8976 Wellington Road
Manassas, VA 20109

Sent via email

November 24, 2020

Jessica LaClair
New York State Department of Environmental Conservation
Division of Environmental Remediation, Remedial Bureau E
625 Broadway, 12th Floor
Albany, New York 12233-7017

Re: Subslab Depressurization System Completion and Startup Report –
Building 330D Central & South System
Former IBM East Fishkill Facility
Hopewell Junction, New York
EPA ID No. NYD000707901, NYSDEC Site No. 314054

Dear Ms. LaClair:

Enclosed is the *Subslab Depressurization System Completion and Startup Report* for the Building 330D (B330D) Central and South System at the former IBM East Fishkill facility in Hopewell Junction, New York. The work described in the report was conducted in accordance with IBM's March 27, 2020 *Subslab Depressurization Conceptual Design Report*, which was approved by the New York State Department of Environmental Conservation (NYSDEC) and Department of Health (NYSDOH) in an April 30, 2020 letter.

If you have any questions, please contact me at (703) 257-2583.

Sincerely yours,
International Business Machines Corporation

Dean W. Chartrand
Program Manager
Corporate Environmental Affairs

Enclosure: *Subslab Depressurization System Completion and Startup Report – Building 330D Central & South System*

cc:	Julia Kenney	NYSDOH	(w/enclosure via e-mail)
	Carl Monheit	National Resources	(w/enclosure via e-mail)
	Gary Marone	Global Foundries	(w/enclosure via e-mail)
	David Shea	Sanborn Head	(w/enclosure via e-mail)

SANBORN HEAD ENGINEERING

Building Trust. Engineering Success.

SUBSLAB DEPRESSURIZATION SYSTEM COMPLETION AND STARTUP REPORT

BUILDING 330D CENTRAL & SOUTH SYSTEM

Former IBM East Fishkill Facility
Hopewell Junction, New York

Prepared for IBM Corporate Environmental Affairs
File No. 2999.19
November 2020

SANBORN HEAD ENGINEERING
Building Trust. Engineering Success.

20 Foundry Street
Concord, NH 03301

Dean Chartrand
IBM Corporate Environmental Affairs
8976 Wellington Road
Manassas, VA 20109

November 24, 2020
File No. 2999.19

Re: Subslab Depressurization System Completion and Startup Report
Building 330D Central & South System
Former IBM East Fishkill Facility
Hopewell Junction, New York
EPA ID No. NYD000707901
NYSDEC Site No. 314054

Dear Mr. Chartrand:

The enclosed report documents the completion of installation and presents the results of startup performance monitoring for the Building 330D Central & South Subslab Depressurization (SSD) system for the at the former IBM East Fishkill facility, currently owned by iPark East Fishkill LLC.

Please contact us if you require additional information.

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

Joseph W. Corsello
Sr. Project Manager

David Shea, P.E.
Sr. Vice President

Encl. Subslab Depressurization System Completion and Startup Report – Building 330D Central & South System

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SUBSLAB DEPRESSURIZATION SYSTEM
COMPLETION AND STARTUP REPORT– BUILDING 330D CENTRAL & SOUTH SYSTEM

Former IBM East Fishkill Facility
Hopewell Junction, New York

Prepared for
IBM Corporation

Corporate Environmental Affairs

Prepared by
Sanborn, Head Engineering, P.C.

File 2999.19
November 2020

SANBORN HEAD ENGINEERING
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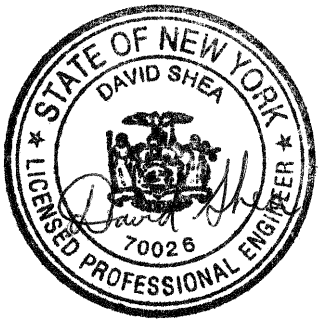
NYS Professional Engineer Certification
Subslab Depressurization System Completion and Startup Report – Building 330D Central & South System
Former IBM East Fishkill Facility
EPA ID No. NYD000707901
NYSDEC Site No. 314054

I, David Shea, certify that I am currently a NYS registered professional engineer. I had primary direct responsibility for implementation of the subject construction program, and I certify that the subslab depressurization (SSD) system in Building 330D was implemented and that all construction activities were completed in substantial conformance with the design plans and specifications prepared by Sanborn, Head Engineering, PC (SHPC). This statement of conformance of the installation with the design documents is based on SHPC's on-site observations during construction and start-up of the SSD system in Building 330D.



Date: November 24, 2020

Name: David Shea

NYS P.E. License No. 70026

\\bosserv1\shdata\SHDATA\2900s\2999.19\Source Files\202011 B330D South Startup Report\PE Certification Page.docx

SUBSLAB DEPRESSURIZATION SYSTEM
COMPLETION AND STARTUP REPORT– BUILDING 330D CENTRAL & SOUTH SYSTEM
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APPENDICES

1.0 INTRODUCTION

This report documents the completion and startup performance monitoring results, including confirmatory indoor air sampling, associated with the subslab depressurization (SSD) system in the central and southern portions of Building 330D (B330D) at the former IBM East Fishkill facility located in Hopewell Junction, New York (the site). A site location plan is provided as Figure 1, and the location of B330D at the site is shown on Figure 2. B330D is currently owned by iPark East Fishkill LLC (iPark), also referred to as National Resources (NR). iPark renumbered its buildings in 2019, and B330D was renumbered as Building 700. However, to be consistent with prior reports, the building will be referred to as B330D herein.

The work described herein was conducted on behalf of IBM by Sanborn, Head Engineering, PC (SHPC). Progress updates and relevant data have been communicated to the New York State Department of Environmental Conservation and Department of Health (the Departments) through periodic correspondence and meetings.

The services conducted, and this report, are subject to the standard limitations for this type of work, as described in Appendix A.

2.0 BACKGROUND INFORMATION

B330D is equipped with an existing permanent SSD system (designated System VE-1) that serves the northern portion of the building. System VE-1 was commissioned in June 2019 as an expansion to the existing 80K Area SSD system.[1] The expansion consisted of connecting two additional extraction ports (EP4017 and EP4023) to the 80K Area SSD system to expand its area of influence beneath the northern portion of the building. In addition, interim Systems VE-5 and VE-6 were commissioned in February 2017,[2] as further discussed below. Interim systems VE-5 and VE-6 were shut-down and replaced with the central and southern permanent SSD system (VE-10) in August 2020, which is the subject of this report.

Subslab vapor sampling was performed throughout B330D in 2016 as documented in a May 2017 report.[2] The inferred subslab vapor PCE isopleths are shown on Figure 4 and indicate that relatively elevated concentrations of PCE were present beneath the western and southeastern portions of the building, decreasing significantly to the east beneath the B330D Annex (a.k.a. B330L). SSD pilot testing was completed in 2016, the results of which were used to design the expansion of VE-1 and the interim SSD systems.

The interim SSD systems were designed for temporary operation in areas of relatively elevated subslab PCE concentrations until a permanent system could be installed, pending plans for re-occupancy of the central area of the building. The interim systems were operated in accordance with their design objectives, including depressurization of the floor slab beneath the central and southern portions of the building, as documented in the most recent

[1] Sanborn Head Engineering, P.C., *Subslab Depressurization System Completion and Startup Report, Building 330D North System, Former IBM East Fishkill Facility, Hopewell Junction, NY*, December 13, 2019.

[2] Sanborn Head Engineering, P.C., *Report of Interim Measures and Indoor Air Quality Testing, Building 330D, Former IBM East Fishkill Facility, Hopewell Junction, NY*, May 30, 2017.

Annual Corrective Action Status Report[3] prepared on behalf of IBM by Groundwater Sciences Corporation (GSC).

In September 2017, iPark purchased portions of the site, including B330D. Building renovations, including asbestos abatement above the first floor ceiling, completed by iPark allowed IBM to proceed with design and installation of overhead SSD vacuum pipe above the drop ceiling for the permanent system to replace the interim systems in the central and southern portions of the building. As a result, IBM prepared a conceptual design for the permanent system, which was documented in a March 2020 report [4] to the Departments. The Departments approved the design in an April 30, 2020 letter to IBM, which indicated that IBM could proceed with construction and operation of the permanent SSD system (designated VE-10).

This report documents the installation, startup, and subsequent indoor air quality (IAQ) testing of VE-10 in the central and southern portions of B330D. These areas include the vacant central area (where VE-5 was located) and the IBM tenant space (where VE-6 was located). SSD system VE-1 continues to operate in the northern portion of the building. The layout of the System VE-1 and VE-10, and a summary of current occupancy within B330D (as reported to IBM by iPark), are shown on Figure 3.

3.0 SUBSLAB DEPRESSURIZATION SYSTEM INSTALLATION AND PERFORMANCE

The purpose of the SSD systems in B330D is to capture subslab VOC vapors and establish control of cross-slab pressure gradients to reduce the potential for vapor intrusion to impact IAQ. The VE-10 equipment enclosure (shown on Figure 3) and the associated SSD system piping were constructed in June, July, and August 2020, in general accordance with the conceptual design and began operation on August 26, 2020.

The following sections provide a description of VE-10 and summarize the startup activities, including operating conditions and performance results.

3.1 System Description

System VE-10 was designed to depressurize the central and southern portion of B330D and overlap with the area of subslab vacuum influence associated with the existing System VE-1. System VE-1 targets the northern portion of the building, including the occupied Crepini tenant space, as shown on Figure 3. System VE-10 targets the vacant central portion (also referred to as the ballroom) and southern portion of the building, including the occupied IBM tenant space and the currently vacant central area. System VE-10 serves as a replacement for the former interim VE-5 and VE-6 systems. The B330D SSD systems were not designed to extend into the B330D Annex (B330L), where significantly lower concentrations of PCE have been observed in subslab vapor and indoor air.

[3] Groundwater Sciences Corporation, *2019 Annual Corrective Action Status Report, Former IBM Facility, East Fishkill, New York*, May 28, 2020.

[4] Sanborn, Head Engineering, P.C, *Subslab Depressurization System Conceptual Design Report, Building 330D Central and South Areas, Former IBM East Fishkill Facility, Hopewell Junction, NY,* March 2020

System VE-10 withdraws subslab vapor from seven extraction ports (EP4004, EP4005, EP4006, EP4010, EP4013, EP4015, and EP4025) and one suction pit (SP4003). To balance vapor extraction rates throughout B330D, valves were installed in the vacuum piping to split the overall extraction flow rate between Systems VE-1 and VE-10. System VE-1 extracts subslab vapor from six extraction ports (EP4001, EP4002, EP4003, EP4017, EP4023, and EP4024) and one suction pit (SP4001).

For System VE-10, vapor is withdrawn from beneath the slab using a 25-horsepower, regenerative-type vacuum blower installed inside an equipment enclosure located on the exterior of the southeast side of B330D. Subslab vapor is pulled through a vapor-liquid separator and treated via three 700-lb granular activated carbon (GAC) adsorber units plumbed in a lead-lag-polish series configuration. The treated vapor then enters the vacuum blower and is discharged above the B330D roofline and away from any outside air intakes. The system is equipped with instruments, controls, and alarms so that the appropriate personnel are notified automatically in the event of a malfunction. Photographs of the system enclosure are provided in Exhibits 3.1 and 3.2 below.

Exhibit 3.1: System VE-10 Equipment Enclosure Exterior

Exhibit 3.2: System VE-10 Equipment Enclosure Interior

3.2 Vapor Extraction Performance Monitoring

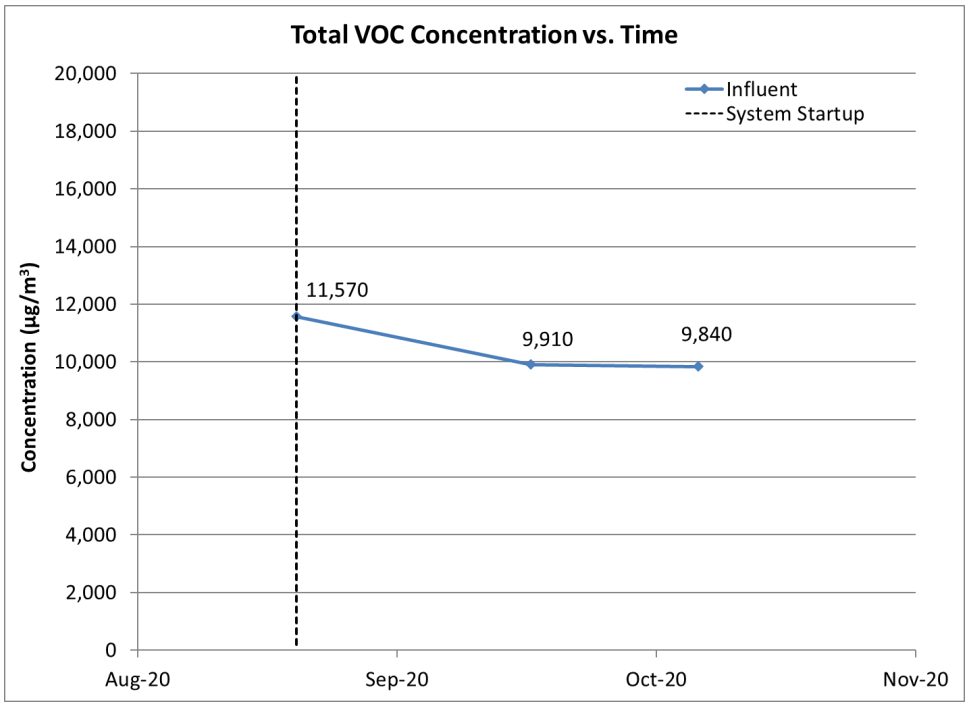
The applied vacuums and flow rates measured at the extraction points during startup are shown on Figure 4. A combined total of 565 standard cubic feet per minute (scfm) of subslab vapor is being extracted by VE-10. The resulting cross-slab differential pressure readings at these conditions are also shown on Figure 4, along with the inferred extent of the subslab pressure response depicted by the differential pressure isopleth at -0.004 inches of water column (in. wc). The applied vacuums, extracted vapor flow rates, and subslab differential pressure response are generally consistent with observations made during pilot testing activities that provided the basis for the SSD system design.

The area of influence of System VE-1 is also shown on Figure 4 for reference and is based on differential pressure measurements recorded on September 5, 2019 without any other SSD systems (i.e., interim systems VE-5 and VE-6) running at the time.

3.3 VOC Mass Removal

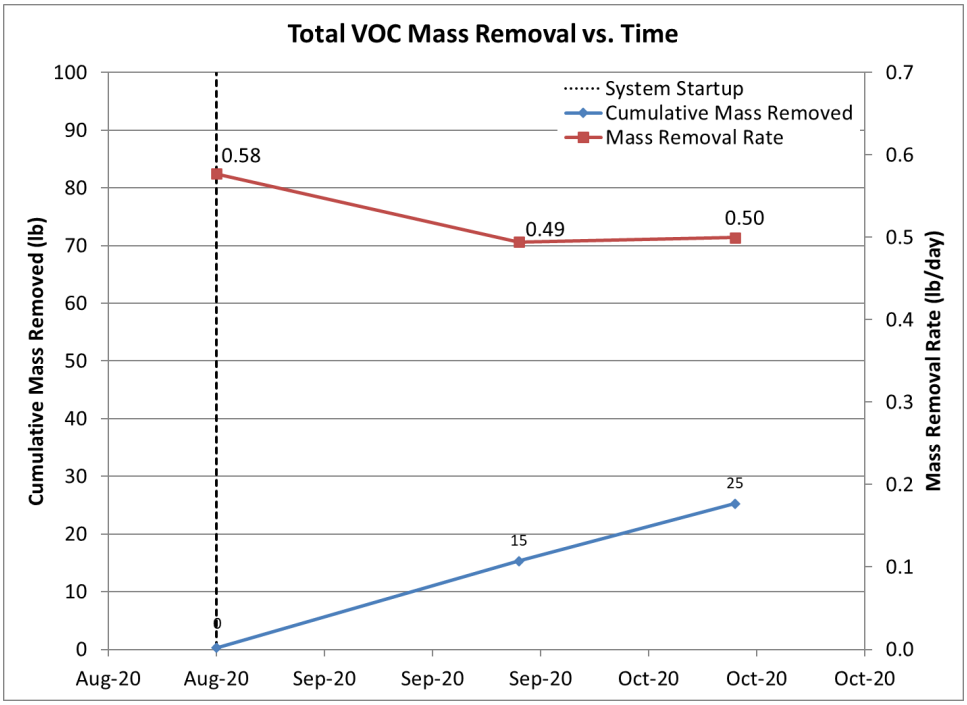
The SSD system is successfully removing VOC mass from beneath the building slab. To estimate the total VOC mass removed by System VE-10, process vapor samples were collected from the influent of the VE-10 GAC treatment train a total of three times since startup. The plot in Exhibit 3.3 below shows the total VOC concentrations verses time at the influent point of the system. Since subslab vapor was previously being extracted by the existing VE-1, VE-5, and VE-6 SSD systems, the typical steep decrease in VOC concentrations following initial startup was not observed. The VOC concentrations shown in Exhibit 3.3 are generally consistent with the recent historical data collected from the VE-1, VE-5, and VE-6 SSD systems before the startup of VE-10 in August 2020.

Exhibit 3.3: System VE-10 Influent Total VOC Concentration vs. Time



The plot in Exhibit 3.4 below shows the total VOC mass removal rate and cumulative mass removed since the startup of VE-10 in August 2020. A total of approximately 25 pounds of VOCs have been removed by VE-10 through October 14, 2020. Prior to their replacement by the VE-10 system, System VE-5 removed approximately 770 lbs of VOCs and System VE-6 removed approximately 660 lbs of VOCS. In addition, System VE-1 has removed approximately 18,000 lbs of VOCs since its startup in October 2010. In combination, the SSD systems have removed a total of approximately 19,500 pounds of VOCs from beneath B330D through October 14, 2020.

Exhibit 3.4: System VE-10 Total VOC Mass Removal vs. Time



To monitor treatment performance of the extracted vapor stream, grab samples are collected downstream of each of the three GAC vessels, on an approximately quarterly basis. Once the sampling data indicates the existing GAC is near exhaustion, it will be replaced with virgin or reactivated GAC.

3.4 Operations and Maintenance

The System VE-10 operations and maintenance monitoring program is outlined below in Exhibit 3.5. In addition to the monitoring described below, the SSD system is equipped with system shut-down alarms that notify operators of when the system is not operational (e.g., during power outages, equipment malfunction).

