8976 Wellington Road
Manassas, VA 20109

November 22, 2019

Jessica LaClair
New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau E, 12th Floor
625 Broadway
Albany, New York 12233-7014

Re: Subslab Depressurization Conceptual Design Report - Building 310
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 Conceptual Design Report for the southern portion of Building 310, including the Model Shop tenant space, at the former IBM East Fishkill Facility in Hopewell Junction, New York. Subslab vapor sampling and subslab depressurization (SSD) pilot testing was conducted in accordance with the April 18, 2019 and August 23, 2019 work plans submitted to the New York State Department of Environmental Conservation and Department of Health (the Departments) on behalf of IBM by Sanborn, Head Engineering, P.C. Based on the results of these work plans, IBM has elected to install an SSD system for the southern portion of Building 310, and this report presents the conceptual design. IBM understands that construction and operation of the SSD system can proceed once the Departments have accepted this report.

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

Sincerely,
International Business Machines Corporation

Dean W. Chartrand
Program Manager
Corporate Environmental Affairs

Enclosure: Subslab Depressurization Conceptual Design Report – Building 310

Cc:	Julia Kenney	NYSDOH	(w/enclosure via e-mail)
	Mike Buckley	iPark	(w/enclosure via e-mail)
	Carl Monheit	iPark	(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 CONCEPTUAL DESIGN REPORT

BUILDING 310

Former IBM East Fishkill Facility
Hopewell Junction, New York

Prepared for IBM Corporation
File No. 2999.13
November 2019

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20 Foundry Street
Concord, NH 03301

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

November 22, 2019
File No. 2999.13

Re: Subslab Depressurization Conceptual Design Report – Building 310
Former IBM East Fishkill Facility
Hopewell Junction, New York
EPA ID No. NYD000707901
NYSDEC Site No. 314054

Dear Mr. Chartrand:

The enclosed report presents the results of subslab vapor sampling, pilot testing, and the conceptual design of a subslab depressurization (SSD) system for the southern portion of Building 310 at the former IBM East Fishkill facility, currently owned by iPark East Fishkill I LLC. Please contact us if you have any questions.

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

David Shea, P.E.
Sr. Vice President

Joseph W. Corsello
Project Manager

Encl. Subslab Depressurization System Conceptual Design Report – Building 310

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SUBSLAB DEPRESSURIZATION CONCEPTUAL DESIGN REPORT
BUILDING 310

Former IBM East Fishkill Facility
Hopewell Junction, New York

Prepared for
IBM Corporation

Prepared by
Sanborn, Head Engineering, P.C.

File 2999.13
November 2019

SANBORN HEAD ENGINEERING

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NYS Professional Engineer Certification
Subslab Depressurization System Conceptual Design Report – Building 310
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 and that this Conceptual Design Report was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10) and that all activities were performed in full accordance with the DER-approved work plan.

Date: November 22, 2019

Name: David Shea

NYS P.E. License No. 70026

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SUBSLAB DEPRESSURIZATION CONCEPTUAL DESIGN REPORT
BUILDING 310
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APPENDICES

1.0 INTRODUCTION

This report presents the conceptual design of a subslab depressurization (SSD) system, including the results of a subslab vapor assessment and SSD pilot testing, for the southern portion of Building 310 (B310) at the former IBM East Fishkill facility (the site). B310 is currently owned by iPark East Fishkill I LLC, also referred to as National Resources (NR). The Model Shop tenant space located at the southern end of B310 is currently being leased from NR by Global Foundries. The remainder of B310 is currently vacant. A site location plan is provided as Figure 1, and the location of B310 at the site is shown on Figure 2.

The work described herein was conducted by Sanborn, Head Engineering, PC (SHPC), on behalf of IBM, in general accordance with IBM's Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Work Plan dated June 15, 2009 (RFI Work Plan) and the August 23, 2019 work plan for subslab depressurization pilot testing, both of which were approved by the New York State Department of Environmental Conservation and Department of Health (the Departments). Progress updates and relevant data associated with vapor intrusion investigations and testing associated with Building 310 have been communicated to 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

B310 is equipped with an SSD system (System VE-2) that serves the central portion of the building, as shown on Figure 3. System VE-2, combined with heating, ventilating, and air conditioning (HVAC) system operations, was successful in mitigating soil vapor intrusion and maintaining acceptable indoor air quality (IAQ), as documented in previous reports[1,2] to the Departments.

In late 2018, NR completed construction of a new wall to partition off the Model Shop area from the remaining areas of B310, as shown on Figure 3. The partition wall extends from the floor to the roof deck, effectively isolating the Model Shop from the remainder of the building. The remainder of B310 is currently vacant and has undergone major renovations, including removal of almost all interior walls and partitions and shut-down of the HVAC units that serve that area. In November 2018, IBM performed IAQ testing within the Model Shop area to assess whether the changes to building conditions affected the potential for soil vapor intrusion and resulting IAQ. The IAQ testing results were reported to the Departments in a letter dated January 23, 2019.[3]

As documented in the January 2019 letter, indoor air concentrations of certain volatile organic compounds (VOCs), primarily tetrachloroethene (PCE) and trichloroethene (TCE),

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1 Sanborn, Head Engineering, P.C., *Performance Monitoring and Confirmatory Sampling Results, Building 310 VOC Source Assessment, IBM East Fishkill Facility, Hopewell Junction, NY*, May 2013.

2 Sanborn, Head Engineering P.C., *Report of HVAC Adjustment and Indoor Air Quality Testing – Building 310*, July 22, 2016.

3 Sanborn, Head Engineering, P.C., *Indoor Air Quality Testing Results, Building 310 – Model Shop Tenant Space, Former IBM East Fishkill Facility, Hopewell Junction, New York*, January 23, 2019.

in the Model Shop area had increased since the previous round of IAQ sampling conducted in April 2016 prior to the construction of the partition wall and other changes to the building. Based on these results, and follow-up HVAC adjustment testing, IBM elected to conduct subslab vapor sampling and SSD pilot testing within the Model Shop and the vacant area to the north of the Model Shop in May and September 2019 in accordance with workplans approved by the Departments[4,5]. The purpose of this work was to evaluate the feasibility of SSD as a means of mitigating soil vapor intrusion in those areas.

This report documents the subslab VOC vapor assessment and SSD pilot testing results that were the basis for the conceptual design for an SSD system targeting the southern portion of B310, including the Model Shop and the vacant area to its north.

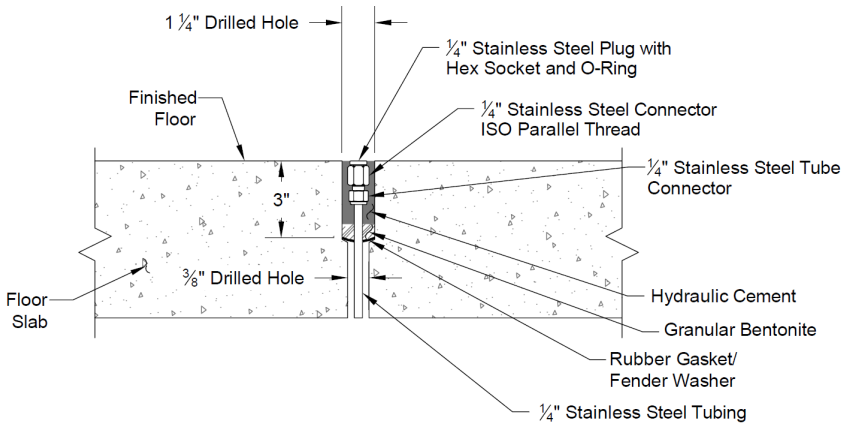
3.0 SUBSLAB VAPOR ASSESSMENT

A subslab vapor assessment was conducted to: 1) evaluate the presence and extent of VOCs beneath the floor slab of the southern portion of B310, and 2) establish a subslab vapor testing and pressure monitoring network to support potential subslab depressurization as a measure to control air pressure gradients across the floor slab. Subslab vapor assessment activities were conducted in May and September 2019 and included the installation and sampling of subslab vapor monitoring ports (SSV ports).

3.1 Subslab Vapor Monitoring Port Installation and Sampling

SSV ports SS-155 through SS-182 (total of 28) were installed in the southern portion of the building, as shown on Figure 4. The SSV ports consist of ¼-inch stainless steel tubing equipped with threaded connectors that penetrate the building slab. A schematic of an SSV port is shown below in Exhibit 3.1. Helium integrity testing was performed on a subset of the SSV ports following installation to confirm airtight seals around the slab penetration.

Exhibit 3.1 – Subslab Vapor Monitoring Port Schematic



[4] Sanborn, Head Engineering, P.C., *Work Plan for Subslab Depressurization Pilot Testing, Building 310 – Model Shop Area, Former IBM East Fishkill Facility, Hopewell Junction, New York*, April 18, 2019.

[5] Sanborn, Head Engineering, P.C., *Work Plan for Subslab Depressurization Pilot Testing, Building 310 – South-Central Area, Former IBM East Fishkill Facility, Hopewell Junction, New York*, August 23, 2019.

Subslab vapor samples were collected from the new and existing SSV ports in May and September 2019 into 1-L SUMMA® canisters equipped with 1-hour flow controllers. Samples were submitted to Eurofins Air Toxics, Inc. (EATI) of Folsom, California for analysis in accordance with USEPA Method TO-15 for the analytes listed in IBM's RFI Work Plan. One blind duplicate sample from each sampling event was collected for quality assurance/quality control (QA/QC) purposes.

3.2 Subslab Vapor Sampling Results

Subslab vapor analytical results are presented in Table 1, and laboratory reports are provided in Appendix C. PCE and TCE were the predominant compounds detected in subslab vapor, and inferred concentration isopleths are shown on Figures 5 and 6, respectively. The results indicate that areas of relatively greater PCE and TCE concentrations are present in subslab vapor beneath the eastern portion of the building and the basement at the very southern end. PCE was detected at concentrations up to 53,000 µg/m^3 in the basement, and TCE was detected at concentrations up to 59,000 µg/m^3 in the eastern portion of the building.

PCE and TCE were present in subslab vapor beneath the other areas of the building, but at concentrations about an order of magnitude lower than the eastern portion of the building and the basement.

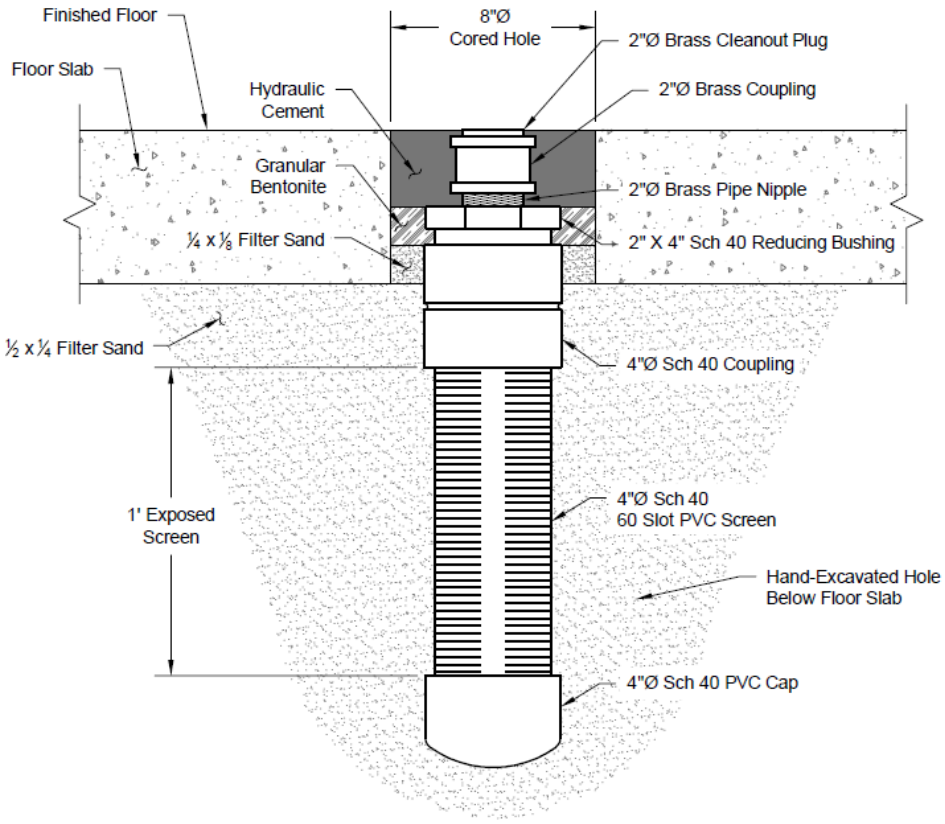
4.0 SUBSLAB DEPRESSURIZATION PILOT TESTING

SSD pilot testing was conducted at extraction ports (EPs) located throughout the building to: 1) evaluate the effectiveness of SSD in controlling air pressure gradients across the floor slab as means of reducing potential for vapor intrusion; and 2) obtain observational data that could be used to support design of an SSD system. This section provides a summary of the testing procedures and results.

4.1 Extraction Port Installation

Extraction ports EP-211 through EP-223 (13 new ports) were installed in May and September 2019 at the locations shown on Figure 4. Each EP was constructed by coring a hole through the concrete floor slab, hand excavating the underlying soil, and installing a 4-inch-diameter by 1-ft-long 60-slot schedule 40 PVC screen equipped with a capped port flush with the floor. A schematic of an EP is shown in Exhibit 4.1 below.

Exhibit 4.1 – Subslab Vapor Extraction Port Schematic

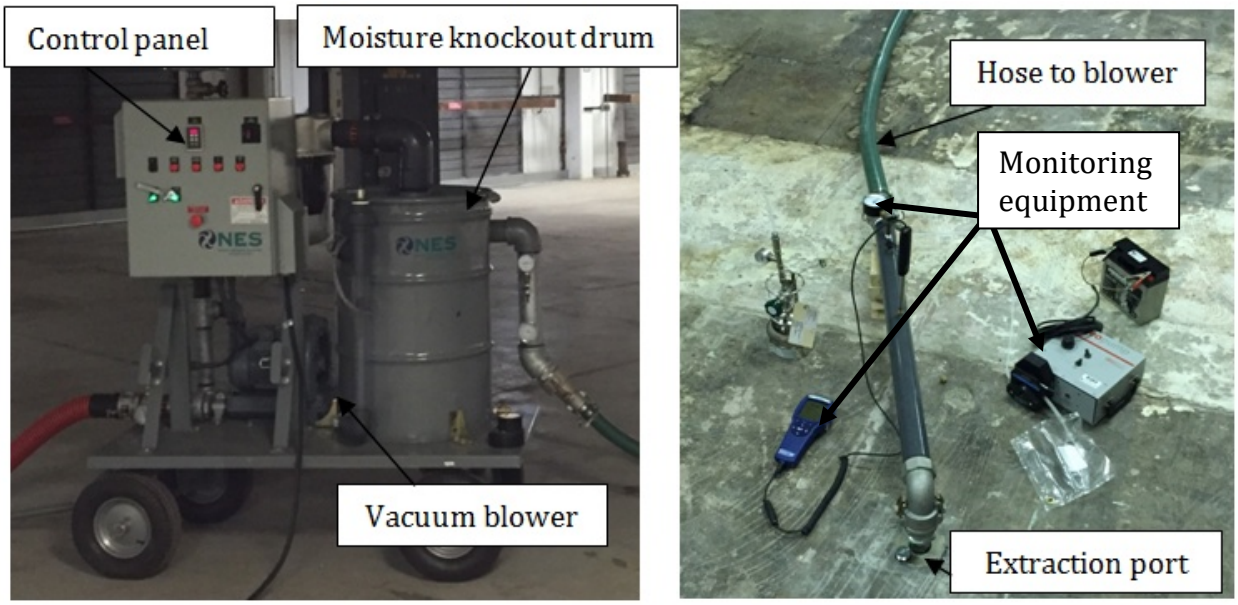


4.2 Testing Procedures

SSD pilot testing activities were conducted in June 2019 and September 2019. During pilot testing activities, individual vacuum extraction tests were conducted at each EP. Extraction ports were connected to a regenerative vacuum blower mounted on a portable cart, shown in Exhibit 4.2 below, which was used to withdraw vapor from the ports for durations of approximately 60 minutes each. The vapor flow rate, applied vacuum, and photoionization detector (PID) screening value were monitored and recorded at each EP using the assembly shown in Exhibit 4.2. For each test, the cross-slab differential pressure response was monitored at nearby SSV ports using digital micromanometers. For certain tests, simultaneous extraction from two ports was conducted to assess the combined influence of extracting from two ports.

Extracted vapor was directed outdoors via flexible duct or hose connected to existing exhaust fan drops, or duct/hose direct to the outdoors via doorways.

Exhibit 4.2 – SSD Pilot Testing Setup
Blower cart (left) and extraction port test assembly (right)



4.3 Pilot Test Results

The subslab pressure responses for each individual and multiport test are shown on Figures B-1 through B-16 in Appendix B. On these figures, the inferred extent of subslab pressure response is depicted by the pressure differential isopleth of -0.004 inches of water column (in. wc) (or 1 pascal); this value, or lower pressure (greater vacuum), is indication that vapor extraction has influence, and is expected to be sufficient to capture subslab soil vapor, within at least the area encompassed by the -0.004 in. wc isopleth.

Figure 7 shows the inferred combined pressure response of simultaneous extraction from six EPs (EP-212, EP-215, EP-216, EP-218, EP-220, EP-222) believed to be an optimal combination for permanent implementation. The results suggest that these six EPs will effectively depressurize all of the southern portion of B310, including the areas with the highest concentrations of PCE and TCE in subslab vapor, and will overlap with the area of subslab vacuum influence associated with the existing System VE-2.

