Not Detected
1,1,1-Trichloroethane	0.032	Not Detected	0.17	Not Detected
Carbon Tetrachloride	0.032	0.070	0.20	0.44
Trichloroethene	0.032	Not Detected	0.17	Not Detected
Toluene	0.079	0.18	0.30	0.70
Tetrachloroethene	0.032	Not Detected	0.21	Not Detected
Ethyl Benzene	0.032	Not Detected	0.14	Not Detected
m,p-Xylene	0.063	0.064	0.27	0.28
o-Xylene	0.032	Not Detected	0.14	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	94	70-130

Client Sample ID: IA-1017_20191212

Lab ID#: 1912375BR1-11A

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

File Name:	22122312	Date of Collection:	12/12/19 1:34:00 PM
Dil. Factor:	1.58	Date of Analysis:	12/23/19 03:04 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	0.23	0.89	1.3
Freon 113	0.16	Not Detected	1.2	Not Detected
Acetone	1.6	4.2	3.8	10
2-Propanol	0.79	7.5	1.9	18
Carbon Disulfide	0.79	Not Detected	2.5	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.79	Not Detected	2.3	Not Detected
4-Methyl-2-pentanone	0.16	Not Detected	0.65	Not Detected
1,2,4-Trimethylbenzene	0.16	Not Detected	0.78	Not Detected
Propylene	1.6	Not Detected	2.7	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	107	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	98	70-130

Client Sample ID: IA-1017_20191212

Lab ID#: 1912375BR1-11B

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

File Name:	22122312sim	Date of Collection: 12/12/19 1:34:00 PM
Dil. Factor:	1.58	Date of Analysis: 12/23/19 03:04 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.032	0.51	0.16	2.5
Vinyl Chloride	0.016	Not Detected	0.040	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.063	Not Detected
1,1-Dichloroethane	0.032	Not Detected	0.13	Not Detected
cis-1,2-Dichloroethene	0.032	Not Detected	0.12	Not Detected
Chloroform	0.032	Not Detected	0.15	Not Detected
1,1,1-Trichloroethane	0.032	Not Detected	0.17	Not Detected
Carbon Tetrachloride	0.032	0.073	0.20	0.46
Trichloroethene	0.032	Not Detected	0.17	Not Detected
Toluene	0.079	0.19	0.30	0.71
Tetrachloroethene	0.032	Not Detected	0.21	Not Detected
Ethyl Benzene	0.032	Not Detected	0.14	Not Detected
m,p-Xylene	0.063	0.069	0.27	0.30
o-Xylene	0.032	Not Detected	0.14	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	96	70-130

Client Sample ID: IA-1015_20191212

Lab ID#: 1912375BR1-12A

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

File Name:	22122314	Date of Collection:	12/12/19 1:31:00 PM
Dil. Factor:	1.58	Date of Analysis:	12/23/19 04:16 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	0.22	0.89	1.3
Freon 113	0.16	Not Detected	1.2	Not Detected
Acetone	1.6	3.4	3.8	8.0
2-Propanol	0.79	7.7	1.9	19
Carbon Disulfide	0.79	Not Detected	2.5	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.79	Not Detected	2.3	Not Detected
4-Methyl-2-pentanone	0.16	Not Detected	0.65	Not Detected
1,2,4-Trimethylbenzene	0.16	Not Detected	0.78	Not Detected
Propylene	1.6	Not Detected	2.7	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	109	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	100	70-130



Air Toxics

Client Sample ID: IA-1015_20191212

Lab ID#: 1912375BR1-12B

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

File Name:	22122314sim	Date of Collection:	12/12/19 1:31:00 PM
Dil. Factor:	1.58	Date of Analysis:	12/23/19 04:16 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.032	0.50	0.16	2.5
Vinyl Chloride	0.016	Not Detected	0.040	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.063	Not Detected
1,1-Dichloroethane	0.032	Not Detected	0.13	Not Detected
cis-1,2-Dichloroethene	0.032	Not Detected	0.12	Not Detected
Chloroform	0.032	Not Detected	0.15	Not Detected
1,1,1-Trichloroethane	0.032	Not Detected	0.17	Not Detected
Carbon Tetrachloride	0.032	0.066	0.20	0.42
Trichloroethene	0.032	Not Detected	0.17	Not Detected
Toluene	0.079	0.16	0.30	0.60
Tetrachloroethene	0.032	Not Detected	0.21	Not Detected
Ethyl Benzene	0.032	Not Detected	0.14	Not Detected
m,p-Xylene	0.063	Not Detected	0.27	Not Detected
o-Xylene	0.032	Not Detected	0.14	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	94	70-130

Client Sample ID: AA-1_20191212

Lab ID#: 1912375BR1-13A

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

File Name:	22122315	Date of Collection:	12/12/19 2:30:00 PM
Dil. Factor:	1.68	Date of Analysis:	12/23/19 04:52 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.17	0.22	0.94	1.3
Freon 113	0.17	Not Detected	1.3	Not Detected
Acetone	1.7	Not Detected	4.0	Not Detected
2-Propanol	0.84	Not Detected	2.1	Not Detected
Carbon Disulfide	0.84	Not Detected	2.6	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.84	Not Detected	2.5	Not Detected
4-Methyl-2-pentanone	0.17	Not Detected	0.69	Not Detected
1,2,4-Trimethylbenzene	0.17	Not Detected	0.82	Not Detected
Propylene	1.7	Not Detected	2.9	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	97	70-130



Air Toxics

Client Sample ID: AA-1_20191212

Lab ID#: 1912375BR1-13B

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

File Name:	22122315sim	Date of Collection:	12/12/19 2:30:00 PM
Dil. Factor:	1.68	Date of Analysis:	12/23/19 04:52 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.034	0.51	0.17	2.5
Vinyl Chloride	0.017	Not Detected	0.043	Not Detected
1,1-Dichloroethene	0.017	Not Detected	0.067	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	Not Detected	0.16	Not Detected
1,1,1-Trichloroethane	0.034	Not Detected	0.18	Not Detected
Carbon Tetrachloride	0.034	0.065	0.21	0.41
Trichloroethene	0.034	Not Detected	0.18	Not Detected
Toluene	0.084	0.22	0.32	0.82
Tetrachloroethene	0.034	Not Detected	0.23	Not Detected
Ethyl Benzene	0.034	Not Detected	0.14	Not Detected
m,p-Xylene	0.067	Not Detected	0.29	Not Detected
o-Xylene	0.034	Not Detected	0.14	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	105	70-130
4-Bromofluorobenzene	95	70-130

Client Sample ID: FD-02_20191212

Lab ID#: 1912375BR1-16A

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

File Name:	22122313	Date of Collection:	12/12/19 1:34:00 PM
Dil. Factor:	1.64	Date of Analysis:	12/23/19 03:40 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	0.22	0.92	1.3
Freon 113	0.16	Not Detected	1.2	Not Detected
Acetone	1.6	3.2	3.9	7.7
2-Propanol	0.82	7.5	2.0	18
Carbon Disulfide	0.82	Not Detected	2.6	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.82	Not Detected	2.4	Not Detected
4-Methyl-2-pentanone	0.16	Not Detected	0.67	Not Detected
1,2,4-Trimethylbenzene	0.16	Not Detected	0.81	Not Detected
Propylene	1.6	Not Detected	2.8	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	97	70-130



Air Toxics

Client Sample ID: FD-02_20191212

Lab ID#: 1912375BR1-16B

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

File Name:	22122313sim	Date of Collection:	12/12/19 1:34:00 PM
Dil. Factor:	1.64	Date of Analysis:	12/23/19 03:40 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.033	0.51	0.16	2.5
Vinyl Chloride	0.016	Not Detected	0.042	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.065	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	Not Detected	0.16	Not Detected
1,1,1-Trichloroethane	0.033	Not Detected	0.18	Not Detected
Carbon Tetrachloride	0.033	0.074	0.21	0.46
Trichloroethene	0.033	Not Detected	0.18	Not Detected
Toluene	0.082	0.18	0.31	0.67
Tetrachloroethene	0.033	Not Detected	0.22	Not Detected
Ethyl Benzene	0.033	Not Detected	0.14	Not Detected
m,p-Xylene	0.066	Not Detected	0.28	Not Detected
o-Xylene	0.033	Not Detected	0.14	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	95	70-130

Client Sample ID: Lab Blank

Lab ID#: 1912375BR1-17A

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

File Name:	22122306	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/23/19 11:05 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.10	Not Detected	0.56	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
2-Butanone (Methyl Ethyl Ketone)	0.50	Not Detected	1.5	Not Detected
4-Methyl-2-pentanone	0.10	Not Detected	0.41	Not Detected
1,2,4-Trimethylbenzene	0.10	Not Detected	0.49	Not Detected
Propylene	1.0	Not Detected	1.7	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	101	70-130

Client Sample ID: Lab Blank

Lab ID#: 1912375BR1-17B

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

File Name:	22122306sim	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/23/19 11:05 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.020	Not Detected	0.099	Not Detected
Vinyl Chloride	0.010	Not Detected	0.026	Not Detected
1,1-Dichloroethene	0.010	Not Detected	0.040	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
Trichloroethene	0.020	Not Detected	0.11	Not Detected
Toluene	0.050	Not Detected	0.19	Not Detected
Tetrachloroethene	0.020	Not Detected	0.14	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

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	100	70-130

Client Sample ID: CCV

Lab ID#: 1912375BR1-18A

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

File Name:	22122302	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/23/19 08:27 AM

Compound	%Recovery
Freon 11	101
Freon 113	97
Acetone	94
2-Propanol	125
Carbon Disulfide	107
2-Butanone (Methyl Ethyl Ketone)	97
4-Methyl-2-pentanone	108
1,2,4-Trimethylbenzene	124
Propylene	105

Container Type: NA - Not Applicable

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

Client Sample ID: CCV

Lab ID#: 1912375BR1-18B

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

File Name:	22122302sim	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/23/19 08:27 AM

Compound	%Recovery
Freon 12	97
Vinyl Chloride	99
1,1-Dichloroethene	89
1,1-Dichloroethane	98
cis-1,2-Dichloroethene	95
-----	-----
Chloroform	98
1,1,1-Trichloroethane	97
Carbon Tetrachloride	104
Trichloroethene	106
Toluene	107
-----	-----
Tetrachloroethene	100
Ethyl Benzene	104
m,p-Xylene	107
o-Xylene	105

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	95	70-130
Toluene-d8	106	70-130
4-Bromofluorobenzene	93	70-130

Client Sample ID: LCS

Lab ID#: 1912375BR1-19A

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

File Name:	22122303	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/23/19 09:09 AM

Compound	%Recovery	Method Limits
Freon 11	100	70-130
Freon 113	96	70-130
Acetone	98	70-130
2-Propanol	119	70-130
Carbon Disulfide	107	70-130
2-Butanone (Methyl Ethyl Ketone)	100	70-130
4-Methyl-2-pentanone	110	70-130
1,2,4-Trimethylbenzene	131 Q	70-130
Propylene	102	70-130

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	106	70-130
4-Bromofluorobenzene	96	70-130

Client Sample ID: LCSD

Lab ID#: 1912375BR1-19AA

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

File Name:	22122304	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/23/19 09:52 AM

Compound	%Recovery	Method Limits
Freon 11	101	70-130
Freon 113	96	70-130
Acetone	100	70-130
2-Propanol	125	70-130
Carbon Disulfide	109	70-130
2-Butanone (Methyl Ethyl Ketone)	102	70-130
4-Methyl-2-pentanone	112	70-130
1,2,4-Trimethylbenzene	133 Q	70-130
Propylene	103	70-130

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	105	70-130
4-Bromofluorobenzene	95	70-130

Client Sample ID: LCS

Lab ID#: 1912375BR1-19B

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

File Name:	22122303sim	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/23/19 09:09 AM

Compound	%Recovery	Method Limits
Freon 12	100	70-130
Vinyl Chloride	100	70-130
1,1-Dichloroethene	87	70-130
1,1-Dichloroethane	94	70-130
cis-1,2-Dichloroethene	87	70-130
Chloroform	97	70-130
1,1,1-Trichloroethane	96	70-130
Carbon Tetrachloride	109	70-130
Trichloroethene	104	70-130
Toluene	107	70-130
Tetrachloroethene	99	70-130
Ethyl Benzene	106	70-130
m,p-Xylene	108	70-130
o-Xylene	109	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	107	70-130
4-Bromofluorobenzene	94	70-130

Client Sample ID: LCSD

Lab ID#: 1912375BR1-19BB

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

File Name:	22122304sim	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/23/19 09:52 AM

Compound	%Recovery	Method Limits
Freon 12	100	70-130
Vinyl Chloride	100	70-130
1,1-Dichloroethene	88	70-130
1,1-Dichloroethane	95	70-130
cis-1,2-Dichloroethene	87	70-130
Chloroform	97	70-130
1,1,1-Trichloroethane	96	70-130
Carbon Tetrachloride	109	70-130
Trichloroethene	104	70-130
Toluene	106	70-130
Tetrachloroethene	99	70-130
Ethyl Benzene	107	70-130
m,p-Xylene	109	70-130
o-Xylene	110	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	106	70-130
4-Bromofluorobenzene	95	70-130

12/31/2019

Mr. Joe Corsello

Sanborn, Head & Associates

20 Foundry Street

Concord NH 03301

Project Name: Neptune Road

Project #: 4593.00

Workorder #: 1912375C

Dear Mr. Joe Corsello

The following report includes the data for the above referenced project for sample(s) received on 12/14/2019 at Air Toxics Ltd.