Exhibit 3.5: Operations and Maintenance Plan

Task	Frequency
SSD system operational monitoring (blower run, vacuum, and flow – manual checks)	Weekly
SSD system combined influent vapor grab Summa® sampling and VOC analysis	Monthly
SSD system GAC treatment train grab Summa® sampling and VOC analysis	Quarterly
SSD system performance monitoring (extraction port flow rates and subslab differential pressures)	Annually

4.0 INDOOR AIR CONFIRMATORY SAMPLING

On September 29, 2020, approximately 30 days after the startup of System VE-10, 14 indoor air samples were collected in B330D at the locations shown on Figure 5. One of the samples was collected in B330L, beyond the influence of the SSD systems, and three samples were collected at, or just beyond, the edges of SSD system influence in B330D (samples IA 4017, IA AY-43, and IA BH-40). Note that indoor air samples were previously collected by Walden Environmental Engineering PLLC (Walden), on behalf of iPark, in the Crepini tenant space after the startup of VE-1, the results of which were reported in Sanborn Head's December 2019 Startup Report and in a January 2020 IAQ Summary Report[5] prepared by Walden.

The most recent samples were collected on September 29, 2020 while VE-1 and VE-10 were operating, and the HVAC system was operating under normal occupancy conditions. A summary of the HVAC operating conditions at the time of sampling, as well as a figure showing the HVAC zone locations, are provided in Appendix B for reference.

The indoor air samples were collected over an 8-hour period into individually certified-clean SUMMA® canisters in accordance with the procedures described in the RFI Work Plan. The samples were submitted to Eurofins/Air Toxics of Folsom, California for analysis of 22 VOCs listed in the RFI Work Plan using modified USEPA Method TO-15. The samples were typically collected at a height between 3 and 4 feet above the floor level. A field duplicate sample, ambient outdoor air sample, and nitrogen blank were also collected for quality assurance/quality control (QA/QC) purposes, which are discussed in Section 5. A summary of field sampling information, including location description, sample identifiers, sample collection times, and initial and final canister vacuums is provided in Table 1.

4.1 IA Sampling Results

The PCE and TCE indoor air concentrations are shown on Figure 5, and the results for all analytes are summarized in Table 2. The analytical laboratory reports are provided in Appendix C.

PCE and TCE were not detected in the eight samples collected from the IBM tenant space in the southern portion of the building, nor in the sample collected from the B330D Annex (B330L), nor in the three samples collected at or beyond the edges of influence of the SSD system (samples IA 4017, IA AY-43, and IA BH-40). Low levels of PCE were detected at concentrations ranging from 1.4 to 3.8 µg/m^3 in four of the five samples collected from the central portion of the building. TCE was detected at only one location (IA BE-28 located in the HES space) at a concentration of 0.22 µg/m^3.

Low levels of nine other analytes were detected in indoor air, including: acetone (7.2 to 66 µg/m^3 across all but one sample); carbon tetrachloride (0.41 to 5.8 µg/m^3 across all but three samples [refer to carbon tetrachloride discussion below]); ethylbenzene (0.9 to 34 µg/m^3 in six samples); methylene chloride (dichloromethane) (1.0 to 1.3 µg/m^3 in three samples); toluene (0.64 to 3.5 µg/m^3 in six samples); trichlorofluoromethane (CFC11) (1.3 to 2.2 µg/m^3

[5] Walden Environmental Engineering PLLC, *Building 700 (Former 330D) Crepini Space Indoor Air Quality Testing Summary Report, iPark 84, Former IBM East Fishkill Facility*, January 3, 2020.

across all but three samples); vinyl chloride (0.058 µg/m^3 in one sample); xylene (m,p-) (1.5 to 180 µg/m^3 in eight samples); and xylene (o-) (8.9 to 54 µg/m^3 in six samples).

Acetone, carbon tetrachloride, and CFC11 were also detected in the ambient outside air sample at concentrations generally consistent with the concentrations detected in indoor air. In four samples from the southern portion of the building, carbon tetrachloride was detected at levels above outside air at concentrations ranging from 0.9 to 5.8 µg/m^3. During previous 8-hour indoor air sampling at these locations in December 2015 and March 2017, carbon tetrachloride concentrations were consistent with outside air (0.37 to 0.48 µg/m^3). In addition, carbon tetrachloride was not detected in any of the subslab vapor samples collected from B330D in 2016. Therefore, carbon tetrachloride detections are likely not attributable to vapor intrusion and are more likely to be connected to a source within the building. Carbon tetrachloride can be found in building materials. Interior renovations have been ongoing in the southern area of the building, with new floors, floor finishes, and walls being constructed. Carbon tetrachloride can also be found in commercial cleaning agents.

In aggregate, the 8-hour indoor air sample data demonstrate that the SSD system is achieving its design objective of intercepting VOCs in subslab soil gas and preventing migration into indoor air.

5.0 QUALITY ASSURANCE/QUALITY CONTROL

The analytical data from the confirmatory samples were provided to New Environmental Horizons, Inc (NEH) of Arlington, MA and Skillman, NJ who conducted an in-depth data usability review. The Data Usability Summary Report (DUSR) is provided in Appendix D. The review found that all results were considered usable for project objectives/decisions.

6.0 TENANT NOTIFICATIONS

We understand that the property owner (NR) is responsible for notifying its tenants of these IAQ testing results under the tenant notification requirements of New York Environmental Conservation Law ENV Section 27-2405.

7.0 CONCLUSIONS

The results of the B330D VE-10 System startup covering the central and southern portions of the building indicate the system is meeting its design objectives of depressurizing the subslab and reducing VOC vapor intrusion to achieve acceptable indoor air quality. Confirmatory indoor air sampling indicates that the SSD system has reduced PCE concentrations within the building to levels at or approaching non-detectable concentrations. Carbon tetrachloride concentrations in indoor air in the southern portion of the building detected above ambient air concentrations are likely attributable to an interior source and not vapor intrusion, based on prior indoor air and subslab vapor data.

IBM intends to operate and maintain the B330D South SSD System as described in Section 3.4.

TABLES

Table 1
Summary of Indoor Air Sample Information
Building 330D
Former IBM East Fishkill Facility
Hopewell Junction, NY

Sample Location	Building Floor	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	Chemicals Observed Near Sample Location
Collection Date: September 29, 2020											
AA4001	Ground	Ambient Air	6L0681	3	6:17	-29	14:17	-6	75	AC-83 intake	None Observed
FB-01	Ground	Nitrogen	6L2224	3	6:17	-27.5	14:17	-7	75	AA4001	None Observed
FD-01	Ground	Indoor Air	6L2272	3	6:25	-28.5	14:25	-6	65	IA BE-28	None Observed
IA AY-43	Ground	Indoor Air	6L2528	3	6:47	-28	14:47	-7	65	Lab	None Observed
IA BA-28	Ground	Indoor Air	6L2529	3	6:28	-29	14:28	-6.5	65	HES	None Observed
IA BB-37	Ground	Indoor Air	6L2123	3	6:34	-26	14:34	-5	65	Vacant	None Observed
IA BB-39	Ground	Indoor Air	6L2678	4	6:35	-26	12:19	-2	65	Lab	None Observed
IA BE-28	Ground	Indoor Air	6L0406	3	6:25	-29	14:25	-5	65	HES	None Observed
IA BG-38	Ground	Indoor Air	6L1175	4	6:40	-30	14:40	-5	65	Lab	None Observed
IA BG-45	Ground	Indoor Air	6L2846	3	6:43	-26	14:43	-4	65	Lab	None Observed
IA BH-40	Ground	Indoor Air	6L2258	3	6:41	-30	14:41	-6	65	Hallway	None Observed
IA4013	Ground	Indoor Air	6L2844	3	6:18	-27.5	14:18	-5	65	Ballroom	None Observed
IA4014	Ground	Indoor Air	6L2816	3	6:23	-28.5	14:23	-5	70	Lobby	None Observed
IA4016	Ground	Indoor Air	6L1737	3	6:45	-29.5	14:55	-7	70	Vacant	None Observed
IA4017	Ground	Indoor Air	6L2409	3.5	6:22	-30	14:22	-5.5	65	Hallway	None Observed
IA4018	Ground	Indoor Air	6L0327	3	6:39	-30	14:39	-5.5	65	Hallway	None Observed
IA4019	Ground	Indoor Air	6L2828	3	6:37	-28.5	14:37	-5	65	Office	None Observed

Notes:

1. Samples were collected by Sanborn, Head Engineering, PC on September 29, 2020.

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 22 project-specific analytes using modified USEPA Method TO-15 and Method TO-15 in selective ion monitoring (SIM) mode.

Table 2
Summary of 8-Hour Indoor Air Analytical Results - B330D
Former IBM East Fishkill Facility
Hopewell Junction, New York

Analyte	Sample Location	AA4001			IA AY-43			IA BA-28			IA BB-37			IA BB-39			IA BE-28			IA BE-28 Dup			IA BG-38			IA BG-45			IA BH-40			IA4013			IA4014			IA4016			IA4017			IA4018			IA4019			Equipment Blank		
	Collection Date	9/29/2020			9/29/2020			9/29/2020			9/29/2020			9/29/2020			9/29/2020			9/29/2020			9/29/2020			9/29/2020			9/29/2020			9/29/2020			9/29/2020			9/29/2020			9/29/2020			9/29/2020			9/29/2020			9/29/2020		
	Units	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	Result	Qual.	Bias	Result	Qual.	Bias	Result	Qual.	Bias
Acetone	µg/m3	8.8			24			44			8.2	EB	H	13			38	UJ	L	66	EB	H	15			17			10	J-	L	22	J-	L	34	J-	L	24	J-	L	15	J-	L	7.2	JEB	I	12	J-	L	9.1		
Benzene	µg/m3	0.52	U		0.51	U		0.55	U		0.51	U		0.48	U		5.1	U		5.2	U		0.52	U		0.51	U		0.51	U		0.54	U		0.52	U		0.55	U		0.51	U		0.52	U		0.51	U		0.56	U	
Carbon tetrachloride	µg/m3	0.50			0.48			0.73			0.49			0.9			2.0	U		2.1	U		5.8			1.1			2.3			0.43			0.45			0.42			0.43			0.41			0.55			0.22	U	
CFC113 (Ethane, 1,1,2-trichloro-1,2,2-trifluoro-)	µg/m3	1.2	U		1.2	U		1.3	U		1.2	U		1.2	U		12	U		12	U		1.2	U		1.2	U		1.2	U		1.3	U		1.2	U		1.3	U		1.2	U		1.2	U		1.2	U		1.3	U	
Chlorobenzene (Monochlorobenzene)	µg/m3	0.76	U		0.74	U		0.79	U		0.74	U		0.70	U		7.4	U		7.6	U		0.76	U		0.74	U		0.74	U		0.77	U		0.76	U		0.79	U		0.74	U		0.76	U		0.74	U		0.80	U	
Dichlorobenzene (1,2-)	µg/m3	0.99	U		0.97	U		1.0	U		0.97	U		0.91	U		9.7	U		9.9	U		0.99	U		0.97	U		0.97	U		1.0	U		0.99	U		1.0	U		0.97	U		0.99	U		0.97	U		1.0	U	
Dichlorobenzene (1,3-)	µg/m3	0.99	U		0.97	U		1.0	U		0.97	U		0.91	U		9.7	U		9.9	U		0.99	U		0.97	U		0.97	U		1.0	U		0.99	U		1.0	U		0.97	U		0.99	U		0.97	U		1.0	U	
Dichlorobenzene (1,4-)	µg/m3	0.99	U		0.97	U		1.0	U		0.97	U		0.91	U		9.7	U		9.9	U		0.99	U		0.97	U		0.97	U		1.0	U		0.99	U		1.0	U		0.97	U		0.99	U		0.97	U		1.0	U	
Dichlorodifluoromethane (CFC12)	µg/m3	4.0	U		4.0	U		4.2	U		4.0	U		3.8	U		40	U		40	U		4.0	U		4.0	U		4.0	U		4.2	U		4.0	U		4.2	U		4.0	U		4.0	U		4.0	U		4.3	U	
Dichloroethene (1,1-)	µg/m3	0.065	U		0.064	U		0.068	U		0.064	U		0.060	U		0.64	U		0.65	U		0.065	U		0.064	U		0.064	U		0.067	U		0.065	U		0.068	U		0.064	U		0.065	U		0.064	U		0.069	U	
Dichloroethene (cis-1,2-)	µg/m3	0.13	U		0.13	U		0.14	U		0.13	U		0.12	U		1.3	U		1.3	U		0.13	U		0.13	U		0.13	U		0.13	U		0.13	U		0.14	U		0.13	U		0.13	U		0.13	U		0.14	U	
Ethylbenzene	µg/m3	0.71	U		0.70	U		12			0.70	U		0.66	U		7.0	U		6.8	J	I	0.71	U		0.9			0.70	U		34			0.71	U		9.7			8.6			0.71	U		0.70	U		0.76	U	
Methylene Chloride (Dichloromethane)	µg/m3	1.1	U		1.1	U		1.2	U		1.1	U		1.0			11	U		11	U		1.1	U		1.2			1.1	U		1.3			1.1	U		1.2	U		1.1	U		1.1	U		1.1	U		1.2	U	
Tetrachloroethene (PCE)	µg/m3	1.1	U		1.1	U		3.8			1.1	U		1.0	U		3.5			3.4			1.1	U		1.1	U		1.1	U		3.0			1.1	U		1.4			1.1	U		1.1	U		1.1	U		1.2	U	
Toluene	µg/m3	0.62	U		0.61	U		1.6			0.61	U		0.57	U		6.1	U		6.2	U		0.62	U		1.1			0.61	U		2.7			0.64			1.9			3.5			0.62	U		0.61	U		0.66	U	
Trichlorobenzene (1,2,4-)	µg/m3	6.1	U		6.0	U		6.3	U		6.0	U		5.6	U		60	U		61	U		6.1	U		6.0	U		6.0	U		6.2	U		6.1	U		6.3	U		6.0	U		6.1	U		6.0	U		6.5	U	
Trichloroethane (1,1,1-)	µg/m3	0.89	U		0.88	U		0.93	U		0.88	U		0.83	U		8.8	U		8.9	U		0.89	U		0.88	U		0.88	U		0.92	U		0.89	U		0.93	U		0.88	U		0.89	U		0.88	U		0.95	U	
Trichloroethene (TCE)	µg/m3	0.18	U		0.17	U		0.22			0.17	U		0.16	U		1.7	U		1.8	U		0.18	U		0.17	U		0.17	U		0.18	U		0.18	U		0.18	U		0.17	U		0.18	U		0.17	U		0.19	U	
Trichlorofluoromethane (CFC11)	µg/m3	1.4			2.2			1.5			1.6			1.6			9.0	U		9.2	U		1.5			1.8			1.4			1.7			1.8			1.7			1.6			1.4			1.3			0.98	U	
Vinyl chloride	µg/m3	0.042	U		0.041	U		0.044	U		0.041	U		0.039	U		0.41	U		0.42	U		0.042	U		0.041	U		0.058			0.043	U		0.042	U		0.044	U		0.041	U		0.042	U		0.041	U		0.045	U	
Xylene (m,p-)	µg/m3	0.71	U		0.70	U		64			0.70	U		0.66	U		30			30			0.71	U		2.4			0.70	U		180			1.5			58			53			0.71	U		0.70	U		0.76	U	
Xylene (o-)	µg/m3	0.71	U		0.70	U		17			0.70	U		0.66	U		8.9			9.3			0.71	U		0.70	U		0.70	U		54			0.71	U		16			14			0.71	U		0.70	U		0.76	U	

Notes:

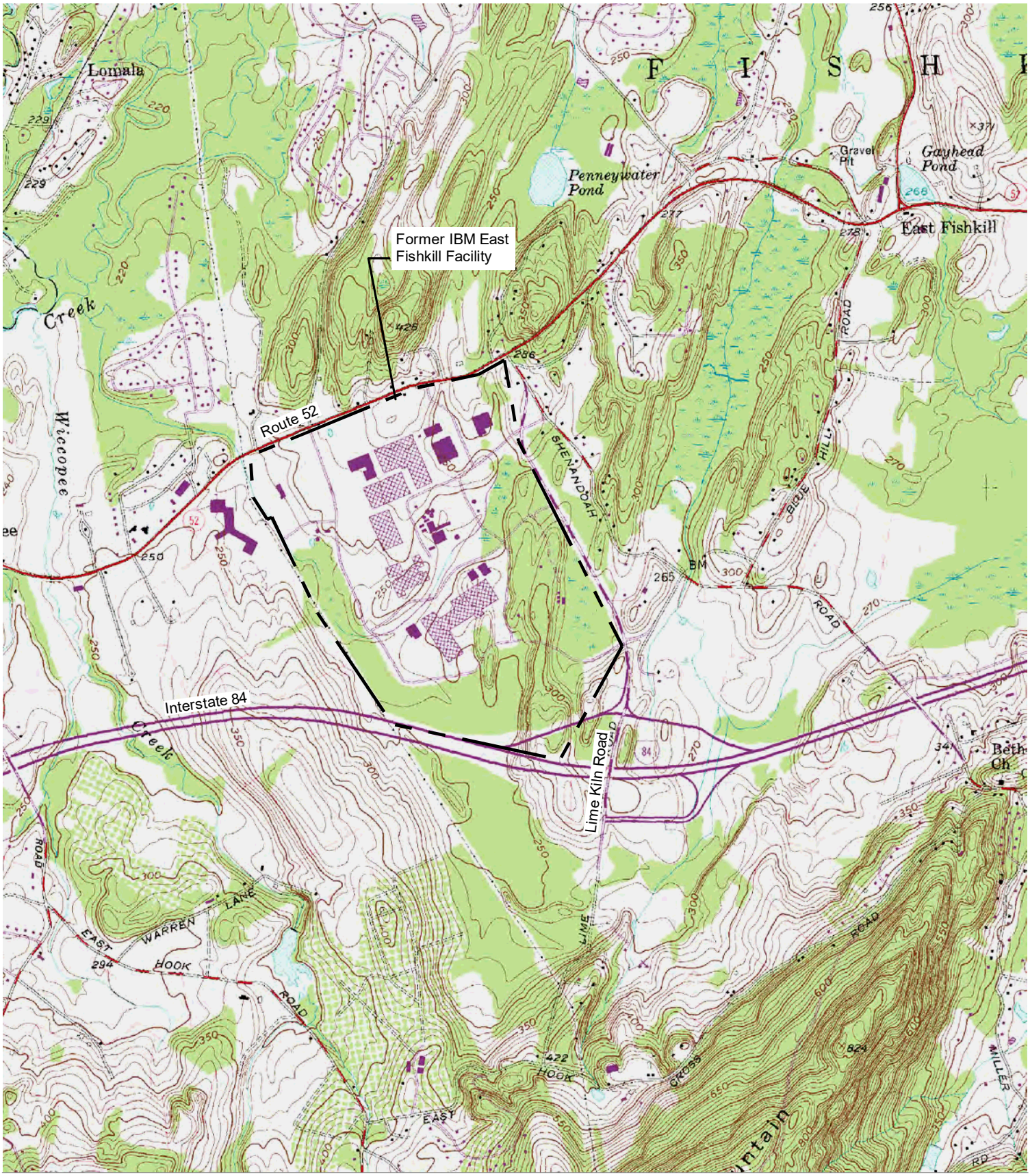
1. Samples were collected by Sanborn, Head Engineering P.C. on behalf of IBM Corporation on the dates indicated over an approximately 8-hour sampling interval using 6-liter, stainless steel, pre-evacuated SUMMA® canisters. The samples were analyzed by Eurofins Air Toxics of Folsom, California for the project-specific list of volatile organic compounds (VOCs) by United States Protection Agency (USEPA) Method TO-15 using a combination of full scan and selective ion monitoring (SIM) mode.