Near the conclusion of each individual test, a grab sample of the vapor stream was collected into a Summa® canister and submitted to EATI for analysis of VOCs by USEPA Method TO-15. The complete analytical results for the vapor grab samples are provided in Table 2, and analytical laboratory reports are provided in Appendix C.

The SSD pilot testing data for each individual test are summarized in Exhibit 4.4 below.

Exhibit 4.3 – SSD Pilot Testing Data Summary
Extraction ports in **bold** are planned for permanent operation

Port Location	Applied Vacuum [in. wc]	Extracted Flow Rate [cfm]	PID Screening [ppmv]	PCE Laboratory Analysis [µg/m^3]	TCE Laboratory Analysis [µg/m^3]	PCE Removal Rate [lbs/hr]	TCE Removal Rate [lbs/hr]
EP-211	60	80	0.2	920	1,500	2.8×10^{-4}	4.5×10^{-4}
EP-212	**36**	**180**	**14.5**	**7,200**	**17,000**	**4.9×10^{-3}**	**1.1×10^{-2}**
EP-213	60	25	3.5	5,200	10,000	4.9×10^{-4}	9.4×10^{-4}
EP-214	38	200	6.9	17,000	13,000	1.3×10^{-2}	9.7×10^{-3}
EP-215	**60**	**73**	**3.3**	**4,100**	**1,000**	**1.1×10^{-3}**	**2.7×10^{-4}**
EP-216	**27**	**170**	**5.0**	**6,600**	**2,000**	**4.2×10^{-3}**	**1.3×10^{-3}**
EP-217	13	200	5.5	3,200	1,200	2.4×10^{-3}	9.0×10^{-4}
EP-218	**35**	**210**	**381**	**40,000**	**91,000**	**3.1×10^{-2}**	**7.2×10^{-2}**
EP-219	41	200	42	650	370	4.9×10^{-4}	2.8×10^{-4}
EP-220	**60**	**60**	**488**	**13,000**	**52,000**	**2.9×10^{-3}**	**1.2×10^{-2}**
EP-221	60	140	33	12,000	38,000	6.3×10^{-3}	2.0×10^{-2}
EP-222	**60**	**100**	**36.5**	**440**	**87**	**1.7×10^{-4}**	**3.3×10^{-5}**
EP-223	60	22	32	1,400	110	1.2×10^{-4}	9.1×10^{-6}

5.0 SSD SYSTEM DESIGN BASIS

This section presents the design basis for subslab depressurization beneath the southern portion of B310. The conceptual design is based on the results of SSD pilot testing, which indicate that SSD will achieve the goals of capture of subslab VOC vapor and control of cross-slab pressure gradients to reduce the potential for vapor intrusion to affect indoor air quality. The conceptual design of the SSD system is described below, including the intended configuration of the vapor extraction ports, target operating conditions (applied vacuum and extraction flow rate), and treatment of VOC-containing vapor.

5.1 Extraction Port Configuration and Target Operating Conditions

The planned layout of the EPs, overhead vacuum piping network, and vapor extraction equipment to be installed as part of the SSD system is shown on Figure 7. Based on the pilot test results, we infer that vapor extraction from six EPs operating simultaneously will effectively depressurize the areas depicted on Figure 7. These six ports, listed in bold in Exhibit 4.5 above, were selected because they exhibited favorable test results with respect to applied vacuum, corresponding extraction rate, and area of depressurization. In combination, we believe they will meet the design goals.

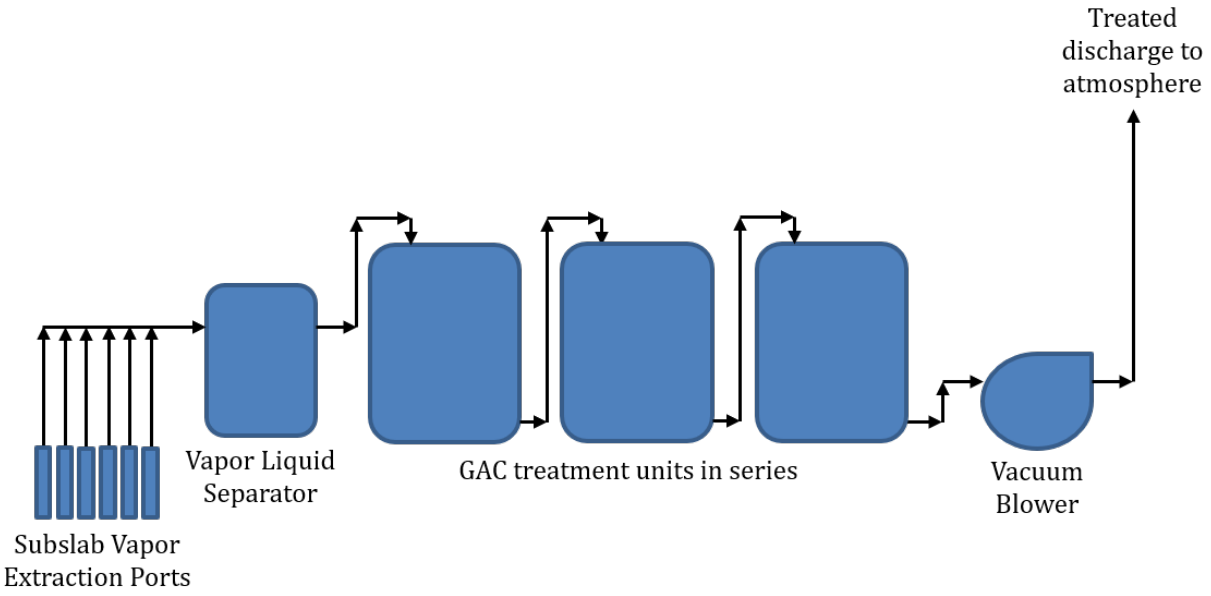
The design target vacuum level at the EPs will be approximately 20 to 40 in. wc (depending on location) because these vacuum levels provide a reasonable balance among extraction flow rate, vacuum influence, and the efficient operating range of blower capacity. At these target applied vacuum levels, we estimate the combined vapor extraction rate would be approximately 570 cfm. The actual withdrawal rate during simultaneous extraction from the six-well network will likely be lower than estimated due in part to superposition effects and competition among EPs. Overall, the EP network and target operating conditions will provide for operating flexibility and redundancy via overlapping areas of influence.

Additional EPs can be added if appropriate based on the results of system startup performance testing.

5.2 Process Flow Diagram

The planned process flow diagram for the SSD system is shown in Exhibit 5.1 below. Subslab soil vapor will be withdrawn from the extraction ports using a regenerative vacuum blower. Before entering the blower, the vapor will pass through a vapor-liquid separator, followed by three granular activated carbon (GAC) units plumbed in series. Placing the GAC units on the suction side of the blowers has several advantages, including 1) maintaining all pipe and equipment with untreated VOC-containing vapor under vacuum, and 2) eliminating the need for a blower aftercooler, which would otherwise be needed on the blower discharge to reduce the temperature prior to GAC treatment. The blower exhaust will be discharged outside via an exhaust stack installed above the building roofline and away from building doors, windows, and outside air intakes.

Exhibit 5.1 – SSD System Process Flow Diagram



The vacuum blower for the system will be sized to achieve an applied vacuum at the extraction ports of approximately 20 to 40 in. wc, and a vapor extraction rate of about 570 cfm. The blower will be sized to account for combined head losses through the piping network, vapor liquid separator, and GAC-filled vessels. The blower will be a regenerative type blower, such as FPZ's Model K12-MS, with an estimated 20 horsepower motor and variable frequency drive (VFD). The VFD will allow for operational flexibility, as well as lower power consumption when operating at conditions less than the capacity of the blower.

5.3 VOC Mass Removal and Treatment

The projected initial VOC mass removal rate from the six EPs is estimated to be approximately 0.14 pounds per hour (lb/hr) (3.4 lb/day) based on the results of the pilot

testing. Over time, we expect the actual VOC mass removal rate will decrease according to an exponential decay curve that will approach an asymptote that represents the mass transfer limitations in the subsurface. Although the emission rate of 0.14 lb/hr is below the threshold of 0.5 lb/hr that would require air pollution controls under NYSDEC Division of Environmental Remediation guidelines,[6] installation of GAC for emissions control is planned. VOC mass in the vapor stream will be treated using 700 lb capacity GAC units installed in a lead-lag-polish configuration. Assuming adsorption capacity of about 0.1 VOC per lb GAC, and the initial average VOC loading will be 50% of that observed during pilot testing (i.e., 1.7 lb/day), 700 lb of GAC would need to be replaced after about 40 days. The GAC replacement frequency will gradually decrease as the VOC mass recovery rate declines.

Monitoring of VOC breakthrough of the GAC units will be conducted, and when the units have exhausted their capacity, the spent GAC will be replaced with fresh GAC. Spent GAC will be transported off-site for reactivation or disposal.

In the future, IBM may re-evaluate the use of emissions controls. In that event, an air quality impact analysis will be conducted in accordance with NYSDEC Division of Air Resources guidance, and IBM will seek the review and approval of the Departments before removing emissions controls.

5.4 System Location and Alarm Monitoring

The SSD and treatment equipment for the system will be installed within an enclosure located outside the south end of B310 (see Figure 7). Vapor conveyance piping installed from the EPs to the blower will be under vacuum, limiting the potential for fugitive VOC emissions. The discharge from the vacuum blower will be piped to an exhaust stack that will terminate above the building roofline and away from outside air intakes.

The EP riser pipes will be installed with monitoring and sampling ports, and pressure indicator gauges to observe performance. In addition, the system will be equipped with sensors, alarms (e.g., low vacuum, power outage), and an auto-dialer that will automatically communicate such alarms to the appropriate personnel.

6.0 CONCLUSIONS

The results of this work have met the objectives of: 1) evaluating the feasibility of subslab vapor extraction to control air pressure gradients across the floor slab and reduce the potential for vapor intrusion to affect indoor air quality, and 2) gathering sufficient information to prepare a conceptual design for an effective SSD system.

A design basis for the SSD and treatment system has been developed from the results of pilot testing. The design basis is intended to achieve subslab depressurization beneath the southern portion of B310, while conservatively providing for operating flexibility and redundancy.

[6] NYSDEC, Division of Environmental Remediation, Internal memorandum from Dale Desnoyers, "Substantive Compliance with Air Requirements", February 28, 2003.

IBM is moving forward with the detailed design and is currently targeting construction beginning in the first quarter of 2020, and startup in the third quarter of 2020. Consistent with similar practice at other site in New York State for which IBM is responsible, IBM understands that construction and operation of the SSD system can proceed once the Departments have accepted this report.

After the startup of the SSD system, IBM intends to conduct system performance monitoring and indoor air sampling, the results of which will be submitted to the Departments in a report of construction completion and startup.

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TABLES

TABLE 1
Summary of Subslab Vapor Sample Analytical Results
Subslab Depressurization Conceptual Design Report - Building 310
Former IBM East Fishkill Facility
Hopewell Junction, New York

Analyte	Sample Location	SS11	SS12	SS13	SS21	SS155	SS156	SS157	SS158
	Collection Date	05/22/19	05/22/19	09/05/19	09/05/19	05/22/19	05/22/19	05/22/19	05/22/19
Acetone	µg/m^3	63	34	<30	<600	140	<150	<240	520
Benzene	µg/m^3	<4.0	<3.9	<4.0	<81	<4.6	<21	<32	<4.0
Carbon tetrachloride	µg/m^3	<8.0	<7.7	<8.0	<160	<9.1	<41	<64	<7.9
Chlorobenzene (Monochlorobenzene)	µg/m^3	<5.8	<5.7	<5.8	<120	<6.7	<30	<47	<5.8
Dichlorobenzene (1,2-)	µg/m^3	<7.6	<7.4	<7.6	<150	<8.7	<39	<61	<7.5
Dichlorobenzene (1,3-)	µg/m^3	<7.6	<7.4	<7.6	<150	<8.7	<39	<61	<7.5
Dichlorobenzene (1,4-)	µg/m^3	<7.6	<7.4	<7.6	<150	<8.7	<39	<61	<7.5
Dichlorodifluoromethane (CFC12)	µg/m^3	630	<6.1	<6.3	<130	<7.2	<32	<50	28
Dichloroethene (1,1-)	µg/m^3	<5.0	<4.9	<5.0	<100	<5.7	<26	<40	<5.0
Dichloroethene (cis-1,2-)	µg/m^3	27	<4.9	<5.0	<100	<5.7	26	<40	<5.0
Ethane, 1,1,2-trichloro-1,2,2-trifluoro- (CFC113)	µg/m^3	46	11	560	1,700	<11	1,000	410	28
Ethylbenzene	µg/m^3	<5.5	<5.3	<5.5	<110	<6.3	<28	<44	<5.4
Methylene Chloride (Dichloromethane)	µg/m^3	<44	<43	<44	<880	<50	<220	<350	<43
Tetrachloroethene (PCE)	µg/m^3	1,400	240	3,000	32,000	66	5,000	10,000	540
Toluene	µg/m^3	<4.8	<4.6	<4.8	<96	32	39	55	27
Trichlorobenzene (1,2,4-)	µg/m^3	<38	<36	<38	<760	<43	<190	<300	<37
Trichloroethane (1,1,1-)	µg/m^3	13	<6.7	10	270	<7.9	80	130	<6.8
Trichloroethene (TCE)	µg/m^3	2,200	99	360	28,000	28	10,000	18,000	290
Trichlorofluoromethane (CFC11)	µg/m^3	14	8.1	95	<140	<8.1	<36	<57	12
Vinyl chloride	µg/m^3	<3.2	<3.1	<3.2	<65	<3.7	<17	<26	<3.2
Xylene (m,p-)	µg/m^3	<5.5	<5.3	<5.5	<110	<6.3	<28	<44	<5.4
Xylene (o-)	µg/m^3	<5.5	<5.3	<5.5	<110	<6.3	<28	<44	<5.4

Notes:

1. Samples were collected by Sanborn Head on the dates indicated in Summa canisters over an approximately 1-hour sampling period. The samples were analyzed by Eurofins Air Toxics, Inc. (EATI) of Folsom, California for the project-specific list of volatile organic compounds (VOCs) by United States Protection Agency (USEPA) Method TO-15 in the full scan mode.

2. Results are presented in micrograms per cubic meter (µg/m^3).

3. "<" indicates the analyte was not detected above the indicated reporting limit.

TABLE 1
Summary of Subslab Vapor Sample Analytical Results
Subslab Depressurization Conceptual Design Report - Building 310
Former IBM East Fishkill Facility
Hopewell Junction, New York

Analyte	Sample Location	SS159	SS159 Dup	SS160	SS161	SS162	SS163	SS164	SS165	SS166
	Collection Date	05/22/19	05/22/19	05/22/19	05/22/19	05/22/19	05/22/19	05/22/19	05/22/19	05/22/19
Acetone	µg/m^3	<580	<570	<430	45	100	69	170	85	76
Benzene	µg/m^3	<79	<77	<58	<4.2	<4.1	<4.1	<3.9	<8.0	<4.1
Carbon tetrachloride	µg/m^3	<160	<150	<110	<8.2	<8.0	<8.0	<7.6	<16	<8.1
Chlorobenzene (Monochlorobenzene)	µg/m^3	<110	<110	<83	<6.0	<5.9	<5.9	<5.6	<12	<5.9
Dichlorobenzene (1,2-)	µg/m^3	<150	<140	<110	<7.9	<7.7	<7.7	<7.3	<15	<7.8
Dichlorobenzene (1,3-)	µg/m^3	<150	<140	<110	<7.9	<7.7	<7.7	<7.3	<15	<7.8
Dichlorobenzene (1,4-)	µg/m^3	<150	<140	<110	<7.9	<7.7	<7.7	<7.3	<15	<7.8
Dichlorodifluoromethane (CFC12)	µg/m^3	<120	<120	<89	1,400	9.0	8.1	17	3,200	510
Dichloroethene (1,1-)	µg/m^3	<98	<96	<72	<5.2	<5.0	<5.1	<4.8	<10	<5.1
Dichloroethene (cis-1,2-)	µg/m^3	<98	98	<72	<5.2	<5.0	<5.1	<4.8	<10	<5.1
Ethane, 1,1,2-trichloro-1,2,2-trifluoro- (CFC113)	µg/m^3	9,000	9,100	1,800	130	52	460	350	48	96
Ethylbenzene	µg/m^3	<110	<100	<78	<5.7	<5.5	<5.6	<5.2	<11	<5.6
Methylene Chloride (Dichloromethane)	µg/m^3	<860	<840	<630	<46	<44	<44	<42	<87	<45
Tetrachloroethene (PCE)	µg/m^3	38,000	38,000	10,000	2,600	820	1,000	790	730	550
Toluene	µg/m^3	<93	<91	<68	15	15	15	18	22	12
Trichlorobenzene (1,2,4-)	µg/m^3	<730	<720	<540	<39	<38	<38	<36	<75	<38
Trichloroethane (1,1,1-)	µg/m^3	970	990	250	19	<7.0	<7.0	<6.6	<14	<7.0
Trichloroethene (TCE)	µg/m^3	44,000	45,000	32,000	1,900	400	620	45	370	120
Trichlorofluoromethane (CFC11)	µg/m^3	<140	<140	<100	30	14	180	15	20	8.6
Vinyl chloride	µg/m^3	<63	<62	<46	<3.3	<3.2	<3.3	<3.1	<6.4	<3.3
Xylene (m,p-)	µg/m^3	<110	<100	<78	<5.7	<5.5	<5.6	<5.2	<11	<5.6
Xylene (o-)	µg/m^3	<110	<100	<78	<5.7	<5.5	<5.6	<5.2	<11	<5.6

Notes:

1. Samples were collected by Sanborn Head on the dates indicated in Summa canisters over an approximately 1-hour sampling period. The samples were analyzed by Eurofins Air Toxics, Inc. (EATI) of Folsom, California for the project-specific list of volatile organic compounds (VOCs) by United States Protection Agency (USEPA) Method TO-15 in the full scan mode.