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 Inc. 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: Ausha Scott at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Ausha Scott

Project Manager

WORK ORDER #: 1912375C

Work Order Summary

CLIENT:	Mr. Joe Corsello Sanborn, Head & Associates 20 Foundry Street Concord, NH 03301	BILL TO:	Accounts Payable Sanborn, Head & Associates 20 Foundry Street Concord, NH 03301
PHONE:	603-229-1900	P.O. #	
FAX:	603-229-1919	PROJECT #	4593.00 Neptune Road
DATE RECEIVED:	12/14/2019	CONTACT:	Ausha Scott
DATE COMPLETED:	12/31/2019		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
14A	FB-1_20191212	Modified TO-15	3.0 "Hg	5 psi
14B	FB-1_20191212	Modified TO-15	3.0 "Hg	5 psi
15A	Lab Blank	Modified TO-15	NA	NA
15B	Lab Blank	Modified TO-15	NA	NA
16A	CCV	Modified TO-15	NA	NA
16B	CCV	Modified TO-15	NA	NA
17A	LCS	Modified TO-15	NA	NA
17AA	LCSD	Modified TO-15	NA	NA
17B	LCS	Modified TO-15	NA	NA
17BB	LCSD	Modified TO-15	NA	NA

CERTIFIED BY: 

 Technical Director

DATE: 12/31/19

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP – CA009332019-11, VA NELAP - 460197, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
 Accreditation number: CA300005-011, Effective date: 10/18/2019, Expiration date: 10/17/2020.

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
Sanborn, Head & Associates
Workorder# 1912375C**

One 6 Liter Summa Canister (SIM Certified) sample was received on December 14, 2019. 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 $< 40\%$ RSD	For Full Scan: 30% RSD with 4 compounds allowed out to $< 40\%$ RSD For SIM: Project specific; default criteria is $\leq 30\%$ RSD with 10% of compounds allowed out to $< 40\%$ RSD
Daily Calibration	$\pm 30\%$ 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

A revised Chain of Custody (COC) was provided by the client on 12/19/19.

The Chain of Custody (COC) information for sample FB-1 did not match the entry on the sample tag with regard to sample identification. The information on the COC was used to process and report the sample.

Due to omission of the sampling date from the ID format on the sample tag, the information on the Chain of Custody (COC) for sample 14A was used to process and report the sample.

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: FB-1_20191212

Lab ID#: 1912375C-14A

No Detections Were Found.

Client Sample ID: FB-1_20191212

Lab ID#: 1912375C-14B

No Detections Were Found.

Client Sample ID: FB-1_20191212

Lab ID#: 1912375C-14A

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

File Name:	22122607	Date of Collection:	12/12/19 9:45:00 AM
Dil. Factor:	1.49	Date of Analysis:	12/26/19 11:54 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.15	Not Detected	0.84	Not Detected
Freon 113	0.15	Not Detected	1.1	Not Detected
Acetone	1.5	Not Detected	3.5	Not Detected
2-Propanol	0.74	Not Detected	1.8	Not Detected
Carbon Disulfide	0.74	Not Detected	2.3	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.74	Not Detected	2.2	Not Detected
4-Methyl-2-pentanone	0.15	Not Detected	0.61	Not Detected
1,2,4-Trimethylbenzene	0.15	Not Detected	0.73	Not Detected
Propylene	1.5	Not Detected	2.6	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	97	70-130

Client Sample ID: FB-1_20191212

Lab ID#: 1912375C-14B

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

File Name:	22122607sim	Date of Collection: 12/12/19 9:45:00 AM
Dil. Factor:	1.49	Date of Analysis: 12/26/19 11:54 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.030	Not Detected	0.15	Not Detected
Vinyl Chloride	0.015	Not Detected	0.038	Not Detected
1,1-Dichloroethene	0.015	Not Detected	0.059	Not Detected
1,1-Dichloroethane	0.030	Not Detected	0.12	Not Detected
cis-1,2-Dichloroethene	0.030	Not Detected	0.12	Not Detected
Chloroform	0.030	Not Detected	0.14	Not Detected
1,1,1-Trichloroethane	0.030	Not Detected	0.16	Not Detected
Carbon Tetrachloride	0.030	Not Detected	0.19	Not Detected
Trichloroethene	0.030	Not Detected	0.16	Not Detected
Toluene	0.074	Not Detected	0.28	Not Detected
Tetrachloroethene	0.030	Not Detected	0.20	Not Detected
Ethyl Benzene	0.030	Not Detected	0.13	Not Detected
m,p-Xylene	0.060	Not Detected	0.26	Not Detected
o-Xylene	0.030	Not Detected	0.13	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	107	70-130
Toluene-d8	106	70-130
4-Bromofluorobenzene	95	70-130

Client Sample ID: Lab Blank

Lab ID#: 1912375C-15A

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

File Name:	22122606	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/26/19 11:07 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.10	Not Detected	0.56	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
2-Butanone (Methyl Ethyl Ketone)	0.50	Not Detected	1.5	Not Detected
4-Methyl-2-pentanone	0.10	Not Detected	0.41	Not Detected
1,2,4-Trimethylbenzene	0.10	Not Detected	0.49	Not Detected
Propylene	1.0	Not Detected	1.7	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	116	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	98	70-130

Client Sample ID: Lab Blank

Lab ID#: 1912375C-15B

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

File Name:	22122606sim	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/26/19 11:07 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.020	Not Detected	0.099	Not Detected
Vinyl Chloride	0.010	Not Detected	0.026	Not Detected
1,1-Dichloroethene	0.010	Not Detected	0.040	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
Trichloroethene	0.020	Not Detected	0.11	Not Detected
Toluene	0.050	Not Detected	0.19	Not Detected
Tetrachloroethene	0.020	Not Detected	0.14	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

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	114	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	97	70-130



Air Toxics

Client Sample ID: CCV

Lab ID#: 1912375C-16A

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

File Name:	22122602	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/26/19 08:11 AM

Compound	%Recovery
Freon 11	100
Freon 113	98
Acetone	91
2-Propanol	114
Carbon Disulfide	106
2-Butanone (Methyl Ethyl Ketone)	94
4-Methyl-2-pentanone	109
1,2,4-Trimethylbenzene	122
Propylene	108

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	96	70-130
Toluene-d8	107	70-130
4-Bromofluorobenzene	98	70-130



Air Toxics

Client Sample ID: CCV

Lab ID#: 1912375C-16B

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

File Name:	22122602sim	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/26/19 08:11 AM

Compound	%Recovery
Freon 12	99
Vinyl Chloride	97
1,1-Dichloroethene	86
1,1-Dichloroethane	96
cis-1,2-Dichloroethene	92
-----	-----
Chloroform	96
1,1,1-Trichloroethane	96
Carbon Tetrachloride	102
Trichloroethene	107
Toluene	109
-----	-----
Tetrachloroethene	102
Ethyl Benzene	106
m,p-Xylene	109
o-Xylene	109

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	95	70-130
Toluene-d8	110	70-130
4-Bromofluorobenzene	95	70-130

Client Sample ID: LCS

Lab ID#: 1912375C-17A

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

File Name:	22122603	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/26/19 08:57 AM

Compound	%Recovery	Method Limits
Freon 11	99	70-130
Freon 113	95	70-130
Acetone	97	70-130
2-Propanol	107	70-130
Carbon Disulfide	107	70-130
2-Butanone (Methyl Ethyl Ketone)	99	70-130
4-Methyl-2-pentanone	110	70-130
1,2,4-Trimethylbenzene	128	70-130
Propylene	104	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	107	70-130
4-Bromofluorobenzene	96	70-130

Client Sample ID: LCSD

Lab ID#: 1912375C-17AA

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

File Name:	22122604	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/26/19 09:42 AM

Compound	%Recovery	Method Limits
Freon 11	99	70-130
Freon 113	95	70-130
Acetone	97	70-130
2-Propanol	109	70-130
Carbon Disulfide	107	70-130
2-Butanone (Methyl Ethyl Ketone)	99	70-130
4-Methyl-2-pentanone	111	70-130
1,2,4-Trimethylbenzene	130	70-130
Propylene	106	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	108	70-130
4-Bromofluorobenzene	97	70-130

Client Sample ID: LCS

Lab ID#: 1912375C-17B

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

File Name:	22122603sim	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/26/19 08:57 AM

Compound	%Recovery	Method Limits
Freon 12	102	70-130
Vinyl Chloride	98	70-130
1,1-Dichloroethene	84	70-130
1,1-Dichloroethane	92	70-130
cis-1,2-Dichloroethene	84	70-130
Chloroform	96	70-130
1,1,1-Trichloroethane	95	70-130
Carbon Tetrachloride	108	70-130
Trichloroethene	107	70-130
Toluene	109	70-130
Tetrachloroethene	102	70-130
Ethyl Benzene	108	70-130
m,p-Xylene	110	70-130
o-Xylene	111	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	110	70-130
4-Bromofluorobenzene	95	70-130

Client Sample ID: LCSD

Lab ID#: 1912375C-17BB

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

File Name:	22122604sim	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/26/19 09:42 AM

Compound	%Recovery	Method Limits
Freon 12	104	70-130
Vinyl Chloride	99	70-130
1,1-Dichloroethene	85	70-130
1,1-Dichloroethane	93	70-130
cis-1,2-Dichloroethene	84	70-130
Chloroform	96	70-130
1,1,1-Trichloroethane	96	70-130
Carbon Tetrachloride	107	70-130
Trichloroethene	106	70-130
Toluene	110	70-130
Tetrachloroethene	101	70-130
Ethyl Benzene	107	70-130
m,p-Xylene	110	70-130
o-Xylene	109	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	110	70-130
4-Bromofluorobenzene	94	70-130

ATTACHMENT 3
DATA USABILITY SUMMARY REPORTS



Data Usability Summary Report (DUSR)

Client: Sanborn, Head & Associates, Inc., Concord, New Hampshire (SHA)

Site: Former IBM Facility, Neptune Road, Poughkeepsie, New York

Laboratory: Eurofins Air Toxics, Inc. (EATL), Folsom, California

SDG / Work Order: 1912375B & 1912375C

Date(s) of Collection: March 28, 2019

**Number and type
Samples & analyses:** 7 Indoor Air, 1 Ambient Air, and 1 Field Blank sample for twenty-three project-specific VOCs by Method TO-15 Hi/Lo

Senior Data Reviewers: Dr. Nancy C. Rothman, New Environmental Horizons, Inc.
Susan D. Chapnick, New Environmental Horizons, Inc.

Date Completed: January 31, 2020

This Data Usability Summary Report (DUSR) is based on guidance developed by the New York State Department of Conservation (NYSDEC), June 1999, for technical review of analytical data and consistent with the requirements set forth in NYSDEC Technical Guidance for Site Investigation and Remediation, DER-10, Appendix 2B (May 2010). The objective of the DUSR is to determine whether or not the data as presented meet NYSDEC ASP 2005 or EPA method QC acceptance criteria.

I. Required DUSR Questions

1. *Is the data package complete as defined under the requirements for the most current NYSDEC ASP Category B or USEPA CLP deliverables?*

Yes.

2. *Have all holding times been met?*

Yes.

3. *Do all the QC data: blanks, instrument tunings, calibration standards, calibration verifications, surrogate recoveries, spike recoveries, replicate analyses, laboratory controls and sample data fall within the protocol required limits and specifications?*

Yes.

4. *Have all of the data been generated using established and agreed upon analytical protocols?*

Yes. Analytical data were generated using established EPA Methods (see analytical references in Section II below). Deviations from EPA and NYSDEC ASP 2005 QC protocols are discussed in the DV Checklists of this DUSR.

5. *Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?*

Yes. The raw data were checked to verify that detected results met retention time and mass spectral criteria, where applicable, for qualitative identification. A spot check was performed to verify quantitative accuracy for reporting of all results (see the DV Checklists).