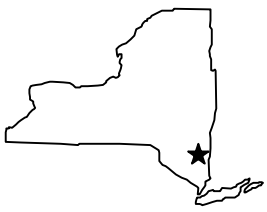
2. The "AA" designation indicates that the sample consists of ambient air collected from outside the building. "Equipment Blank" represents a field blank sample, where laboratory-supplied nitrogen was transferred from one SUMMA® canister into another.

3. Results are displayed with two significant figures.

4. A data usability summary report (DUSR) was performed on the data by New Environmental Horizons, Inc. (NEH) . All results were considered acceptable, with the understanding of the potential uncertainty (bias) in the qualified results. In some cases, NEH assigned the following qualifiers and biases to the data. Refer to the DUSR report for further details.
"U" indicates the analyte is non-detect at or above the indicated sample specific practical quantification limit (PQL).
"UJ" = non-detect is usable as an estimated value.
"EB" = the analyte was also present in a Field Equipment Blank.
"J" indicates the result is estimated.
"J-" = result is usable as an estimated value with possible low bias
"L" indicates a low bias.
"I" indicates an indeterminate bias.
"H" indicates a high bias

FIGURES





Notes:
Base map taken from 7.5 minute USGS Quadrangle Maps: Hopewell Junction, New York, Dated 1957, Photorevised in 1981.

Drawn By: E. Wright
Designed By: C. Murphy
Reviewed By: D. Shea
Project No: 2999.19
Date: November 2020

1,000' 0 2,000' Feet

SANBORN HEAD ENGINEERING

Figure 1

Site Location Plan

Subslab Depressurization Completion and Startup Report - Building 330D Central and South System

Former IBM East Fishkill Facility
Hopewell Junction, New York

Figure 2

B330D Location Plan

Subslab Depressurization Completion and Startup Report - Building 330D Central and South System

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By: E. Wright
Designed By: C. Murphy
Reviewed By: D. Shea
Project No: 2999.19
Date: November 2020

Figure Narrative

This figure shows the buildings at the former IBM East Fishkill facility. Building B330D is outlined.

Legend

— - - — Property Line

Unlabeled features include wastewater treatment tanks, pump houses, trailers, and other structures and features not intended for human occupancy

B330D Indicates building number

Indicates the location of B330D

Indicates the approximate extent of the B330D VE-10 SSD system

GlobalFoundries
Lot 1 GlobalFoundries U.S 2 LLC
Lot 5 GlobalFoundries U.S 2 LLC

i.Park
Lot 2 i.Park East Fishkill I LLC
Lot 3 i.Park East Fishkill I LLC
Lot 4 i.Park East Fishkill LLC
Lot 6 i.Park East Fishkill LLC
Lot 7 i.Park East Fishkill LLC
Lot 8 i.Park East Fishkill LLC

- Subdivision (GlobalFoundries U.S. 2 LLC)
- Subdivision (i.Park East Fishkill LLC)
- Subdivision (i.Park East Fishkill I LLC)

N W E S

200' 100' 0 200' 400' Feet

SANBORN HEAD ENGINEERING

Last Edited By: ewright

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Proposed Sprout Creek Bakery

B330D Annex (B330L)

Proposed Midway Dental

SSD System VE-10

EP4023

EP4017

EP4002

Proposed Crepini Expansion

EP4005

SP4003

EP4015

HES Space

B330D

IBM

EP4024

EP4025

Crepini Space

Former Ballroom Area

EP4003

EP4010

SP4001

EP4001

EP4004

EP4006

EP4013

SSD System VE-1

22

Figure 3

Occupancy and Subslab Depressurization System Summary Figure

Subslab Depressurization Completion and Startup Report - Building 330D Central and South System

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	E. Wright
Designed By:	C. Murphy
Reviewed By:	D. Shea
Project No:	2999.19
Date:	November 2020

Figure Narrative

This figure shows the B330D Subslab Depressurization (SSD) System piping installed by IBM, as well as information on occupied areas of the building.

Occupied areas and tenant spaces are based on information provided by iPark, and are current as of November 2020. IBM is to be notified by the building owner when tenants vacate or occupy spaces within the building.

Legend

- Crepini Tenant Space
- IBM Tenant Space
- HES Tenant Space
- Proposed Sprout Creek Bakery
- Proposed Midway Dental
- Unoccupied
- B330D SSD System Piping
- Existing B330D North (VE-1) SSD system piping
- EP4025 — Subslab vapor extraction port connected to the SSDS
- SP4003 — Subslab vapor suction pit connected to the SSDS

30 15 0 30 60 Feet

SANBORN HEAD ENGINEERING

Figure 4

Subslab Pressure Response to Vapor Extraction

Subslab Depressurization Completion and Startup Report - Building 330D Central and South System

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	E. Wright
Designed By:	C. Murphy
Reviewed By:	D. Shea
Project No:	2999.19
Date:	November 2020

Figure Narrative

This figure shows the inferred subslab pressure response from the subslab depressurization (SSD) system extracting vapor from from EP4001, EP4002, EP4003, EP4004, EP4005, EP4006, EP4010, EP4013, EP4015, EP4024, EP4025, and SP4003, and the measurements recorded at those extraction points upon startup. The subslab pressure response footprint represents the outer limit of the -0.004 inches of water column differential pressure based on measurements recorded on September 29, 2020.

The differential pressure contours overlay the inferred subslab vapor tetrachloroethene (PCE) concentration isopleths based on subslab vapor samples collected in 2016.

Legend

- Subslab Vapor Monitoring Port
- Subslab Vapor Extraction Port
- Subslab vapor extraction port not connected to an SSD system
- Subslab Vapor Suction Pit
- Differential pressure contour (inches of water column) for VE-10 dashed where inferred
- Differential pressure contour (inches of water column) for System VE-1 dashed where inferred

SP4001	Extraction Port / Suction Pit
in. wc	Applied Vacuum inches of water column (in. wc.)
scfm	Flow Rate (std. cu. ft. per min.)
TVOC	Total VOC concentration (µg/m³)

Observed pressure differential between the subslab and room after SSD start-up (in. wc). Negative values indicate subslab pressure is less than indoor air pressure.

30 15 0 30 60 Feet

SANBORN HEAD ENGINEERING

Last Edited By: ewright

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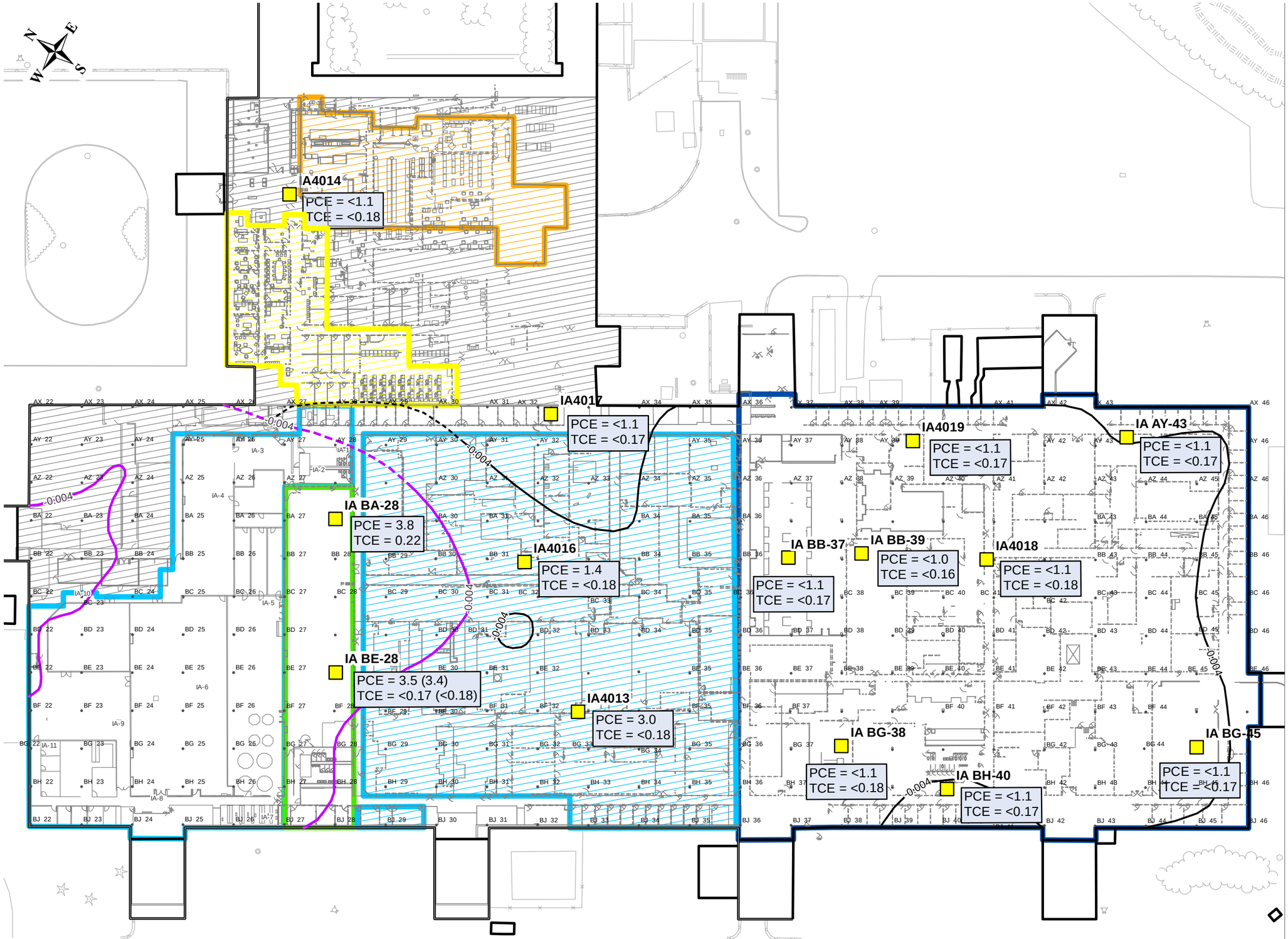

Figure 5

Summary of PCE and TCE Concentrations in 8-Hour Indoor Air Samples

Subslab Depressurization Completion and Startup Report - Building 330D Central and South System

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	E. Wright
Designed By:	C. Murphy
Reviewed By:	D. Shea
Project No:	2999.19
Date:	November 2020

Figure Narrative

This figure shows tetrachloroethene (PCE) and trichloroethene (TCE) results for indoor air samples collected in Building 330D on September 29, 2020 while the SSD system was operating. The samples were collected as approximately 8-hour time-weighted average samples using 6-L SUMMA canisters. Results are shown in micrograms per cubic meter ($\mu g/m^3$). Refer to Appendix C of this report for the full list of sampling results.

Refer to previous figures for additional notes and legend.

Legend

- Indoor Air Location
- PCE = 1.4 / TCE = <0.18 — Tetrachloroethene (PCE) sample result ($\mu g/m^3$); Trichloroethene (TCE) sample result ($\mu g/m^3$)
- ( ) Indicates field duplicate

30 15 0 30 60 Feet

SANBORN HEAD ENGINEERING

APPENDIX A

LIMITATIONS

APPENDIX A
SHPC LIMITATIONS

1. The observations 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. The conclusions contained in this report are based in part upon various types of chemical data as well as historical and hydrogeologic information developed by previous investigators. While SHPC has reviewed that data available to us at the time the report was prepared and information as stated in this report, any of SHPC's interpretations and conclusions that have relied on that information will be contingent on its validity. SHPC has not performed an independent assessment of the reliability of the data; should additional chemical data, historical information, or hydrogeologic information become available in the future, such information should be reviewed by SHPC and the interpretations and conclusions presented herein may be modified accordingly.

3. Sampling and quantitative laboratory testing was performed by others as part of the investigation as noted within the report. Where such analyses have been conducted by an outside laboratory, unless otherwise stated in the report, SHPC has relied upon the data provided, and has not conducted an independent evaluation of the reliability of these data. It must be noted that additional compounds not searched for during the current study may be present in vapor and 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 vapor and indoor air may occur due to the passage of time, seasonal water table fluctuations, recharge events, and other factors.

4. This report has been prepared for the use of the IBM Corporation for specific application to the former IBM East Fishkill facility 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.

5. 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.

APPENDIX B

SUMMARY OF HVAC OPERATING CONDITIONS

Table B.1
Summary of HVAC Setting - B330D
Former IBM East Fishkill Facility
Hopewell Junction, NY

HVAC Unit	Area Served	Operating Conditions	
		ON/OFF	OA Damper Position (% Open)
AC-6A2	Offices	ON	0%
AC-8-2	Labs and Offices	ON	65-100%
AC-12	Offices/Unoccupied Labs	OFF	NA
AC-13	Offices/Unoccupied Labs	ON	40%
AC-15	Labs and Offices	ON	30%
AC-25	Lobbies (B330L)	ON	10%
AC-60	Cleaning Personnel/ Unoccupied Area (B330L)	ON	100%
AC-61	Unoccupied (B330L)	OFF	NA
AC-71	Unoccupied Tool Shop	OFF	NA
AC-72,82	Crepini Space	Units removed	NA
AC-79	Unoccupied Lab	ON	100%
AC-83	Lab and Unoccupied Lab	ON	Not Visible
AC-5B2	Labs/Unoccupied Lab/Former Ballroom	ON	100%
AC-6B1	HES Semi-Conductor Manufacturing Space	ON	Not Visible
Recirculation Unit	HES Semi-Conductor Manufacturing Space	ON	NA (All Return Air)
Multiple Recirculation Units	Crepini	ON	NA (All Return Air)
MAU	Crepini	NR	100%
MAU	Crepini	NR	100%
MAU	Crepini	NR	100%

Notes:
1. HVAC operating conditions were observed by Sanborn Head on September 29, 2020. Damper positions should be considered approximate.
2. Abbreviations
OA = Outside air
RA = Return air
MAU = Makeup air unit
NA = Not Applicable
NR = Not Reported
3. Refer to Figure B.1 for HVAC zone locations.

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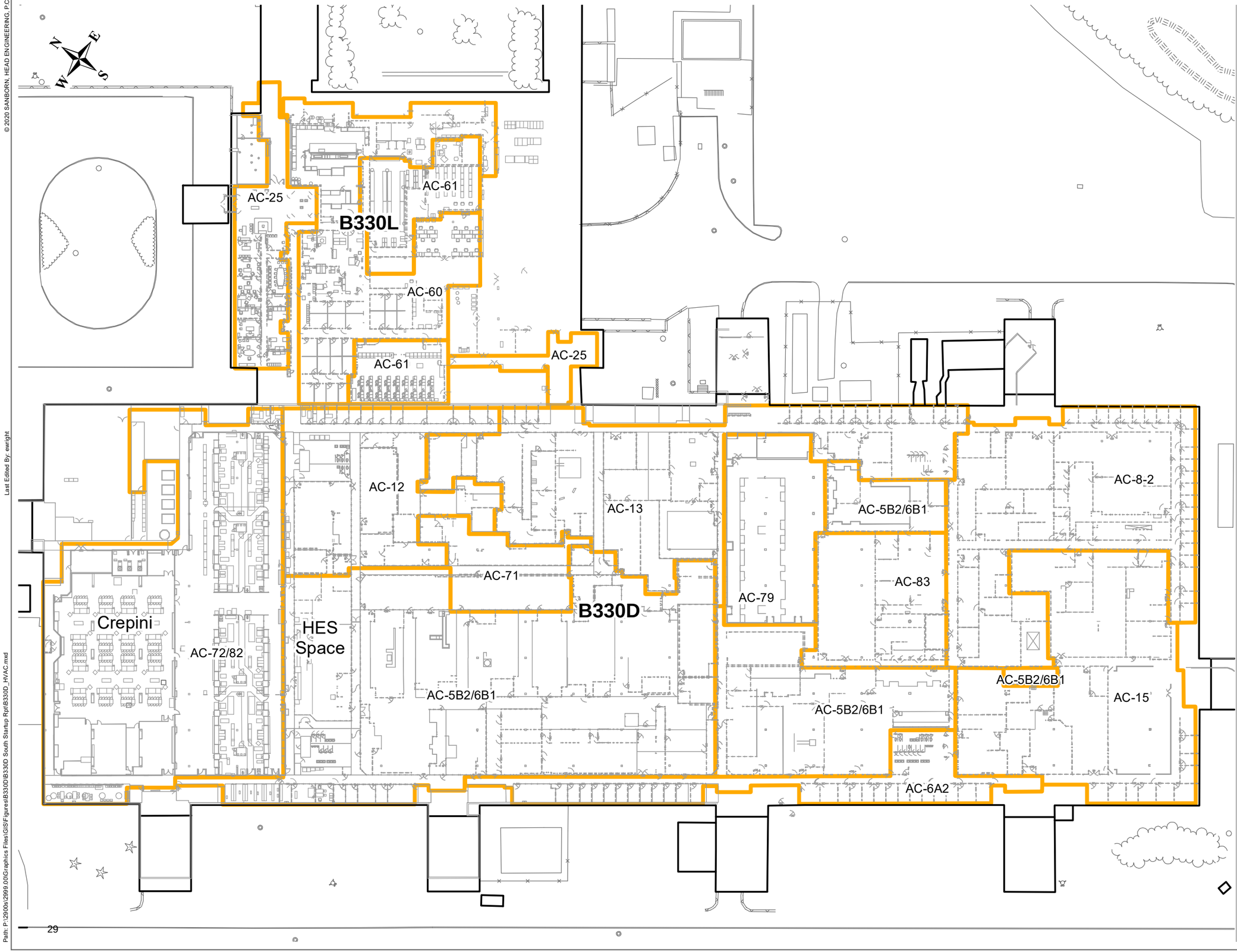

Figure B.1

HVAC Zones

Subslab Depressurization Completion and Startup Report - Buiding 330D Central and South System

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	E. Wright
Designed By:	C. Murphy
Reviewed By:	D. Shea
Project No:	2999.19
Date:	November 2020

Figure Narrative

This figure shows the approximate layout of the heating, ventilation, and air conditioning (HVAC) zones and units.