2. Results are presented in micrograms per cubic meter (µg/m^3).

3. "<" indicates the analyte was not detected above the indicated reporting limit.

TABLE 1
Summary of Subslab Vapor Sample Analytical Results
Subslab Depressurization Conceptual Design Report - Building 310
Former IBM East Fishkill Facility
Hopewell Junction, New York

Analyte	Sample Location	SS167	SS168	SS169	SS170	SS171	SS172	SS173	SS173 Dup	SS174
	Collection Date	05/22/19	05/22/19	05/22/19	05/22/19	05/22/19	05/22/19	09/05/19	09/05/19	09/05/19
Acetone	µg/m^3	56	76	59	<300	<590	<410	<110	<120	<28
Benzene	µg/m^3	<4.0	<9.0	<6.8	<41	<80	<56	<38	<40	<3.8
Carbon tetrachloride	µg/m^3	<7.9	<18	<13	<80	<160	<110	<76	<78	<7.6
Chlorobenzene (Monochlorobenzene)	µg/m^3	<5.8	<13	<9.8	<59	<110	<80	<55	<57	<5.5
Dichlorobenzene (1,2-)	µg/m^3	<7.5	<17	<13	<77	<150	<100	<72	<74	<7.2
Dichlorobenzene (1,3-)	µg/m^3	<7.5	<17	<13	<77	<150	<100	<72	<74	<7.2
Dichlorobenzene (1,4-)	µg/m^3	<7.5	<17	<13	<77	<150	<100	<72	<74	<7.2
Dichlorodifluoromethane (CFC12)	µg/m^3	220	490	420	580	580	470	<60	<61	6.1
Dichloroethene (1,1-)	µg/m^3	<5.0	<11	<8.4	<50	<99	<69	<48	<49	<4.8
Dichloroethene (cis-1,2-)	µg/m^3	45	62	120	<50	<99	<69	120	120	<4.8
Ethane, 1,1,2-trichloro-1,2,2-trifluoro- (CFC113)	µg/m^3	220	3,300	390	5,200	16,000	14,000	4,300	4,600	500
Ethylbenzene	µg/m^3	<5.4	<12	<9.2	<55	<110	<76	<52	<54	<5.2
Methylene Chloride (Dichloromethane)	µg/m^3	<43	<98	<74	<440	<860	<600	<170	<170	<42
Tetrachloroethene (PCE)	µg/m^3	1,400	7,300	2,900	20,000	53,000	34,000	14,000	15,000	1,600
Toluene	µg/m^3	14	14	16	<48	<94	<66	<45	<47	<4.5
Trichlorobenzene (1,2,4-)	µg/m^3	<37	<84	<63	<380	<740	<520	<360	<370	<36
Trichloroethane (1,1,1-)	µg/m^3	29	59	44	82	<140	<95	340	380	7.1
Trichloroethene (TCE)	µg/m^3	2,300	5,900	3,900	10,000	13,000	7,500	58,000	59,000	1,400
Trichlorofluoromethane (CFC11)	µg/m^3	<7.0	58	12	160	450	420	82	94	54
Vinyl chloride	µg/m^3	<3.2	<7.2	<5.4	<32	<64	<44	<31	<32	<3.1
Xylene (m,p-)	µg/m^3	<5.4	<12	<9.2	<55	<110	<76	<52	<54	<5.2
Xylene (o-)	µg/m^3	<5.4	<12	<9.2	<55	<110	<76	<52	<54	<5.2

Notes:

1. Samples were collected by Sanborn Head on the dates indicated in Summa canisters over an approximately 1-hour sampling period. The samples were analyzed by Eurofins Air Toxics, Inc. (EATI) of Folsom, California for the project-specific list of volatile organic compounds (VOCs) by United States Protection Agency (USEPA) Method TO-15 in the full scan mode.

2. Results are presented in micrograms per cubic meter (µg/m^3).

3. "<" indicates the analyte was not detected above the indicated reporting limit.

TABLE 1
Summary of Subslab Vapor Sample Analytical Results
Subslab Depressurization Conceptual Design Report - Building 310
Former IBM East Fishkill Facility
Hopewell Junction, New York

Analyte	Sample Location	SS175	SS176	SS177	SS178	SS179	SS180	SS181	SS182
	Collection Date	09/05/19	09/05/19	09/05/19	09/05/19	09/05/19	09/05/19	09/05/19	09/05/19
Acetone	µg/m^3	<420	50	<390	<60	31	51	510	5900
Benzene	µg/m^3	<56	<4.2	<52	<8.1	<3.9	<4.0	<11	<43
Carbon tetrachloride	µg/m^3	<110	<8.3	<100	<16	<7.8	<8.0	<22	<86
Chlorobenzene (Monochlorobenzene)	µg/m^3	<80	<6.0	<75	<12	<5.7	<5.8	<16	<63
Dichlorobenzene (1,2-)	µg/m^3	<100	<7.9	<98	<15	<7.4	<7.6	<21	<82
Dichlorobenzene (1,3-)	µg/m^3	<100	<7.9	<98	<15	<7.4	<7.6	<21	<82
Dichlorobenzene (1,4-)	µg/m^3	<100	<7.9	<98	<15	<7.4	<7.6	<21	<82
Dichlorodifluoromethane (CFC12)	µg/m^3	<86	<6.5	280	19	<6.1	<6.3	<17	<67
Dichloroethene (1,1-)	µg/m^3	<69	<5.2	<65	<10	<4.9	<5.0	<14	<54
Dichloroethene (cis-1,2-)	µg/m^3	<69	<5.2	<65	<10	<4.9	<5.0	<14	<54
Ethane, 1,1,2-trichloro-1,2,2-trifluoro- (CFC113)	µg/m^3	1,800	440	270	2,700	270	26	100	620
Ethylbenzene	µg/m^3	<76	<5.7	<71	<11	<5.4	<5.5	<15	<59
Methylene Chloride (Dichloromethane)	µg/m^3	<610	<46	<570	<88	<43	<44	<120	<470
Tetrachloroethene (PCE)	µg/m^3	6,100	1,500	33,000	3,600	3,000	660	6,500	5,400
Toluene	µg/m^3	<66	<5.0	<61	<9.6	<4.6	<4.8	<13	<51
Trichlorobenzene (1,2,4-)	µg/m^3	<520	<39	<480	<76	<37	<38	<100	<400
Trichloroethane (1,1,1-)	µg/m^3	120	<7.2	<89	<14	<6.7	<6.9	<19	<74
Trichloroethene (TCE)	µg/m^3	20,000	760	21,000	490	770	280	440	240
Trichlorofluoromethane (CFC11)	µg/m^3	<98	98	<92	290	68	74	110	110
Vinyl chloride	µg/m^3	<45	<3.4	<42	<6.5	<3.2	<3.2	<9.0	<35
Xylene (m,p-)	µg/m^3	<76	<5.7	<71	<11	<5.4	<5.5	<15	<59
Xylene (o-)	µg/m^3	<76	<5.7	<71	<11	<5.4	<5.5	<15	<59

Notes:

1. Samples were collected by Sanborn Head on the dates indicated in Summa canisters over an approximately 1-hour sampling period. The samples were analyzed by Eurofins Air Toxics, Inc. (EATI) of Folsom, California for the project-specific list of volatile organic compounds (VOCs) by United States Protection Agency (USEPA) Method TO-15 in the full scan mode.

2. Results are presented in micrograms per cubic meter (µg/m^3).

3. "<" indicates the analyte was not detected above the indicated reporting limit.

TABLE 2
Summary of Subslab Vapor Extraction Pilot Test Analytical Results
Subslab Depressurization Conceptual Design Report -
Building 310
Former IBM East Fishkill Facility
Hopewell Junction, New York

Sample Location	Collection Date	Concentrations in µg/m^3					
		VC	t-1,2-DCE	c-1,2-DCE	TCE	PCE	Total VOCs
EP211	06/18/19	<3.2	<4.9	11	1,500	920	2,400
EP212	06/18/19	<33	<52	400	17,000	7,200	25,000
EP212_EP215	06/20/19	<25	<38	300	13,000	6,300	20,000
EP213	06/19/19	<20	<32	260	10,000	5,200	15,000
EP214	06/19/19	<30	<46	110	13,000	17,000	30,000
EP215	06/19/19	<6.2	<9.6	<9.6	1,000	4,100	5,100
EP216	06/19/19	<6.7	<10	<10	2,000	6,600	8,600
EP217	06/19/19	<5.6	<8.8	<8.8	1,200	3,200	4,400
EP218	09/18/19	<29	<45	1,500	91,000	40,000	130,000
EP219	09/18/19	<2.9	<4.5	<4.5	370	650	1,000
EP220	09/17/19	<30	<47	83	52,000	13,000	65,000
EP220_EP222	09/18/19	<60	<92	<92	21,000	6,700	28,000
EP221	09/17/19	<31	<48	<48	38,000	12,000	50,000
EP222	09/17/19	<3.0	<4.6	<4.6	87	440	530
EP223	09/17/19	<3.1	<4.8	<4.8	110	1,400	1,500

Notes:

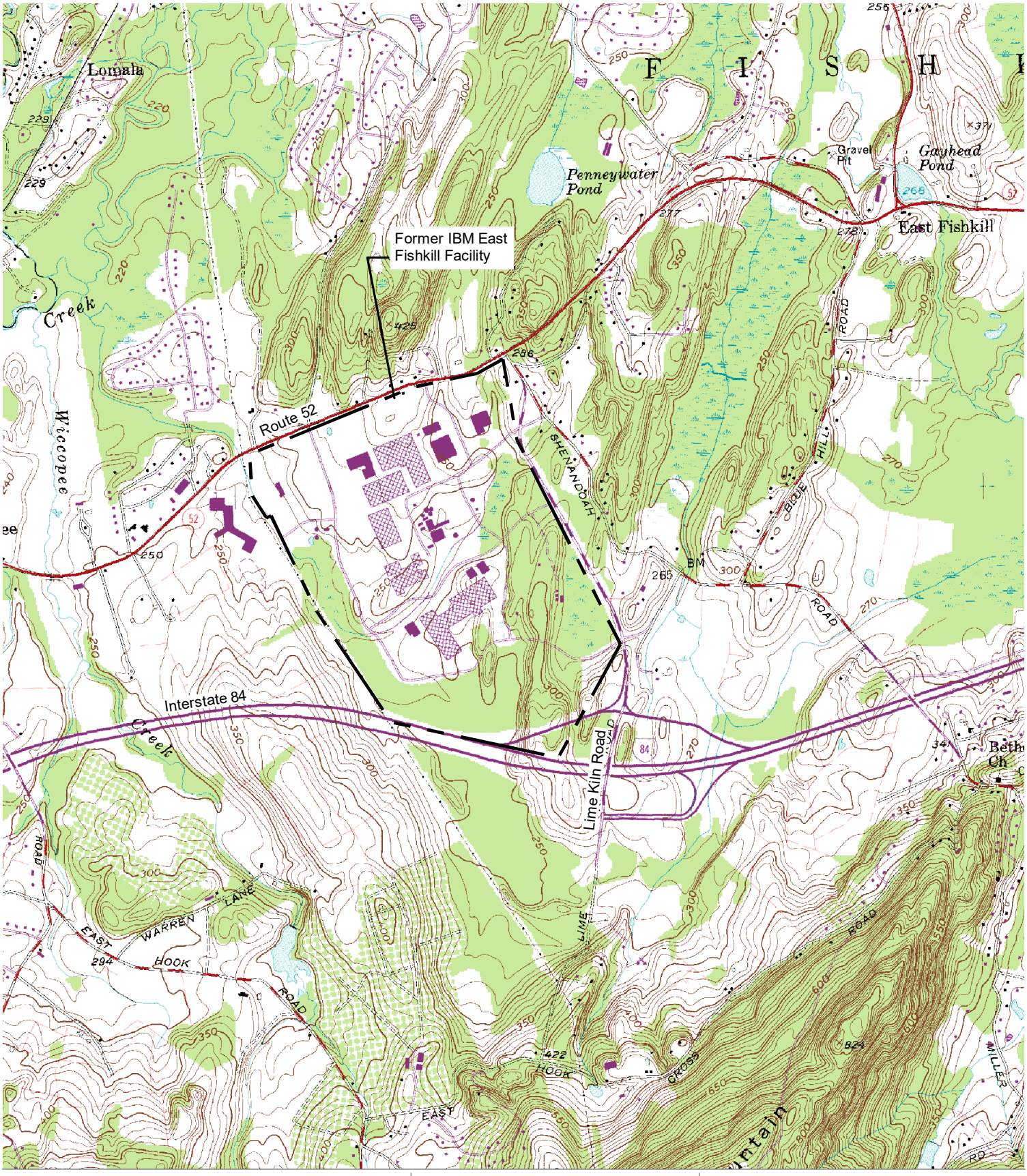
1. Samples were collected by Sanborn Head on the dates indicated. Samples were grab samples collected in Summa canisters during subslab vapor extraction pilot testing, and were collected once the pilot test field parameters stabilized. The samples were analyzed by Eurofins Air Toxics, Inc. (EATI) of Folsom, California for the project-specific list of volatile organic compounds (VOCs) by United States Protection Agency (USEPA) Method TO-15 in the full scan mode.

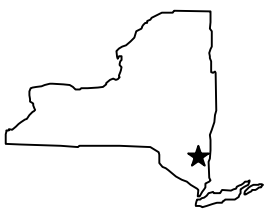
2. "<" indicates the analyte was not detected above the indicated laboratory reporting limit.

3. Total VOCs are the sum of the detected concentrations of VOCs rounded to two significant figures.

4. Abbreviations:
   VC = vinyl chloride
   t-1,2-DCE = trans-1,2-dichloroethene
   c-1,2-DCE = cis-1,2-dichloroethene
   TCE = trichloroethene
   PCE = tetrachloroethene

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: 2999.13
Date: November 2019

1,000' 0 2,000' Feet

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Figure 1

Site Location Plan

Subslab Depressurization Conceptual Design Report - Building 310

Former IBM East Fishkill Facility
Hopewell Junction, New York

Figure 2

B310 Location Plan

Subslab Depressurization Conceptual Design Report - Building 310

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By: E. Wright
Designed By: J. Sanborn
Reviewed By: D. Shea
Project No: 2999.13
Date: November 2019

Figure Narrative

This figure shows the buildings at the former IBM East Fishkill facility. Building B310 is highlighted.

Legend

- Property Line
- Unlabeled features include wastewater treatment tanks, pump houses, trailers, and other structures and features not intended for human occupancy
- B310 — Indicates building number
- Indicates the location of B310

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

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File:P:\2990s\2999.00\Graphics Files\CAD\B310\B310 SSD Concept Design\B310_SSD_LocationPlan.dwg Plot Date: 10-24-19

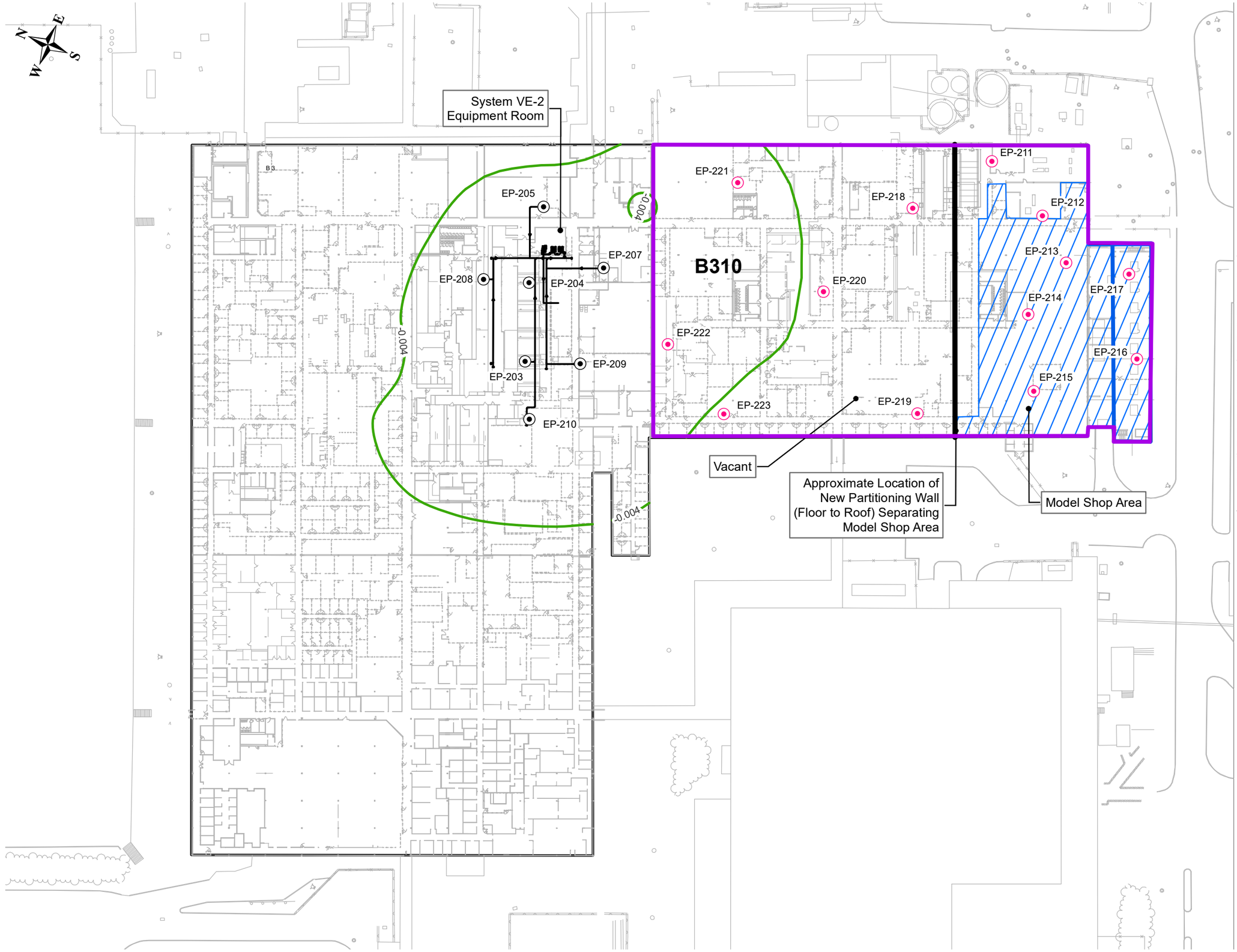

Figure 3

Building 310 Layout

Subslab Depressurization Conceptual Design Report - Building 310

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	E. Wright / H. Pothier
Designed By:	J. Corsello
Reviewed By:	D. Shea
Project No:	2999.13
Date:	November 2019

Figure Narrative

This figure shows the extent of the proposed subslab depressurization (SSD) system located in the southern portion of Building 310. Note that most of the interior walls and rooms in Building 310 have been demolished and the building cleared. The building layout reflects the pre-demolition conditions.