6. *Have the correct data qualifiers been used and are they consistent with the most current NYSDEC ASP?*

Yes. The laboratory used the correct data qualifiers in reporting of results. The data were unchanged as a consequence of this review.

7. *Have any quality control (QC) exceedances been specifically noted in the DUSR and have the corresponding QC summary sheets from the data package been attached to the DUSR?*

There were no QC exceedances and the results reported by the laboratory were unchanged as a consequence of this validation.

II. Sample Descriptions and Analytical Parameters

The sample IDs, date of sampling, identification of quality control (QC) samples, if applicable, and the analytical parameters reviewed in this In-Depth data usability review are listed in Table 1. Any deviations noted for sample collection or receipt (e.g., temperature or preservation issues) are included in Section III, below.

Table 1. Sample Descriptions and Analytical Parameters

Sample ID	Lab Sample ID	Collection Date	Matrix	Analytical Parameters	Sample Type
IA-1002_20191212	1912375B-07B	12/12/2019	Indoor Air	VOCs	Field Sample
IA-1005_20191212	1912375B-08B	12/12/2019	Indoor Air	VOCs	Field Sample
IA-1013_20191212	1912375B-09B	12/12/2019	Indoor Air	VOCs	Field Sample
IA-1016_20191212	1912375B-10B	12/12/2019	Indoor Air	VOCs	Field Sample
IA-1017_20191212	1912375B-11B	12/12/2019	Indoor Air	VOCs	Field Sample
IA-1015_20191212	1912375B-12B	12/12/2019	Indoor Air	VOCs	Field Sample
AA-1_20191212	1912375B-13B	12/12/2019	Ambient Air	VOCs	Field Sample
FD-02_20191212	1912375B-16B	12/12/2019	Indoor Air	VOCs	Field Duplicate of IA-1017_20191212
FB-01_20190328	1912375C-01	12/12/2019	Air	VOCs	Equipment Blank

Analytical method reference:

VOC: TO-15 Hi/Lo – Method TO-15 with simultaneous Full Scan and Selected Ion Monitoring (SIM) analysis for twenty-three project-specific VOCs

III. Data Deficiencies, Analytical Protocol Deviations, and Quality Control Problems

The following QC elements, as applicable to the analytical methods, were reviewed during this validation:

- Data package completeness and reporting protocols
- Sample receipt, holding times, and canister condition
- Calibration criteria (instrument tuning, initial and continuing calibration verifications)
- Method and field blank results
- Laboratory Control Sample (LCS) and Laboratory Control Sample Duplicate (LCSD) Recoveries and Precision
- Internal Standard (IS) and Surrogate Recoveries
- Sample/Laboratory Duplicate (LD) or sample/Field Duplicate (FD) Relative Percent Differences (RPDs)
- Sample result reporting (including reporting limits and units)
- Other method-specific QC if applicable and reported
- Deficiencies or protocol deviations as noted in the Laboratory Narrative

The results reported by the laboratory were unchanged as a consequence of this review. All quality control information associated with accuracy, precision, and sensitivity for the VOCs reported met method and QAPP criteria for the samples in these Work Orders. NEH generated validated electronic data deliverables (EDDs) based on the EDD files received from SHA for these Work Orders. All results were considered acceptable compared to QAPP and method criteria and usable for project decisions.

As required by the DUSR, the DV Checklists attached to this DUSR document the QC reviewed and the issues that required action or affected the data certainty in terms of the project data quality objectives (DQO) of accuracy, precision, representativeness, comparability, and sensitivity. The DQO of completeness can be evaluated by the project manager after all data are generated.

The laboratory reported results for 23 project-specific VOCs from a single analysis with two mass spectrometer (MS) detectors, each operated in a different detection mode: one operated in the full scan electron impact mode and the other operated in the Selected Ion Monitoring (SIM) mode. This analysis, called TO-15 Hi/Lo by ATL, allowed the sensitivity requirements of the project, unless otherwise discussed in this report, to be met for all of the compounds. The Data Review Checklist indicates the compounds reported from each of the two modes of MS operation. The full scan analysis was reported with an “A” suffix and the SIM analysis with a “B” suffix appended to the laboratory sample ID.

Field duplicate (FD) precision was acceptable in the FD pair IA-1017_20191212 and FD-02_20191212 for all target VOCs indicating acceptable precision and representativeness of the samples to the site location for all the project-specific VOCs.

All non-detects were reported at levels below the May 2017 NYSDOH Soil Vapor/Indoor Air values indicating sensitivity was acceptable for these data.

Date Sampled: 12/12/19

No. Samples

6 IA + 1FD + 1AA

Method of Analysis: TO-15 Full scan & SIM

Data Element Acceptable	Canister Receipt	HT	GC/MS Tunes + Calibrations	Internal Stds + Surrogates	LCS	Lab Dup (LCS and LD)	Field Duplicates	RL & Quant.
Yes	√	√	√	√	√	√	√	√
No								

Other Issues : None

A combined Full Scan and SIM Analysis was performed for each sample for 23 Project-specific VOCs listed in Table B.1 of the Work Plan, as shown on the second to last page of this checklist. The full scan analysis was reported with an "A" suffix and the SIM analysis with a "B" suffix appended to the laboratory sample ID.

Data usability review was performed on Quality Control forms associated with this data package, which involved evaluation of the following (where applicable): agreement of analyses conducted with COC requests; Holding times and sample preservation; Laboratory blanks/equipment blanks/ field blanks results compared to field sample results; Field duplicate results; Quantitation limits and sample results; Surrogate and Internal Standard recoveries; LCS/LCSD results; Laboratory duplicate results; instrument tuning and calibration information; sample chromatograms; and laboratory qualifiers applied to the dataset. The project narrative was also reviewed to determine whether additional issues were found that were not reported in the QC previously evaluated. This review is consistent with the requirements set forth in NYSDEC Technical Guidance for Site Investigation and Remediation, DER-10, Appendix 2B (May 2010).

Data Package Completeness: All required forms (results, summary QC, COC), as needed to validate the data in accordance with NYSDEC ASP and the Work Plan were present in the data package. The laboratory provided the equivalent of the Category B deliverable. A revision (1912375BR1) to the Category B deliverable was made to change the times of sample collection for the samples on the data, according to the narrative.

Sample receipt: The 8 6-L canisters were received intact and in good condition on 12/19/19. There were 2 COCs provided by SHA to the lab: 1 COC containing all samples collected on 12/12/19 and a revised COC sent by e-mail to the lab containing only the samples reported in the Work Order with the dates of collection appended to the sample IDs (e.g., original COC listed sample ID as "IA-1002" while the revised ID listed this sample as "IA-1002_20191212"). The lab reported the data using the revised client IDs.

Associated Blanks: Method Blank: 22122306 / 22122306sim
 FB = FB-01_20191212 (reported in Work Order 1912375C)

Blank ID	Contaminant / Level (µg/m ³)	Action Level DF= 2.18	Sample and reported result (µg/m3)	Corrected Database Result
22122306	None		No Blank Action Required	
22122306sim	None		No Blank Action Required	
FB-01_20191212	None		No Blank Action Required	

Certification: Canisters were Certified pre-cleaned on 11/28/19 & 12/05/19 prior to shipment to the field indicating all 23 target VOCs were non-detect prior to use.

Sample Integrity: Samples were collected for 8 hours on 12/12/19 except for the Ambient Air (AA) sample, which was collected for 9 hours. The field receipt vacuums (26 - 30 "Hg), field final vacuums (5.0 - 9.0 "Hg) and lab receipt vacuum (4.5 - 6.5 "Hg) were acceptable. The canisters were over-pressurized to 5 psi prior to analysis. No Action required.

Holding Time (HT): Samples were analyzed on 12/23/19; therefore HT was met. No Action required.

BFB Tunes: Instrument MSD22 2 tunes (ICAL + 1 CCV). Method TO-15 tune criteria used and tunes were acquired properly (average of 3 scans across BFB peak with background subtraction). All criteria in all tunes were met and all samples were analyzed within 12 hours of tune; therefore, No Action Required.

ICALs: Instrument MSD22 Full Scan and SIM performed on 12/18/19. Full Scan = 7- to 9-level calibration from 0.05, 0.1, or 0.5 to 40 ppbV for all 23 Target compounds plus several non-target compounds. SIM = 9- to 10-level calibration from 0.01 or 0.02 to 20 ppbV for all 14 Targets requiring SIM (see Table on second to last page of this DV Checklist). All %RSD were acceptable and all RLs were supported by the ICAL (i.e., the lowest ICAL standard was at a level at or below the RL reported as verified by evaluating the Method Blank with DF=1). No Action required - valid ICAL.

CCALs: 22122302 / 22122302sim - % Recovery 70-130% for all 23 Target compounds - No Action required.

Surrogates & Internal Standards: Surrogates (1,2-Dichloroethane-d4, Toluene-d8, and 4-Bromofluorobenzene) had %Recovery within criteria and all 3 IS' (Chlorobenzene-d5, 1,4-Difluorobenzene, and Bromochloromethane) had areas and RTs within criteria for both full scan and SIM in all analyses; therefore, No Action Required.

SHA: Neptune Road, Poughkeepsie, NY

LCS/LCSD : 22122303/22122304 & 22122303sim/22122304sim - %Recovery acceptable for all 23 Targets in both LCS and LCSD and LCS/LCSD RPDs all OK; therefore, acceptable accuracy and precision demonstrated for analysis of the 23 VOCs by Full Scan & SIM analysis. No Action required

LD: not performed for this sample since LCS/LCSD performed allowing precision evaluation.

Compound Reporting: the lab reported results for 23 Target VOCs, as requested in Table B.1 of the Work Plan. 9 compounds were reported from the Full Scan analysis and 14 from the SIM analysis as shown on the second to last page of this DV Checklist.

Qualifier Action: There were no results reported < RL and qualified "J" by the lab. All other data were either detected (not qualified) or non-detect with the "U" qualifier. No qualifier action required.

Sensitivity: All non-detects were below the NYSDOH Values; therefore, sensitivity was acceptable for all these analyses.

Narrative: The narrative did not raise any issues not already address or that would affect data quality.

The sample chromatogram, and quantitation report was reviewed and data appeared to have been reported correctly. Although Tentatively Identified Compound (TIC) analysis was not requested, there were some extra peaks in some samples not identified in the analyses.

Calculation Verification Checks:

Initial Calibration : Verification MSD22 Full Scan ICAL on 12/18/19 for Isopropanol (called 2-Propanol in the data) with IS Bromochloromethane

	Level 1	Level 2	Level 3	Level 4	Level 5
Std Conc.	0.5	1	5	10	15
Cpd Resp	14014	25017	284669	503287	800923
IS Conc.	5	5	5	5	5
IS Resp	140274	130947	139433	138367	135648
RRF	0.9990	0.9552	2.0416	1.8187	1.9681

	Level 6	Level 7	Avg. RRF	%RSD
Std Conc.	20	40		
Cpd Resp	1006939	2091949		
IS Conc.	5	5		
IS Resp	133109	127319		
RRF	1.8912	2.0538	1.6754	28.90%

√

ICAL verified, no action required

CCV : Verification MSD22 12/23/19 for 10 ppbV Standard of Freon 12: Response for Compound = 3260560; IS (Bromochloromethane) Response = 139444 @5 ppbV; RRF from SIM ICAL = 12.08270

$$\text{Concentration} = \frac{3260560 \times 5}{139444 \times 12.08270} = 9.68 \text{ ppb}$$

√

$$\% \text{Recovery} = \frac{100 \times 9.68}{10} = 97\%$$

QL & Result Verification: IA-1002_20191212; Freon 12

Normal 250 mL analyzed (same as for Method Blank) but since canister was over-pressurize, effective DF = 1.71; Mwt = 120.92

Sample Response = 98878; IS Response = 141744 @ 5; RRF ICAL = 12.08270

$$\text{Conc.} = \frac{98878 \times 5 \times 1.71}{141744 \times 12.08270} = 0.49 \text{ ppbV}$$

$$\mu\text{g}/\text{m}^3 = (\text{ppbv} \times \text{Mwt} \times \text{DF}) / 24.45 = (0.49 \times 120.92 \times 1) / 24.45 = 2.4 \mu\text{g}/\text{m}^3$$

√

SHA: Neptune Road, Poughkeepsie, NY

FD: IA-1017_20191212 /FD-02_20191212. A comparison of results for the 23 target compounds is shown below

Field Duplicate Evaluation_ Sample IDs:

Sample = IA-1017_20191212

FD = FD-02_20191212

Analyte Name	DF= 1.58*	Sample	Sample Result	FD	FD Result	RPD	Action **
	RL (µg/m ³)	µg/m ³	Q Level	µg/m ³	Q Level		
Freon 11	0.89	1.3	< 5x RL	1.3	< 5x RL	0.0%	None
Freon 113	1.2	1.2	U RL	1.2	U RL	NA	None
Acetone	3.8	10	< 5x RL	7.7	< 5x RL	26.0%	None **
2-Propanol	1.9	18	> 5x RL	18	> 5x RL	0.0%	None
Carbon Disulfide	2.5	2.5	U RL	2.6	U RL	NA	None
2-Butanone (Methyl Ethyl Ketone)	2.3	2.3	U RL	2.4	U RL	NA	None
4-Methyl-2-pentanone	0.65	0.65	U RL	0.67	U RL	NA	None
1,2,4-Trimethylbenzene	0.78	0.78	U RL	0.81	U RL	NA	None
Propylene	2.7	2.7	U RL	2.8	U RL	NA	None
Freon 12	0.16	2.5	> 5x RL	2.5	> 5x RL	0.0%	None
Vinyl Chloride	0.04	0.04	U RL	0.042	U RL	NA	None
1,1-Dichloroethene	0.063	0.063	U RL	0.065	U RL	NA	None
1,1-Dichloroethane	0.13	0.13	U RL	0.13	U RL	NA	None
cis-1,2-Dichloroethene	0.12	0.12	U RL	0.13	U RL	NA	None
Chloroform	0.15	0.15	U RL	0.16	U RL	NA	None
1,1,1-Trichloroethane	0.17	0.17	U RL	0.18	U RL	NA	None
Carbon Tetrachloride	0.2	0.46	< 5x RL	0.46	< 5x RL	0.0%	None
Trichloroethene	0.17	0.17	U RL	0.18	U RL	NA	None
Toluene	0.3	0.71	< 5x RL	0.67	< 5x RL	5.8%	None
Tetrachloroethene	0.21	0.21	U RL	0.22	U RL	NA	None
Ethyl Benzene	0.14	0.14	U RL	0.14	U RL	NA	None
m,p-Xylene	0.27	0.3	< 5x RL	0.28	U < 5x RL	NA	None
o-Xylene	0.14	0.14	U RL	0.14	U RL	NA	None

* FD DF was 1.64 so RLs for FD are RLs shown x 1.64/1.58

**Action only taken if RPD > 20% and one or both samples report values > 5 x RL; Q = Validator Qualifier

FD precision was acceptable for all project-specific VOCs in the FD pair IA-1017_20191212 /FD-02_20191212 indicating acceptable precision from sample collection through analysis. No Action required.

Compound List and Project-required Reporting Limits (RL): Table B.1 of Work Plan (updated March 2019)

Analyte	CAS No.	TO-15/TO-15 SIM (6 L canister)	Full Scan TO-15 Soil Vapor (6 L canister)	Expected Analysis
		Typical Final RL (µg/m ³) *	Typical Final RL (µg/m ³) *	
1,1,1-Trichloroethane	71-55-6	0.1771	4.3	SIM
1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	76-13-1	1.2397	6.1	Full
1,1-Dichloroethane (1,1-DCA)	75-34-3	0.13041	3.2	SIM
1,1-Dichloroethylene (1,1-DCE)	75-35-4	0.0644	3.2	SIM
1,2,4-Trimethylbenzene	95-63-6	0.7889	3.8	Full
2-Butanone (Methyl Ethyl Ketone [MEK])	78-93-3	2.415	9.5	Full
4-Methyl-2-Pentanone (2-Pentanone; Methyl Isobutyl Ketone [MIBK])	108-10-1	0.6601	3.2	Full
Acetone	67-64-1	1.932	19	Full
Carbon disulfide	75-15-0	2.576	10	Full
Carbon tetrachloride	56-23-5	0.2093	5	SIM
Chloroform	67-66-3	0.15778	3.8	SIM
cis-1,2-Dichloroethylene (cis-1,2-DCE)	156-59-2	0.12719	3.2	SIM
Dichlorodifluoromethane (DCDFM; Freon 12)	75-71-8	0.15939	4	SIM
Ethylbenzene	100-41-4	0.14007	3.5	SIM
Isopropanol	67-63-0	1.932	7.9	Full
Propylene	115-07-1	2.737	5.5	Full
Tetrachloroethylene (PCE)	127-18-4	0.2254	5.5	SIM
Toluene	108-88-3	0.12075	3	SIM
Trichloroethylene (TCE)	79-01-6	0.1771	4.3	SIM
Trichlorofluoromethane (TCFM; Freon 11)	75-69-4	0.9016	4.5	Full
Vinyl chloride (VC)	75-01-4	0.04186	2.1	SIM
m/p-Xylene	108-38-3 106-42-3	0.2737	3.5	SIM
o-Xylene	95-47-6	0.14007	3.5	SIM

NYS DOH Values (µg/m ³)		
Indoor Air		Subslab Vapor
3		100
0.2		6
3		100
0.2		6
0.2		6

* Typical Final RL assumed a 1.61 Dilution Factor for sample (6L canister collected to a final vacuum of 5 "Hg and over-pressurized to 5 psi prior to analysis).

SHA: Neptune Road, Poughkeepsie, NY

Actions continued (see references below):

Canister Integrity:	If certification forms indicate issues, J/U or UJ results in samples; if Flow controller RPD > 20% for pre- and post-flow calibrations, J detect/UJ non-detects
Canister Vacuum (Vac):	Initial Field Vac < 25" Hg, J/UJ all results; Lab Receipt Vac > 15" Hg, J/UJ results; Lab Receipt Vac > ± 5" Hg of Final Field Vac, J/UJ results
Hold Time (HT):	HT > 30 days, J detects/ UJ non-detects
Blank Actions:	Sample-specific Blank Action Level = Blank Level x (Sample DF/Blank DF) Method Blank (MB): If MB < RL : and sample < RL, negate (U) result in sample RL; if sample is > RL but < 2 x RL (or 4 x RL for acetone, 2-butanone, and methylene chloride), negate (U) result at level found in sample. If MB > RL : and sample < RL, negate (U) result in sample RL; if sample is > RL but < Sample-Specific Blank Action Level, negate (U) the sample at the Sample-Specific Blank Action Level. Equipment Blank (EB): Result < Blank Action, EB result at level reported in sample
BFB Tune:	SW-846 method 8260B or TO-15 tune criteria not met, professional judgment on R of all data; samples analyzed > 12-hours after tune; professional judgment on J/UJ or R of results
LCS and CCV:	Percent Recovery (%Rec) < 10%, J detects, R non-detects; 10% < %Rec < 70%; J/UJ all associated data; %Rec > 130%, J detects - no action for non-detects
Initial Calibration (ICAL):	%RSD > 30%, J/UJ associated results
Internal Standard (IS):	RT > ±0.33 min of IS RT in daily CCV, J/UJ associated results; Area < 25% Area in CCV, J detects, R non-detects (or professional judgment); 25% < Area < 60% of CCV Area, J/UJ associated results; Area > 140% of CCV Area, J detects, no action for non-detects
Surrogates:	%Rec < 10%, J detects, R non-detects; 10% < %Rec < 70%; J/UJ all associated data; %Rec > 130%, J detects - no action for non-detects
Laboratory Duplicates:	LCS/LCSD RPD or Sample/LD RPD > 20% for detects > 5x RL, J associated data; professional judgment for results < 5 x RL
Field Duplicates:	RPD > 20% for detects > 5x RL, J associated data; professional judgment for results < 5 x RL
RLs + Quant:	Compound reported outside calibration range (< RL or at ppbV level > sample-specific highest ICAL standard for compound), J data. Note if RL > expected RL from Table B.1 of Work Plan (see above) and if non-detects exceed NYSDOH May 2017 Updated Soil Vapor/Indoor Air Matrices levels
DV Qualifier Definitions:	U = analyte is non-detect at the sample-specific Quantitation Limit (usable); UJ = non-detect is usable as an estimated value; J = result is usable as an estimated value with indeterminate bias; J+ = result is usable as an estimated value with possible high bias; J- = result is usable as an estimated value with possible low bias; and R = result is rejected due to severe QC exceedance and unusable for project objectives. Bias: L = Low; H = High; I = Indeterminate.
References:	<i>Remedial Design/Remedial Action Work Plan; Former IBM Building 982 – Neptune Road, Poughkeepsie, New York, including Appendix B, QA/QC Plan, prepared by Sanborn, Head & Associates, September 3, 2013 (Work Plan) with updated Table B.1 March 2019 ; NYSDEC Analytical Services Protocol, June 2005 with NYSDEC Modifications to the EPA Region 9 TO-15 QA/QC Criteria, February 2008; USEPA Region II SOP HW-31, Validating Air Samples, Volatile Organic Analysis of Ambient Air in Canisters by Method TO-15, Rev. 6, June 2014; Method TO-15, Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS), Publication EPA/625/R-96/010b, January 1999; and NYSDOH May 2017 Update to Soil Vapor/Indoor Air Decision Matrices.</i>

Date: 1/31/20Data Reviewer: Nancy C. Rothman, Ph.D.

7 of 7

New Environmental Horizons, Inc.

Date Sampled: 12/12/19

No. Samples 1 FB

Method of Analysis: TO-15 Full scan & SIM

Data Element Acceptable	Canister Receipt		HT	GC/MS Tunes + Calibrations		Internal Stds + Surrogates		LCS	Lab Dup (LCS and LD)		Field Duplicates		RL & Quant.	
Yes		√		√		√		√		√		NA		√
No														

Other Issues : None

A combined Full Scan and SIM Analysis was performed for each sample for 23 Project-specific VOCs listed in Table B.1 of the Work Plan, as shown on the second to last page of this checklist. The full scan analysis was reported with an "A" suffix and the SIM analysis with a "B" suffix appended to the laboratory sample ID.

Data usability review was performed on Quality Control forms associated with this data package, which involved evaluation of the following (where applicable): agreement of analyses conducted with COC requests; Holding times and sample preservation; Laboratory blanks/equipment blanks/ field blanks results compared to field sample results; Field duplicate results; Quantitation limits and sample results; Surrogate and Internal Standard recoveries; LCS/LCSD results; Laboratory duplicate results; instrument tuning and calibration information; sample chromatograms; and laboratory qualifiers applied to the dataset. The project narrative was also reviewed to determine whether additional issues were found that were not reported in the QC previously evaluated. This review is consistent with the requirements set forth in NYSDEC Technical Guidance for Site Investigation and Remediation, DER-10, Appendix 2B (May 2010).

Data Package Completeness: All required forms (results, summary QC, COC), as needed to validate the data in accordance with NYSDEC ASP and the Work Plan were present in the data package. The laboratory provided the equivalent of the Category B deliverable.

Sample receipt: The 1 6-L canisters was received intact and in good condition on 12/19/19. There were 2 COCs provided by SHA to the lab: 1 COC containing all samples collected on 12/12/19 and a revised COC sent by e-mail to the lab containing only the sample reported in this Work Order. The original COC list the sample reported in this Work Order as "EB-1"; however, the revised COC lists the sample ID as "FB-1_20191212". Data were reported using the "FB_20191212" ID. The Canister ID listed on the COC (6L1776) did not match the canister ID on the sample canister tag (N3566). This canister ID mis-identification issue is a result of each canister having 2 IDs (one affixed to the canister and one on the sample tag). The client used the ID on the canister while the lab considers the canister ID to be the one listed on the tag.

Associated Blanks: Method Blank: 22122606 / 22122606sim
FB = NA

Blank ID	Contaminant / Level (µg/m ³)	Action Level DF=	Sample and reported result (µg/m ³)	Corrected Database Result
22122606	None		No Blank Action Required	
22122606sim	None		No Blank Action Required	

Additional Notes:

Certification: Canister was Certified pre-cleaned on 12/5/19 prior to shipment to the field indicating all 23 target VOCs were non-detect prior to use.

Sample Integrity: FB-120191212 was collected for about 4.25 hours on 12/12/19. The field receipt vacuum (29 "Hg), field final vacuum (5 "Hg) and lab receipt vacuum (3 "Hg) were acceptable. The canister was over-pressurized to 5 psi prior to analysis. No Action required.

Holding Time (HT): Sample was analyzed on 12/26/19; therefore HT was met. No Action required.

BFB Tunes: Instrument MSD22 tunes (ICAL + 1 CCV). Method TO-15 tune criteria used and tunes were acquired properly (average of 3 scans across BFB peak with background subtraction). All criteria in all tunes were met and the sample was analyzed within 12 hours of tune; therefore, No Action Required.