Legend

AC-83 — HVAC Zone and Designation

30 15 0 30 60 Feet

SANBORN HEAD ENGINEERING

APPENDIX C

ANALYTICAL LABORATORY REPORT

eurofins | Air Toxics

10/16/2020
Ms. Jennifer Sanborn
Sanborn, Head & Associates
20 Foundry Street

Concord NH 03301

Project Name: EFK
Project #: 2999.19
Workorder #: 2010027A

Dear Ms. Jennifer Sanborn

The following report includes the data for the above referenced project for sample(s) received on 10/1/2020 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: Alexandra Winslow at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Alexandra Winslow

Project Manager

eurofins | Air Toxics

WORK ORDER #: 2010027A

Work Order Summary

CLIENT:	Ms. Jennifer Sanborn 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 #**	2999.19 EFK
DATE RECEIVED:	10/01/2020	**CONTACT:**	Alexandra Winslow
DATE COMPLETED:	10/16/2020		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	AA4001_20200929	Modified TO-15	5.5 "Hg	5 psi
01B	AA4001_20200929	Modified TO-15	5.5 "Hg	5 psi
02A	FB-01_20200929	Modified TO-15	7.0 "Hg	5 psi
02B	FB-01_20200929	Modified TO-15	7.0 "Hg	5 psi
03A	FD-01_20200929	Modified TO-15	5.5 "Hg	5 psi
03B	FD-01_20200929	Modified TO-15	5.5 "Hg	5 psi
04A	IA AY-43_20200929	Modified TO-15	5.0 "Hg	5 psi
04B	IA AY-43_20200929	Modified TO-15	5.0 "Hg	5 psi
05A	IA BA-28_20200929	Modified TO-15	6.5 "Hg	5 psi
05B	IA BA-28_20200929	Modified TO-15	6.5 "Hg	5 psi
06A	IA BB-37_20200929	Modified TO-15	5.0 "Hg	5 psi
06B	IA BB-37_20200929	Modified TO-15	5.0 "Hg	5 psi
07A	IA BB-39_20200929	Modified TO-15	3.5 "Hg	5 psi
07B	IA BB-39_20200929	Modified TO-15	3.5 "Hg	5 psi
08A	IA BE-28_20200929	Modified TO-15	5.0 "Hg	5 psi
08B	IA BE-28_20200929	Modified TO-15	5.0 "Hg	5 psi
09A	IA BG-38_20200929	Modified TO-15	5.5 "Hg	5 psi
09B	IA BG-38_20200929	Modified TO-15	5.5 "Hg	5 psi
10A	IA BG-45_20200929	Modified TO-15	5.0 "Hg	5 psi
10B	IA BG-45_20200929	Modified TO-15	5.0 "Hg	5 psi
11A	Lab Blank	Modified TO-15	NA	NA
11B	Lab Blank	Modified TO-15	NA	NA
11C	Lab Blank	Modified TO-15	NA	NA

Continued on next page

eurofins | Air Toxics

WORK ORDER #: 2010027A

Work Order Summary

CLIENT:	Ms. Jennifer Sanborn 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 #**	2999.19 EFK
DATE RECEIVED:	10/01/2020	**CONTACT:**	Alexandra Winslow
DATE COMPLETED:	10/16/2020		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
11D	Lab Blank	Modified TO-15	NA	NA
12A	CCV	Modified TO-15	NA	NA
12B	CCV	Modified TO-15	NA	NA
12C	CCV	Modified TO-15	NA	NA
12D	CCV	Modified TO-15	NA	NA
13A	LCS	Modified TO-15	NA	NA
13AA	LCSD	Modified TO-15	NA	NA
13B	LCS	Modified TO-15	NA	NA
13BB	LCSD	Modified TO-15	NA	NA
13C	LCS	Modified TO-15	NA	NA
13CC	LCSD	Modified TO-15	NA	NA
13D	LCS	Modified TO-15	NA	NA
13DD	LCSD	Modified TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 10/16/20

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209219, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-19-14, UT NELAP – CA009332020-12, VA NELAP - 10615, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-013, 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

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# 2010027A

Ten 6 Liter Summa Canister (100% SIM Ambient) samples were received on October 01, 2020. 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.

Requirement	***TO-15***	***ATL Modifications***
ICAL %RSD acceptance criteria	</=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 </=30% RSD with 10% of compounds allowed out to < 40% RSD
Daily Calibration	+- 30% Difference	For Full Scan: </= 30% Difference with four allowed out up to </=40%.; flag and narrate outliers For SIM: Project specific; default criteria is </= 30% Difference with 10% of compounds allowed out up to </=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

Due to omission of the sampling date from the ID format on the sample tag, the information on the Chain of Custody (COC) for all sample 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.

Dilution was performed on samples FD-01_20200929 and IA BE-28_20200929 due to the presence of high level non-target species.

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

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

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

Client Sample ID: AA4001_20200929

Lab ID#: 2010027A-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	0.25	0.92	1.4
Acetone	1.6	3.7	3.9	8.8

Client Sample ID: AA4001_20200929

Lab ID#: 2010027A-01B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.033	0.080	0.21	0.50

Client Sample ID: FB-01_20200929

Lab ID#: 2010027A-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	1.8	3.8	4.2	9.1

Client Sample ID: FB-01_20200929

Lab ID#: 2010027A-02B

No Detections Were Found.

Client Sample ID: FD-01_20200929

Lab ID#: 2010027A-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	16	28	39	66
Ethyl Benzene	1.6	1.6 J	7.1	6.8 J
m,p-Xylene	1.6	6.9	7.1	30
o-Xylene	1.6	2.2	7.1	9.3

Client Sample ID: FD-01_20200929

Lab ID#: 2010027A-03B

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

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

Client Sample ID: FD-01_20200929

Lab ID#: 2010027A-03B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	0.33	0.51	2.2	3.4

Client Sample ID: IA AY-43_20200929

Lab ID#: 2010027A-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	0.40	0.90	2.2
Acetone	1.6	9.9	3.8	24

Client Sample ID: IA AY-43_20200929

Lab ID#: 2010027A-04B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.032	0.076	0.20	0.48

Client Sample ID: IA BA-28_20200929

Lab ID#: 2010027A-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.17	0.26	0.96	1.5
Acetone	1.7	19	4.1	44
Tetrachloroethene	0.17	0.57	1.2	3.8
Toluene	0.17	0.42	0.64	1.6
Ethyl Benzene	0.17	2.8	0.74	12
m,p-Xylene	0.17	15	0.74	64
o-Xylene	0.17	4.0	0.74	17

Client Sample ID: IA BA-28_20200929

Lab ID#: 2010027A-05B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.034	0.12	0.22	0.73

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

Client Sample ID: IA BA-28_20200929

Lab ID#: 2010027A-05B

Trichloroethene	0.034	0.042	0.18	0.22

Client Sample ID: IA BB-37_20200929

Lab ID#: 2010027A-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	0.29	0.90	1.6
Acetone	1.6	3.5	3.8	8.2

Client Sample ID: IA BB-37_20200929

Lab ID#: 2010027A-06B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.032	0.078	0.20	0.49

Client Sample ID: IA BB-39_20200929

Lab ID#: 2010027A-07A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.15	0.28	0.85	1.6
Acetone	1.5	5.6	3.6	13
Methylene Chloride	0.30	0.30	1.0	1.0

Client Sample ID: IA BB-39_20200929

Lab ID#: 2010027A-07B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.030	0.14	0.19	0.90

Client Sample ID: IA BE-28_20200929

Lab ID#: 2010027A-08A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
m,p-Xylene	1.6	6.9	7.0	30

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

Client Sample ID: IA BE-28_20200929

Lab ID#: 2010027A-08A

o-Xylene	1.6	2.1	7.0	8.9

Client Sample ID: IA BE-28_20200929

Lab ID#: 2010027A-08B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	0.32	0.51	2.2	3.5

Client Sample ID: IA BG-38_20200929

Lab ID#: 2010027A-09A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	0.26	0.92	1.5
Acetone	1.6	6.2	3.9	15

Client Sample ID: IA BG-38_20200929

Lab ID#: 2010027A-09B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.033	0.93	0.21	5.8

Client Sample ID: IA BG-45_20200929

Lab ID#: 2010027A-10A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	0.32	0.90	1.8
Acetone	1.6	7.2	3.8	17
Methylene Chloride	0.32	0.36	1.1	1.2
Toluene	0.16	0.30	0.61	1.1
Ethyl Benzene	0.16	0.21	0.70	0.90
m,p-Xylene	0.16	0.55	0.70	2.4

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

Client Sample ID: IA BG-45_20200929

Lab ID#: 2010027A-10B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.032	0.18	0.20	1.1

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Client Sample ID: AA4001_20200929

Lab ID#: 2010027A-01A

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

File Name:	**21100907**	**Date of Collection:**	**9/29/20 2:17:00 PM**
Dil. Factor:	**1.64**	**Date of Analysis:**	**10/9/20 12:26 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.82	Not Detected	4.0	Not Detected
Freon 11	0.16	0.25	0.92	1.4
Freon 113	0.16	Not Detected	1.2	Not Detected
Acetone	1.6	3.7	3.9	8.8
Methylene Chloride	0.33	Not Detected	1.1	Not Detected
1,1,1-Trichloroethane	0.16	Not Detected	0.89	Not Detected
Tetrachloroethene	0.16	Not Detected	1.1	Not Detected
Benzene	0.16	Not Detected	0.52	Not Detected
Toluene	0.16	Not Detected	0.62	Not Detected
Chlorobenzene	0.16	Not Detected	0.76	Not Detected
Ethyl Benzene	0.16	Not Detected	0.71	Not Detected
m,p-Xylene	0.16	Not Detected	0.71	Not Detected
o-Xylene	0.16	Not Detected	0.71	Not Detected
1,3-Dichlorobenzene	0.16	Not Detected	0.99	Not Detected
1,4-Dichlorobenzene	0.16	Not Detected	0.99	Not Detected
1,2-Dichlorobenzene	0.16	Not Detected	0.99	Not Detected
1,2,4-Trichlorobenzene	0.82	Not Detected	6.1	Not Detected

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

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	120	70-130
Toluene-d8	107	70-130
4-Bromofluorobenzene	90	70-130

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Client Sample ID: AA4001_20200929

Lab ID#: 2010027A-01B

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

File Name:	**21100907sim**	**Date of Collection: 9/29/20 2:17:00 PM**	
Dil. Factor:	**1.64**	**Date of Analysis: 10/9/20 12:26 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	Not Detected	0.042	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.065	Not Detected
cis-1,2-Dichloroethene	0.033	Not Detected	0.13	Not Detected
Carbon Tetrachloride	0.033	0.080	0.21	0.50
Trichloroethene	0.033	Not Detected	0.18	Not Detected

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

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	117	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	94	70-130

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Client Sample ID: FB-01_20200929

Lab ID#: 2010027A-02A

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

File Name:	**21100908**	**Date of Collection:**	**9/29/20 2:17:00 PM**
Dil. Factor:	**1.75**	**Date of Analysis:**	**10/9/20 01:06 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.88	Not Detected	4.3	Not Detected
Freon 11	0.18	Not Detected	0.98	Not Detected
Freon 113	0.18	Not Detected	1.3	Not Detected
Acetone	1.8	3.8	4.2	9.1
Methylene Chloride	0.35	Not Detected	1.2	Not Detected
1,1,1-Trichloroethane	0.18	Not Detected	0.95	Not Detected
Tetrachloroethene	0.18	Not Detected	1.2	Not Detected
Benzene	0.18	Not Detected	0.56	Not Detected
Toluene	0.18	Not Detected	0.66	Not Detected
Chlorobenzene	0.18	Not Detected	0.80	Not Detected
Ethyl Benzene	0.18	Not Detected	0.76	Not Detected
m,p-Xylene	0.18	Not Detected	0.76	Not Detected
o-Xylene	0.18	Not Detected	0.76	Not Detected
1,3-Dichlorobenzene	0.18	Not Detected	1.0	Not Detected
1,4-Dichlorobenzene	0.18	Not Detected	1.0	Not Detected
1,2-Dichlorobenzene	0.18	Not Detected	1.0	Not Detected
1,2,4-Trichlorobenzene	0.88	Not Detected	6.5	Not Detected

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

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	112	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	91	70-130

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Client Sample ID: FB-01_20200929

Lab ID#: 2010027A-02B

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

File Name:	**21100908sim**	**Date of Collection:**	**9/29/20 2:17:00 PM**
Dil. Factor:	**1.75**	**Date of Analysis:**	**10/9/20 01:06 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.018	Not Detected	0.045	Not Detected
1,1-Dichloroethene	0.018	Not Detected	0.069	Not Detected
cis-1,2-Dichloroethene	0.035	Not Detected	0.14	Not Detected
Carbon Tetrachloride	0.035	Not Detected	0.22	Not Detected
Trichloroethene	0.035	Not Detected	0.19	Not Detected

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

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	110	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	93	70-130

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Client Sample ID: FD-01_20200929

Lab ID#: 2010027A-03A

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

File Name:	**21100909**	**Date of Collection: 9/29/20 2:25:00 PM**	
Dil. Factor:	**16.4**	**Date of Analysis: 10/9/20 02:02 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	8.2	Not Detected	40	Not Detected
Freon 11	1.6	Not Detected	9.2	Not Detected
Freon 113	1.6	Not Detected	12	Not Detected
Acetone	16	28	39	66
Methylene Chloride	3.3	Not Detected	11	Not Detected
1,1,1-Trichloroethane	1.6	Not Detected	8.9	Not Detected
Benzene	1.6	Not Detected	5.2	Not Detected
Toluene	1.6	Not Detected	6.2	Not Detected
Chlorobenzene	1.6	Not Detected	7.6	Not Detected
Ethyl Benzene	1.6	1.6 J	7.1	6.8 J
m,p-Xylene	1.6	6.9	7.1	30
o-Xylene	1.6	2.2	7.1	9.3
1,3-Dichlorobenzene	1.6	Not Detected	9.9	Not Detected
1,4-Dichlorobenzene	1.6	Not Detected	9.9	Not Detected
1,2-Dichlorobenzene	1.6	Not Detected	9.9	Not Detected
1,2,4-Trichlorobenzene	8.2	Not Detected	61	Not Detected

J = Estimated value.

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

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	113	70-130
Toluene-d8	106	70-130
4-Bromofluorobenzene	86	70-130

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Client Sample ID: FD-01_20200929

Lab ID#: 2010027A-03B

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

File Name:	**21100909sim**	**Date of Collection: 9/29/20 2:25:00 PM**	
Dil. Factor:	**16.4**	**Date of Analysis: 10/9/20 02:02 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.16	Not Detected	0.42	Not Detected
1,1-Dichloroethene	0.16	Not Detected	0.65	Not Detected
cis-1,2-Dichloroethene	0.33	Not Detected	1.3	Not Detected
Carbon Tetrachloride	0.33	Not Detected	2.1	Not Detected
Trichloroethene	0.33	Not Detected	1.8	Not Detected
Tetrachloroethene	0.33	0.51	2.2	3.4

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

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	109	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	95	70-130

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Client Sample ID: IA AY-43_20200929

Lab ID#: 2010027A-04A

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

File Name:	**21100912**	**Date of Collection: 9/29/20 2:47:00 PM**	
Dil. Factor:	**1.61**	**Date of Analysis: 10/9/20 04:08 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.80	Not Detected	4.0	Not Detected
Freon 11	0.16	0.40	0.90	2.2
Freon 113	0.16	Not Detected	1.2	Not Detected
Acetone	1.6	9.9	3.8	24
Methylene Chloride	0.32	Not Detected	1.1	Not Detected
1,1,1-Trichloroethane	0.16	Not Detected	0.88	Not Detected
Tetrachloroethene	0.16	Not Detected	1.1	Not Detected
Benzene	0.16	Not Detected	0.51	Not Detected
Toluene	0.16	Not Detected	0.61	Not Detected
Chlorobenzene	0.16	Not Detected	0.74	Not Detected
Ethyl Benzene	0.16	Not Detected	0.70	Not Detected
m,p-Xylene	0.16	Not Detected	0.70	Not Detected
o-Xylene	0.16	Not Detected	0.70	Not Detected
1,3-Dichlorobenzene	0.16	Not Detected	0.97	Not Detected
1,4-Dichlorobenzene	0.16	Not Detected	0.97	Not Detected
1,2-Dichlorobenzene	0.16	Not Detected	0.97	Not Detected
1,2,4-Trichlorobenzene	0.80	Not Detected	6.0	Not Detected

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

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	109	70-130
Toluene-d8	105	70-130
4-Bromofluorobenzene	87	70-130

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Client Sample ID: IA AY-43_20200929

Lab ID#: 2010027A-04B

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

File Name:	**21100912sim**	**Date of Collection: 9/29/20 2:47:00 PM**	
Dil. Factor:	**1.61**	**Date of Analysis: 10/9/20 04:08 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	Not Detected	0.041	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.064	Not Detected
cis-1,2-Dichloroethene	0.032	Not Detected	0.13	Not Detected
Carbon Tetrachloride	0.032	0.076	0.20	0.48
Trichloroethene	0.032	Not Detected	0.17	Not Detected