This figure also shows the location of the currently occupied Model Shop area to the south, and the layout of the existing SSD System VE-2 to the north, including the approximate area of subslab vapor vacuum influence. The presumed area of vacuum influence represents the inferred apparent vacuum conditions based on subslab differential pressure readings collected on December 18, 2018.

Legend

- System VE-2 active subslab extraction port
- Subslab vapor extraction port (currently inactive)
- Occupied areas
- Existing overhead vacuum piping for System VE-2
- Inferred area of vacuum influence for System VE-2
- Extent of proposed SSD system
- Basement

40 20 0 40 80 Feet

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Last Edited By: hpothier

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Figure 4

Subslab Port Location Plan

Subslab Depressurization Conceptual Design Report - Building 310

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	E. Wright
Designed By:	J. Corsello
Reviewed By:	D. Shea
Project No:	2999.13
Date:	November 2019

Figure Narrative

This figure shows the location and designation of existing and new subslab vapor monitoring ports and extraction ports in Building 310. The new ports were installed by Sanborn Head personnel in May and September 2019.

Legend

- Existing Subslab Vapor Monitoring Port
- System VE-2 active subslab extraction port
- New Subslab Vapor Monitoring Port
- New Subslab Vapor Extraction Port
- Approximate Location of Subslab Acid Waste Drains and Cleanouts
- Basement
- -0.004 Approximate extent of subslab vacuum influence from System VE-2 (inches of water column)

B310

Vacant

Approximate Location of New Partitioning Wall (Floor to Roof) Separating Model Shop Area

Model Shop Area

N W E S

20 10 0 20 40 Feet

SANBORN HEAD ENGINEERING

Figure 5

Summary of PCE Concentrations in Subslab Vapor

Subslab Depressurization Conceptual Design Report - Building 310

Former IBM East Fishkill Facility

Hopewell Junction, New York

Drawn By:	H. Pothier
Designed By:	J. Corsello
Reviewed By:	D. Shea
Project No:	2999.13
Date:	November 2019

Figure Narrative

This figure shows the concentrations of tetrachloroethene (PCE) detected in subslab vapor samples in micrograms per cubic meter (ug/m^3). Subslab vapor samples were collected on May 22 and September 5, 2019 into 1-L Summa canisters equipped with 1-hour flow controllers. The colored shading represents inferred PCE concentrations below the slab based onthe results of the samples collected at the monitoring ports. Other interpretations are possible. Refer to Table 1 for other analyte concentrations.

Legend

- Subslab Vapor Monitoring Port
- System VE-2 active subslab extraction port
- New Subslab Vapor Extraction Port
- Approximate Location of Subslab Acid Waste Drains and Cleanouts
- Basement
- 820 — PCE Concentration in Subslab Vapor Sample (µg/m³)

PCE Concentrations (µg/m³)

- <1,000
- 1,000 10,000
- 10,000 - 50,000
- >50,000

Ports north of column line A14 were not sampled as part of this work.

B310

Vacant

Approximate Location of New Partitioning Wall (Floor to Roof) Separating Model Shop Area

Model Shop Area

20 10 0 20 40 Feet

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Last Edited By: hpothier

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Figure 6

Summary of TCE Concentrations in Subslab Vapor

Subslab Depressurization Conceptual Design Report - Building 310

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	H. Pothier
Designed By:	J. Corsello
Reviewed By:	D. Shea
Project No:	2999.13
Date:	November 2019

Figure Narrative

This figure shows the concentrations of trichloroethene (TCE) detected in subslab vapor samples in micrograms per cubic meter (ug/m^3). Subslab vapor samples were collected on May 22 and September 5, 2019 into 1-L Summa canisters equipped with 1-hour flow controllers. The colored shading represents inferred TCE concentrations below the slab based on the results of the samples collected at the monitoring ports. Other interpretations are possible. Refer to Table 1 for other analyte concentrations

Legend

- Subslab Vapor Monitoring Port
- System VE-2 active subslab extraction port
- New Subslab Vapor Extraction Port
- Approximate Location of Subslab Acid Waste Drains and Cleanouts
- Basement
- 400 — TCE Concentration in Subslab Vapor Sample (µg/m³)

TCE Concentrations (µg/m³)

- <1,000
- 1,000 10,000
- 10,000 - 50,000
- >50,000

N E S W

20 10 0 20 40 Feet

SANBORN HEAD ENGINEERING

Ports north of column line A14 were not sampled as part of this work.

B310

Vacant

Approximate Location of New Partitioning Wall (Floor to Roof) Separating Model Shop Area

Model Shop Area

Last Edited By: hpothier

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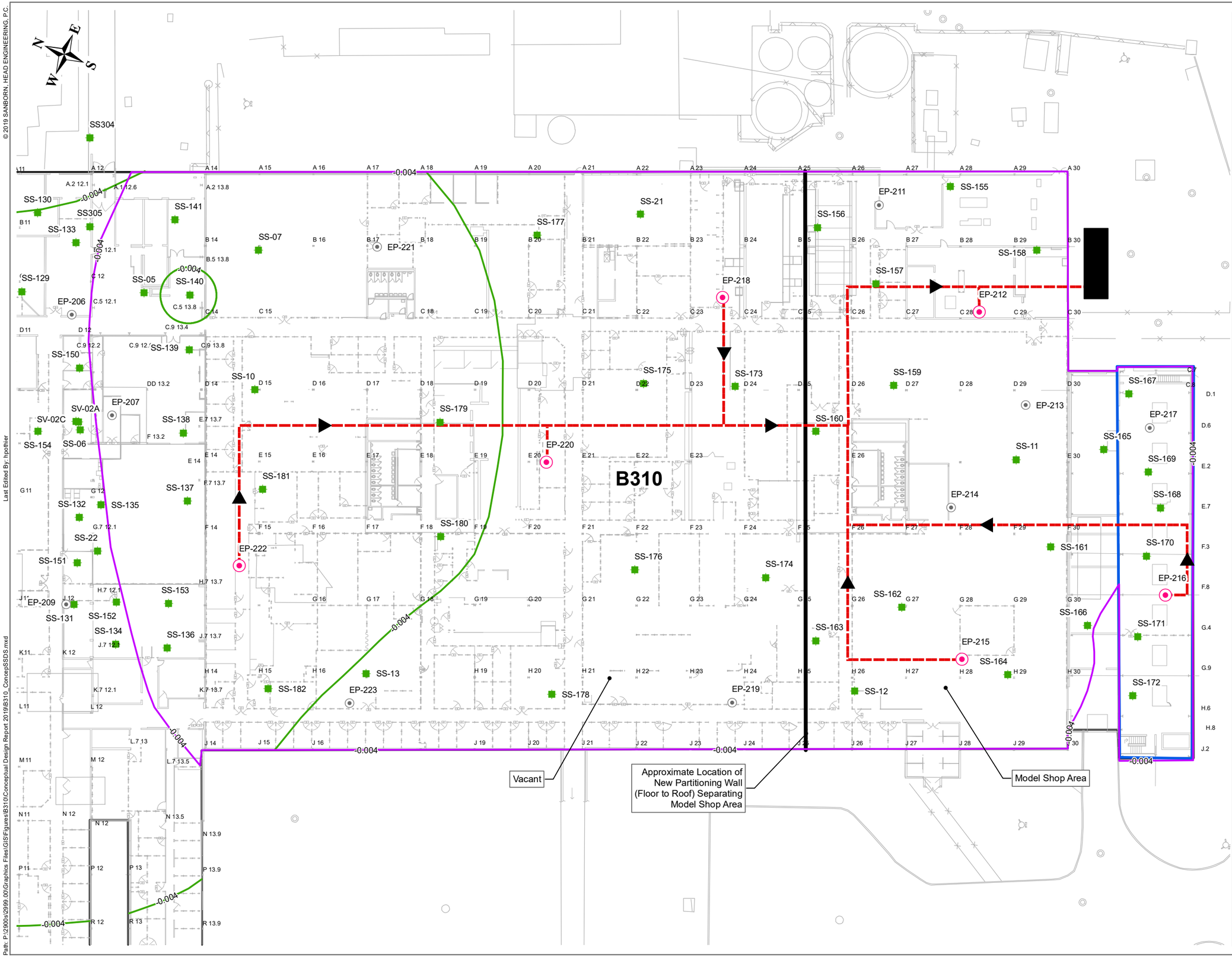

Figure 7

Conceptual Subslab Depressurization System Layout

Subslab Depressurization Conceptual Design Report - Building 310

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	E. Wright
Designed By:	J. Corsello
Reviewed By:	D. Shea
Project No:	2999.13
Date:	November 2019

Figure Narrative

This figure shows the inferred combined subslab pressure response from vapor extraction at the six extraction ports planned for the subslab depressurization (SSD) system. The subslab pressure response represents the outer limit of the -0.004 inches of water column (in. wc) differential pressure measurement based on the aggregate of individual vapor extraction test results. Individual vapor extraction test results are presented in Appendix B of this report.

This figure also shows the proposed layout of the subslab vapor extraction ports, overhead vacuum pipe, and system equipment container to be installed as part of the SSD system in B310. The vacuum pipe route and system equipment container location are approximate and subject to change based on field conditions.

Legend

- Subslab Vapor Monitoring Port
- Subslab Vapor Extraction Port to be included in SSD System
- Subslab Vapor Extraction Port
- Overhead Vacuum Pipe and Flow Arrow
- Subslab Depressurization System Equipment Container
- Basement
- -0.004 — Inferred combined subslab pressure response to vapor extraction (inches of water column)
- -0.004 — Approximate extent of subslab vacuum influence from System VE-2 (inches of water column)

20 10 0 20 40 Feet

SANBORN | HEAD ENGINEERING

APPENDIX A

LIMITATIONS

APPENDIX A
SHPC LIMITATIONS

1. The findings and conclusions described in this report are based in part on the data obtained from a finite number of samples from widely spaced locations. The figures are intended to depict inferred conditions during a given period of time, consistent with available information. The actual conditions will vary from that shown, both spatially and temporally. Other interpretations are possible. The nature and extent of variations between sampling locations may not become evident until further investigation is initiated. If variations or other latent conditions then appear evident, it may be necessary to re-evaluate the conclusions of this report.

2. 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 exclusive 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

SUBSLAB PRESSURE RESPONSE TO VAPOR EXTRACTION TESTS

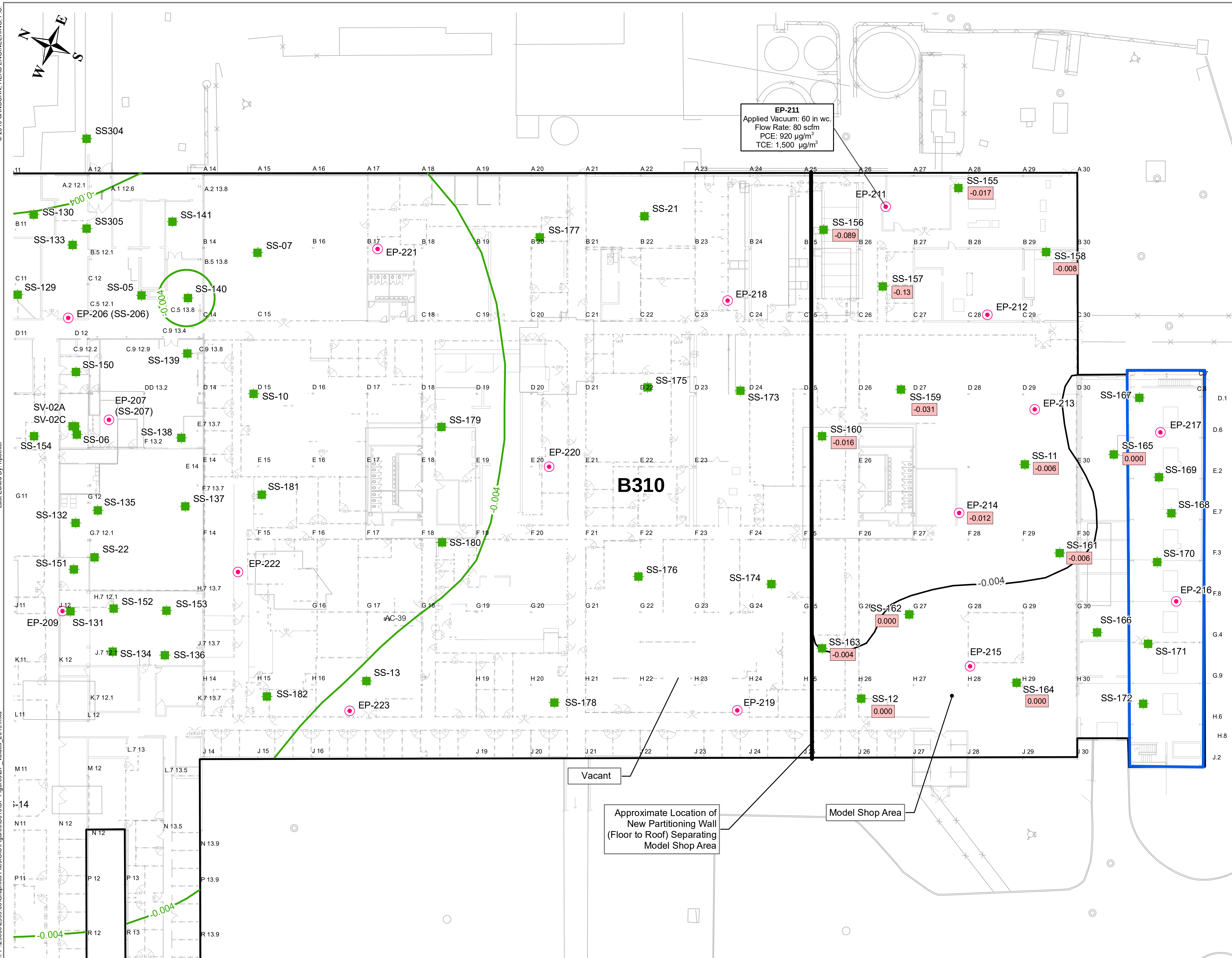

Figure B-1

Subslab Pressure Response to Vapor Extraction Testing

EP-211
Building 310

Former IBM East Fishkill Facility

Hopewell Junction, New York

Drawn By:	H. Pothier
Designed By:	J. Flood
Reviewed By:	D. Shea
Project No:	2999.13
Date:	November 2019

Figure Narrative

This figure shows the individual vapor extraction test data and inferred subslab pressure response observed during testing. Measurements were collected on June 18, 2019 with a digital micromanometer. Negative values indicate subsurface pressures less than indoor air pressure, or under vacuum, at the time of recording.

The contour represents the inferred apparent extent of vacuum conditions observed. Other interpretations are possible.

Legend

- Subslab Vapor Extraction Port
- Subslab Vapor Monitoring Port
- -0.004 — Differential pressure contour (inches of water column).
- EP-211 — Extraction Port
- in. wc — Applied Vacuum (extraction port) inches of water column (in. wc)
- scfm — Flow Rate (std. cu. ft. per min.)
- µg/m³ — Tetrachloroethene (PCE) (micrograms per cubic meter)
- µg/m³ — Trichloroethene (TCE) (micrograms per cubic meter)
- -0.006 — Observed pressure differential between the subslab and room during subslab vapor extraction test (in. wc.). Negative values indicate subslab pressure is less than indoor air pressure.
- Approximate extent of subslab vacuum influence from System VE-2 (inches of water column).
- Basement

20 10 0 20 40 Feet

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Figure B-2

Subslab Pressure Response to Vapor Extraction Testing

EP-212
Building 310

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	H. Pothier
Designed By:	J. Flood
Reviewed By:	D. Shea
Project No:	2999.13
Date:	November 2019

Figure Narrative

This figure shows the individual vapor extraction test data and inferred subslab pressure response observed during testing. Measurements were collected on June 18, 2019 with a digital micromanometer. Negative values indicate subsurface pressures less than indoor air pressure, or under vacuum, at the time of recording.

The contour represents the inferred apparent extent of vacuum conditions observed. Other interpretations are possible.