ICALs : Instrument MSD22 Full Scan and SIM performed on 12/18/19. Full Scan = 7- to 9-level calibration from 0.05, 0.1, or 0.5 to 40 ppbV for all 23 Target compounds plus several non-target compounds. SIM = 9- to 10-level calibration from 0.01 or 0.02 to 20 ppbV for all 14 Targets requiring SIM (see Table on second to last page of this DV Checklist). All %RSD were acceptable and all RLs were supported by the ICAL (i.e., the lowest ICAL standard was at a level at or below the RL reported as verified by evaluating the Method Blank with DF=1). No Action required - valid ICAL.

Additional Notes:

CCALs: 22122602/22122602sim - % Recovery 70-130% for all 23 Target compounds - No Action required.

Surrogates & Internal Standards : Surrogates (1,2-Dichloroethane-d4, Toluene-d8, and 4-Bromofluorobenzene) had %Recovery within criteria and all 3 IS' (Chlorobenzene-d5, 1,4-Difluorobenzene, and Bromochloromethane) had areas and RTs within criteria for both full scan and SIM in all analyses; therefore, No Action Required.

LCS/LCSD : 22122603/22122604 & 22122603sim/22122604sim - %Recovery acceptable for all 23 Targets in both LCS and LCSD and LCS/LCSD RPDs all OK; therefore, acceptable accuracy and precision demonstrated for analysis of the 23 VOCs by Full Scan & SIM analysis. No Action required

LD: not performed for this sample since LCS/LCSD performed allowing precision evaluation.

FD: not applicable for a Field Blank.

Compound Reporting: the lab reported results for 23 Target VOCs, as requested in Table B.1 of the Work Plan. 9 compounds were reported from the Full Scan analysis and 14 from the SIM analysis as shown on the second to last page of this DV Checklist.

Qualifier Action: There were no results reported < RL and all data were non-detect qualified "U". No Qualifier action required.

Sensitivity: All non-detects were below the NYSDOH Values (shown on the second to last page of this DV Checklist); therefore, sensitivity was considered acceptable.

Narrative: The narrative did not raise any issues not already addressed or that would affect data quality.

The sample chromatogram, and quantitation report was reviewed and data appeared to have been reported correctly. Although Tentatively Identified Compound (TIC) analysis was not requested, there were no extra peaks not identified in the FB sample.

Calculation Verification Checks:

Initial Calibration : Verification MSD22 Full Scan ICAL on 12/18/19 for Freon 11 with IS Bromochloromethane

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7
Std Conc.	0.05	0.1	0.5	1	5	10	15
Cpd Resp	3176	8641	36495	70663	331868	601204	872421
IS Conc.	5	5	5	5	5	5	5
IS Resp	132486	151998	140274	130947	139433	138367	135648
RRF	2.3972	2.8425	2.6017	2.6982	2.3801	2.1725	2.1438

	Level 8	Level 9	Avg. RRF	%RSD
Std Conc.	20	40		
Cpd Resp	1081468	1898656		
IS Conc.	5	5		
IS Resp	133109	127319		
RRF	2.0312	1.8641	2.3479	13.82%

√

ICAL verified, no action required

CCV : Verification MSD22 12/26/19 for 10 ppbV Standard of Toluene: Response for Compound = 1316956; IS (1,4-Difluorobenzene) Response = 463675 @5 ppbV; RRF from SIM ICAL = 1.29964

$$\text{Concentration} = \frac{1316956 \times 5}{463675 \times 1.29964} = 10.9 \text{ ppb} \quad \sqrt{\quad} \quad \text{\%Recovery} = \frac{100 \times 10.9}{10} = 109\%$$

QL & Result Verification: FB-01_20191212; All results are non-detect so only QL Checked for 1,1-Dichloroethene (1,1-DCE)

Normal 250 mL analyzed (same as for Method Blank) but since canister was over-pressurize, effective DF = 1.49

Lowest-level 1,1-DCE standard analyzed was 0.01 ppbV

QL = 0.01 ppbV x 1.49 = 0.015 ppbV
Mwt 1,1-DCE = 96.95

$$\mu\text{g}/\text{m}^3 = (\text{ppbv} \times \text{Mwt} \times \text{DF}) / 24.45 = (0.015 \times 96.95 \times 1) / 24.45 = 0.059 \mu\text{g}/\text{m}^3 \quad \sqrt{\quad}$$

Compound List and Project-required Reporting Limits (RL): Table B.1 of Work Plan (updated March 2019)

Analyte	CAS No.	TO-15/TO-15 SIM (6 L canister)	Full Scan TO-15 Soil Vapor (6 L canister)	Expected Analysis
		Typical Final RL (µg/m ³) *	Typical Final RL (µg/m ³) *	
1,1,1-Trichloroethane	71-55-6	0.1771	4.3	SIM
1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	76-13-1	1.2397	6.1	Full
1,1-Dichloroethane (1,1-DCA)	75-34-3	0.13041	3.2	SIM
1,1-Dichloroethylene (1,1-DCE)	75-35-4	0.0644	3.2	SIM
1,2,4-Trimethylbenzene	95-63-6	0.7889	3.8	Full
2-Butanone (Methyl Ethyl Ketone [MEK])	78-93-3	2.415	9.5	Full
4-Methyl-2-Pentanone (2-Pentanone; Methyl Isobutyl Ketone [MIBK])	108-10-1	0.6601	3.2	Full
Acetone	67-64-1	1.932	19	Full
Carbon disulfide	75-15-0	2.576	10	Full
Carbon tetrachloride	56-23-5	0.2093	5	SIM
Chloroform	67-66-3	0.15778	3.8	SIM
cis-1,2-Dichloroethylene (cis-1,2-DCE)	156-59-2	0.12719	3.2	SIM
Dichlorodifluoromethane (DCDFM; Freon 12)	75-71-8	0.15939	4	SIM
Ethylbenzene	100-41-4	0.14007	3.5	SIM
Isopropanol	67-63-0	1.932	7.9	Full
Propylene	115-07-1	2.737	5.5	Full
Tetrachloroethylene (PCE)	127-18-4	0.2254	5.5	SIM
Toluene	108-88-3	0.12075	3	SIM
Trichloroethylene (TCE)	79-01-6	0.1771	4.3	SIM
Trichlorofluoromethane (TCFM; Freon 11)	75-69-4	0.9016	4.5	Full
Vinyl chloride (VC)	75-01-4	0.04186	2.1	SIM
m/p-Xylene	108-38-3	0.2737	3.5	SIM
	106-42-3			
o-Xylene	95-47-6	0.14007	3.5	SIM

NYS DOH Values (µg/m ³)		
Indoor Air		Subslab Vapor
3		100
0.2		6
0.2		6
3		100
0.2		6
0.2		6

* Typical Final RL assumed a 1.61 Dilution Factor for sample (6L canister collected to a final vacuum of 5 "Hg and over-pressurized to 5 psi prior to analysis).

SHA: Neptune Road, Poughkeepsie, NY

Actions continued (see references below):

Canister Integrity:	If certification forms indicate issues, J/U or UJ results in samples; if Flow controller RPD > 20% for pre- and post-flow calibrations, J detect/UJ non-detects
Canister Vacuum (Vac):	Initial Field Vac < 25" Hg, J/UJ all results; Lab Receipt Vac > 15" Hg, J/UJ results; Lab Receipt Vac > ± 5" Hg of Final Field Vac, J/UJ results
Hold Time (HT):	HT > 30 days, J detects/ UJ non-detects
Blank Actions:	Sample-specific Blank Action Level = Blank Level x (Sample DF/Blank DF) Method Blank (MB): If MB < RL : and sample < RL, negate (U) result in sample RL; if sample is > RL but < 2 x RL (or 4 x RL for acetone, 2-butanone, and methylene chloride), negate (U) result at level found in sample. If MB > RL : and sample < RL, negate (U) result in sample RL; if sample is > RL but < Sample-Specific Blank Action Level, negate (U) the sample at the Sample-Specific Blank Action Level. Equipment Blank (EB): Result<Blank Action, EB result at level reported in sample
BFB Tune:	SW-846 method 8260B or TO-15 tune criteria not met, professional judgment on R of all data; samples analyzed > 12-hours after tune; professional judgment on J/UJ or R of results
LCS and CCV:	Percent Recovery (%Rec) <10%, J detects, R non-detects; 10% < %Rec <70%; J/UJ all associated data; %Rec >130%, J detects - no action for non-detects
Initial Calibration (ICAL):	%RSD > 30%, J/UJ associated results
Internal Standard (IS):	RT > ±0.33 min of IS RT in daily CCV, J/UJ associated results; Area < 25% Area in CCV, J detects, R non-detects (or professional judgment); 25%< Area < 60% of CCV Area, J/UJ associated results; Area > 140% of CCV Area, J detects, no action for non-detects
Surrogates:	%Rec <10%, J detects, R non-detects; 10% < %Rec <70%; J/UJ all associated data; %Rec >130%, J detects - no action for non-detects
Laboratory Duplicates:	LCS/LCSD RPD or Sample/LD RPD > 20% for detects > 5x RL, J associated data; professional judgment for results < 5 x RL
Field Duplicates:	RPD > 20% for detects > 5x RL, J associated data; professional judgment for results < 5 x RL
RLs + Quant:	Compound reported outside calibration range (< RL or at ppbV level > sample-specific highest ICAL standard for compound), J data. Note if RL > expected RL from Table B.1 of Work Plan (see above) and if non-detects exceed NYSDOH May 2017 Updated Soil Vapor/Indoor Air Matrices levels
DV Qualifier Definitions:	U = analyte is non-detect at the sample-specific Quantitation Limit (usable); UJ = non-detect is usable as an estimated value; J = result is usable as an estimated value with indeterminate bias; J+ = result is usable as an estimated value with possible high bias; J- = result is usable as an estimated value with possible low bias; and R = result is rejected due to severe QC exceedance and unusable for project objectives. Bias: L = Low; H = High; I = Indeterminate.
References:	<i>Remedial Design/Remedial Action Work Plan; Former IBM Building 982 – Neptune Road, Poughkeepsie, New York, including Appendix B, QAQC Plan, prepared by Sanborn, Head & Associates, September 3, 2013 (Work Plan) with updated Table B.1 March 2019 ; NYSDEC Analytical Services Protocol, June 2005 with NYSDEC Modifications to the EPA Region 9 TO-15 QA/QC Criteria, February 2008; USEPA Region II SOP HW-31, Validating Air Samples, Volatile Organic Analysis of Ambient Air in Canisters by Method TO-15, Rev. 6, June 2014; Method TO-15, Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS), Publication EPA/625/R-96/010b, January 1999; and NYSDOH May 2017 Update to Soil Vapor/Indoor Air Decision Matrices.</i>

Date: 1/30/20Data Reviewer: Nancy C. Rothman, Ph.D.

6 of 6

New Environmental Horizons, Inc.



Data Usability Summary Report (DUSR)

Client: Sanborn, Head & Associates, Inc., Concord, New Hampshire (SHA)

Site: Former IBM Facility, Neptune Road, Poughkeepsie, New York

Laboratory: Eurofins Air Toxics, Inc. (EATL), Folsom, California

SDG / Work Order: 1912375A & 1912375C

Date(s) of Collection: December 12, 2019

**Number and type
Samples & analyses:** 7 Subslab Soil Vapor and 1 Field Blank sample for twenty-three project-specific VOCs by Method TO-15 Hi/Lo

Senior Data Reviewers: Dr. Nancy C. Rothman, New Environmental Horizons, Inc.
Susan D. Chapnick, New Environmental Horizons, Inc.

Date Completed: January 31, 2020

This Data Usability Summary Report (DUSR) is based on guidance developed by the New York State Department of Conservation (NYSDEC), June 1999, for technical review of analytical data and consistent with the requirements set forth in NYSDEC Technical Guidance for Site Investigation and Remediation, DER-10, Appendix 2B (May 2010). The objective of the DUSR is to determine whether or not the data as presented meet NYSDEC ASP 2005 or EPA method QC acceptance criteria.

I. Required DUSR Questions

1. *Is the data package complete as defined under the requirements for the most current NYSDEC ASP Category B or USEPA CLP deliverables?*

Yes.

2. *Have all holding times been met?*

Yes.

3. *Do all the QC data: blanks, instrument tunings, calibration standards, calibration verifications, surrogate recoveries, spike recoveries, replicate analyses, laboratory controls and sample data fall within the protocol required limits and specifications?*

Yes, in general except some QC exceptions resulted in qualification of data as noted in the Data Validation Checklists (DV Checklists).

4. *Have all of the data been generated using established and agreed upon analytical protocols?*

Yes. Analytical data were generated using established EPA Methods (see analytical references in Section II below). Deviations from EPA and NYSDEC ASP 2005 QC protocols are discussed in the DV Checklists of this DUSR.