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

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	111	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	91	70-130

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Client Sample ID: IA BA-28_20200929

Lab ID#: 2010027A-05A

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

File Name:	**21100915**	**Date of Collection: 9/29/20 2:28:00 PM**	
Dil. Factor:	**1.71**	**Date of Analysis: 10/9/20 05:59 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.86	Not Detected	4.2	Not Detected
Freon 11	0.17	0.26	0.96	1.5
Freon 113	0.17	Not Detected	1.3	Not Detected
Acetone	1.7	19	4.1	44
Methylene Chloride	0.34	Not Detected	1.2	Not Detected
1,1,1-Trichloroethane	0.17	Not Detected	0.93	Not Detected
Tetrachloroethene	0.17	0.57	1.2	3.8
Benzene	0.17	Not Detected	0.55	Not Detected
Toluene	0.17	0.42	0.64	1.6
Chlorobenzene	0.17	Not Detected	0.79	Not Detected
Ethyl Benzene	0.17	2.8	0.74	12
m,p-Xylene	0.17	15	0.74	64
o-Xylene	0.17	4.0	0.74	17
1,3-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
1,4-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
1,2-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
1,2,4-Trichlorobenzene	0.86	Not Detected	6.3	Not Detected

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

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	112	70-130
Toluene-d8	110	70-130
4-Bromofluorobenzene	92	70-130

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Client Sample ID: IA BA-28_20200929

Lab ID#: 2010027A-05B

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

File Name:	**21100915sim**	**Date of Collection: 9/29/20 2:28:00 PM**	
Dil. Factor:	**1.71**	**Date of Analysis: 10/9/20 05:59 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.017	Not Detected	0.044	Not Detected
1,1-Dichloroethene	0.017	Not Detected	0.068	Not Detected
cis-1,2-Dichloroethene	0.034	Not Detected	0.14	Not Detected
Carbon Tetrachloride	0.034	0.12	0.22	0.73
Trichloroethene	0.034	0.042	0.18	0.22

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

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

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Client Sample ID: IA BB-37_20200929

Lab ID#: 2010027A-06A

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

File Name:	**21100913**	**Date of Collection: 9/29/20 2:34:00 PM**	
Dil. Factor:	**1.61**	**Date of Analysis: 10/9/20 04:45 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.80	Not Detected	4.0	Not Detected
Freon 11	0.16	0.29	0.90	1.6
Freon 113	0.16	Not Detected	1.2	Not Detected
Acetone	1.6	3.5	3.8	8.2
Methylene Chloride	0.32	Not Detected	1.1	Not Detected
1,1,1-Trichloroethane	0.16	Not Detected	0.88	Not Detected
Tetrachloroethene	0.16	Not Detected	1.1	Not Detected
Benzene	0.16	Not Detected	0.51	Not Detected
Toluene	0.16	Not Detected	0.61	Not Detected
Chlorobenzene	0.16	Not Detected	0.74	Not Detected
Ethyl Benzene	0.16	Not Detected	0.70	Not Detected
m,p-Xylene	0.16	Not Detected	0.70	Not Detected
o-Xylene	0.16	Not Detected	0.70	Not Detected
1,3-Dichlorobenzene	0.16	Not Detected	0.97	Not Detected
1,4-Dichlorobenzene	0.16	Not Detected	0.97	Not Detected
1,2-Dichlorobenzene	0.16	Not Detected	0.97	Not Detected
1,2,4-Trichlorobenzene	0.80	Not Detected	6.0	Not Detected

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

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	124	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	88	70-130

eurofins | Air Toxics

Client Sample ID: IA BB-37_20200929

Lab ID#: 2010027A-06B

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

File Name:	**21100913sim**	**Date of Collection: 9/29/20 2:34:00 PM**	
Dil. Factor:	**1.61**	**Date of Analysis: 10/9/20 04:45 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	Not Detected	0.041	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.064	Not Detected
cis-1,2-Dichloroethene	0.032	Not Detected	0.13	Not Detected
Carbon Tetrachloride	0.032	0.078	0.20	0.49
Trichloroethene	0.032	Not Detected	0.17	Not Detected

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

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	118	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	93	70-130

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Client Sample ID: IA BB-39_20200929

Lab ID#: 2010027A-07A

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

File Name:	**21100914**	**Date of Collection: 9/29/20 12:19:00 PM**	
Dil. Factor:	**1.52**	**Date of Analysis: 10/9/20 05:22 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.76	Not Detected	3.8	Not Detected
Freon 11	0.15	0.28	0.85	1.6
Freon 113	0.15	Not Detected	1.2	Not Detected
Acetone	1.5	5.6	3.6	13
Methylene Chloride	0.30	0.30	1.0	1.0
1,1,1-Trichloroethane	0.15	Not Detected	0.83	Not Detected
Tetrachloroethene	0.15	Not Detected	1.0	Not Detected
Benzene	0.15	Not Detected	0.48	Not Detected
Toluene	0.15	Not Detected	0.57	Not Detected
Chlorobenzene	0.15	Not Detected	0.70	Not Detected
Ethyl Benzene	0.15	Not Detected	0.66	Not Detected
m,p-Xylene	0.15	Not Detected	0.66	Not Detected
o-Xylene	0.15	Not Detected	0.66	Not Detected
1,3-Dichlorobenzene	0.15	Not Detected	0.91	Not Detected
1,4-Dichlorobenzene	0.15	Not Detected	0.91	Not Detected
1,2-Dichlorobenzene	0.15	Not Detected	0.91	Not Detected
1,2,4-Trichlorobenzene	0.76	Not Detected	5.6	Not Detected

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

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	121	70-130
Toluene-d8	106	70-130
4-Bromofluorobenzene	85	70-130

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Client Sample ID: IA BB-39_20200929

Lab ID#: 2010027A-07B

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

File Name:	**21100914sim**	**Date of Collection: 9/29/20 12:19:00 PM**	
Dil. Factor:	**1.52**	**Date of Analysis: 10/9/20 05:22 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.015	Not Detected	0.039	Not Detected
1,1-Dichloroethene	0.015	Not Detected	0.060	Not Detected
cis-1,2-Dichloroethene	0.030	Not Detected	0.12	Not Detected
Carbon Tetrachloride	0.030	0.14	0.19	0.90
Trichloroethene	0.030	Not Detected	0.16	Not Detected

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

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	116	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	92	70-130

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Client Sample ID: IA BE-28_20200929

Lab ID#: 2010027A-08A

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

File Name:	**v100914**	**Date of Collection: 9/29/20 2:25:00 PM**	
Dil. Factor:	**16.1**	**Date of Analysis: 10/9/20 06:32 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	8.0	Not Detected	40	Not Detected
Freon 11	1.6	Not Detected	9.0	Not Detected
Freon 113	1.6	Not Detected	12	Not Detected
Acetone	16	Not Detected	38	Not Detected
Methylene Chloride	3.2	Not Detected	11	Not Detected
1,1,1-Trichloroethane	1.6	Not Detected	8.8	Not Detected
Benzene	1.6	Not Detected	5.1	Not Detected
Toluene	1.6	Not Detected	6.1	Not Detected
Chlorobenzene	1.6	Not Detected	7.4	Not Detected
Ethyl Benzene	1.6	Not Detected	7.0	Not Detected
m,p-Xylene	1.6	6.9	7.0	30
o-Xylene	1.6	2.1	7.0	8.9
1,3-Dichlorobenzene	1.6	Not Detected	9.7	Not Detected
1,4-Dichlorobenzene	1.6	Not Detected	9.7	Not Detected
1,2-Dichlorobenzene	1.6	Not Detected	9.7	Not Detected
1,2,4-Trichlorobenzene	8.0	Not Detected	60	Not Detected

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

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	87	70-130
Toluene-d8	94	70-130
4-Bromofluorobenzene	109	70-130

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Client Sample ID: IA BE-28_20200929

Lab ID#: 2010027A-08B

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

File Name:	**v100914sim**	**Date of Collection: 9/29/20 2:25:00 PM**	
Dil. Factor:	**16.1**	**Date of Analysis: 10/9/20 06:32 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.16	Not Detected	0.41	Not Detected
1,1-Dichloroethene	0.16	Not Detected	0.64	Not Detected
cis-1,2-Dichloroethene	0.32	Not Detected	1.3	Not Detected
Carbon Tetrachloride	0.32	Not Detected	2.0	Not Detected
Trichloroethene	0.32	Not Detected	1.7	Not Detected
Tetrachloroethene	0.32	0.51	2.2	3.5

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

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	87	70-130
Toluene-d8	94	70-130
4-Bromofluorobenzene	105	70-130

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Client Sample ID: IA BG-38_20200929

Lab ID#: 2010027A-09A

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

File Name:	**21100916**	**Date of Collection: 9/29/20 2:40:00 PM**	
Dil. Factor:	**1.64**	**Date of Analysis: 10/9/20 06:36 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.82	Not Detected	4.0	Not Detected
Freon 11	0.16	0.26	0.92	1.5
Freon 113	0.16	Not Detected	1.2	Not Detected
Acetone	1.6	6.2	3.9	15
Methylene Chloride	0.33	Not Detected	1.1	Not Detected
1,1,1-Trichloroethane	0.16	Not Detected	0.89	Not Detected
Tetrachloroethene	0.16	Not Detected	1.1	Not Detected
Benzene	0.16	Not Detected	0.52	Not Detected
Toluene	0.16	Not Detected	0.62	Not Detected
Chlorobenzene	0.16	Not Detected	0.76	Not Detected
Ethyl Benzene	0.16	Not Detected	0.71	Not Detected
m,p-Xylene	0.16	Not Detected	0.71	Not Detected
o-Xylene	0.16	Not Detected	0.71	Not Detected
1,3-Dichlorobenzene	0.16	Not Detected	0.99	Not Detected
1,4-Dichlorobenzene	0.16	Not Detected	0.99	Not Detected
1,2-Dichlorobenzene	0.16	Not Detected	0.99	Not Detected
1,2,4-Trichlorobenzene	0.82	Not Detected	6.1	Not Detected

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

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	117	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	83	70-130

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Client Sample ID: IA BG-38_20200929

Lab ID#: 2010027A-09B

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

File Name:	**21100916sim**	**Date of Collection: 9/29/20 2:40:00 PM**	
Dil. Factor:	**1.64**	**Date of Analysis: 10/9/20 06:36 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	Not Detected	0.042	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.065	Not Detected
cis-1,2-Dichloroethene	0.033	Not Detected	0.13	Not Detected
Carbon Tetrachloride	0.033	0.93	0.21	5.8
Trichloroethene	0.033	Not Detected	0.18	Not Detected

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

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	113	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	92	70-130

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Client Sample ID: IA BG-45_20200929

Lab ID#: 2010027A-10A

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

File Name:	**21100917**	**Date of Collection: 9/29/20 2:43:00 PM**	
Dil. Factor:	**1.61**	**Date of Analysis: 10/9/20 07:14 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.80	Not Detected	4.0	Not Detected
Freon 11	0.16	0.32	0.90	1.8
Freon 113	0.16	Not Detected	1.2	Not Detected
Acetone	1.6	7.2	3.8	17
Methylene Chloride	0.32	0.36	1.1	1.2
1,1,1-Trichloroethane	0.16	Not Detected	0.88	Not Detected
Tetrachloroethene	0.16	Not Detected	1.1	Not Detected
Benzene	0.16	Not Detected	0.51	Not Detected
Toluene	0.16	0.30	0.61	1.1
Chlorobenzene	0.16	Not Detected	0.74	Not Detected
Ethyl Benzene	0.16	0.21	0.70	0.90
m,p-Xylene	0.16	0.55	0.70	2.4
o-Xylene	0.16	Not Detected	0.70	Not Detected
1,3-Dichlorobenzene	0.16	Not Detected	0.97	Not Detected
1,4-Dichlorobenzene	0.16	Not Detected	0.97	Not Detected
1,2-Dichlorobenzene	0.16	Not Detected	0.97	Not Detected
1,2,4-Trichlorobenzene	0.80	Not Detected	6.0	Not Detected

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

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	110	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	84	70-130

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Client Sample ID: IA BG-45_20200929

Lab ID#: 2010027A-10B

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

File Name:	**21100917sim**	**Date of Collection: 9/29/20 2:43:00 PM**	
Dil. Factor:	**1.61**	**Date of Analysis: 10/9/20 07:14 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	Not Detected	0.041	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.064	Not Detected
cis-1,2-Dichloroethene	0.032	Not Detected	0.13	Not Detected
Carbon Tetrachloride	0.032	0.18	0.20	1.1
Trichloroethene	0.032	Not Detected	0.17	Not Detected

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

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	111	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	92	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2010027A-11A

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

File Name:	**v100906c**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/9/20 10:25 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Freon 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
Methylene Chloride	0.20	Not Detected	0.69	Not Detected
1,1,1-Trichloroethane	0.10	Not Detected	0.54	Not Detected
Benzene	0.10	Not Detected	0.32	Not Detected
Toluene	0.10	Not Detected	0.38	Not Detected
Chlorobenzene	0.10	Not Detected	0.46	Not Detected
Ethyl Benzene	0.10	Not Detected	0.43	Not Detected
m,p-Xylene	0.10	Not Detected	0.43	Not Detected
o-Xylene	0.10	Not Detected	0.43	Not Detected
1,3-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
1,4-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
1,2-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
1,2,4-Trichlorobenzene	0.50	Not Detected	3.7	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	94	70-130
Toluene-d8	93	70-130
4-Bromofluorobenzene	105	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2010027A-11B

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

File Name:	**v100906simc**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/9/20 10:25 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.010	Not Detected	0.026	Not Detected
1,1-Dichloroethene	0.010	Not Detected	0.040	Not Detected
cis-1,2-Dichloroethene	0.020	Not Detected	0.079	Not Detected
Carbon Tetrachloride	0.020	Not Detected	0.12	Not Detected
Trichloroethene	0.020	Not Detected	0.11	Not Detected
Tetrachloroethene	0.020	Not Detected	0.14	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	92	70-130
Toluene-d8	94	70-130
4-Bromofluorobenzene	103	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2010027A-11C

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

File Name:	**21100906a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/9/20 10:30 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Freon 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
Methylene Chloride	0.20	Not Detected	0.69	Not Detected
1,1,1-Trichloroethane	0.10	Not Detected	0.54	Not Detected
Tetrachloroethene	0.10	Not Detected	0.68	Not Detected
Benzene	0.10	Not Detected	0.32	Not Detected
Toluene	0.10	Not Detected	0.38	Not Detected
Chlorobenzene	0.10	Not Detected	0.46	Not Detected
Ethyl Benzene	0.10	Not Detected	0.43	Not Detected
m,p-Xylene	0.10	Not Detected	0.43	Not Detected
o-Xylene	0.10	Not Detected	0.43	Not Detected
1,3-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
1,4-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
1,2-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
1,2,4-Trichlorobenzene	0.50	Not Detected	3.7	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	118	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	91	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2010027A-11D

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

File Name:	**21100906simc**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/9/20 10:30 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.010	Not Detected	0.026	Not Detected
1,1-Dichloroethene	0.010	Not Detected	0.040	Not Detected
cis-1,2-Dichloroethene	0.020	Not Detected	0.079	Not Detected
Carbon Tetrachloride	0.020	Not Detected	0.12	Not Detected
Trichloroethene	0.020	Not Detected	0.11	Not Detected
Tetrachloroethene	0.020	Not Detected	0.14	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	114	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	96	70-130

eurofins | Air Toxics

Client Sample ID: CCV

Lab ID#: 2010027A-12A

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

File Name:	**v100902**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 10/9/20 07:08 AM**

Compound	%Recovery
Freon 12	92
Freon 11	103
Freon 113	91
Acetone	78
Methylene Chloride	82
1,1,1-Trichloroethane	88
Benzene	88
Toluene	94
Chlorobenzene	93
Ethyl Benzene	92
m,p-Xylene	90
o-Xylene	88
1,3-Dichlorobenzene	89
1,4-Dichlorobenzene	92
1,2-Dichlorobenzene	91
1,2,4-Trichlorobenzene	109

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	85	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	109	70-130

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Client Sample ID: CCV

Lab ID#: 2010027A-12B

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

File Name:	**v100902sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/9/20 07:08 AM**	

Compound	**%Recovery**
Vinyl Chloride	79
1,1-Dichloroethene	87
cis-1,2-Dichloroethene	87
Carbon Tetrachloride	62
Trichloroethene	90
Tetrachloroethene	99

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	86	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	109	70-130

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Client Sample ID: CCV

Lab ID#: 2010027A-12C

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

File Name:	**21100902**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/9/20 07:39 AM**	

Compound	%Recovery
Freon 12	104
Freon 11	110
Freon 113	106
Acetone	100
Methylene Chloride	96
1,1,1-Trichloroethane	111
Tetrachloroethene	105
Benzene	117
Toluene	114
Chlorobenzene	108
Ethyl Benzene	106
m,p-Xylene	109
o-Xylene	103
1,3-Dichlorobenzene	108
1,4-Dichlorobenzene	104
1,2-Dichlorobenzene	101
1,2,4-Trichlorobenzene	84

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	107	70-130
Toluene-d8	121	70-130
4-Bromofluorobenzene	100	70-130

eurofins | Air Toxics

Client Sample ID: CCV

Lab ID#: 2010027A-12D

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

File Name:	**21100902sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/9/20 07:39 AM**	

Compound	**%Recovery**
Vinyl Chloride	97
1,1-Dichloroethene	102
cis-1,2-Dichloroethene	104
Carbon Tetrachloride	76
Trichloroethene	107
Tetrachloroethene	103

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	115	70-130
4-Bromofluorobenzene	104	70-130

eurofins | Air Toxics

Client Sample ID: LCS

Lab ID#: 2010027A-13A

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

File Name:	**v100903**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/9/20 08:15 AM**	

Compound	%Recovery	Method Limits
Freon 12	84	70-130
Freon 11	96	70-130
Freon 113	86	70-130
Acetone	69 Q	70-130
Methylene Chloride	74	70-130
1,1,1-Trichloroethane	85	70-130
Benzene	83	70-130
Toluene	89	70-130
Chlorobenzene	93	70-130
Ethyl Benzene	90	70-130
m,p-Xylene	93	70-130
o-Xylene	90	70-130
1,3-Dichlorobenzene	90	70-130
1,4-Dichlorobenzene	90	70-130
1,2-Dichlorobenzene	93	70-130
1,2,4-Trichlorobenzene	116	70-130