Legend

- Subslab Vapor Extraction Port
- Subslab Vapor Monitoring Port
- -0.004 — Differential pressure contour (inches of water column).
- **EP-212** — Extraction Port
- in. wc — Applied Vacuum (extraction port) inches of water column (in. wc)
- scfm — Flow Rate (std. cu. ft. per min.)
- µg/m³ — Tetrachloroethene (PCE) (micrograms per cubic meter)
- µg/m³ — Trichloroethene (TCE) (micrograms per cubic meter)
- -0.027 — Observed pressure differential between the subslab and room during subslab vapor extraction test (in. wc.). Negative values indicate subslab pressure is less than indoor air pressure.
- Approximate extent of subslab vacuum influence from System VE-2 (inches of water column).
- Basement

20 10 0 20 40 Feet

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Last Edited By: hpothier

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Figure B-3

Subslab Pressure Response to Vapor Extraction Testing

EP-213
Building 310

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	H. Pothier
Designed By:	J. Flood
Reviewed By:	D. Shea
Project No:	2999.13
Date:	November 2019

Figure Narrative

This figure shows the individual vapor extraction test data and inferred subslab pressure response observed during testing. Measurements were collected on June 19, 2019 with a digital micromanometer. Negative values indicate subsurface pressures less than indoor air pressure, or under vacuum, at the time of recording.

The contour represents the inferred apparent extent of vacuum conditions observed. Other interpretations are possible.

Legend

- Subslab Vapor Extraction Port
- Subslab Vapor Monitoring Port
- -0.004 — Differential pressure contour (inches of water column).
- EP-213 — Extraction Port
- in. wc — Applied Vacuum (extraction port) inches of water column (in. wc)
- scfm — Flow Rate (std. cu. ft. per min.)
- µg/m³ — Tetrachloroethene (PCE) (micrograms per cubic meter)
- µg/m³ — Trichloroethene (TCE) (micrograms per cubic meter)
- -0.006 — Observed pressure differential between the subslab and room during subslab vapor extraction test (in. wc.). Negative values indicate subslab pressure is less than indoor air pressure.
- Approximate extent of subslab vacuum influence from System VE-2 (inches of water column).
- Basement

20 10 0 20 40 Feet

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Figure B-4

Subslab Pressure Response to Vapor Extraction Testing

EP-214
Building 310

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	H. Pothier
Designed By:	J. Flood
Reviewed By:	D. Shea
Project No:	2999.13
Date:	November 2019

Figure Narrative

This figure shows the individual vapor extraction test data and inferred subslab pressure response observed during testing. Measurements were collected on June 19, 2019 with a digital micromanometer. Negative values indicate subsurface pressures less than indoor air pressure, or under vacuum, at the time of recording.

The contour represents the inferred apparent extent of vacuum conditions observed. Other interpretations are possible.

Legend

- Subslab Vapor Extraction Port
- Subslab Vapor Monitoring Port
- -0.004 — Differential pressure contour (inches of water column).
- EP-214 — Extraction Port
- in. wc — Applied Vacuum (extraction port) inches of water column (in. wc)
- scfm — Flow Rate (std. cu. ft. per min.)
- µg/m³ — Tetrachloroethene (PCE) (micrograms per cubic meter)
- µg/m³ — Trichloroethene (TCE) (micrograms per cubic meter)
- -0.005 — Observed pressure differential between the subslab and room during subslab vapor extraction test (in. wc.). Negative values indicate subslab pressure is less than indoor air pressure.
- Approximate extent of subslab vacuum influence from System VE-2 (inches of water column).
- Basement

20 10 0 20 40 Feet

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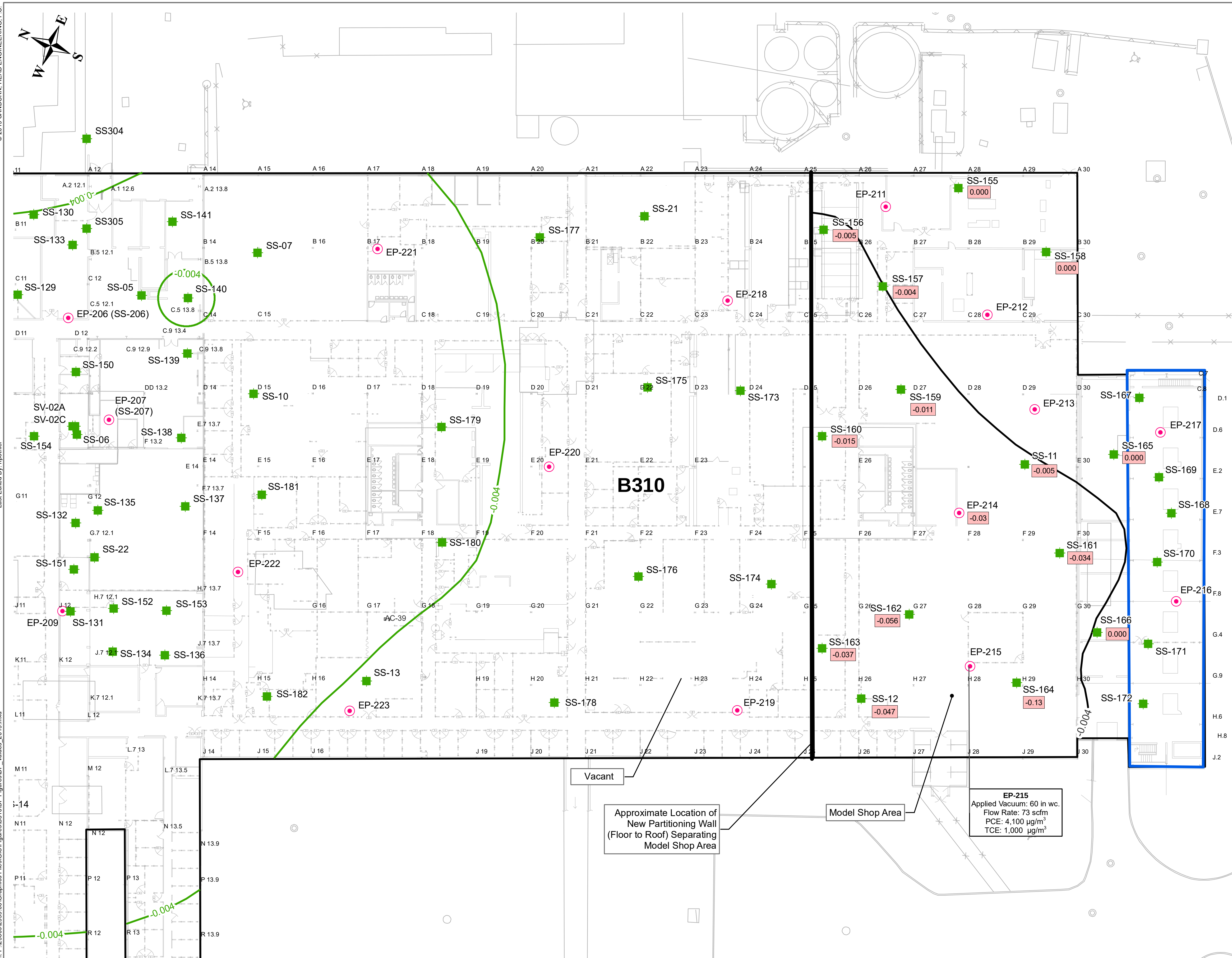

Figure B-5

Subslab Pressure Response to Vapor Extraction Testing

EP-215
Building 310

Former IBM East Fishkill Facility

Hopewell Junction, New York

Drawn By: H. Pothier
Designed By: J. Flood
Reviewed By: D. Shea
Project No: 2999.13
Date: November 2019

Figure Narrative

This figure shows the individual vapor extraction test data and inferred subslab pressure response observed during testing. Measurements were collected on June 19, 2019 with a digital micromanometer. Negative values indicate subsurface pressures less than indoor air pressure, or under vacuum, at the time of recording.

The contour represents the inferred apparent extent of vacuum conditions observed. Other interpretations are possible.

Legend

- Subslab Vapor Extraction Port
- Subslab Vapor Monitoring Port
- -0.004 — Differential pressure contour (inches of water column).
- EP-215 — Extraction Port
- in. wc — Applied Vacuum (extraction port) inches of water column (in. wc)
- scfm — Flow Rate (std. cu. ft. per min.)
- µg/m3 — Tetrachloroethene (PCE) (micrograms per cubic meter)
- µg/m3 — Trichloroethene (TCE) (micrograms per cubic meter)
- -0.005 — Observed pressure differential between the subslab and room during subslab vapor extraction test (in. wc.). Negative values indicate subslab pressure is less than indoor air pressure.
- Approximate extent of subslab vacuum influence from System VE-2 (inches of water column).
- Basement

Feet: 20 10 0 20 40

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Figure B-6

Subslab Pressure Response to Vapor Extraction Testing

EP-216
Building 310

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	H. Pothier
Designed By:	J. Flood
Reviewed By:	D. Shea
Project No:	2999.13
Date:	November 2019

Figure Narrative

This figure shows the individual vapor extraction test data and inferred subslab pressure response observed during testing. Measurements were collected on June 19, 2019 with a digital micromanometer. Negative values indicate subsurface pressures less than indoor air pressure, or under vacuum, at the time of recording.

The contour represents the inferred apparent extent of vacuum conditions observed. Other interpretations are possible.

Legend

- Subslab Vapor Extraction Port
- Subslab Vapor Monitoring Port
- -0.004 — Differential pressure contour (inches of water column).
- **EP-216** — Extraction Port
- in. wc — Applied Vacuum (extraction port) inches of water column (in. wc)
- scfm — Flow Rate (std. cu. ft. per min.)
- µg/m³ — Tetrachloroethene (PCE) (micrograms per cubic meter)
- µg/m³ — Trichloroethene (TCE) (micrograms per cubic meter)
- 0.000 — Observed pressure differential between the subslab and room during subslab vapor extraction test (in. wc.). Negative values indicate subslab pressure is less than indoor air pressure.
- Approximate extent of subslab vacuum influence from System VE-2 (inches of water column).
- Basement

20 10 0 20 40 Feet

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Figure B-7

Subslab Pressure Response to Vapor Extraction Testing

EP-217
Building 310

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	H. Pothier
Designed By:	J. Flood
Reviewed By:	D. Shea
Project No:	2999.13
Date:	November 2019

Figure Narrative

This figure shows the individual vapor extraction test data and inferred subslab pressure response observed during testing. Measurements were collected on June 19, 2019 with a digital micromanometer. Negative values indicate subsurface pressures less than indoor air pressure, or under vacuum, at the time of recording.

The contour represents the inferred apparent extent of vacuum conditions observed. Other interpretations are possible.

Legend

- Subslab Vapor Extraction Port
- Subslab Vapor Monitoring Port
- -0.004 — Differential pressure contour (inches of water column).
- **EP-217** — Extraction Port
- in. wc — Applied Vacuum (extraction port) inches of water column (in. wc)
- scfm — Flow Rate (std. cu. ft. per min.)
- µg/m³ — Tetrachloroethene (PCE) (micrograms per cubic meter)
- µg/m³ — Trichloroethene (TCE) (micrograms per cubic meter)
- -0.005 — Observed pressure differential between the subslab and room during subslab vapor extraction test (in. wc.). Negative values indicate subslab pressure is less than indoor air pressure.
- Approximate extent of subslab vacuum influence from System VE-2 (inches of water column).
- Basement

20 10 0 20 40 Feet

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Figure B-8

Subslab Pressure Response to Vapor Extraction Testing

EP-212 and EP-215
Building 310

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	H. Pothier
Designed By:	J. Flood
Reviewed By:	D. Shea
Project No:	2999.13
Date:	November 2019

Figure Narrative

This figure shows the multiple port vapor extraction test data and inferred subslab pressure response observed during testing. Measurements were collected on June 20, 2019 with a digital micromanometer. Negative values indicate subsurface pressures less than indoor air pressure, or under vacuum, at the time of recording.

The contour represents the inferred apparent extent of vacuum conditions observed. Other interpretations are possible.

Legend

- Subslab Vapor Extraction Port
- Subslab Vapor Monitoring Port
- -0.004 — Differential pressure contour (inches of water column).
- EP-212 — Extraction Port
- in. wc — Applied Vacuum (extraction port) inches of water column (in. wc)
- scfm — Flow Rate (std. cu. ft. per min.)
- µg/m³ — Tetrachloroethene (PCE) (micrograms per cubic meter)
- µg/m³ — Trichloroethene (TCE) (micrograms per cubic meter)
- -0.013 — Observed pressure differential between the subslab and room during subslab vapor extraction test (in. wc.). Negative values indicate subslab pressure is less than indoor air pressure.
- Approximate extent of subslab vacuum influence from System VE-2 (inches of water column).
- Basement

20 10 0 20 40 Feet

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Applied Vacuum:
EP-212 = 25 in. wc.
EP-215 = 25 in. wc.

Flow Rate:
EP-212 = 135 scfm
EP-215 = 44 scfm

PCE: 6,300 µg/m³
TCE: 13,000 µg/m³

B310

Vacant

Approximate Location of New Partitioning Wall (Floor to Roof) Separating Model Shop Area

Model Shop Area

SS304 SS-130 SS305 SS-141 SS-133 SS-07 SS-177 SS-21 SS-155 -0.016 EP-211 SS-156 -0.054 SS-158 -0.046 SS-157 -0.11 EP-218 EP-212 EP-221 SS-129 SS-05 SS-140 EP-206 (SS-206) SS-150 SS-139 SS-175 SS-173 SS-159 -0.12 SS-167 EP-213 SV-02A SV-02C EP-207 (SS-207) SS-10 SS-179 SS-160 -0.048 EP-217 SS-154 SS-06 SS-138 EP-220 SS-165 -0.013 SS-11 -0.028 SS-169 SS-181 SS-135 SS-137 SS-132 EP-214 -0.056 SS-168 SS-180 SS-161 -0.044 SS-170 SS-22 SS-151 EP-222 SS-176 SS-174 EP-216 SS-152 SS-153 SS-162 -0.04 SS-166 -0.004 EP-209 SS-131 AC-39 SS-163 -0.031 SS-171 SS-134 SS-136 EP-215 SS-13 SS-182 EP-223 SS-178 EP-219 SS-164 -0.08 SS-172 SS-12 -0.033 -0.004 -0.004 -0.004 -0.004

Figure B-9

Subslab Pressure Response to Vapor Extraction Testing

EP-218
Building 310

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	H. Pothier
Designed By:	J. Flood
Reviewed By:	D. Shea
Project No:	2999.13
Date:	November 2019

Figure Narrative

This figure shows the individual vapor extraction test data and inferred subslab pressure response observed during testing. Measurements were collected on September 17-18, 2019 with a digital micromanometer. Negative values indicate subsurface pressures less than indoor air pressure, or under vacuum, at the time of recording.

The contour represents the inferred apparent extent of vacuum conditions observed. Other interpretations are possible.

Legend

- Subslab Extraction Port Location
- Subslab Sample Port Location
- -0.004 — Differential pressure contour (inches of water column). Dashed where inferred.
- EP-218 — Extraction Port
- in. wc — Applied Vacuum (extraction port) inches of water column (in. wc)
- scfm — Flow Rate (std. cu. ft. per min.)
- µg/m³ — Tetrachloroethene (PCE) (micrograms per cubic meter)
- µg/m³ — Trichloroethene (TCE) (micrograms per cubic meter)
- -0.006 — Observed pressure differential between the subslab and room during subslab vapor extraction test (in. wc.). Negative values indicate subslab pressure is less than indoor air pressure.
- Approximate extent of subslab vacuum influence from System VE-2 (inches of water column).
- Basement

20 10 0 20 40 Feet

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EP-218
Applied Vacuum: 35 in wc.
Flow Rate: 210 scfm
PCE: 40,000 µg/m³
TCE: 91,000 µg/m³

B310

Vacant

Approximate Location of New Partitioning Wall (Floor to Roof) Separating Model Shop Area

Model Shop Area

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Figure B-10

Subslab Pressure Response to Vapor Extraction Testing

EP-219
Building 310

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	H. Pothier
Designed By:	J. Flood
Reviewed By:	D. Shea
Project No:	2999.13
Date:	November 2019

Figure Narrative

This figure shows the individual vapor extraction test data and inferred subslab pressure response observed during testing. Measurements were collected on September 17-18, 2019 with a digital micromanometer. Negative values indicate subsurface pressures less than indoor air pressure, or under vacuum, at the time of recording.

The contour represents the inferred apparent extent of vacuum conditions observed. Other interpretations are possible.

Legend

- Subslab Extraction Port Location
- Subslab Sample Port Location
- -0.004 — Differential pressure contour (inches of water column). Dashed where inferred.
- EP-219 — Extraction Port
- in. wc — Applied Vacuum (extraction port) inches of water column (in. wc)
- scfm — Flow Rate (std. cu. ft. per min.)
- µg/m³ — Tetrachloroethene (PCE) (micrograms per cubic meter)
- µg/m³ — Trichloroethene (TCE) (micrograms per cubic meter)
- -0.005 — Observed pressure differential between the subslab and room during subslab vapor extraction test (in. wc.). Negative values indicate subslab pressure is less than indoor air pressure.
- Approximate extent of subslab vacuum influence from System VE-2 (inches of water column).
- Basement

20 10 0 20 40 Feet

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Figure B-11

Subslab Pressure Response to Vapor Extraction Testing

EP-220
Building 310

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	H. Pothier
Designed By:	J. Flood
Reviewed By:	D. Shea
Project No:	2999.13
Date:	November 2019

Figure Narrative

This figure shows the individual vapor extraction test data and inferred subslab pressure response observed during testing. Measurements were collected on September 17-18, 2019 with a digital micromanometer. Negative values indicate subsurface pressures less than indoor air pressure, or under vacuum, at the time of recording.

The contour represents the inferred apparent extent of vacuum conditions observed. Other interpretations are possible.