5. *Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?*

Yes. The raw data were checked to verify that detected results met retention time and mass spectral criteria, where applicable, for qualitative identification. A spot check was performed to verify quantitative accuracy for reporting of all results (see the DV Checklists).

6. *Have the correct data qualifiers been used and are they consistent with the most current NYSDEC ASP?*

Yes. The laboratory used the correct data qualifiers in reporting of results. The data were unchanged as a consequence of this review.

7. *Have any quality control (QC) exceedances been specifically noted in the DUSR and have the corresponding QC summary sheets from the data package been attached to the DUSR?*

Yes. QC exceedances are specified in the DV Checklists. QC summary sheets from the data package have not been attached; however, all QC exceedances that required data qualification are summarized in Table 2 of the DUSR and flagged in the validated electronic data deliverable (EDD).

II. Sample Descriptions and Analytical Parameters

The sample IDs, date of sampling, identification of quality control (QC) samples, if applicable, and the analytical parameters reviewed in this In-Depth data usability review are listed in Table 1. Any deviations noted for sample collection or receipt (e.g., temperature or preservation issues) are included in Section III, below.

Table 1. Sample Descriptions and Analytical Parameters

Sample ID	Lab Sample ID	Collection Date	Matrix	Analytical Parameters	Sample Type
SSV-1001_20191212	1912375A-01	12/12/2019	Subslab Soil Vapor	VOCs	Field Sample
SSV-1002_20191212	1912375A-02	12/12/2019	Subslab Soil Vapor	VOCs	Field Sample
SSV-1009_20191212	1912375A-03	12/12/2019	Subslab Soil Vapor	VOCs	Field Sample
SSV-1016_20191212	1912375A-04	12/12/2019	Subslab Soil Vapor	VOCs	Field Sample
SSV-1017_20191212	1912375A-05	12/12/2019	Subslab Soil Vapor	VOCs	Field Sample
SSV-1033_20191212	1912375A-06	12/12/2019	Subslab Soil Vapor	VOCs	Field Sample
FD-01_20191212	1912375A-07	12/12/2019	Subslab Soil Vapor	VOCs	Field Duplicate of SSV-1017_20191212
FB-01_20191212	1912375C-01	12/12/2019	Air	VOCs	Equipment Blank

Analytical method reference:

VOC: TO-15 Hi/Lo – Method TO-15 with simultaneous Full Scan and Selected Ion Monitoring (SIM) analysis for twenty-three project-specific VOCs

III. Data Deficiencies, Analytical Protocol Deviations, and Quality Control Problems

The following QC elements, as applicable to the analytical methods, were reviewed during this validation:

- Data package completeness and reporting protocols
- Sample receipt, holding times, and canister condition
- Calibration criteria (instrument tuning, initial and continuing calibration verifications)
- Method and field blank results
- Laboratory Control Sample (LCS) and Laboratory Control Sample Duplicate (LCSD) Recoveries and Precision
- Internal Standard (IS) and Surrogate Recoveries
- Sample/Laboratory Duplicate (LD) or sample/Field Duplicate (FD) Relative Percent Differences (RPDs)
- Sample result reporting (including reporting limits and units)
- Other method-specific QC if applicable and reported
- Deficiencies or protocol deviations as noted in the Laboratory Narrative

During this review of VOCs one result was estimated (J) due to a QC issue. Table 2 summarizes the actions taken during this review. NEH generated validated electronic data deliverables (EDDs) based on the EDD files received from SHA for these Work Orders. All results were considered acceptable compared to QAPP and method criteria and usable for project decisions with the understanding of the potential uncertainty (bias) in the qualified result.

As required by the DUSR, the DV Checklists attached to this DUSR document the QC reviewed and the issues that required action or affected the data certainty in terms of the project data quality objectives (DQO) of accuracy, precision, representativeness, comparability, and sensitivity. The DQO of completeness can be evaluated by the project manager after all data are generated.

The laboratory reported results for 23 project-specific VOCs from a single analysis with two mass spectrometer (MS) detectors, each operated in a different detection mode: one operated in the full scan electron impact mode and the other operated in the Selected Ion Monitoring (SIM) mode. This analysis, called TO-15 Hi/Lo by ATL, allowed the sensitivity requirements of the project, unless otherwise discussed in this report, to be met for all of the compounds. The Data Review Checklist indicates the compounds reported from each of the two modes of MS operation. The full scan analysis was reported with an “A” suffix and the SIM analysis with a “B” suffix appended to the laboratory sample ID.

Field duplicate (FD) precision was acceptable in the FD pair SSV-1017_20191212 and FD-01_20191212 for all target VOCs indicating acceptable precision and representativeness of the samples to the site location for all the project-specific VOCs.

All non-detects were reported at levels below the May 2017 NYSDOH Soil Vapor/Indoor Air values indicating sensitivity was acceptable for these data.

All other quality control information associated with accuracy, precision, and sensitivity for the VOCs reported met method and QAPP criteria for the samples in these Work Orders with the exceptions included in Table 2.

Table 2. Summary of Data Validation Actions

Field Sample ID	Analyte	Qualifier	Bias	Validation Comments
SSV-1017_20191212	Tetrachloroethene	J	I	Result < RL

Qualifiers: U = Analyte is non-detect at or above the sample-specific reporting limit (RL); UJ = Non-detect is estimated at the RL; J = Result is estimated with indeterminate bias; J+ = Result is estimated with possible high bias; J- = Result is estimated with possible low bias;; EB = Analyte was also present in a Field Equipment Blank; R = Result is rejected and is unusable for project decisions.

Bias: L = Low; H = High; I = Indeterminate

*Abbreviations used in Table 2:
 RL = Reporting Limit*

Date Sampled: 12/12/19

No. Samples

6 SSV + 1FD

Method of Analysis: TO-15 Full scan & SIM

Data Element Acceptable	Canister Receipt	HT	GC/MS Tunes + Calibrations	Internal Stds + Surrogates	LCS	Lab Dup (LCS and LD)	Field Duplicates	RL & Quant.
Yes	✓	✓	✓	✓	✓	✓	✓	
No								Accept 1 "J" value

Other Issues : None

A combined Full Scan and SIM Analysis was performed for each sample for 23 Project-specific VOCs listed in Table B.1 of the Work Plan, as shown on the second to last page of this checklist. The full scan analysis was reported with an "A" suffix and the SIM analysis with a "B" suffix appended to the laboratory sample ID.

Data usability review was performed on Quality Control forms associated with this data package, which involved evaluation of the following (where applicable): agreement of analyses conducted with COC requests; Holding times and sample preservation; Laboratory blanks/equipment blanks/ field blanks results compared to field sample results; Field duplicate results; Quantitation limits and sample results; Surrogate and Internal Standard recoveries; LCS/LCSD results; Laboratory duplicate results; instrument tuning and calibration information; sample chromatograms; and laboratory qualifiers applied to the dataset. The project narrative was also reviewed to determine whether additional issues were found that were not reported in the QC previously evaluated. This review is consistent with the requirements set forth in NYSDEC Technical Guidance for Site Investigation and Remediation, DER-10, Appendix 2B (May 2010).

Data Package Completeness: All required forms (results, summary QC, COC), as needed to validate the data in accordance with NYSDEC ASP and the Work Plan were present in the data package. The laboratory provided the equivalent of the Category B deliverable. A revision (1912375AR1) to the Category B deliverable was made to change the times of sample collection for the samples on the data, according to the narrative.

Sample receipt: The 7 6-L canisters were received intact and in good condition on 12/19/19. There were 2 COCs provided by SHA to the lab: 1 COC containing all samples collected on 12/12/19 and a revised COC sent by e-mail to the lab containing only the samples reported in the Work Order with the dates of collection appended to the sample IDs (e.g., original COC listed sample ID as "SSV-1001" while the revised ID listed this sample as "SSV-1001_20191212"). The lab reported the data using the revised client IDs.

Associated Blanks: Method Blank: 22122006/22122006sim
 FB = FB-01_20191212 (reported in Work Order 1912375C)

Blank ID	Contaminant / Level (µg/m ³)	Action Level DF=	Sample and reported result (µg/m ³)	Corrected Database Result
22122006	None		No Blank Action Required	
22122006sim	None		No Blank Action Required	
FB-01_20191212	None		No Blank Action Required	

Additional Notes:

Certification: Canisters were Certified pre-cleaned on 12/3/19 & 12/5/19 prior to shipment to the field indicating all 23 target VOCs were non-detect prior to use.

Sample Integrity: Samples were collected for 8 hours on 12/12/19. The field receipt vacuums (28 - 30 "Hg), field final vacuums (5.0 - 7.0 "Hg) and lab receipt vacuum (4.0 - 5.5"Hg) were acceptable. The canisters were over-pressurized to 5 psi prior to analysis. No Action required.

Holding Time (HT): Samples were analyzed on 12/20/19; therefore HT was met. No Action required.

BFB Tunes: Instrument MSD22 2 tunes (ICAL + CCV). Method TO-15 tune criteria used and tunes were acquired properly (average of 3 scans across BFB peak with background subtraction). All criteria in all tunes were met and all samples were analyzed within 12 hours of tune; therefore, No Action Required.

ICALs : Instrument MSD22 Full Scan and SIM performed on 12/18/19. Full Scan = 7- to 9-level calibration from 0.05, 0.1, or 0.5 to 40 ppbV for all 23 Target compounds plus several non-target compounds. SIM = 9- to 10-level calibration from 0.01 or 0.02 to 20 ppbV for all 14 Targets requiring SIM (see Table on second to last page of this DV Checklist). All %RSD were acceptable and all RLs were supported by the ICAL (i.e., the lowest ICAL standard was at a level at or below the RL reported as verified by evaluating the Method Blank with DF=1). No Action required - valid ICAL.

CCALs: 22122002 / 22122002sim - % Recovery 70-130% for all 23 Target compounds - No Action required.

Surrogates & Internal Standards : Surrogates (1,2-Dichloroethane-d4, Toluene-d8, and 4-Bromofluorobenzene) had %Recovery within criteria and all 3 IS' (Chlorobenzene-d5, 1,4-Difluorobenzene, and Bromochloromethane) had areas and RTs within criteria for both full scan and SIM in all analyses. No action required.

LCS/LCSD : 20040303/ 20040304, 20040303sim/20040304sim, 20040403/ 20040404, & 20040403sim/20040404sim - %Recovery acceptable for all 23 Targets in all LCS and LCSD and LCS/LCSD RPDs all OK; therefore, acceptable accuracy and precision demonstrated for analysis of the 23 VOCs by Full Scan & SIM analysis. No Action required

LD: not performed for this sample since LCS/LCSD performed allowing precision evaluation.

Compound Reporting: the lab reported results for 23 Target VOCs, as requested in Table B.1 of the Work Plan. 9 compounds were reported from the Full Scan analysis and 14 from the SIM analysis as shown on the second to last page of this DV Checklist.

Qualifier Action: There was one result reported < RL and qualified "J" by the lab. This "J" value was accepted as an estimated (J) result with indeterminate bias due to uncertainty of quantitation below the calibration range. Other than with one "J", all other data were either detected (no qualifier) or non-detect qualified "U". NOTE: value reported for Tetrachloroethene in ppbV was < RL but equaled the RL when converted to $\mu\text{g}/\text{m}^3$ units.

***ACTION: Accept 1 "J" lab result as an estimated (J) value due to reporting < RL**

Sensitivity: All non-detects were below the NYSDOH Values shown on the Table B.1 (second to last page of this DV Checklist) indicating sensitivity was acceptable for the analysis of these samples.

Narrative: The narrative did not raise any issues in addition to those already discussed that would affect data quality.

The sample chromatogram, and quantitation report was reviewed and data appeared to have been reported correctly. Although Tentatively Identified Compound (TIC) analysis was not requested, there were some extra peaks in some samples not identified in the analyses.