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	81	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	106	70-130

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Client Sample ID: LCSD

Lab ID#: 2010027A-13AA

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

File Name:	**v100904**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/9/20 08:55 AM**	

Compound	%Recovery	Method Limits
Freon 12	81	70-130
Freon 11	96	70-130
Freon 113	88	70-130
Acetone	68 Q	70-130
Methylene Chloride	73	70-130
1,1,1-Trichloroethane	85	70-130
Benzene	85	70-130
Toluene	90	70-130
Chlorobenzene	92	70-130
Ethyl Benzene	90	70-130
m,p-Xylene	90	70-130
o-Xylene	83	70-130
1,3-Dichlorobenzene	83	70-130
1,4-Dichlorobenzene	82	70-130
1,2-Dichlorobenzene	82	70-130
1,2,4-Trichlorobenzene	116	70-130

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	85	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	111	70-130

Client Sample ID: LCS

Lab ID#: 2010027A-13B

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

File Name:	**v100903sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/9/20 08:15 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	74	70-130
1,1-Dichloroethene	86	70-130
cis-1,2-Dichloroethene	86	70-130
Carbon Tetrachloride	93	60-140
Trichloroethene	90	70-130
Tetrachloroethene	98	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	86	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	106	70-130

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Client Sample ID: LCSD

Lab ID#: 2010027A-13BB

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

File Name:	**v100904sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/9/20 08:55 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	70	70-130
1,1-Dichloroethene	84	70-130
cis-1,2-Dichloroethene	84	70-130
Carbon Tetrachloride	93	60-140
Trichloroethene	88	70-130
Tetrachloroethene	98	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	86	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	108	70-130

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Client Sample ID: LCS

Lab ID#: 2010027A-13C

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

File Name:	**21100903**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/9/20 08:22 AM**	

Compound	%Recovery	Method Limits
Freon 12	100	70-130
Freon 11	102	70-130
Freon 113	96	70-130
Acetone	95	70-130
Methylene Chloride	90	70-130
1,1,1-Trichloroethane	101	70-130
Tetrachloroethene	96	70-130
Benzene	116	70-130
Toluene	114	70-130
Chlorobenzene	107	70-130
Ethyl Benzene	111	70-130
m,p-Xylene	108	70-130
o-Xylene	108	70-130
1,3-Dichlorobenzene	105	70-130
1,4-Dichlorobenzene	100	70-130
1,2-Dichlorobenzene	103	70-130
1,2,4-Trichlorobenzene	112	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	119	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: LCSD

Lab ID#: 2010027A-13CC

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

File Name:	**21100904**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/9/20 08:59 AM**	

Compound	%Recovery	Method Limits
Freon 12	104	70-130
Freon 11	107	70-130
Freon 113	100	70-130
Acetone	99	70-130
Methylene Chloride	92	70-130
1,1,1-Trichloroethane	105	70-130
Tetrachloroethene	100	70-130
Benzene	113	70-130
Toluene	111	70-130
Chlorobenzene	104	70-130
Ethyl Benzene	107	70-130
m,p-Xylene	101	70-130
o-Xylene	98	70-130
1,3-Dichlorobenzene	95	70-130
1,4-Dichlorobenzene	94	70-130
1,2-Dichlorobenzene	93	70-130
1,2,4-Trichlorobenzene	96	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	114	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: LCS

Lab ID#: 2010027A-13D

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

File Name:	**21100903sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/9/20 08:22 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	97	70-130
1,1-Dichloroethene	102	70-130
cis-1,2-Dichloroethene	104	70-130
Carbon Tetrachloride	102	60-140
Trichloroethene	105	70-130
Tetrachloroethene	103	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	113	70-130
4-Bromofluorobenzene	102	70-130

Client Sample ID: LCSD

Lab ID#: 2010027A-13DD

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

File Name:	**21100904sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/9/20 08:59 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	97	70-130
1,1-Dichloroethene	102	70-130
cis-1,2-Dichloroethene	104	70-130
Carbon Tetrachloride	102	60-140
Trichloroethene	104	70-130
Tetrachloroethene	102	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	107	70-130
Toluene-d8	111	70-130
4-Bromofluorobenzene	101	70-130

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10/14/2020
Ms. Jennifer Sanborn
Sanborn, Head & Associates
20 Foundry Street

Concord NH 03301

Project Name: EFK
Project #: 2999.19
Workorder #: 2010027B

Dear Ms. Jennifer Sanborn

The following report includes the data for the above referenced project for sample(s) received on 10/1/2020 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: Alexandra Winslow at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Alexandra Winslow

Project Manager

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WORK ORDER #: 2010027B

Work Order Summary

CLIENT:	Ms. Jennifer Sanborn 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 #**	2999.19 EFK
DATE RECEIVED:	10/01/2020	**CONTACT:**	Alexandra Winslow
DATE COMPLETED:	10/14/2020		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
11A	IA BH-40_20200929	Modified TO-15	5.0 "Hg	5 psi
11B	IA BH-40_20200929	Modified TO-15	5.0 "Hg	5 psi
12A	IA4013_20200929	Modified TO-15	6.0 "Hg	5 psi
12B	IA4013_20200929	Modified TO-15	6.0 "Hg	5 psi
13A	IA4014_20200929	Modified TO-15	5.5 "Hg	5 psi
13B	IA4014_20200929	Modified TO-15	5.5 "Hg	5 psi
14A	IA4016_20200929	Modified TO-15	6.5 "Hg	5 psi
14B	IA4016_20200929	Modified TO-15	6.5 "Hg	5 psi
15A	IA4017_20200929	Modified TO-15	5.0 "Hg	5 psi
15B	IA4017_20200929	Modified TO-15	5.0 "Hg	5 psi
16A	IA4018_20200929	Modified TO-15	5.5 "Hg	5 psi
16B	IA4018_20200929	Modified TO-15	5.5 "Hg	5 psi
17A	IA4019_20200929	Modified TO-15	5.0 "Hg	5 psi
17B	IA4019_20200929	Modified TO-15	5.0 "Hg	5 psi
18A	Lab Blank	Modified TO-15	NA	NA
18B	Lab Blank	Modified TO-15	NA	NA
19A	CCV	Modified TO-15	NA	NA
19B	CCV	Modified TO-15	NA	NA
20A	LCS	Modified TO-15	NA	NA
20AA	LCSD	Modified TO-15	NA	NA
20B	LCS	Modified TO-15	NA	NA
20BB	LCSD	Modified TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 10/14/20

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209219, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-19-14, UT NELAP – CA009332020-12, VA NELAP - 10615, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-013, 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

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# 2010027B

Seven 6 Liter Summa Canister (100% SIM Ambient) samples were received on October 01, 2020. 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.

Requirement	***TO-15***	***ATL Modifications***
ICAL %RSD acceptance criteria	</=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 </=30% RSD with 10% of compounds allowed out to < 40% RSD
Daily Calibration	+- 30% Difference	For Full Scan: </= 30% Difference with four allowed out up to </=40%.; flag and narrate outliers For SIM: Project specific; default criteria is </= 30% Difference with 10% of compounds allowed out up to </=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

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

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

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

Client Sample ID: IA BH-40_20200929

Lab ID#: 2010027B-11A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	0.25	0.90	1.4
Acetone	1.6	4.2	3.8	10

Client Sample ID: IA BH-40_20200929

Lab ID#: 2010027B-11B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	0.023	0.041	0.058
Carbon Tetrachloride	0.032	0.37	0.20	2.3

Client Sample ID: IA4013_20200929

Lab ID#: 2010027B-12A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.17	0.30	0.94	1.7
Acetone	1.7	9.1	4.0	22
Methylene Chloride	0.34	0.37	1.2	1.3
Toluene	0.17	0.72	0.63	2.7
Tetrachloroethene	0.17	0.45	1.1	3.0
Ethyl Benzene	0.17	7.8	0.73	34
m,p-Xylene	0.17	40	0.73	180
o-Xylene	0.17	12	0.73	54

Client Sample ID: IA4013_20200929

Lab ID#: 2010027B-12B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.034	0.068	0.21	0.43

Client Sample ID: IA4014_20200929

Lab ID#: 2010027B-13A

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

Client Sample ID: IA4014_20200929

Lab ID#: 2010027B-13A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	0.32	0.92	1.8
Acetone	1.6	14	3.9	34
Toluene	0.16	0.17	0.62	0.64
m,p-Xylene	0.16	0.34	0.71	1.5

Client Sample ID: IA4014_20200929

Lab ID#: 2010027B-13B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.033	0.071	0.21	0.45

Client Sample ID: IA4016_20200929

Lab ID#: 2010027B-14A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.17	0.30	0.96	1.7
Acetone	1.7	10	4.1	24
Toluene	0.17	0.52	0.64	1.9
Tetrachloroethene	0.17	0.20	1.2	1.4
Ethyl Benzene	0.17	2.2	0.74	9.7
m,p-Xylene	0.17	13	0.74	58
o-Xylene	0.17	3.7	0.74	16

Client Sample ID: IA4016_20200929

Lab ID#: 2010027B-14B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.034	0.067	0.22	0.42

Client Sample ID: IA4017_20200929

Lab ID#: 2010027B-15A

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

Client Sample ID: IA4017_20200929

Lab ID#: 2010027B-15A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	0.29	0.90	1.6
Acetone	1.6	6.3	3.8	15
Toluene	0.16	0.93	0.61	3.5
Ethyl Benzene	0.16	2.0	0.70	8.6
m,p-Xylene	0.16	12	0.70	53
o-Xylene	0.16	3.2	0.70	14

Client Sample ID: IA4017_20200929

Lab ID#: 2010027B-15B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.032	0.068	0.20	0.43

Client Sample ID: IA4018_20200929

Lab ID#: 2010027B-16A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	0.26	0.92	1.4
Acetone	1.6	3.0	3.9	7.2

Client Sample ID: IA4018_20200929

Lab ID#: 2010027B-16B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.033	0.066	0.21	0.41

Client Sample ID: IA4019_20200929

Lab ID#: 2010027B-17A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	0.23	0.90	1.3
Acetone	1.6	5.3	3.8	12

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

Client Sample ID: IA4019_20200929

Lab ID#: 2010027B-17B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.032	0.088	0.20	0.55

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Client Sample ID: IA BH-40_20200929

Lab ID#: 2010027B-11A

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

File Name:	**v100907**	**Date of Collection: 9/29/20 2:41:00 PM**	
Dil. Factor:	**1.61**	**Date of Analysis: 10/9/20 11:59 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.80	Not Detected	4.0	Not Detected
Freon 11	0.16	0.25	0.90	1.4
Freon 113	0.16	Not Detected	1.2	Not Detected
Acetone	1.6	4.2	3.8	10
Methylene Chloride	0.32	Not Detected	1.1	Not Detected
1,1,1-Trichloroethane	0.16	Not Detected	0.88	Not Detected
Benzene	0.16	Not Detected	0.51	Not Detected
Toluene	0.16	Not Detected	0.61	Not Detected
Tetrachloroethene	0.16	Not Detected	1.1	Not Detected
Chlorobenzene	0.16	Not Detected	0.74	Not Detected
Ethyl Benzene	0.16	Not Detected	0.70	Not Detected
m,p-Xylene	0.16	Not Detected	0.70	Not Detected
o-Xylene	0.16	Not Detected	0.70	Not Detected
1,3-Dichlorobenzene	0.16	Not Detected	0.97	Not Detected
1,4-Dichlorobenzene	0.16	Not Detected	0.97	Not Detected
1,2-Dichlorobenzene	0.16	Not Detected	0.97	Not Detected
1,2,4-Trichlorobenzene	0.80	Not Detected	6.0	Not Detected

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

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	96	70-130
Toluene-d8	93	70-130
4-Bromofluorobenzene	103	70-130

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Client Sample ID: IA BH-40_20200929

Lab ID#: 2010027B-11B

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

File Name:	**v100907sim**	**Date of Collection: 9/29/20 2:41:00 PM**	
Dil. Factor:	**1.61**	**Date of Analysis: 10/9/20 11:59 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	0.023	0.041	0.058
1,1-Dichloroethene	0.016	Not Detected	0.064	Not Detected
cis-1,2-Dichloroethene	0.032	Not Detected	0.13	Not Detected
Carbon Tetrachloride	0.032	0.37	0.20	2.3
Trichloroethene	0.032	Not Detected	0.17	Not Detected

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

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

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Client Sample ID: IA4013_20200929

Lab ID#: 2010027B-12A

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

File Name:	**v100908**	**Date of Collection: 9/29/20 2:18:00 PM**	
Dil. Factor:	**1.68**	**Date of Analysis: 10/9/20 12:55 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.84	Not Detected	4.2	Not Detected
Freon 11	0.17	0.30	0.94	1.7
Freon 113	0.17	Not Detected	1.3	Not Detected
Acetone	1.7	9.1	4.0	22
Methylene Chloride	0.34	0.37	1.2	1.3
1,1,1-Trichloroethane	0.17	Not Detected	0.92	Not Detected
Benzene	0.17	Not Detected	0.54	Not Detected
Toluene	0.17	0.72	0.63	2.7
Tetrachloroethene	0.17	0.45	1.1	3.0
Chlorobenzene	0.17	Not Detected	0.77	Not Detected
Ethyl Benzene	0.17	7.8	0.73	34
m,p-Xylene	0.17	40	0.73	180
o-Xylene	0.17	12	0.73	54
1,3-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
1,4-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
1,2-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
1,2,4-Trichlorobenzene	0.84	Not Detected	6.2	Not Detected

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

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	99	70-130
Toluene-d8	110	70-130
4-Bromofluorobenzene	97	70-130

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Client Sample ID: IA4013_20200929

Lab ID#: 2010027B-12B

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

File Name:	**v100908sim**	**Date of Collection: 9/29/20 2:18:00 PM**	
Dil. Factor:	**1.68**	**Date of Analysis: 10/9/20 12:55 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.017	Not Detected	0.043	Not Detected
1,1-Dichloroethene	0.017	Not Detected	0.067	Not Detected
cis-1,2-Dichloroethene	0.034	Not Detected	0.13	Not Detected
Carbon Tetrachloride	0.034	0.068	0.21	0.43
Trichloroethene	0.034	Not Detected	0.18	Not Detected

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

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	92	70-130
Toluene-d8	110	70-130
4-Bromofluorobenzene	97	70-130

eurofins | Air Toxics

Client Sample ID: IA4014_20200929

Lab ID#: 2010027B-13A

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

File Name:	**v100909**	**Date of Collection: 9/29/20 2:23:00 PM**	
Dil. Factor:	**1.64**	**Date of Analysis: 10/9/20 01:46 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.82	Not Detected	4.0	Not Detected
Freon 11	0.16	0.32	0.92	1.8
Freon 113	0.16	Not Detected	1.2	Not Detected
Acetone	1.6	14	3.9	34
Methylene Chloride	0.33	Not Detected	1.1	Not Detected
1,1,1-Trichloroethane	0.16	Not Detected	0.89	Not Detected
Benzene	0.16	Not Detected	0.52	Not Detected
Toluene	0.16	0.17	0.62	0.64
Tetrachloroethene	0.16	Not Detected	1.1	Not Detected
Chlorobenzene	0.16	Not Detected	0.76	Not Detected
Ethyl Benzene	0.16	Not Detected	0.71	Not Detected
m,p-Xylene	0.16	0.34	0.71	1.5
o-Xylene	0.16	Not Detected	0.71	Not Detected
1,3-Dichlorobenzene	0.16	Not Detected	0.99	Not Detected
1,4-Dichlorobenzene	0.16	Not Detected	0.99	Not Detected
1,2-Dichlorobenzene	0.16	Not Detected	0.99	Not Detected
1,2,4-Trichlorobenzene	0.82	Not Detected	6.1	Not Detected

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

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	105	70-130
Toluene-d8	95	70-130
4-Bromofluorobenzene	93	70-130

eurofins | Air Toxics

Client Sample ID: IA4014_20200929

Lab ID#: 2010027B-13B

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

File Name:	**v100909sim**	**Date of Collection: 9/29/20 2:23:00 PM**	
Dil. Factor:	**1.64**	**Date of Analysis: 10/9/20 01:46 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	Not Detected	0.042	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.065	Not Detected
cis-1,2-Dichloroethene	0.033	Not Detected	0.13	Not Detected
Carbon Tetrachloride	0.033	0.071	0.21	0.45
Trichloroethene	0.033	Not Detected	0.18	Not Detected

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

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	94	70-130
4-Bromofluorobenzene	92	70-130

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Client Sample ID: IA4016_20200929

Lab ID#: 2010027B-14A

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

File Name:	**v100910**	**Date of Collection: 9/29/20 2:55:00 PM**	
Dil. Factor:	**1.71**	**Date of Analysis: 10/9/20 02:47 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.86	Not Detected	4.2	Not Detected
Freon 11	0.17	0.30	0.96	1.7
Freon 113	0.17	Not Detected	1.3	Not Detected
Acetone	1.7	10	4.1	24
Methylene Chloride	0.34	Not Detected	1.2	Not Detected
1,1,1-Trichloroethane	0.17	Not Detected	0.93	Not Detected
Benzene	0.17	Not Detected	0.55	Not Detected
Toluene	0.17	0.52	0.64	1.9
Tetrachloroethene	0.17	0.20	1.2	1.4
Chlorobenzene	0.17	Not Detected	0.79	Not Detected
Ethyl Benzene	0.17	2.2	0.74	9.7
m,p-Xylene	0.17	13	0.74	58
o-Xylene	0.17	3.7	0.74	16
1,3-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
1,4-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
1,2-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
1,2,4-Trichlorobenzene	0.86	Not Detected	6.3	Not Detected

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

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	95	70-130
Toluene-d8	108	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: IA4016_20200929

Lab ID#: 2010027B-14B

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

File Name:	**v100910sim**	**Date of Collection: 9/29/20 2:55:00 PM**	
Dil. Factor:	**1.71**	**Date of Analysis: 10/9/20 02:47 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.017	Not Detected	0.044	Not Detected
1,1-Dichloroethene	0.017	Not Detected	0.068	Not Detected
cis-1,2-Dichloroethene	0.034	Not Detected	0.14	Not Detected
Carbon Tetrachloride	0.034	0.067	0.22	0.42
Trichloroethene	0.034	Not Detected	0.18	Not Detected