Legend

- Subslab Extraction Port Location
- Subslab Sample Port Location
- -0.004 — Differential pressure contour (inches of water column). Dashed where inferred.
- EP-220 — Extraction Port
- in. wc — Applied Vacuum (extraction port) inches of water column (in. wc)
- scfm — Flow Rate (std. cu. ft. per min.)
- µg/m³ — Tetrachloroethene (PCE) (micrograms per cubic meter)
- µg/m³ — Trichloroethene (TCE) (micrograms per cubic meter)
- -0.007 — Observed pressure differential between the subslab and room during subslab vapor extraction test (in. wc.). Negative values indicate subslab pressure is less than indoor air pressure.
- Approximate extent of subslab vacuum influence from System VE-2 (inches of water column).
- Basement

20 10 0 20 40 Feet

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Figure B-12

Subslab Pressure Response to Vapor Extraction Testing

EP-221
Building 310

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	H. Pothier
Designed By:	J. Flood
Reviewed By:	D. Shea
Project No:	2999.13
Date:	November 2019

Figure Narrative

This figure shows the individual vapor extraction test data and inferred subslab pressure response observed during testing. Measurements were collected on September 17-18, 2019 with a digital micromanometer. Negative values indicate subsurface pressures less than indoor air pressure, or under vacuum, at the time of recording.

The contour represents the inferred apparent extent of vacuum conditions observed. Other interpretations are possible.

Legend

- Subslab Extraction Port Location
- Subslab Sample Port Location
- -0.004 — Differential pressure contour (inches of water column). Dashed where inferred.
- **EP-221** — Extraction Port
- in. wc — Applied Vacuum (extraction port) inches of water column (in. wc)
- scfm — Flow Rate (std. cu. ft. per min.)
- µg/m³ — Tetrachloroethene (PCE) (micrograms per cubic meter)
- µg/m³ — Trichloroethene (TCE) (micrograms per cubic meter)
- -0.009 — Observed pressure differential between the subslab and room during subslab vapor extraction test (in. wc.). Negative values indicate subslab pressure is less than indoor air pressure.
- Approximate extent of subslab vacuum influence from System VE-2 (inches of water column).
- Basement

20 10 0 20 40 Feet

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Figure B-13

Subslab Pressure Response to Vapor Extraction Testing

EP-222
Building 310

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	H. Pothier
Designed By:	J. Flood
Reviewed By:	D. Shea
Project No:	2999.13
Date:	November 2019

Figure Narrative

This figure shows the individual vapor extraction test data and inferred subslab pressure response observed during testing. Measurements were collected on September 17-18, 2019 with a digital micromanometer. Negative values indicate subsurface pressures less than indoor air pressure, or under vacuum, at the time of recording.

The contour represents the inferred apparent extent of vacuum conditions observed. Other interpretations are possible.

Legend

- Subslab Extraction Port Location
- Subslab Sample Port Location
- -0.004 — Differential pressure contour (inches of water column). Dashed where inferred.
- EP-221 — Extraction Port
- in. wc — Applied Vacuum (extraction port) inches of water column (in. wc)
- scfm — Flow Rate (std. cu. ft. per min.)
- µg/m^3 — Tetrachloroethene (PCE) (micrograms per cubic meter)
- µg/m^3 — Trichloroethene (TCE) (micrograms per cubic meter)
- -0.009 — Observed pressure differential between the subslab and room during subslab vapor extraction test (in. wc.). Negative values indicate subslab pressure is less than indoor air pressure.
- Approximate extent of subslab vacuum influence from System VE-2 (inches of water column).
- Basement

Feet
20 10 0 20 40

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EP-222
Applied Vacuum: 60 in wc.
Flow Rate: 100 scfm
PCE: 440 µg/m^3
TCE: 87 µg/m^3

Vacant

Approximate Location of New Partitioning Wall (Floor to Roof) Separating Model Shop Area

Model Shop Area

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Figure B-14

Subslab Pressure Response to Vapor Extraction Testing

EP-223
Building 310

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	H. Pothier
Designed By:	J. Flood
Reviewed By:	D. Shea
Project No:	2999.13
Date:	November 2019

Figure Narrative

This figure shows the individual vapor extraction test data and inferred subslab pressure response observed during testing. Measurements were collected on September 17-18, 2019 with a digital micromanometer. Negative values indicate subsurface pressures less than indoor air pressure, or under vacuum, at the time of recording.

The contour represents the inferred apparent extent of vacuum conditions observed. Other interpretations are possible.

Legend

- Subslab Extraction Port Location
- Subslab Sample Port Location
- -0.004 — Differential pressure contour (inches of water column). Dashed where inferred.
- EP-221 — Extraction Port
- in. wc — Applied Vacuum (extraction port) inches of water column (in. wc)
- scfm — Flow Rate (std. cu. ft. per min.)
- µg/m³ — Tetrachloroethene (PCE) (micrograms per cubic meter)
- µg/m³ — Trichloroethene (TCE) (micrograms per cubic meter)
- -0.009 — Observed pressure differential between the subslab and room during subslab vapor extraction test (in. wc.). Negative values indicate subslab pressure is less than indoor air pressure.
- Approximate extent of subslab vacuum influence from System VE-2 (inches of water column).
- Basement

20 10 0 20 40 Feet

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EP-223
Applied Vacuum: 60 in wc.
Flow Rate: 22 scfm
PCE: 1,400 µg/m³
TCE: 110 µg/m³

Vacant

Approximate Location of New Partitioning Wall (Floor to Roof) Separating Model Shop Area

Model Shop Area

Figure B-15

Subslab Pressure Response to Vapor Extraction Testing

EP-220 & EP-222
Building 310

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	H. Pothier
Designed By:	J. Flood
Reviewed By:	D. Shea
Project No:	2999.13
Date:	November 2019

Figure Narrative

This figure shows the multiple port vapor extraction test data and inferred subslab pressure response observed during testing. Measurements were collected on September 17-18, 2019 with a digital micromanometer. Negative values indicate subsurface pressures less than indoor air pressure, or under vacuum, at the time of recording.

The contour represents the inferred apparent extent of vacuum conditions observed. Other interpretations are possible.

Legend

- Subslab Extraction Port Location
- Subslab Sample Port Location
- -0.004 — Differential pressure contour (inches of water column). Dashed where inferred.
- **EP-220** — Extraction Port
- in. wc — Applied Vacuum (extraction port) inches of water column (in. wc)
- scfm — Flow Rate (std. cu. ft. per min.)
- µg/m^3 — Tetrachloroethene (PCE) (micrograms per cubic meter)
- µg/m^3 — Trichloroethene (TCE) (micrograms per cubic meter)
- -0.005 — Observed pressure differential between the subslab and room during subslab vapor extraction test (in. wc.). Negative values indicate subslab pressure is less than indoor air pressure.
- Approximate extent of subslab vacuum influence from System VE-2 (inches of water column).
- Basement

Feet
20 10 0 20 40

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Applied Vacuum:
EP-220: 34 in wc.
EP-222: 34 in wc.

Flow Rate:
EP-220: 110 scfm
EP-222: 72 scfm

PCE: 6,700 µg/m^3
TCE: 21,000 µg/m^3

Vacant

Approximate Location of New Partitioning Wall (Floor to Roof) Separating Model Shop Area

Model Shop Area

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Figure B-16

Subslab Pressure Response to Vapor Extraction Testing

EP-218 & EP-222
Building 310

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	H. Pothier
Designed By:	J. Flood
Reviewed By:	D. Shea
Project No:	2999.13
Date:	November 2019

Figure Narrative

This figure shows the multiple port vapor extraction test data and inferred subslab pressure response observed during testing. Measurements were collected on September 17-18, 2019 with a digital micromanometer. Negative values indicate subsurface pressures less than indoor air pressure, or under vacuum, at the time of recording.

The contour represents the inferred apparent extent of vacuum conditions observed. Other interpretations are possible.

Legend

- Subslab Extraction Port Location
- Subslab Sample Port Location
- -0.004 — Differential pressure contour (inches of water column). Dashed where inferred.
- **EP-218** — Extraction Port
- in. wc — Applied Vacuum (extraction port) inches of water column (in. wc)
- scfm — Flow Rate (std. cu. ft. per min.)
- µg/m³ — Tetrachloroethene (PCE) (micrograms per cubic meter)
- µg/m³ — Trichloroethene (TCE) (micrograms per cubic meter)
- -0.009 — Observed pressure differential between the subslab and room during subslab vapor extraction test (in. wc.). Negative values indicate subslab pressure is less than indoor air pressure.
- Approximate extent of subslab vacuum influence from System VE-2 (inches of water column).
- Basement

20 10 0 20 40 Feet

SANBORN HEAD ENGINEERING

APPENDIX C

ANALYTICAL LABORATORY REPORTS

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6/10/2019
Ms. Jennifer Sanborn
Sanborn, Head & Associates
20 Foundry Street

Concord NH 03301

Project Name: EFK
Project #: 2999.13
Workorder #: 1905571

Dear Ms. Jennifer Sanborn

The following report includes the data for the above referenced project for sample(s) received on 5/28/2019 at Air Toxics Ltd.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

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

Regards,

Ausha Scott

Project Manager

WORK ORDER #: 1905571

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 #**	2999.13 EFK
DATE RECEIVED:	05/28/2019	**CONTACT:**	Ausha Scott
DATE COMPLETED:	06/10/2019		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	SS-155_20190522	TO-15	9 "Hg	15.2 psi
02A	SS-156_20190522	TO-15	5.9 "Hg	16 psi
03A	SS-157_20190522	TO-15	6.1 "Hg	15.1 psi
04A	SS-158_20190522	TO-15	5.9 "Hg	14.8 psi
05A	SS-159_20190522	TO-15	5.1 "Hg	15.4 psi
06A	FD-01_20190522	TO-15	5.1 "Hg	14.7 psi
07A	SS-160_20190522	TO-15	7.1 "Hg	15.7 psi
08A	SS-161_20190522	TO-15	6.5 "Hg	15.5 psi
09A	SS-162_20190522	TO-15	6.3 "Hg	14.9 psi
10A	SS-163_20190522	TO-15	5.5 "Hg	16 psi
11A	SS-164_20190522	TO-15	4.9 "Hg	15.1 psi
12A	SS-165_20190522	TO-15	5.9 "Hg	15 psi
13A	SS-166_20190522	TO-15	6.7 "Hg	14.7 psi
14A	SS-167_20190522	TO-15	5.9 "Hg	14.8 psi
15A	SS-168_20190522	TO-15	6.1 "Hg	15 psi
16A	SS-169_20190522	TO-15	6.1 "Hg	15.1 psi
17A	SS-170_20190522	TO-15	6.3 "Hg	14.9 psi
18A	SS-171_20190522	TO-15	5.5 "Hg	15.2 psi
19A	SS-172_20190522	TO-15	6.1 "Hg	15.9 psi
20A	SS-11_20190522	TO-15	6.3 "Hg	14.8 psi
21A	SS-12_20190522	TO-15	5.1 "Hg	15.3 psi
22A	Lab Blank	TO-15	NA	NA
22B	Lab Blank	TO-15	NA	NA

Continued on next page

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WORK ORDER #: 1905571

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 #**	2999.13 EFK
DATE RECEIVED:	05/28/2019	**CONTACT:**	Ausha Scott
DATE COMPLETED:	06/10/2019		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
22C	Lab Blank	TO-15	NA	NA
23A	CCV	TO-15	NA	NA
23B	CCV	TO-15	NA	NA
23C	CCV	TO-15	NA	NA
24A	LCS	TO-15	NA	NA
24AA	LCSD	TO-15	NA	NA
24B	LCS	TO-15	NA	NA
24BB	LCSD	TO-15	NA	NA
24C	LCS	TO-15	NA	NA
24CC	LCSD	TO-15	NA	NA

CERTIFIED BY:  DATE: 06/10/19

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-15-9, UT NELAP CA0093332015-6, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2015, Expiration date: 10/17/2016.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

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

LABORATORY NARRATIVE
EPA Method TO-15
Sanborn, Head & Associates
Workorder# 1905571

Twenty-one 1 Liter Summa Canister samples were received on May 28, 2019. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Receiving Notes

The Chain of Custody (COC) was not relinquished properly. A time was not provided by the field sampler.

Due to omission of the sampling date from the ID format on the sample tag, the information on the Chain of Custody (COC) for samples SS-155_20190522, SS-156_20190522, SS-157_20190522, SS-158_20190522, SS-159_20190522, FD-01_20190522, SS-160_20190522, SS-161_20190522, SS-162_20190522, SS-163_20190522, SS-164_20190522, SS-165_20190522, SS-166_20190522, SS-167_20190522, SS-168_20190522, SS-169_20190522, SS-170_20190522, SS-171_20190522, SS-172_20190522, SS-11_20190522, and SS-12_20190522
was used to process and report the samples.

Analytical Notes

Dilution was performed on samples SS-156_20190522, SS-157_20190522, SS-159_20190522, FD-01_20190522, SS-160_20190522, SS-165_20190522, SS-168_20190522, SS-169_20190522, SS-170_20190522, SS-171_20190522 and SS-172_20190522 due to the presence of high level target species.

Definition of Data Qualifying Flags

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

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

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

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

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

N - The identification is based on presumptive evidence.

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

CN - See Case Narrative.

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

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

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

Client Sample ID: SS-155_20190522

Lab ID#: 1905571-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	14	61	34	140
Trichloroethene	1.4	5.2	7.8	28
Toluene	1.4	8.4	5.5	32
Tetrachloroethene	1.4	9.8	9.8	66

Client Sample ID: SS-156_20190522

Lab ID#: 1905571-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 113	6.5	130	50	1000
cis-1,2-Dichloroethene	6.5	6.7	26	26
1,1,1-Trichloroethane	6.5	15	35	80
Trichloroethene	6.5	1900	35	10000
Toluene	6.5	10	24	39
Tetrachloroethene	6.5	730	44	5000

Client Sample ID: SS-157_20190522

Lab ID#: 1905571-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 113	10	54	78	410
1,1,1-Trichloroethane	10	24	56	130
Trichloroethene	10	3400	55	18000
Toluene	10	15	38	55
Tetrachloroethene	10	1500	69	10000

Client Sample ID: SS-158_20190522

Lab ID#: 1905571-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	5.7	6.2	28
Freon 11	1.2	2.2	7.0	12

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

Client Sample ID: SS-158_20190522

Lab ID#: 1905571-04A

Freon 113	1.2	3.6	9.6	28
Acetone	12	220	30	520
Trichloroethene	1.2	54	6.7	290
Toluene	1.2	7.2	4.7	27
Tetrachloroethene	1.2	79	8.5	540

Client Sample ID: SS-159_20190522

Lab ID#: 1905571-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 113	25	1200	190	9000
1,1,1-Trichloroethane	25	180	130	970
Trichloroethene	25	8300	130	44000
Tetrachloroethene	25	5700	170	38000

Client Sample ID: FD-01_20190522

Lab ID#: 1905571-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 113	24	1200	180	9100
cis-1,2-Dichloroethene	24	25	96	98
1,1,1-Trichloroethane	24	180	130	990
Trichloroethene	24	8400	130	45000
Tetrachloroethene	24	5600	160	38000

Client Sample ID: SS-160_20190522

Lab ID#: 1905571-07A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 113	18	230	140	1800
1,1,1-Trichloroethane	18	46	98	250
Trichloroethene	18	6000	97	32000
Tetrachloroethene	18	1500	120	10000

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

Client Sample ID: SS-161_20190522

Lab ID#: 1905571-08A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.3	290	6.5	1400
Freon 11	1.3	5.3	7.4	30
Freon 113	1.3	17	10	130
Acetone	13	19	31	45
1,1,1-Trichloroethane	1.3	3.5	7.1	19
Trichloroethene	1.3	350	7.0	1900
Toluene	1.3	4.1	4.9	15
Tetrachloroethene	1.3	390	8.9	2600

Client Sample ID: SS-162_20190522

Lab ID#: 1905571-09A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.3	1.8	6.3	9.0
Freon 11	1.3	2.4	7.2	14
Freon 113	1.3	6.8	9.8	52
Acetone	13	43	30	100
Trichloroethene	1.3	74	6.8	400
Toluene	1.3	4.0	4.8	15
Tetrachloroethene	1.3	120	8.6	820

Client Sample ID: SS-163_20190522

Lab ID#: 1905571-10A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.3	1.6	6.3	8.1
Freon 11	1.3	32	7.2	180
Freon 113	1.3	60	9.8	460
Acetone	13	29	30	69
Trichloroethene	1.3	120	6.9	620
Toluene	1.3	4.1	4.8	15
Tetrachloroethene	1.3	150	8.7	1000

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

Client Sample ID: SS-164_20190522

Lab ID#: 1905571-11A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	3.5	6.0	17
Freon 11	1.2	2.7	6.8	15
Freon 113	1.2	46	9.3	350
Acetone	12	71	29	170
Trichloroethene	1.2	8.4	6.5	45
Toluene	1.2	4.8	4.6	18
Tetrachloroethene	1.2	120	8.2	790

Client Sample ID: SS-165_20190522

Lab ID#: 1905571-12A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	2.5	660	12	3200
Freon 11	2.5	3.6	14	20
Freon 113	2.5	6.2	19	48
Acetone	25	36	60	85
Trichloroethene	2.5	70	14	370
Toluene	2.5	6.0	9.5	22
Tetrachloroethene	2.5	110	17	730

Client Sample ID: SS-166_20190522

Lab ID#: 1905571-13A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.3	100	6.4	510
Freon 11	1.3	1.5	7.2	8.6
Freon 113	1.3	12	9.9	96
Acetone	13	32	31	76
Trichloroethene	1.3	23	6.9	120
Toluene	1.3	3.1	4.9	12
Tetrachloroethene	1.3	81	8.8	550