Calculation Verification Checks:

Initial Calibration : Verification MSD22 SIM ICAL on 12/18/19 for 1,1,1-Trichloroethane with IS Bromochloromethane

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7
Std Conc.	0.01	0.02	0.05	0.1	0.5	1	5
Cpd Resp	660	1258	3012	7666	32927	62853	294783
IS Conc.	5	5	5	5	5	5	5
IS Resp	140644	139847	130129	149220	139595	131872	139338
RRF	2.3463	2.2489	2.3146	2.5687	2.3588	2.3831	2.1156

	Level 8	Level 9	Level 10	Avg. RRF	%RSD
Std Conc.	10	15	20		
Cpd Resp	539290	778190	956012		
IS Conc.	5	5	5		
IS Resp	136481	134817	132243		
RRF	1.9757	1.9241	1.8073	2.2043	10.90%

√

ICAL verified, no action required

CCV : Verification MSD22 12/20/19 for 10 ppbV Standard of Acetone: Response for Compound = 194653; IS (Bromochloromethane) Response = 147591 @5 ppbV; RRF from Full Scan ICAL = 0.71517

$$\text{Concentration} = \frac{194653 \times 5}{147591 \times 0.71517} = 9.22 \text{ ppb} \quad \sqrt{\quad} \quad \text{\%Recovery} = \frac{100 \times 9.22}{10} = 92\%$$

QL & Result Verification: SSV-1001_20191212; 1,1,1-Trichloroethane

Normal 250 mL analyzed (same as for Method Blank) but since canister was over-pressurize, effective DF = 1.58; Mwt = 133.42

Sample Response = 357522; IS Response = 136059 @ 5; RRF ICAL = 2.2043

$$\text{Conc.} = \frac{357522 \times 5 \times 1.58}{136059 \times 2.2043} = 9.42 \text{ ppbV}$$

$$\mu\text{g}/\text{m}^3 = (\text{ppbv} \times \text{Mwt} \times \text{DF}) / 24.45 = (9.42 \times 133.42 \times 1) / 24.45 = 51 \mu\text{g}/\text{m}^3$$

√

SHA: Neptune Road, Poughkeepsie, NY

FD: SSV-1017_20191212 /FD-01_20191212. A comparison of results for the 23 target compounds is shown below

Field Duplicate Evaluation_ Sample IDs:

Sample = SSV-1017_20191212

FD = FD-01_20191212

Analyte Name	DF= 1.58	Sample	Sample Result	FD	FD Result	RPD	Action **
	RL (µg/m ³)	µg/m ³	Q Level	µg/m ³	Q Level		
Freon 11	0.89	1.2	< 5x RL	1.2	< 5x RL	0.0%	None
Freon 113	1.2	6.6	> 5x RL	6.6	> 5x RL	0.0%	None
Acetone	3.8	4.8	< 5x RL	3.8	U RL	NA	None
2-Propanol	1.9	1.9	U RL	1.9	U RL	NA	None
Carbon Disulfide	2.5	2.5	U RL	2.5	U RL	NA	None
2-Butanone (Methyl Ethyl Ketone)	2.3	2.3	U RL	2.3	U RL	NA	None
4-Methyl-2-pentanone	0.65	0.65	U RL	0.65	U RL	NA	None
1,2,4-Trimethylbenzene	0.78	0.78	U RL	0.78	U RL	NA	None
Propylene	2.7	2.7	U RL	2.7	U RL	NA	None
Freon 12	0.16	2.4	> 5x RL	2.4	> 5x RL	0.0%	None
Vinyl Chloride	0.04	0.04	U RL	0.04	U RL	NA	None
1,1-Dichloroethene	0.063	11	> 5x RL	11	> 5x RL	0.0%	None
1,1-Dichloroethane	0.13	1	> 5x RL	1.1	> 5x RL	9.5%	None
cis-1,2-Dichloroethene	0.12	0.39	< 5x RL	0.39	< 5x RL	0.0%	None
Chloroform	0.15	3.3	> 5x RL	3.4	> 5x RL	3.0%	None
1,1,1-Trichloroethane	0.17	120	> 5x RL	120	> 5x RL	0.0%	None
Carbon Tetrachloride	0.2	0.2	U RL	0.2	U RL	NA	None
Trichloroethene	0.17	4.7	> 5x RL	4.9	> 5x RL	4.2%	None
Toluene	0.3	1	< 5x RL	1.1	< 5x RL	9.5%	None
Tetrachloroethene	0.21	0.21	J < 5x RL	0.34	< 5x RL	47.3%	None **
Ethyl Benzene	0.14	0.14	U RL	0.14	U RL	NA	None
m,p-Xylene	0.27	0.37	< 5x RL	0.32	< 5x RL	14.5%	None
o-Xylene	0.14	0.14	U RL	0.14	U RL	NA	None

* FD DF was 1.55 so RLs for FD are RLs shown x 1.55/1.58

**Action only taken if RPD > 20% and one or both samples report values > 5 x RL; Q = Validator Qualifier

FD precision was acceptable for all project-specific VOCs in the FD pair SSV-1017_20191212 /FD-01_20191212; therefore, precision was acceptable from sample collection through analysis - No Action required.

Date: 1/30/20Data Reviewer: Nancy C. Rothman, Ph.D.

Compound List and Project-required Reporting Limits (RL): Table B.1 of Work Plan (updated March 2019)

Analyte	CAS No.	TO-15/TO-15 SIM (6 L canister)	Full Scan TO-15 Soil Vapor (6 L canister)	Expected Analysis
		Typical Final RL (µg/m ³) *	Typical Final RL (µg/m ³) *	
1,1,1-Trichloroethane	71-55-6	0.1771	4.3	SIM
1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	76-13-1	1.2397	6.1	Full
1,1-Dichloroethane (1,1-DCA)	75-34-3	0.13041	3.2	SIM
1,1-Dichloroethylene (1,1-DCE)	75-35-4	0.0644	3.2	SIM
1,2,4-Trimethylbenzene	95-63-6	0.7889	3.8	Full
2-Butanone (Methyl Ethyl Ketone [MEK])	78-93-3	2.415	9.5	Full
4-Methyl-2-Pentanone (2-Pentanone; Methyl Isobutyl Ketone [MIBK])	108-10-1	0.6601	3.2	Full
Acetone	67-64-1	1.932	19	Full
Carbon disulfide	75-15-0	2.576	10	Full
Carbon tetrachloride	56-23-5	0.2093	5	SIM
Chloroform	67-66-3	0.15778	3.8	SIM
cis-1,2-Dichloroethylene (cis-1,2-DCE)	156-59-2	0.12719	3.2	SIM
Dichlorodifluoromethane (DCDFM; Freon 12)	75-71-8	0.15939	4	SIM
Ethylbenzene	100-41-4	0.14007	3.5	SIM
Isopropanol	67-63-0	1.932	7.9	Full
Propylene	115-07-1	2.737	5.5	Full
Tetrachloroethylene (PCE)	127-18-4	0.2254	5.5	SIM
Toluene	108-88-3	0.12075	3	SIM
Trichloroethylene (TCE)	79-01-6	0.1771	4.3	SIM
Trichlorofluoromethane (TCFM; Freon 11)	75-69-4	0.9016	4.5	Full
Vinyl chloride (VC)	75-01-4	0.04186	2.1	SIM
m/p-Xylene	108-38-3 106-42-3	0.2737	3.5	SIM
o-Xylene	95-47-6	0.14007	3.5	SIM

NYS DOH Values (µg/m ³)		
Indoor Air		Subslab Vapor
3		100
0.2		6
3		100
0.2		6
0.2		6

* Typical Final RL assumed a 1.61 Dilution Factor for sample (6L canister collected to a final vacuum of 5 "Hg and over-pressurized to 5 psi prior to analysis).

SHA: Neptune Road, Poughkeepsie, NY

Actions continued (see references below):

Canister Integrity:	If certification forms indicate issues, J/U or UJ results in samples; if Flow controller RPD > 20% for pre- and post-flow calibrations, J detect/UJ non-detects
Canister Vacuum (Vac):	Initial Field Vac < 25" Hg, J/UJ all results; Lab Receipt Vac > 15" Hg, J/UJ results; Lab Receipt Vac > ± 5" Hg of Final Field Vac, J/UJ results
Hold Time (HT):	HT > 30 days, J detects/ UJ non-detects
Blank Actions:	Sample-specific Blank Action Level = Blank Level x (Sample DF/Blank DF) Method Blank (MB): If MB < RL : and sample < RL, negate (U) result in sample RL; if sample is > RL but < 2 x RL (or 4 x RL for acetone, 2-butanone, and methylene chloride), negate (U) result at level found in sample. If MB > RL : and sample < RL, negate (U) result in sample RL; if sample is > RL but < Sample-Specific Blank Action Level, negate (U) the sample at the Sample-Specific Blank Action Level. Equipment Blank (EB): Result < Blank Action, EB result at level reported in sample
BFB Tune:	SW-846 method 8260B or TO-15 tune criteria not met, professional judgment on R of all data; samples analyzed > 12-hours after tune; professional judgment on J/UJ or R of results
LCS and CCV:	Percent Recovery (%Rec) <10%, J detects, R non-detects; 10% < %Rec <70%; J/UJ all associated data; %Rec >130%, J detects - no action for non-detects
Initial Calibration (ICAL):	%RSD > 30%, J/UJ associated results
Internal Standard (IS):	RT > ±0.33 min of IS RT in daily CCV, J/UJ associated results; Area < 25% Area in CCV, J detects, R non-detects (or professional judgment); 25% < Area < 60% of CCV Area, J/UJ associated results; Area > 140% of CCV Area, J detects, no action for non-detects
Surrogates:	%Rec <10%, J detects, R non-detects; 10% < %Rec <70%; J/UJ all associated data; %Rec >130%, J detects - no action for non-detects
Laboratory Duplicates:	LCS/LCSD RPD or Sample/LD RPD > 20% for detects > 5x RL, J associated data; professional judgment for results < 5 x RL
Field Duplicates:	RPD > 20% for detects > 5x RL, J associated data; professional judgment for results < 5 x RL
RLs + Quant:	Compound reported outside calibration range (< RL or at ppbV level > sample-specific highest ICAL standard for compound), J data. Note if RL > expected RL from Table B.1 of Work Plan (see above) and if non-detects exceed NYSDOH May 2017 Updated Soil Vapor/Indoor Air Matrices levels
DV Qualifier Definitions:	U = analyte is non-detect at the sample-specific Quantitation Limit (usable); UJ = non-detect is usable as an estimated value; J = result is usable as an estimated value with indeterminate bias; J+ = result is usable as an estimated value with possible high bias; J- = result is usable as an estimated value with possible low bias; and R = result is rejected due to severe QC exceedance and unusable for project objectives. Bias: L = Low; H = High; I = Indeterminate.
References:	<i>Remedial Design/Remedial Action Work Plan; Former IBM Building 982 – Neptune Road, Poughkeepsie, New York, including Appendix B, QA/QC Plan, prepared by Sanborn, Head & Associates, September 3, 2013 (Work Plan) with updated Table B.1 March 2019 ; NYSDEC Analytical Services Protocol, June 2005 with NYSDEC Modifications to the EPA Region 9 TO-15 QA/QC Criteria, February 2008; USEPA Region II SOP HW-31, Validating Air Samples, Volatile Organic Analysis of Ambient Air in Canisters by Method TO-15, Rev. 6, June 2014; Method TO-15, Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS), Publication EPA/625/R-96/010b, January 1999; and NYSDOH May 2017 Update to Soil Vapor/Indoor Air Decision Matrices.</i>

Date: 1/30/20Data Reviewer: Nancy C. Rothman, Ph.D.

7 of 7

New Environmental Horizons, Inc.

Date Sampled: 12/12/19

No. Samples 1 FB

Method of Analysis: TO-15 Full scan & SIM

Data Element Acceptable	Canister Receipt		HT	GC/MS Tunes + Calibrations		Internal Stds + Surrogates		LCS	Lab Dup (LCS and LD)		Field Duplicates		RL & Quant.	
Yes		✓		✓		✓		✓		✓		NA		✓
No														

Other Issues : None

A combined Full Scan and SIM Analysis was performed for each sample for 23 Project-specific VOCs listed in Table B.1 of the Work Plan, as shown on the second to last page of this checklist. The full scan analysis was reported with an "A" suffix and the SIM analysis with a "B" suffix appended to the laboratory sample ID.

Data usability review was performed on Quality Control forms associated with this data package, which involved evaluation of the following (where applicable): agreement of analyses conducted with COC requests; Holding times and sample preservation; Laboratory blanks/equipment blanks/ field blanks results compared to field sample results; Field duplicate results; Quantitation limits and sample results; Surrogate and Internal Standard recoveries; LCS/LCSD results; Laboratory duplicate results; instrument tuning and calibration information; sample chromatograms; and laboratory qualifiers applied to the dataset. The project narrative was also reviewed to determine whether additional issues were found that were not reported in the QC previously evaluated. This review is consistent with the requirements set forth in NYSDEC Technical Guidance for Site Investigation and Remediation, DER-10, Appendix 2B (May 2010).

Data Package Completeness: All required forms (results, summary QC, COC), as needed to validate the data in accordance with NYSDEC ASP and the Work Plan were present in the data package. The laboratory provided the equivalent of the Category B deliverable.