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

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	93	70-130
Toluene-d8	105	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: IA4017_20200929

Lab ID#: 2010027B-15A

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

File Name:	**v100911**	**Date of Collection:**	**9/29/20 2:22:00 PM**
Dil. Factor:	**1.61**	**Date of Analysis:**	**10/9/20 03:31 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.80	Not Detected	4.0	Not Detected
Freon 11	0.16	0.29	0.90	1.6
Freon 113	0.16	Not Detected	1.2	Not Detected
Acetone	1.6	6.3	3.8	15
Methylene Chloride	0.32	Not Detected	1.1	Not Detected
1,1,1-Trichloroethane	0.16	Not Detected	0.88	Not Detected
Benzene	0.16	Not Detected	0.51	Not Detected
Toluene	0.16	0.93	0.61	3.5
Tetrachloroethene	0.16	Not Detected	1.1	Not Detected
Chlorobenzene	0.16	Not Detected	0.74	Not Detected
Ethyl Benzene	0.16	2.0	0.70	8.6
m,p-Xylene	0.16	12	0.70	53
o-Xylene	0.16	3.2	0.70	14
1,3-Dichlorobenzene	0.16	Not Detected	0.97	Not Detected
1,4-Dichlorobenzene	0.16	Not Detected	0.97	Not Detected
1,2-Dichlorobenzene	0.16	Not Detected	0.97	Not Detected
1,2,4-Trichlorobenzene	0.80	Not Detected	6.0	Not Detected

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

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	93	70-130
Toluene-d8	108	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: IA4017_20200929

Lab ID#: 2010027B-15B

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

File Name:	**v100911sim**	**Date of Collection: 9/29/20 2:22:00 PM**	
Dil. Factor:	**1.61**	**Date of Analysis: 10/9/20 03:31 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	Not Detected	0.041	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.064	Not Detected
cis-1,2-Dichloroethene	0.032	Not Detected	0.13	Not Detected
Carbon Tetrachloride	0.032	0.068	0.20	0.43
Trichloroethene	0.032	Not Detected	0.17	Not Detected

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

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	94	70-130
Toluene-d8	105	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: IA4018_20200929

Lab ID#: 2010027B-16A

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

File Name:	**v100912**	**Date of Collection: 9/29/20 2:39:00 PM**	
Dil. Factor:	**1.64**	**Date of Analysis: 10/9/20 04:11 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.82	Not Detected	4.0	Not Detected
Freon 11	0.16	0.26	0.92	1.4
Freon 113	0.16	Not Detected	1.2	Not Detected
Acetone	1.6	3.0	3.9	7.2
Methylene Chloride	0.33	Not Detected	1.1	Not Detected
1,1,1-Trichloroethane	0.16	Not Detected	0.89	Not Detected
Benzene	0.16	Not Detected	0.52	Not Detected
Toluene	0.16	Not Detected	0.62	Not Detected
Tetrachloroethene	0.16	Not Detected	1.1	Not Detected
Chlorobenzene	0.16	Not Detected	0.76	Not Detected
Ethyl Benzene	0.16	Not Detected	0.71	Not Detected
m,p-Xylene	0.16	Not Detected	0.71	Not Detected
o-Xylene	0.16	Not Detected	0.71	Not Detected
1,3-Dichlorobenzene	0.16	Not Detected	0.99	Not Detected
1,4-Dichlorobenzene	0.16	Not Detected	0.99	Not Detected
1,2-Dichlorobenzene	0.16	Not Detected	0.99	Not Detected
1,2,4-Trichlorobenzene	0.82	Not Detected	6.1	Not Detected

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

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	94	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: IA4018_20200929

Lab ID#: 2010027B-16B

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

File Name:	**v100912sim**	**Date of Collection: 9/29/20 2:39:00 PM**	
Dil. Factor:	**1.64**	**Date of Analysis: 10/9/20 04:11 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	Not Detected	0.042	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.065	Not Detected
cis-1,2-Dichloroethene	0.033	Not Detected	0.13	Not Detected
Carbon Tetrachloride	0.033	0.066	0.21	0.41
Trichloroethene	0.033	Not Detected	0.18	Not Detected

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

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	93	70-130
Toluene-d8	94	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: IA4019_20200929

Lab ID#: 2010027B-17A

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

File Name:	**v100913**	**Date of Collection: 9/29/20 2:37:00 PM**	
Dil. Factor:	**1.61**	**Date of Analysis: 10/9/20 04:51 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.80	Not Detected	4.0	Not Detected
Freon 11	0.16	0.23	0.90	1.3
Freon 113	0.16	Not Detected	1.2	Not Detected
Acetone	1.6	5.3	3.8	12
Methylene Chloride	0.32	Not Detected	1.1	Not Detected
1,1,1-Trichloroethane	0.16	Not Detected	0.88	Not Detected
Benzene	0.16	Not Detected	0.51	Not Detected
Toluene	0.16	Not Detected	0.61	Not Detected
Tetrachloroethene	0.16	Not Detected	1.1	Not Detected
Chlorobenzene	0.16	Not Detected	0.74	Not Detected
Ethyl Benzene	0.16	Not Detected	0.70	Not Detected
m,p-Xylene	0.16	Not Detected	0.70	Not Detected
o-Xylene	0.16	Not Detected	0.70	Not Detected
1,3-Dichlorobenzene	0.16	Not Detected	0.97	Not Detected
1,4-Dichlorobenzene	0.16	Not Detected	0.97	Not Detected
1,2-Dichlorobenzene	0.16	Not Detected	0.97	Not Detected
1,2,4-Trichlorobenzene	0.80	Not Detected	6.0	Not Detected

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

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

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Client Sample ID: IA4019_20200929

Lab ID#: 2010027B-17B

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

File Name:	**v100913sim**	**Date of Collection: 9/29/20 2:37:00 PM**	
Dil. Factor:	**1.61**	**Date of Analysis: 10/9/20 04:51 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	Not Detected	0.041	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.064	Not Detected
cis-1,2-Dichloroethene	0.032	Not Detected	0.13	Not Detected
Carbon Tetrachloride	0.032	0.088	0.20	0.55
Trichloroethene	0.032	Not Detected	0.17	Not Detected

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

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	92	70-130
Toluene-d8	93	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2010027B-18A

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

File Name:	**v100906a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/9/20 10:25 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Freon 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
Methylene Chloride	0.20	Not Detected	0.69	Not Detected
1,1,1-Trichloroethane	0.10	Not Detected	0.54	Not Detected
Benzene	0.10	Not Detected	0.32	Not Detected
Toluene	0.10	Not Detected	0.38	Not Detected
Tetrachloroethene	0.10	Not Detected	0.68	Not Detected
Chlorobenzene	0.10	Not Detected	0.46	Not Detected
Ethyl Benzene	0.10	Not Detected	0.43	Not Detected
m,p-Xylene	0.10	Not Detected	0.43	Not Detected
o-Xylene	0.10	Not Detected	0.43	Not Detected
1,3-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
1,4-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
1,2-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
1,2,4-Trichlorobenzene	0.50	Not Detected	3.7	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	94	70-130
Toluene-d8	93	70-130
4-Bromofluorobenzene	105	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2010027B-18B

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

File Name:	**v100906sima**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/9/20 10:25 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.010	Not Detected	0.026	Not Detected
1,1-Dichloroethene	0.010	Not Detected	0.040	Not Detected
cis-1,2-Dichloroethene	0.020	Not Detected	0.079	Not Detected
Carbon Tetrachloride	0.020	Not Detected	0.12	Not Detected
Trichloroethene	0.020	Not Detected	0.11	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	92	70-130
Toluene-d8	94	70-130
4-Bromofluorobenzene	103	70-130

eurofins | Air Toxics

Client Sample ID: CCV

Lab ID#: 2010027B-19A

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

File Name:	**v100902**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/9/20 07:08 AM**	

Compound	%Recovery
Freon 12	92
Freon 11	103
Freon 113	91
Acetone	78
Methylene Chloride	82
1,1,1-Trichloroethane	88
Benzene	88
Toluene	94
Tetrachloroethene	100
Chlorobenzene	93
Ethyl Benzene	92
m,p-Xylene	90
o-Xylene	88
1,3-Dichlorobenzene	89
1,4-Dichlorobenzene	92
1,2-Dichlorobenzene	91
1,2,4-Trichlorobenzene	109

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	85	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	109	70-130

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Client Sample ID: CCV

Lab ID#: 2010027B-19B

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

File Name:	**v100902sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/9/20 07:08 AM**	

Compound	**%Recovery**
Vinyl Chloride	79
1,1-Dichloroethene	87
cis-1,2-Dichloroethene	87
Carbon Tetrachloride	62
Trichloroethene	90

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	86	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	109	70-130

eurofins | Air Toxics

Client Sample ID: LCS

Lab ID#: 2010027B-20A

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

File Name:	**v100903**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/9/20 08:15 AM**	

Compound	%Recovery	Method Limits
Freon 12	84	70-130
Freon 11	96	70-130
Freon 113	86	70-130
Acetone	69 Q	70-130
Methylene Chloride	74	70-130
1,1,1-Trichloroethane	85	70-130
Benzene	83	70-130
Toluene	89	70-130
Tetrachloroethene	102	70-130
Chlorobenzene	93	70-130
Ethyl Benzene	90	70-130
m,p-Xylene	93	70-130
o-Xylene	90	70-130
1,3-Dichlorobenzene	90	70-130
1,4-Dichlorobenzene	90	70-130
1,2-Dichlorobenzene	93	70-130
1,2,4-Trichlorobenzene	116	70-130

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	81	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	106	70-130

eurofins | Air Toxics

Client Sample ID: LCSD

Lab ID#: 2010027B-20AA

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

File Name:	**v100904**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/9/20 08:55 AM**	

Compound	%Recovery	Method Limits
Freon 12	81	70-130
Freon 11	96	70-130
Freon 113	88	70-130
Acetone	68 Q	70-130
Methylene Chloride	73	70-130
1,1,1-Trichloroethane	85	70-130
Benzene	85	70-130
Toluene	90	70-130
Tetrachloroethene	98	70-130
Chlorobenzene	92	70-130
Ethyl Benzene	90	70-130
m,p-Xylene	90	70-130
o-Xylene	83	70-130
1,3-Dichlorobenzene	83	70-130
1,4-Dichlorobenzene	82	70-130
1,2-Dichlorobenzene	82	70-130
1,2,4-Trichlorobenzene	116	70-130

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	85	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	111	70-130

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Client Sample ID: LCS

Lab ID#: 2010027B-20B

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

File Name:	**v100903sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/9/20 08:15 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	74	70-130
1,1-Dichloroethene	86	70-130
cis-1,2-Dichloroethene	86	70-130
Carbon Tetrachloride	93	60-140
Trichloroethene	90	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	86	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	106	70-130

eurofins | Air Toxics

Client Sample ID: LCSD

Lab ID#: 2010027B-20BB

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

File Name:	**v100904sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/9/20 08:55 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	70	70-130
1,1-Dichloroethene	84	70-130
cis-1,2-Dichloroethene	84	70-130
Carbon Tetrachloride	93	60-140
Trichloroethene	88	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	86	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	108	70-130

APPENDIX D

DATA USABILITY SUMMARY REPORT

Data Usability Summary Report (DUSR)

Client:	Sanborn, Head & Associates, Inc., Concord, New Hampshire (SHA)
Site:	Former IBM East Fishkills Facility, Hopewell Junction, New York Building 330D
Laboratory:	Eurofins Air Toxics, Inc. (EATL), Folsom, California
Lab SDG / Work Order:	2010027 (reported in Work Orders 2010027A & 2010027B)
Date(s) of Collection:	September 29, 2020
Number and type Samples & analyses:	15 Indoor Air, 1 Ambient Air, and 1 Field Blank sample for twenty-two 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:	October 30, 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 the Work Plan or EPA method QC acceptance criteria.

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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 several QC exceptions resulted in qualification of data as noted in the Data Validation Checklist (DV Checklist).

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.

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 DUSR 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	Sample ID	Collection Date	Matrix	Analytical Parameters	Sample Type
AA4001_20200929	2010027A-01	9/29/2020	Ambient Air	VOCs	Field Sample
FB-01_20200929	2010027A-02	9/29/2020	Air	VOCs	Field Blank
FD-01_20200929	2010027A-03	9/29/2020	Indoor Air	VOCs	Field Duplicate of IA BE-28_20200929
IA AY-43_20200929	2010027A-04	9/29/2020	Indoor Air	VOCs	Field Sample
IA BA-28_20200929	2010027A-05	9/29/2020	Indoor Air	VOCs	Field Sample
IA BB-37_20200929	2010027A-06	9/29/2020	Indoor Air	VOCs	Field Sample
IA BB-39_20200929	2010027A-07	9/29/2020	Indoor Air	VOCs	Field Sample
IA BE-28_20200929	2010027A-08	9/29/2020	Indoor Air	VOCs	Field Sample
IA BG-38_20200929	2010027A-09	9/29/2020	Indoor Air	VOCs	Field Sample
IA BG-45_20200929	2010027A-10	9/29/2020	Indoor Air	VOCs	Field Sample
IA BH-40_20200929	2010027B-11	9/29/2020	Indoor Air	VOCs	Field Sample
IA4013_20200929	2010027B-12	9/29/2020	Indoor Air	VOCs	Field Sample
IA4014_20200929	2010027B-13	9/29/2020	Indoor Air	VOCs	Field Sample
IA4016_20200929	2010027B-14	9/29/2020	Indoor Air	VOCs	Field Sample
IA4017_20200929	2010027B-15	9/29/2020	Indoor Air	VOCs	Field Sample

Table 1. Sample Descriptions and Analytical Parameters - *continued*

Sample ID	Sample ID	Collection Date	Matrix	Analytical Parameters	Sample Type
IA4018_20200929	2010027B-16	9/29/2020	Indoor Air	VOCs	Field Sample
IA4019_20200929	2010027B-17	9/29/2020	Indoor Air	VOCs	Field Sample

Analytical method reference:

VOC: TO-15 Hi/Lo – Method TO-15 with simultaneous Full Scan and Selected Ion Monitoring (SIM) analysis for twenty-two project-specific VOCs (see Table in the DV Checklist for complete list of 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) and Matrix Spike (MS) and Matrix Spike Duplicate (MSD) 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 several results were estimated (EB, JEB, J, J-, or UJ) due to QC issues. Table 2 summarizes the actions taken during this review. NEH generated validated data spreadsheets based on the electronic project database 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 results.

The attached Data Review Checklists document the method and matrix-specific QC reviewed and the issues that required action (as listed in Table 2) or affected the data certainty in terms of data quality objectives (DQO) of accuracy, precision, and sensitivity.

The laboratory reported results for 22 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.

All non-detects were reported at levels below the Project required RLs (as shown in Table B.1 of the QAPP) except: Freon 12 in all samples due to calibration issues causing project sensitivity requirements to not be met for this compound; and Freon 11, Freon 113, methylene chloride, 1,1,1-trichloroethane, benzene, toluene, chlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 1,2-dichlorobenzene, 1,2,4-trichlorobenzene, vinyl chloride, 1,1-dichloroethene,

cis-1,2-dichloroethene, carbon tetrachloride, and trichloroethene in samples IA BE-28_20200929 and FD-01_20200929 and acetone and ethylbenzene in FD-01_20200929 due to dilutions used for analysis of these samples. The data users will need to evaluate these non-detects above project sensitivity criteria for project uses.

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
FD-01_20200929	Acetone	EB	H	Detected in associated Equipment Blank
IA BB-37_20200929	Acetone	EB	H	Detected in associated Equipment Blank
IA4018_20200929	Acetone	JEB	I	Detected in associated Equipment Blank + Low LCS/LCSD recoveries
IA BE-28_20200929	Acetone	UJ	L	Low LCS/LCSD recoveries
IA BH-40_20200929 IA4013_20200929 IA4014_20200929 IA4016_20200929 IA4017_20200929 IA4019_20200929	Acetone	J-	L	Low LCS/LCSD recoveries
FD-01_20200929	Ethyl Benzene	J	I	Result < RL

Qualifiers: *U = analyte is non-detect at the sample-specific Reporting 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; EB = the analyte was also present in a Field Equipment Blank; JN = the analyte has been "tentatively identified" and the result is usable as an estimated value with indeterminate bias; R = result is rejected due to severe QC exceedance and unusable for project decisions.*

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

Former IBM B330C - East Fishkill Facility, Hopewell Junction, New York

Date Sampled: 9/29/2020

No. Samples 7IA + 1FD + 1AA + 1FB

Method of Analysis: TO-15 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					Estimate (UJ) 1 result			44 RLs > Proj. Req. RLs

Other Issues :

Blank Action: Estimate (EB) 2 results

Qualifier Action: 1 "J" lab qualifier accepted as an estimated (J) value

A combined Full Scan and SIM Analysis was performed for each sample for 22 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. The laboratory received 17 samples for B330D and split these samples into 2 Work Orders: 2010027A and 2010027B. This DV Checklist reviews the first 10 samples received at the lab and reported in Work Order 2010027A.

Sample receipt: The 10 6-L canisters were received intact and in good condition on 10/1/2020. The canister tag sample IDs did not contain the date of sample collection (e.g., COC ID was FD-01_20200929 but the canister tag only listed the ID as FD-01). The lab used the COC IDs for reporting of results. There were no other issues noted with sample receiving.

Date: ***10/29/2020***

Data Reviewer: ***Nancy C. Rothman, Ph.D.***

Associated Blanks: Method Blanks: v100906c/v100906simc & 21100906a/21100906sima

FB = FB-01_20200929

Blank ID	Contaminant / Level (µg/m^3)	Action Level DF= 1.75 *	Sample and reported result (µg/m3)		Corrected Database Result
v100906c	None		No Blank Action Required		
v100906simc	None		No Blank Action Required		
21100906a	None		No Blank Action Required		
21100906sima	None		No Blank Action Required		
FB-01_20200929	Acetone 9.1	8.5	AA4001_20200929	8.8	No Action
		85	FD-01_20200929	66	66 EB
		8.4	IA AY-43_20200929	24	No Action
		8.9	IA BA-28_20200929	44	No Action
		8.4	IA BB-37_20200929	8.2	8.2 EB
		7.9	IA BB-39_20200929	13	No Action
		8.5	IA BG-38_20200929	15	No Action
		8.4	IA BG-45_20200929	17	No Action
*Sample-specific Action Level = Amount in Blank x Sample DF/Blank DF					

Certification: Canisters were each Certified pre-cleaned on 9/17/2020 - 9/18/2020 prior to shipment to the field indicating all 22 target VOCs were non-detect prior to use. The eCVP for this Work Order 2010027A contains the certifications for all 17 canisters collected from B330D. No Action required.