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

Client Sample ID: SS-167_20190522

Lab ID#: 1905571-14A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	46	6.2	220
Freon 113	1.2	29	9.6	220
Acetone	12	24	30	56
cis-1,2-Dichloroethene	1.2	11	5.0	45
1,1,1-Trichloroethane	1.2	5.3	6.8	29
Trichloroethene	1.2	430	6.7	2300
Toluene	1.2	3.7	4.7	14
Tetrachloroethene	1.2	210	8.5	1400

Client Sample ID: SS-168_20190522

Lab ID#: 1905571-15A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	2.8	99	14	490
Freon 11	2.8	10	16	58
Freon 113	2.8	440	22	3300
Acetone	28	32	67	76
cis-1,2-Dichloroethene	2.8	16	11	62
1,1,1-Trichloroethane	2.8	11	15	59
Trichloroethene	2.8	1100	15	5900
Toluene	2.8	3.8	11	14
Tetrachloroethene	2.8	1100	19	7300

Client Sample ID: SS-169_20190522

Lab ID#: 1905571-16A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	2.1	85	10	420
Freon 11	2.1	2.2	12	12
Freon 113	2.1	51	16	390
Acetone	21	25	50	59
cis-1,2-Dichloroethene	2.1	32	8.4	120
1,1,1-Trichloroethane	2.1	8.0	12	44

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

Client Sample ID: SS-169_20190522

Lab ID#: 1905571-16A

Trichloroethene	2.1	720	11	3900
Toluene	2.1	4.2	8.0	16
Tetrachloroethene	2.1	420	14	2900

Client Sample ID: SS-170_20190522

Lab ID#: 1905571-17A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	13	120	63	580
Freon 11	13	29	72	160
Freon 113	13	680	98	5200
1,1,1-Trichloroethane	13	15	70	82
Trichloroethene	13	1900	68	10000
Tetrachloroethene	13	3000	86	20000

Client Sample ID: SS-171_20190522

Lab ID#: 1905571-18A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	25	120	120	580
Freon 11	25	80	140	450
Freon 113	25	2100	190	16000
Trichloroethene	25	2500	130	13000
Tetrachloroethene	25	7800	170	53000

Client Sample ID: SS-172_20190522

Lab ID#: 1905571-19A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	17	96	86	470
Freon 11	17	75	98	420
Freon 113	17	1800	130	14000
Trichloroethene	17	1400	94	7500
Tetrachloroethene	17	5100	120	34000

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

Client Sample ID: SS-11_20190522

Lab ID#: 1905571-20A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.3	130	6.3	630
Freon 11	1.3	2.4	7.1	14
Freon 113	1.3	6.0	9.7	46
Acetone	13	27	30	63
cis-1,2-Dichloroethene	1.3	6.8	5.0	27
1,1,1-Trichloroethane	1.3	2.3	6.9	13
Trichloroethene	1.3	400	6.8	2200
Tetrachloroethene	1.3	210	8.6	1400

Client Sample ID: SS-12_20190522

Lab ID#: 1905571-21A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	1.2	1.4	6.9	8.1
Freon 113	1.2	1.5	9.4	11
Acetone	12	14	29	34
Trichloroethene	1.2	18	6.6	99
Tetrachloroethene	1.2	35	8.3	240

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Client Sample ID: SS-155_20190522

Lab ID#: 1905571-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a060507**	**Date of Collection:**	**5/22/19 3:22:00 PM**
Dil. Factor:	**2.90**	**Date of Analysis:**	**6/5/19 02:48 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.4	Not Detected	7.2	Not Detected
Vinyl Chloride	1.4	Not Detected	3.7	Not Detected
Freon 11	1.4	Not Detected	8.1	Not Detected
Freon 113	1.4	Not Detected	11	Not Detected
1,1-Dichloroethene	1.4	Not Detected	5.7	Not Detected
Acetone	14	61	34	140
Methylene Chloride	14	Not Detected	50	Not Detected
cis-1,2-Dichloroethene	1.4	Not Detected	5.7	Not Detected
1,1,1-Trichloroethane	1.4	Not Detected	7.9	Not Detected
Carbon Tetrachloride	1.4	Not Detected	9.1	Not Detected
Benzene	1.4	Not Detected	4.6	Not Detected
Trichloroethene	1.4	5.2	7.8	28
Toluene	1.4	8.4	5.5	32
Tetrachloroethene	1.4	9.8	9.8	66
Chlorobenzene	1.4	Not Detected	6.7	Not Detected
Ethyl Benzene	1.4	Not Detected	6.3	Not Detected
m,p-Xylene	1.4	Not Detected	6.3	Not Detected
o-Xylene	1.4	Not Detected	6.3	Not Detected
1,3-Dichlorobenzene	1.4	Not Detected	8.7	Not Detected
1,4-Dichlorobenzene	1.4	Not Detected	8.7	Not Detected
1,2-Dichlorobenzene	1.4	Not Detected	8.7	Not Detected
1,2,4-Trichlorobenzene	5.8	Not Detected	43	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	97	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: SS-156_20190522

Lab ID#: 1905571-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a060511**	**Date of Collection:**	**5/22/19 3:25:00 PM**
Dil. Factor:	**13.0**	**Date of Analysis:**	**6/5/19 04:31 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	6.5	Not Detected	32	Not Detected
Vinyl Chloride	6.5	Not Detected	17	Not Detected
Freon 11	6.5	Not Detected	36	Not Detected
Freon 113	6.5	130	50	1000
1,1-Dichloroethene	6.5	Not Detected	26	Not Detected
Acetone	65	Not Detected	150	Not Detected
Methylene Chloride	65	Not Detected	220	Not Detected
cis-1,2-Dichloroethene	6.5	6.7	26	26
1,1,1-Trichloroethane	6.5	15	35	80
Carbon Tetrachloride	6.5	Not Detected	41	Not Detected
Benzene	6.5	Not Detected	21	Not Detected
Trichloroethene	6.5	1900	35	10000
Toluene	6.5	10	24	39
Tetrachloroethene	6.5	730	44	5000
Chlorobenzene	6.5	Not Detected	30	Not Detected
Ethyl Benzene	6.5	Not Detected	28	Not Detected
m,p-Xylene	6.5	Not Detected	28	Not Detected
o-Xylene	6.5	Not Detected	28	Not Detected
1,3-Dichlorobenzene	6.5	Not Detected	39	Not Detected
1,4-Dichlorobenzene	6.5	Not Detected	39	Not Detected
1,2-Dichlorobenzene	6.5	Not Detected	39	Not Detected
1,2,4-Trichlorobenzene	26	Not Detected	190	Not Detected

Container Type: 1 Liter Summa Canister

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

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Client Sample ID: SS-157_20190522

Lab ID#: 1905571-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a060512**	**Date of Collection:**	**5/22/19 3:27:00 PM**
Dil. Factor:	**20.4**	**Date of Analysis:**	**6/5/19 04:55 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	10	Not Detected	50	Not Detected
Vinyl Chloride	10	Not Detected	26	Not Detected
Freon 11	10	Not Detected	57	Not Detected
Freon 113	10	54	78	410
1,1-Dichloroethene	10	Not Detected	40	Not Detected
Acetone	100	Not Detected	240	Not Detected
Methylene Chloride	100	Not Detected	350	Not Detected
cis-1,2-Dichloroethene	10	Not Detected	40	Not Detected
1,1,1-Trichloroethane	10	24	56	130
Carbon Tetrachloride	10	Not Detected	64	Not Detected
Benzene	10	Not Detected	32	Not Detected
Trichloroethene	10	3400	55	18000
Toluene	10	15	38	55
Tetrachloroethene	10	1500	69	10000
Chlorobenzene	10	Not Detected	47	Not Detected
Ethyl Benzene	10	Not Detected	44	Not Detected
m,p-Xylene	10	Not Detected	44	Not Detected
o-Xylene	10	Not Detected	44	Not Detected
1,3-Dichlorobenzene	10	Not Detected	61	Not Detected
1,4-Dichlorobenzene	10	Not Detected	61	Not Detected
1,2-Dichlorobenzene	10	Not Detected	61	Not Detected
1,2,4-Trichlorobenzene	41	Not Detected	300	Not Detected

Container Type: 1 Liter Summa Canister

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

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Client Sample ID: SS-158_20190522

Lab ID#: 1905571-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a060508**	**Date of Collection:**	**5/22/19 3:48:00 PM**
Dil. Factor:	**2.50**	**Date of Analysis:**	**6/5/19 03:14 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	5.7	6.2	28
Vinyl Chloride	1.2	Not Detected	3.2	Not Detected
Freon 11	1.2	2.2	7.0	12
Freon 113	1.2	3.6	9.6	28
1,1-Dichloroethene	1.2	Not Detected	5.0	Not Detected
Acetone	12	220	30	520
Methylene Chloride	12	Not Detected	43	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	5.0	Not Detected
1,1,1-Trichloroethane	1.2	Not Detected	6.8	Not Detected
Carbon Tetrachloride	1.2	Not Detected	7.9	Not Detected
Benzene	1.2	Not Detected	4.0	Not Detected
Trichloroethene	1.2	54	6.7	290
Toluene	1.2	7.2	4.7	27
Tetrachloroethene	1.2	79	8.5	540
Chlorobenzene	1.2	Not Detected	5.8	Not Detected
Ethyl Benzene	1.2	Not Detected	5.4	Not Detected
m,p-Xylene	1.2	Not Detected	5.4	Not Detected
o-Xylene	1.2	Not Detected	5.4	Not Detected
1,3-Dichlorobenzene	1.2	Not Detected	7.5	Not Detected
1,4-Dichlorobenzene	1.2	Not Detected	7.5	Not Detected
1,2-Dichlorobenzene	1.2	Not Detected	7.5	Not Detected
1,2,4-Trichlorobenzene	5.0	Not Detected	37	Not Detected

Container Type: 1 Liter Summa Canister

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

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Client Sample ID: SS-159_20190522

Lab ID#: 1905571-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a060514**	**Date of Collection:**	**5/22/19 5:06:00 PM**
Dil. Factor:	**49.3**	**Date of Analysis:**	**6/5/19 05:45 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	25	Not Detected	120	Not Detected
Vinyl Chloride	25	Not Detected	63	Not Detected
Freon 11	25	Not Detected	140	Not Detected
Freon 113	25	1200	190	9000
1,1-Dichloroethene	25	Not Detected	98	Not Detected
Acetone	250	Not Detected	580	Not Detected
Methylene Chloride	250	Not Detected	860	Not Detected
cis-1,2-Dichloroethene	25	Not Detected	98	Not Detected
1,1,1-Trichloroethane	25	180	130	970
Carbon Tetrachloride	25	Not Detected	160	Not Detected
Benzene	25	Not Detected	79	Not Detected
Trichloroethene	25	8300	130	44000
Toluene	25	Not Detected	93	Not Detected
Tetrachloroethene	25	5700	170	38000
Chlorobenzene	25	Not Detected	110	Not Detected
Ethyl Benzene	25	Not Detected	110	Not Detected
m,p-Xylene	25	Not Detected	110	Not Detected
o-Xylene	25	Not Detected	110	Not Detected
1,3-Dichlorobenzene	25	Not Detected	150	Not Detected
1,4-Dichlorobenzene	25	Not Detected	150	Not Detected
1,2-Dichlorobenzene	25	Not Detected	150	Not Detected
1,2,4-Trichlorobenzene	99	Not Detected	730	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	95	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: FD-01_20190522

Lab ID#: 1905571-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a060515**	**Date of Collection:**	**5/22/19 5:06:00 PM**
Dil. Factor:	**48.2**	**Date of Analysis:**	**6/5/19 06:09 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	24	Not Detected	120	Not Detected
Vinyl Chloride	24	Not Detected	62	Not Detected
Freon 11	24	Not Detected	140	Not Detected
Freon 113	24	1200	180	9100
1,1-Dichloroethene	24	Not Detected	96	Not Detected
Acetone	240	Not Detected	570	Not Detected
Methylene Chloride	240	Not Detected	840	Not Detected
cis-1,2-Dichloroethene	24	25	96	98
1,1,1-Trichloroethane	24	180	130	990
Carbon Tetrachloride	24	Not Detected	150	Not Detected
Benzene	24	Not Detected	77	Not Detected
Trichloroethene	24	8400	130	45000
Toluene	24	Not Detected	91	Not Detected
Tetrachloroethene	24	5600	160	38000
Chlorobenzene	24	Not Detected	110	Not Detected
Ethyl Benzene	24	Not Detected	100	Not Detected
m,p-Xylene	24	Not Detected	100	Not Detected
o-Xylene	24	Not Detected	100	Not Detected
1,3-Dichlorobenzene	24	Not Detected	140	Not Detected
1,4-Dichlorobenzene	24	Not Detected	140	Not Detected
1,2-Dichlorobenzene	24	Not Detected	140	Not Detected
1,2,4-Trichlorobenzene	96	Not Detected	720	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	94	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: SS-160_20190522

Lab ID#: 1905571-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a060513**	**Date of Collection:**	**5/22/19 3:31:00 PM**
Dil. Factor:	**36.1**	**Date of Analysis:**	**6/5/19 05:20 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	18	Not Detected	89	Not Detected
Vinyl Chloride	18	Not Detected	46	Not Detected
Freon 11	18	Not Detected	100	Not Detected
Freon 113	18	230	140	1800
1,1-Dichloroethene	18	Not Detected	72	Not Detected
Acetone	180	Not Detected	430	Not Detected
Methylene Chloride	180	Not Detected	630	Not Detected
cis-1,2-Dichloroethene	18	Not Detected	72	Not Detected
1,1,1-Trichloroethane	18	46	98	250
Carbon Tetrachloride	18	Not Detected	110	Not Detected
Benzene	18	Not Detected	58	Not Detected
Trichloroethene	18	6000	97	32000
Toluene	18	Not Detected	68	Not Detected
Tetrachloroethene	18	1500	120	10000
Chlorobenzene	18	Not Detected	83	Not Detected
Ethyl Benzene	18	Not Detected	78	Not Detected
m,p-Xylene	18	Not Detected	78	Not Detected
o-Xylene	18	Not Detected	78	Not Detected
1,3-Dichlorobenzene	18	Not Detected	110	Not Detected
1,4-Dichlorobenzene	18	Not Detected	110	Not Detected
1,2-Dichlorobenzene	18	Not Detected	110	Not Detected
1,2,4-Trichlorobenzene	72	Not Detected	540	Not Detected

Container Type: 1 Liter Summa Canister

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

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Client Sample ID: SS-161_20190522

Lab ID#: 1905571-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a060509**	**Date of Collection:**	**5/22/19 3:38:00 PM**
Dil. Factor:	**2.62**	**Date of Analysis:**	**6/5/19 03:41 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.3	290	6.5	1400
Vinyl Chloride	1.3	Not Detected	3.3	Not Detected
Freon 11	1.3	5.3	7.4	30
Freon 113	1.3	17	10	130
1,1-Dichloroethene	1.3	Not Detected	5.2	Not Detected
Acetone	13	19	31	45
Methylene Chloride	13	Not Detected	46	Not Detected
cis-1,2-Dichloroethene	1.3	Not Detected	5.2	Not Detected
1,1,1-Trichloroethane	1.3	3.5	7.1	19
Carbon Tetrachloride	1.3	Not Detected	8.2	Not Detected
Benzene	1.3	Not Detected	4.2	Not Detected
Trichloroethene	1.3	350	7.0	1900
Toluene	1.3	4.1	4.9	15
Tetrachloroethene	1.3	390	8.9	2600
Chlorobenzene	1.3	Not Detected	6.0	Not Detected
Ethyl Benzene	1.3	Not Detected	5.7	Not Detected
m,p-Xylene	1.3	Not Detected	5.7	Not Detected
o-Xylene	1.3	Not Detected	5.7	Not Detected
1,3-Dichlorobenzene	1.3	Not Detected	7.9	Not Detected
1,4-Dichlorobenzene	1.3	Not Detected	7.9	Not Detected
1,2-Dichlorobenzene	1.3	Not Detected	7.9	Not Detected
1,2,4-Trichlorobenzene	5.2	Not Detected	39	Not Detected

Container Type: 1 Liter Summa Canister

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

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Client Sample ID: SS-162_20190522

Lab ID#: 1905571-09A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a060510**	**Date of Collection:**	**5/22/19 3:36:00 PM**
Dil. Factor:	**2.55**	**Date of Analysis:**	**6/5/19 04:07 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.3	1.8	6.3	9.0
Vinyl Chloride	1.3	Not Detected	3.2	Not Detected
Freon 11	1.3	2.4	7.2	14
Freon 113	1.3	6.8	9.8	52
1,1-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Acetone	13	43	30	100
Methylene Chloride	13	Not Detected	44	Not Detected
cis-1,2-Dichloroethene	1.3	Not Detected	5.0	Not Detected
1,1,1-Trichloroethane	1.3	Not Detected	7.0	Not Detected
Carbon Tetrachloride	1.3	Not Detected	8.0	Not Detected
Benzene	1.3	Not Detected	4.1	Not Detected
Trichloroethene	1.3	74	6.8	400
Toluene	1.3	4.0	4.8	15
Tetrachloroethene	1.3	120	8.6	820
Chlorobenzene	1.3	Not Detected	5.9	Not Detected
Ethyl Benzene	1.3	Not Detected	5.5	Not Detected
m,p-Xylene	1.3	Not Detected	5.5	Not Detected
o-Xylene	1.3	Not Detected	5.5	Not Detected
1,3-Dichlorobenzene	1.3	Not Detected	7.7	Not Detected
1,4-Dichlorobenzene	1.3	Not Detected	7.7	Not Detected
1,2-Dichlorobenzene	1.3	Not Detected	7.7	Not Detected
1,2,4-Trichlorobenzene	5.1	Not Detected	38	Not Detected