Sample receipt: The 1 6-L canisters was received intact and in good condition on 12/19/19. There were 2 COCs provided by SHA to the lab: 1 COC containing all samples collected on 12/12/19 and a revised COC sent by e-mail to the lab containing only the sample reported in this Work Order. The original COC list the sample reported in this Work Order as "EB-1"; however, the revised COC lists the sample ID as "FB-1_20191212". Data were reported using the "FB_20191212" ID. The Canister ID listed on the COC (6L1776) did not match the canister ID on the sample canister tag (N3566). This canister ID mis-identification issue is a result of each canister having 2 IDs (one affixed to the canister and one on the sample tag). The client used the ID on the canister while the lab considers the canister ID to be the one listed on the tag.

Associated Blanks: Method Blank: 22122606 / 22122606sim
FB = NA

Blank ID	Contaminant / Level ($\mu\text{g}/\text{m}^3$)	Action Level DF=	Sample and reported result ($\mu\text{g}/\text{m}^3$)	Corrected Database Result
22122606	None		No Blank Action Required	
22122606sim	None		No Blank Action Required	

Additional Notes:

Certification: Canister was Certified pre-cleaned on 12/5/19 prior to shipment to the field indicating all 23 target VOCs were non-detect prior to use.

Sample Integrity: FB-120191212 was collected for about 4.25 hours on 12/12/19. The field receipt vacuum (29 "Hg), field final vacuum (5 "Hg) and lab receipt vacuum (3 "Hg) were acceptable. The canister was over-pressurized to 5 psi prior to analysis. No Action required.

Holding Time (HT): Sample was analyzed on 12/26/19; therefore HT was met. No Action required.

BFB Tunes: Instrument MSD22 tunes (ICAL + 1 CCV). Method TO-15 tune criteria used and tunes were acquired properly (average of 3 scans across BFB peak with background subtraction). All criteria in all tunes were met and the sample was analyzed within 12 hours of tune; therefore, No Action Required.

ICALs : Instrument MSD22 Full Scan and SIM performed on 12/18/19. Full Scan = 7- to 9-level calibration from 0.05, 0.1, or 0.5 to 40 ppbV for all 23 Target compounds plus several non-target compounds. SIM = 9- to 10-level calibration from 0.01 or 0.02 to 20 ppbV for all 14 Targets requiring SIM (see Table on second to last page of this DV Checklist). All %RSD were acceptable and all RLs were supported by the ICAL (i.e., the lowest ICAL standard was at a level at or below the RL reported as verified by evaluating the Method Blank with DF=1). No Action required - valid ICAL.

Additional Notes:

CCALs: 22122602/22122602sim - % Recovery 70-130% for all 23 Target compounds - No Action required.

Surrogates & Internal Standards : Surrogates (1,2-Dichloroethane-d4, Toluene-d8, and 4-Bromofluorobenzene) had %Recovery within criteria and all 3 IS' (Chlorobenzene-d5, 1,4-Difluorobenzene, and Bromochloromethane) had areas and RTs within criteria for both full scan and SIM in all analyses; therefore, No Action Required.

LCS/LCSD : 22122603/22122604 & 22122603sim/22122604sim - %Recovery acceptable for all 23 Targets in both LCS and LCSD and LCS/LCSD RPDs all OK; therefore, acceptable accuracy and precision demonstrated for analysis of the 23 VOCs by Full Scan & SIM analysis. No Action required

LD: not performed for this sample since LCS/LCSD performed allowing precision evaluation.

FD: not applicable for a Field Blank.

Compound Reporting: the lab reported results for 23 Target VOCs, as requested in Table B.1 of the Work Plan. 9 compounds were reported from the Full Scan analysis and 14 from the SIM analysis as shown on the second to last page of this DV Checklist.

Qualifier Action: There were no results reported < RL and all data were non-detect qualified "U". No Qualifier action required.

Sensitivity: All non-detects were below the NYSDOH Values (shown on the second to last page of this DV Checklist); therefore, sensitivity was considered acceptable.

Narrative: The narrative did not raise any issues not already addressed or that would affect data quality.

The sample chromatogram, and quantitation report was reviewed and data appeared to have been reported correctly. Although Tentatively Identified Compound (TIC) analysis was not requested, there were no extra peaks not identified in the FB sample.

Calculation Verification Checks:

Initial Calibration : Verification MSD22 Full Scan ICAL on 12/18/19 for Freon 11 with IS Bromochloromethane

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7
Std Conc.	0.05	0.1	0.5	1	5	10	15
Cpd Resp	3176	8641	36495	70663	331868	601204	872421
IS Conc.	5	5	5	5	5	5	5
IS Resp	132486	151998	140274	130947	139433	138367	135648
RRF	2.3972	2.8425	2.6017	2.6982	2.3801	2.1725	2.1438

	Level 8	Level 9	Avg. RRF	%RSD
Std Conc.	20	40		
Cpd Resp	1081468	1898656		
IS Conc.	5	5		
IS Resp	133109	127319		
RRF	2.0312	1.8641	2.3479	13.82%

√

ICAL verified, no action required

CCV : Verification MSD22 12/26/19 for 10 ppbV Standard of Toluene: Response for Compound = 1316956; IS (1,4-Difluorobenzene) Response = 463675 @5 ppbV; RRF from SIM ICAL = 1.29964

$$\text{Concentration} = \frac{1316956 \times 5}{463675 \times 1.29964} = 10.9 \text{ ppb} \quad \sqrt{\quad} \quad \text{\%Recovery} = \frac{100 \times 10.9}{10} = 109\%$$

QL & Result Verification: FB-01_20191212; All results are non-detect so only QL Checked for 1,1-Dichloroethene (1,1-DCE)

Normal 250 mL analyzed (same as for Method Blank) but since canister was over-pressurize, effective DF = 1.49

Lowest-level 1,1-DCE standard analyzed was 0.01 ppbV

QL = 0.01 ppbV x 1.49 = 0.015 ppbV
Mwt 1,1-DCE = 96.95

$$\mu\text{g}/\text{m}^3 = (\text{ppbv} \times \text{Mwt} \times \text{DF}) / 24.45 = (0.015 \times 96.95 \times 1) / 24.45 = 0.059 \mu\text{g}/\text{m}^3 \quad \sqrt{\quad}$$

Compound List and Project-required Reporting Limits (RL): Table B.1 of Work Plan (updated March 2019)

Analyte	CAS No.	TO-15/TO-15 SIM (6 L canister)	Full Scan TO-15 Soil Vapor (6 L canister)	Expected Analysis
		Typical Final RL (µg/m ³) *	Typical Final RL (µg/m ³) *	
1,1,1-Trichloroethane	71-55-6	0.1771	4.3	SIM
1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	76-13-1	1.2397	6.1	Full
1,1-Dichloroethane (1,1-DCA)	75-34-3	0.13041	3.2	SIM
1,1-Dichloroethylene (1,1-DCE)	75-35-4	0.0644	3.2	SIM
1,2,4-Trimethylbenzene	95-63-6	0.7889	3.8	Full
2-Butanone (Methyl Ethyl Ketone [MEK])	78-93-3	2.415	9.5	Full
4-Methyl-2-Pentanone (2-Pentanone; Methyl Isobutyl Ketone [MIBK])	108-10-1	0.6601	3.2	Full
Acetone	67-64-1	1.932	19	Full
Carbon disulfide	75-15-0	2.576	10	Full
Carbon tetrachloride	56-23-5	0.2093	5	SIM
Chloroform	67-66-3	0.15778	3.8	SIM
cis-1,2-Dichloroethylene (cis-1,2-DCE)	156-59-2	0.12719	3.2	SIM
Dichlorodifluoromethane (DCDFM; Freon 12)	75-71-8	0.15939	4	SIM
Ethylbenzene	100-41-4	0.14007	3.5	SIM
Isopropanol	67-63-0	1.932	7.9	Full
Propylene	115-07-1	2.737	5.5	Full
Tetrachloroethylene (PCE)	127-18-4	0.2254	5.5	SIM
Toluene	108-88-3	0.12075	3	SIM
Trichloroethylene (TCE)	79-01-6	0.1771	4.3	SIM
Trichlorofluoromethane (TCFM; Freon 11)	75-69-4	0.9016	4.5	Full
Vinyl chloride (VC)	75-01-4	0.04186	2.1	SIM
m/p-Xylene	108-38-3	0.2737	3.5	SIM
o-Xylene	106-42-3			
	95-47-6	0.14007	3.5	SIM

NYS DOH Values (µg/m ³)		
Indoor Air		Subslab Vapor
3		100
0.2		6
0.2		6
3		100
0.2		6
0.2		6

* Typical Final RL assumed a 1.61 Dilution Factor for sample (6L canister collected to a final vacuum of 5 "Hg and over-pressurized to 5 psi prior to analysis).

SHA: Neptune Road, Poughkeepsie, NY

Actions continued (see references below):

Canister Integrity:	If certification forms indicate issues, J/U or UJ results in samples; if Flow controller RPD > 20% for pre- and post-flow calibrations, J detect/UJ non-detects
Canister Vacuum (Vac):	Initial Field Vac < 25" Hg, J/UJ all results; Lab Receipt Vac > 15" Hg, J/UJ results; Lab Receipt Vac > ± 5" Hg of Final Field Vac, J/UJ results
Hold Time (HT):	HT > 30 days, J detects/ UJ non-detects
Blank Actions:	Sample-specific Blank Action Level = Blank Level x (Sample DF/Blank DF) Method Blank (MB): If MB < RL : and sample < RL, negate (U) result in sample RL; if sample is > RL but < 2 x RL (or 4 x RL for acetone, 2-butanone, and methylene chloride), negate (U) result at level found in sample. If MB > RL : and sample < RL, negate (U) result in sample RL; if sample is > RL but < Sample-Specific Blank Action Level, negate (U) the sample at the Sample-Specific Blank Action Level. Equipment Blank (EB): Result<Blank Action, EB result at level reported in sample
BFB Tune:	SW-846 method 8260B or TO-15 tune criteria not met, professional judgment on R of all data; samples analyzed > 12-hours after tune; professional judgment on J/UJ or R of results
LCS and CCV:	Percent Recovery (%Rec) <10%, J detects, R non-detects; 10% < %Rec <70%; J/UJ all associated data; %Rec >130%, J detects - no action for non-detects
Initial Calibration (ICAL):	%RSD > 30%, J/UJ associated results
Internal Standard (IS):	RT > ±0.33 min of IS RT in daily CCV, J/UJ associated results;
	Area < 25% Area in CCV, J detects, R non-detects (or professional judgment); 25%< Area < 60% of CCV Area, J/UJ associated results; Area > 140% of CCV Area, J detects, no action for non-detects
Surrogates:	%Rec <10%, J detects, R non-detects; 10% < %Rec <70%; J/UJ all associated data; %Rec >130%, J detects - no action for non-detects
Laboratory Duplicates:	LCS/LCSD RPD or Sample/LD RPD > 20% for detects > 5x RL, J associated data; professional judgment for results < 5 x RL
Field Duplicates:	RPD > 20% for detects > 5x RL, J associated data; professional judgment for results < 5 x RL
RLs + Quant:	Compound reported outside calibration range (< RL or at ppbV level > sample-specific highest ICAL standard for compound), J data. Note if RL > expected RL from Table B.1 of Work Plan (see above) and if non-detects exceed NYSDOH May 2017 Updated Soil Vapor/Indoor Air Matrices levels
DV Qualifier Definitions:	U = analyte is non-detect at the sample-specific Quantitation Limit (usable); UJ = non-detect is usable as an estimated value; J = result is usable as an estimated value with indeterminate bias; J+ = result is usable as an estimated value with possible high bias; J- = result is usable as an estimated value with possible low bias; and R = result is rejected due to severe QC exceedance and unusable for project objectives. Bias: L = Low; H = High; I = Indeterminate.
References:	<i>Remedial Design/Remedial Action Work Plan; Former IBM Building 982 – Neptune Road, Poughkeepsie, New York, including Appendix B, QA/QC Plan, prepared by Sanborn, Head & Associates, September 3, 2013 (Work Plan) with updated Table B.1 March 2019 ; NYSDEC Analytical Services Protocol, June 2005 with NYSDEC Modifications to the EPA Region 9 TO-15 QA/QC Criteria, February 2008; USEPA Region II SOP HW-31, Validating Air Samples, Volatile Organic Analysis of Ambient Air in Canisters by Method TO-15, Rev. 6, June 2014; Method TO-15, Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS), Publication EPA/625/R-96/010b, January 1999; and NYSDOH May 2017 Update to Soil Vapor/Indoor Air Decision Matrices.</i>

Date: 1/30/20Data Reviewer: Nancy C. Rothman, Ph.D.

6 of 6

New Environmental Horizons, Inc.