Sample Integrity: All samples were collected for 8 hours on 9/29/2020. The field receipt vacuums (26 - 30 ”Hg), field final vacuums (2 - 7 "Hg) and lab receipt vacuums (3.5 -7 "Hg) were acceptable. All canisters were over-pressurized prior to analysis (final pressures was 5 psi). No Action required.

Holding Time (HT): Samples were analyzed on 10/9/2020; therefore HT was met. No Action required.

Date: ***10/29/2020***

Data Reviewer: ***Nancy C. Rothman, Ph.D.***

BFB Tunes: Instrument MSDV tunes (1 ICAL + 1 CCV) and MSD21 (1 ICAL + 1CCV). One tune on 9/15/2020 for Instrument MSD21 preceded analysis of secondary ICAL standards, which did not include the target compounds reported for the samples reported herein. 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 : Instruments MSDV Full Scan and SIM performed on 8/20/2020 and MSD21 Full Scan and SIM performed 6/26/2020 (note, MSD21 had an additional series of ICAL standards analyzed on 9/15/2020; however, these were for compounds not reported in this Work Order). Full Scan = 6- to 9-level calibration from 0.05, 0.1, 0.5, or 1.0 to 40 ppbV for all 22 Target compounds plus several non-target compounds. SIM = 11-level calibration from 0.005 to 20 ppbV for 3 Targets shown in the Table on page 5 plus 1,1-dichloroethene, cis-1,2-dichloroethene, and tetrachloroethene plus several other compounds not reported by SIM. %RSD ≤ 30% for all 22 Target Compounds - Valid ICALs, No Action required.

CCVs: v100902/v100902sim & 21100902/21100902sim - % Recovery 70-130% for all 22 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 in all analyses; therefore, No Action Required.

LCS/LCSD : v100903/v100904 & v100903sim/ v100904sim and 21100903/21100904 & 21100903sim/21100904sim - %Recovery acceptable for all 22 Targets in both LCS and LCSD and LCS/LCSD RPDs all OK except acetone %Rec was low, but > 10% in the LCS/LCSD v100903/v100904. This set of LCS/LCSD is only associated with sample 2010027A-08 (IA BE-28_20200929) according to the instrument log.
****ACTION: Acetone estimated (UJ) with possible low bias in sample IA BE-28_20200929 due to low LCS/LCSD recoveries***

LD: Not performed for these samples since LCS/LCSD and FD performed allowing precision evaluation.

Compound Reporting: The lab reported results for 22 Target VOCs, as requested in Table B.1 of the Work Plan. 16 compounds were reported from the Full Scan analysis and 6 from the SIM analysis as shown on the second to last page of this DV Checklist.

Qualifier Action: the lab reported 1 results < RL and qualified the result as an estimated ("J-qualified"). All other data were either detect within the instrument calibration range or were qualified "U" to indicate the result was non-detect at the sample-specific RL.
****ACTION: 1 "J" lab qualified result estimated (J) with indeterminate bias due to uncertainty in quantitation below the calibration range***

Compound Reporting & Sensitivity: All non-detects were at or below the Project required RL (as shown in Table B.1, which is reproduced on the second to last page of this Checklist) except: Freon 12 in all samples due to a calibration issues causing project sensitivity requirements to not be met; and Freon 11, Freon 113, methylene chloride, 1,1,1-trichloroethane, benzene, toluene, chlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 1,2-dichlorobenzene, 1,2,4-trichlorobenzene, vinyl chloride, 1,1-dichloroethene, cis-1,2-dichloroethene, carbon tetrachloride, and trichloroethene in samples IA BE-28_20200929 and FD-01_20200929, and acetone and ethylbenzene in FD-01_20200929 due to dilutions used for analysis of these samples. The data users will need to evaluate these non-detects above project sensitivity criteria for project uses.

Narrative: The narrative indicated that the DF=10 dilution for samples IA BE-28_20200929 and FD-01_20200929 was due to the presence of high non-target compounds in these samples. There were no other issues raised not already addressed or that would affect data quality.

Date: ***10/29/2020***
Data Reviewer: ***Nancy C. Rothman, Ph.D.***

Calculation Verification Checks:

Initial Calibration : Verification MSDV Full Scan ICAL on 8/20/20 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	2586	8496	39091	72181	522890	958140	1349790
IS Conc.	5	5	5	5	5	5	5
IS Resp	108261	131012	117966	110394	131234	136538	133545
RRF	2.3887	3.2425	3.3138	3.2692	3.9844	3.5087	3.3691

	Level 8	Level 9	Avg. RRF	%RSD
Std Conc.	20	40		
Cpd Resp	1782192	3755350		
IS Conc.	5	5		
IS Resp	131606	139963		
RRF	3.3855	3.3539	3.3129	12.45%

√

ICAL verified, no action required

CCV : Verification MSDV 10/9/20 for 10 ppbV Standard of Freon 11: Response for Compound = 769737; IS (Bromochloromethane) Response = 112512@5 ppbV; RRF from ICAL = 3.3129

$$\text{Concentration} = \frac{769737 \times 5}{112512 \times 3.3129} = 10.3 \text{ ppb}$$ √

$$\%\text{Recovery} = \frac{100 \times 10.3}{10} = 103\%$$

QL & Result Verification: IA AY-43_20200929; Freon 11

Normal 250 mL analyzed (same as for Method Blank) but since canister was over-pressurize, effective DF = 1.61; MWt = 137.38

Sample Response = 23300; IS Response = 101713@ 5; RRF ICAL = 4.6256 (MSD21)

Lowest-level ICAL Std = 0.05 ppbV; QL based on 0.10 ppbV level

$$\text{Conc.} = \frac{23300 \times 5 \times 1.61}{101713 \times 4.6256} = 0.40 \text{ ppbV}$$

QL = 0.10 x 1.61 = 0.16 ppbV or 0.90 µg/m3 √

µg/m^3 = (ppbv x Mwt x DF) / 24.45 = (0.40 x 137.38 x 1)/24.45 = 2.2 µg/m^3 √

The sample chromatograms, mass spectra of detects and quantitation reports were scanned and data appeared to have been reported correctly. Although TICs were not requested, some samples contained peaks that are not target compounds.

Date: ***10/29/2020***

Data Reviewer: ***Nancy C. Rothman, Ph.D.***

FD : IA BE-28_20200929 /FD-01_20200929. A comparison of results for the 22 target compounds is shown below

Field Duplicate Evaluation_ Sample IDs: Sample = IA BE-28_20200929 FD = FD-01_20201029

Analyte Name	DF= 16.1* RL (µg/m^3)	Sample µg/m^3	Q	Sample Result Level	FD µg/m^3	Q	FD Result Level	RPD	Action **
Freon 12	40	40	U	RL	40.0	U	RL	NC	None
Freon 11	9	9	U	RL	9.2	U	RL	NC	None
Freon 113	12	12	U	RL	12.0	U	RL	NC	None
Acetone	38	38	UJ	RL	66	EB	< 5 x RL	NC	None
Methylene Chloride	11	11	U	RL	11.0	U	RL	NC	None
1,1,1-Trichloroethane	8.8	8.8	U	RL	8.9	U	RL	NC	None
Benzene	5.1	5.1	U	RL	5.2	U	RL	NC	None
Toluene	6.1	6.1	U	RL	6.2	U	RL	NC	None
Chlorobenzene	7.4	7.4	U	RL	7.6	U	RL	NC	None
Ethyl Benzene	7	7	U	RL	6.80	J	< 5 x RL	NC	None
m,p-Xylene	7	30		< 5 x RL	30.00		< 5 x RL	0.0%	None
o-Xylene	7	8.9		< 5 x RL	9.30		< 5 x RL	4.4%	None
1,3-Dichlorobenzene	9.7	9.7	U	RL	9.9	U	RL	NC	None
1,4-Dichlorobenzene	9.7	9.7	U	RL	9.9	U	RL	NC	None
1,2-Dichlorobenzene	9.7	9.7	U	RL	9.9	U	RL	NC	None
1,2,4-Trichlorobenzene	60	60	U	RL	61	U	RL	NC	None
Vinyl Chloride	0.41	0.41	U	RL	0.42	U	RL	NC	None
1,1-Dichloroethene	0.64	0.64	U	RL	0.65	U	RL	NC	None
cis-1,2-Dichloroethene	1.3	1.3	U	RL	1.3	U	RL	NC	None
Carbon Tetrachloride	2	2	U	RL	2.1	U	RL	NC	None
Trichloroethene	1.7	1.7	U	RL	1.8	U	RL	NC	None
Tetrachloroethene	2.2	3.5		< 5 x RL	3.40		< 5 x RL	2.9%	None

* FD DF was 16.4 so RLs for FD are the Sample RLs x 1.59/1.62

**Action only taken if RPD > 20% and one or both samples report values > 5 x RL; Q = Validator Qualifier; NC = Not Calculated

FD precision was acceptable for all 22 project-specific VOCs in the FD pair IA BE-28_20200929 and FD-01_20200929 indicating acceptable precision and representativeness of the samples to the site location for all compounds - No Action required.

Date: ***10/29/2020***
Data Reviewer: ***Nancy C. Rothman, Ph.D.***

Method of Analysis: TO-15 Hi/Lo

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

Target Analyte Name		Full Scan (Full) or SIM		RL (µg/m^3)	
Tetrachloroethene (PCE)		Full		1.4	*Reported by SIM for this Work Order*
Trichloroethene (TCE)		SIM		0.22	
cis-1,2-Dichloroethene (cDCE)		Full		0.8	*Reported by SIM for this Work Order*
1,1-Dichloroethene (DCE)		Full		0.8	*Reported by SIM for this Work Order*
Vinyl chloride (VC)		SIM		0.06	
1,1,1-Trichloroethane (TCA)		Full		1.1	
Carbon Tetrachloride		SIM		0.2	
Methylene chloride (MeCl)		Full		1.4	
Chlorobenzene		Full		0.92	
1,2,4-Trichlorobenzene		Full		7.4	
1,2-Dichlorobenzene		Full		1.2	
1,3-Dichlorobenzene		Full		1.2	
1,4-Dichlorobenzene		Full		1.2	
Acetone		Full		2.4	
Benzene		Full		0.64	
Ethylbenzene		Full		0.86	
m, p-Xylene		Full		0.86	
o-Xylene		Full		0.86	
Toluene		Full		0.77	
Trichlorofluoromethane (Freon 11)		Full		1.1	
Dichlorodifluoromethane (Freon 12)		Full		1	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)		Full		1.5	

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)
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; EB = analyte was also present in a Field Equipment Blank; NJ = the analyte has been "tentatively identified" and the result is usable as an estimated value with indeterminate bias; and R = result is rejected due to severe QC exceedance and unusable for project objectives. Bias: L = Low; H = High; I = Indeterminate.
References:	*Work Plan, RCRA Facility Investigation (RFI), VOC Source Assessment IBM East Fishkill Facility, Hopewell Junction, New York,* prepared by Sanborn, Head & Associates, June 2009; *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; *and 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

Former IBM B330C - East Fishkill Facility, Hopewell Junction, New York

Date Sampled: 9/29/2020

No. Samples 7IA

Method of Analysis: TO-15 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					Estimate (J or J-) 7 results			7 RLs > Proj. Req. RLs

Other Issues :

Blank Action: Estimate (EB) 1 result

Qualifier Action: no action required

A combined Full Scan and SIM Analysis was performed for each sample for 22 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. The laboratory received 17 samples for B330D and split these samples into 2 Work Orders: 2010027A and 2010027B. This DV Checklist reviews the 7 of the samples received at the lab and reported in Work Order 2010027B.

Sample receipt: The 7 6-L canisters were received intact and in good condition on 10/1/2020. The canister tag sample IDs did not contain the date of sample collection (e.g., COC ID was IA4013_20200929 but the canister tag only listed the ID as IA4013). The lab used the COC IDs for reporting of results. There were no other issues noted with sample receiving.

Date: ***10/29/2020***

Data Reviewer: ***Nancy C. Rothman, Ph.D.***

Associated Blanks: Method Blanks: v100906a/v100906sima

FB = FB-01_20200929 (reported in Work Order #2010027A)

Blank ID	Contaminant / Level (µg/m^3)	Action Level DF= 1.75 *	Sample and reported result (µg/m3)		Corrected Database Result
v100906a	None		No Blank Action Required		
v100906sima	None		No Blank Action Required		
FB-01_20200929	Acetone 9.1	8.4	IA BH-40_20200929	10	No Action
		8.7	IA4013_20200929	22	No Action
		8.5	IA4014_20200929	34	No Action
		8.9	IA4016_20200929	24	No Action
		8.4	IA4017_20200929	15	No Action
		8.5	IA4018_20200929	7.2	7.2 EB
		8.4	IA4019_20200929	12	No Action
*Sample-specific Action Level = Amount in Blank x Sample DF/Blank DF					

Certification: Canisters were each Certified pre-cleaned on 9/17/2020 - 9/18/2020 prior to shipment to the field indicating all 22 target VOCs were non-detect prior to use. The eCVP Work Order 2010027A contains the certifications for the 7 canisters reported in this Work Order. No Action required.

Sample Integrity: All samples were collected for 8 hours on 9/29/2020. The field receipt vacuums (26 - 30 ”Hg), field final vacuums (4 - 7 "Hg) and lab receipt vacuums (5 -6.5 "Hg) were acceptable. All canisters were over-pressurized prior to analysis (final pressures was 5 psi). No Action required.

Holding Time (HT): Samples were analyzed on 10/9/2020; therefore HT was met. No Action required.

BFB Tunes: Instrument MSDV tunes (1 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.

Date: ***10/29/2020***

Data Reviewer: ***Nancy C. Rothman, Ph.D.***

ICALs : Instruments MSDV Full Scan and SIM performed on 8/20/2020. Full Scan = 6- to 9-level calibration from 0.05, 0.1, 0.5, or 1.0 to 40 ppbV for all 22 Target compounds plus several non-target compounds. SIM = 11-level calibration from 0.005 to 20 ppbV for 3 Targets shown in the Table on page 5 plus 1,1-dichloroethene, cis-1,2-dichloroethene, and tetrachloroethene plus several other compounds not reported by SIM. %RSD ≤ 30% for all 22 Target Compounds - Valid ICALs, No Action required.

CCVs: v100902/v100902sim - % Recovery 70-130% for all 22 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 in all analyses; therefore, No Action Required.

LCS/LCSD : v100903/v100904 & v100903sim/ v100904sim - %Recovery acceptable for all 22 Targets in both LCS and LCSD and LCS/LCSD RPDs all OK except acetone %Rec was low, but > 10% in the LCS/LCSD v100903/v100904. This set of LCS/LCSD is only associated with all samples reported in this Work Order, according to the instrument log.
****ACTION: Acetone estimated (J-) in all samples with possible low bias, unless other issues affect the results, due to low LCS/LCSD recoveries (Note: 1 result changed to indeterminate bias (J) due to cumulative bias)***

LD: Not performed for these samples since LCS/LCSD and FD performed allowing precision evaluation.

FD: there was no FD associated with the samples reported in this Work Order - see Work Order 2010027A for FD evaluation.

Compound Reporting: The lab reported results for 22 Target VOCs, as requested in Table B.1 of the Work Plan. 16 compounds were reported from the Full Scan analysis and 6 from the SIM analysis as shown on the second to last page of this DV Checklist.

Qualifier Action: All data were either detect within the instrument calibration range or were qualified "U" to indicate the result was non-detect at the sample-specific RL. No qualifier action required.

Compound Reporting & Sensitivity: All non-detects were at or below the Project required RL (as shown in Table B.1, which is reproduced on the second to last page of this Checklist) except: Freon 12 in all samples due to a calibration issues causing project sensitivity requirements to not be met. The data users will need to evaluate these non-detects above project sensitivity criteria for project uses.

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

Calculation Verification Checks: See DV Checklist for 2010027A for Calculation verification. This Work Order used the same instrument calibrations as were used in Work Order 2010027A.

Method of Analysis: TO-15 Hi/Lo

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

Target Analyte Name		Full Scan (Full) or SIM		RL (µg/m^3)	
Tetrachloroethene (PCE)		Full		1.4	*Reported by SIM for this Work Order*
Trichloroethene (TCE)		SIM		0.22	
cis-1,2-Dichloroethene (cDCE)		Full		0.8	*Reported by SIM for this Work Order*
1,1-Dichloroethene (DCE)		Full		0.8	*Reported by SIM for this Work Order*
Vinyl chloride (VC)		SIM		0.06	
1,1,1-Trichloroethane (TCA)		Full		1.1	
Carbon Tetrachloride		SIM		0.2	
Methylene chloride (MeCl)		Full		1.4	
Chlorobenzene		Full		0.92	
1,2,4-Trichlorobenzene		Full		7.4	
1,2-Dichlorobenzene		Full		1.2	
1,3-Dichlorobenzene		Full		1.2	
1,4-Dichlorobenzene		Full		1.2	
Acetone		Full		2.4	
Benzene		Full		0.64	
Ethylbenzene		Full		0.86	
m, p-Xylene		Full		0.86	
o-Xylene		Full		0.86	
Toluene		Full		0.77	
Trichlorofluoromethane (Freon 11)		Full		1.1	
Dichlorodifluoromethane (Freon 12)		Full		1	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)		Full		1.5	

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)
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; EB = analyte was also present in a Field Equipment Blank; NJ = the analyte has been "tentatively identified" and the result is usable as an estimated value with indeterminate bias; and R = result is rejected due to severe QC exceedance and unusable for project objectives. Bias: L = Low; H = High; I = Indeterminate.
References:	*Work Plan, RCRA Facility Investigation (RFI), VOC Source Assessment IBM East Fishkill Facility, Hopewell Junction, New York,* prepared by Sanborn, Head & Associates, June 2009; *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; *and 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