Container Type: 1 Liter Summa Canister

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

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Client Sample ID: SS-163_20190522

Lab ID#: 1905571-10A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a060607**	**Date of Collection:**	**5/22/19 3:34:00 PM**
Dil. Factor:	**2.56**	**Date of Analysis:**	**6/6/19 03:07 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.3	1.6	6.3	8.1
Vinyl Chloride	1.3	Not Detected	3.3	Not Detected
Freon 11	1.3	32	7.2	180
Freon 113	1.3	60	9.8	460
1,1-Dichloroethene	1.3	Not Detected	5.1	Not Detected
Acetone	13	29	30	69
Methylene Chloride	13	Not Detected	44	Not Detected
cis-1,2-Dichloroethene	1.3	Not Detected	5.1	Not Detected
1,1,1-Trichloroethane	1.3	Not Detected	7.0	Not Detected
Carbon Tetrachloride	1.3	Not Detected	8.0	Not Detected
Benzene	1.3	Not Detected	4.1	Not Detected
Trichloroethene	1.3	120	6.9	620
Toluene	1.3	4.1	4.8	15
Tetrachloroethene	1.3	150	8.7	1000
Chlorobenzene	1.3	Not Detected	5.9	Not Detected
Ethyl Benzene	1.3	Not Detected	5.6	Not Detected
m,p-Xylene	1.3	Not Detected	5.6	Not Detected
o-Xylene	1.3	Not Detected	5.6	Not Detected
1,3-Dichlorobenzene	1.3	Not Detected	7.7	Not Detected
1,4-Dichlorobenzene	1.3	Not Detected	7.7	Not Detected
1,2-Dichlorobenzene	1.3	Not Detected	7.7	Not Detected
1,2,4-Trichlorobenzene	5.1	Not Detected	38	Not Detected

Container Type: 1 Liter Summa Canister

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

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Client Sample ID: SS-164_20190522

Lab ID#: 1905571-11A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a060608**	**Date of Collection:**	**5/22/19 3:50:00 PM**
Dil. Factor:	**2.42**	**Date of Analysis:**	**6/6/19 03:34 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	3.5	6.0	17
Vinyl Chloride	1.2	Not Detected	3.1	Not Detected
Freon 11	1.2	2.7	6.8	15
Freon 113	1.2	46	9.3	350
1,1-Dichloroethene	1.2	Not Detected	4.8	Not Detected
Acetone	12	71	29	170
Methylene Chloride	12	Not Detected	42	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	4.8	Not Detected
1,1,1-Trichloroethane	1.2	Not Detected	6.6	Not Detected
Carbon Tetrachloride	1.2	Not Detected	7.6	Not Detected
Benzene	1.2	Not Detected	3.9	Not Detected
Trichloroethene	1.2	8.4	6.5	45
Toluene	1.2	4.8	4.6	18
Tetrachloroethene	1.2	120	8.2	790
Chlorobenzene	1.2	Not Detected	5.6	Not Detected
Ethyl Benzene	1.2	Not Detected	5.2	Not Detected
m,p-Xylene	1.2	Not Detected	5.2	Not Detected
o-Xylene	1.2	Not Detected	5.2	Not Detected
1,3-Dichlorobenzene	1.2	Not Detected	7.3	Not Detected
1,4-Dichlorobenzene	1.2	Not Detected	7.3	Not Detected
1,2-Dichlorobenzene	1.2	Not Detected	7.3	Not Detected
1,2,4-Trichlorobenzene	4.8	Not Detected	36	Not Detected

Container Type: 1 Liter Summa Canister

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

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Client Sample ID: SS-165_20190522

Lab ID#: 1905571-12A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a060617**	**Date of Collection: 5/22/19 3:52:00 PM**	
Dil. Factor:	**5.03**	**Date of Analysis: 6/6/19 09:59 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	2.5	660	12	3200
Vinyl Chloride	2.5	Not Detected	6.4	Not Detected
Freon 11	2.5	3.6	14	20
Freon 113	2.5	6.2	19	48
1,1-Dichloroethene	2.5	Not Detected	10	Not Detected
Acetone	25	36	60	85
Methylene Chloride	25	Not Detected	87	Not Detected
cis-1,2-Dichloroethene	2.5	Not Detected	10	Not Detected
1,1,1-Trichloroethane	2.5	Not Detected	14	Not Detected
Carbon Tetrachloride	2.5	Not Detected	16	Not Detected
Benzene	2.5	Not Detected	8.0	Not Detected
Trichloroethene	2.5	70	14	370
Toluene	2.5	6.0	9.5	22
Tetrachloroethene	2.5	110	17	730
Chlorobenzene	2.5	Not Detected	12	Not Detected
Ethyl Benzene	2.5	Not Detected	11	Not Detected
m,p-Xylene	2.5	Not Detected	11	Not Detected
o-Xylene	2.5	Not Detected	11	Not Detected
1,3-Dichlorobenzene	2.5	Not Detected	15	Not Detected
1,4-Dichlorobenzene	2.5	Not Detected	15	Not Detected
1,2-Dichlorobenzene	2.5	Not Detected	15	Not Detected
1,2,4-Trichlorobenzene	10	Not Detected	75	Not Detected

Container Type: 1 Liter Summa Canister

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

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Client Sample ID: SS-166_20190522

Lab ID#: 1905571-13A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a060610**	**Date of Collection:**	**5/22/19 3:54:00 PM**
Dil. Factor:	**2.58**	**Date of Analysis:**	**6/6/19 04:27 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.3	100	6.4	510
Vinyl Chloride	1.3	Not Detected	3.3	Not Detected
Freon 11	1.3	1.5	7.2	8.6
Freon 113	1.3	12	9.9	96
1,1-Dichloroethene	1.3	Not Detected	5.1	Not Detected
Acetone	13	32	31	76
Methylene Chloride	13	Not Detected	45	Not Detected
cis-1,2-Dichloroethene	1.3	Not Detected	5.1	Not Detected
1,1,1-Trichloroethane	1.3	Not Detected	7.0	Not Detected
Carbon Tetrachloride	1.3	Not Detected	8.1	Not Detected
Benzene	1.3	Not Detected	4.1	Not Detected
Trichloroethene	1.3	23	6.9	120
Toluene	1.3	3.1	4.9	12
Tetrachloroethene	1.3	81	8.8	550
Chlorobenzene	1.3	Not Detected	5.9	Not Detected
Ethyl Benzene	1.3	Not Detected	5.6	Not Detected
m,p-Xylene	1.3	Not Detected	5.6	Not Detected
o-Xylene	1.3	Not Detected	5.6	Not Detected
1,3-Dichlorobenzene	1.3	Not Detected	7.8	Not Detected
1,4-Dichlorobenzene	1.3	Not Detected	7.8	Not Detected
1,2-Dichlorobenzene	1.3	Not Detected	7.8	Not Detected
1,2,4-Trichlorobenzene	5.2	Not Detected	38	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	95	70-130

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Client Sample ID: SS-167_20190522

Lab ID#: 1905571-14A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a060611**	**Date of Collection: 5/22/19 3:56:00 PM**	
Dil. Factor:	**2.50**	**Date of Analysis: 6/6/19 04:54 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	46	6.2	220
Vinyl Chloride	1.2	Not Detected	3.2	Not Detected
Freon 11	1.2	Not Detected	7.0	Not Detected
Freon 113	1.2	29	9.6	220
1,1-Dichloroethene	1.2	Not Detected	5.0	Not Detected
Acetone	12	24	30	56
Methylene Chloride	12	Not Detected	43	Not Detected
cis-1,2-Dichloroethene	1.2	11	5.0	45
1,1,1-Trichloroethane	1.2	5.3	6.8	29
Carbon Tetrachloride	1.2	Not Detected	7.9	Not Detected
Benzene	1.2	Not Detected	4.0	Not Detected
Trichloroethene	1.2	430	6.7	2300
Toluene	1.2	3.7	4.7	14
Tetrachloroethene	1.2	210	8.5	1400
Chlorobenzene	1.2	Not Detected	5.8	Not Detected
Ethyl Benzene	1.2	Not Detected	5.4	Not Detected
m,p-Xylene	1.2	Not Detected	5.4	Not Detected
o-Xylene	1.2	Not Detected	5.4	Not Detected
1,3-Dichlorobenzene	1.2	Not Detected	7.5	Not Detected
1,4-Dichlorobenzene	1.2	Not Detected	7.5	Not Detected
1,2-Dichlorobenzene	1.2	Not Detected	7.5	Not Detected
1,2,4-Trichlorobenzene	5.0	Not Detected	37	Not Detected

Container Type: 1 Liter Summa Canister

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

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Client Sample ID: SS-168_20190522

Lab ID#: 1905571-15A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a060613**	**Date of Collection: 5/22/19 3:57:00 PM**	
Dil. Factor:	**5.64**	**Date of Analysis: 6/6/19 05:43 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	2.8	99	14	490
Vinyl Chloride	2.8	Not Detected	7.2	Not Detected
Freon 11	2.8	10	16	58
Freon 113	2.8	440	22	3300
1,1-Dichloroethene	2.8	Not Detected	11	Not Detected
Acetone	28	32	67	76
Methylene Chloride	28	Not Detected	98	Not Detected
cis-1,2-Dichloroethene	2.8	16	11	62
1,1,1-Trichloroethane	2.8	11	15	59
Carbon Tetrachloride	2.8	Not Detected	18	Not Detected
Benzene	2.8	Not Detected	9.0	Not Detected
Trichloroethene	2.8	1100	15	5900
Toluene	2.8	3.8	11	14
Tetrachloroethene	2.8	1100	19	7300
Chlorobenzene	2.8	Not Detected	13	Not Detected
Ethyl Benzene	2.8	Not Detected	12	Not Detected
m,p-Xylene	2.8	Not Detected	12	Not Detected
o-Xylene	2.8	Not Detected	12	Not Detected
1,3-Dichlorobenzene	2.8	Not Detected	17	Not Detected
1,4-Dichlorobenzene	2.8	Not Detected	17	Not Detected
1,2-Dichlorobenzene	2.8	Not Detected	17	Not Detected
1,2,4-Trichlorobenzene	11	Not Detected	84	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	96	70-130
1,2-Dichloroethane-d4	99	70-130
4-Bromofluorobenzene	97	70-130

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Client Sample ID: SS-169_20190522

Lab ID#: 1905571-16A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a060612**	**Date of Collection:**	**5/22/19 4:04:00 PM**
Dil. Factor:	**4.24**	**Date of Analysis:**	**6/6/19 05:19 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	2.1	85	10	420
Vinyl Chloride	2.1	Not Detected	5.4	Not Detected
Freon 11	2.1	2.2	12	12
Freon 113	2.1	51	16	390
1,1-Dichloroethene	2.1	Not Detected	8.4	Not Detected
Acetone	21	25	50	59
Methylene Chloride	21	Not Detected	74	Not Detected
cis-1,2-Dichloroethene	2.1	32	8.4	120
1,1,1-Trichloroethane	2.1	8.0	12	44
Carbon Tetrachloride	2.1	Not Detected	13	Not Detected
Benzene	2.1	Not Detected	6.8	Not Detected
Trichloroethene	2.1	720	11	3900
Toluene	2.1	4.2	8.0	16
Tetrachloroethene	2.1	420	14	2900
Chlorobenzene	2.1	Not Detected	9.8	Not Detected
Ethyl Benzene	2.1	Not Detected	9.2	Not Detected
m,p-Xylene	2.1	Not Detected	9.2	Not Detected
o-Xylene	2.1	Not Detected	9.2	Not Detected
1,3-Dichlorobenzene	2.1	Not Detected	13	Not Detected
1,4-Dichlorobenzene	2.1	Not Detected	13	Not Detected
1,2-Dichlorobenzene	2.1	Not Detected	13	Not Detected
1,2,4-Trichlorobenzene	8.5	Not Detected	63	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	95	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: SS-170_20190522

Lab ID#: 1905571-17A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a060618**	**Date of Collection: 5/22/19 4:00:00 PM**	
Dil. Factor:	**25.5**	**Date of Analysis: 6/6/19 10:23 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	13	120	63	580
Vinyl Chloride	13	Not Detected	32	Not Detected
Freon 11	13	29	72	160
Freon 113	13	680	98	5200
1,1-Dichloroethene	13	Not Detected	50	Not Detected
Acetone	130	Not Detected	300	Not Detected
Methylene Chloride	130	Not Detected	440	Not Detected
cis-1,2-Dichloroethene	13	Not Detected	50	Not Detected
1,1,1-Trichloroethane	13	15	70	82
Carbon Tetrachloride	13	Not Detected	80	Not Detected
Benzene	13	Not Detected	41	Not Detected
Trichloroethene	13	1900	68	10000
Toluene	13	Not Detected	48	Not Detected
Tetrachloroethene	13	3000	86	20000
Chlorobenzene	13	Not Detected	59	Not Detected
Ethyl Benzene	13	Not Detected	55	Not Detected
m,p-Xylene	13	Not Detected	55	Not Detected
o-Xylene	13	Not Detected	55	Not Detected
1,3-Dichlorobenzene	13	Not Detected	77	Not Detected
1,4-Dichlorobenzene	13	Not Detected	77	Not Detected
1,2-Dichlorobenzene	13	Not Detected	77	Not Detected
1,2,4-Trichlorobenzene	51	Not Detected	380	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	94	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	95	70-130

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Client Sample ID: SS-171_20190522

Lab ID#: 1905571-18A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17060717**	**Date of Collection:**	**5/22/19 4:02:00 PM**
Dil. Factor:	**49.8**	**Date of Analysis:**	**6/7/19 10:41 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	25	120	120	580
Vinyl Chloride	25	Not Detected	64	Not Detected
Freon 11	25	80	140	450
Freon 113	25	2100	190	16000
1,1-Dichloroethene	25	Not Detected	99	Not Detected
Acetone	250	Not Detected	590	Not Detected
Methylene Chloride	250	Not Detected	860	Not Detected
cis-1,2-Dichloroethene	25	Not Detected	99	Not Detected
1,1,1-Trichloroethane	25	Not Detected	140	Not Detected
Carbon Tetrachloride	25	Not Detected	160	Not Detected
Benzene	25	Not Detected	80	Not Detected
Trichloroethene	25	2500	130	13000
Toluene	25	Not Detected	94	Not Detected
Tetrachloroethene	25	7800	170	53000
Chlorobenzene	25	Not Detected	110	Not Detected
Ethyl Benzene	25	Not Detected	110	Not Detected
m,p-Xylene	25	Not Detected	110	Not Detected
o-Xylene	25	Not Detected	110	Not Detected
1,3-Dichlorobenzene	25	Not Detected	150	Not Detected
1,4-Dichlorobenzene	25	Not Detected	150	Not Detected
1,2-Dichlorobenzene	25	Not Detected	150	Not Detected
1,2,4-Trichlorobenzene	100	Not Detected	740	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	99	70-130
4-Bromofluorobenzene	93	70-130

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Client Sample ID: SS-172_20190522

Lab ID#: 1905571-19A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17060716**	**Date of Collection:**	**5/22/19 4:03:00 PM**
Dil. Factor:	**34.8**	**Date of Analysis:**	**6/7/19 10:13 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	17	96	86	470
Vinyl Chloride	17	Not Detected	44	Not Detected
Freon 11	17	75	98	420
Freon 113	17	1800	130	14000
1,1-Dichloroethene	17	Not Detected	69	Not Detected
Acetone	170	Not Detected	410	Not Detected
Methylene Chloride	170	Not Detected	600	Not Detected
cis-1,2-Dichloroethene	17	Not Detected	69	Not Detected
1,1,1-Trichloroethane	17	Not Detected	95	Not Detected
Carbon Tetrachloride	17	Not Detected	110	Not Detected
Benzene	17	Not Detected	56	Not Detected
Trichloroethene	17	1400	94	7500
Toluene	17	Not Detected	66	Not Detected
Tetrachloroethene	17	5100	120	34000
Chlorobenzene	17	Not Detected	80	Not Detected
Ethyl Benzene	17	Not Detected	76	Not Detected
m,p-Xylene	17	Not Detected	76	Not Detected
o-Xylene	17	Not Detected	76	Not Detected
1,3-Dichlorobenzene	17	Not Detected	100	Not Detected
1,4-Dichlorobenzene	17	Not Detected	100	Not Detected
1,2-Dichlorobenzene	17	Not Detected	100	Not Detected
1,2,4-Trichlorobenzene	70	Not Detected	520	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	104	70-130
4-Bromofluorobenzene	93	70-130

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Client Sample ID: SS-11_20190522

Lab ID#: 1905571-20A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17060715**	**Date of Collection:**	**5/22/19 4:51:00 PM**
Dil. Factor:	**2.54**	**Date of Analysis:**	**6/7/19 09:47 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.3	130	6.3	630
Vinyl Chloride	1.3	Not Detected	3.2	Not Detected
Freon 11	1.3	2.4	7.1	14
Freon 113	1.3	6.0	9.7	46
1,1-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Acetone	13	27	30	63
Methylene Chloride	13	Not Detected	44	Not Detected
cis-1,2-Dichloroethene	1.3	6.8	5.0	27
1,1,1-Trichloroethane	1.3	2.3	6.9	13
Carbon Tetrachloride	1.3	Not Detected	8.0	Not Detected
Benzene	1.3	Not Detected	4.0	Not Detected
Trichloroethene	1.3	400	6.8	2200
Toluene	1.3	Not Detected	4.8	Not Detected
Tetrachloroethene	1.3	210	8.6	1400
Chlorobenzene	1.3	Not Detected	5.8	Not Detected
Ethyl Benzene	1.3	Not Detected	5.5	Not Detected
m,p-Xylene	1.3	Not Detected	5.5	Not Detected
o-Xylene	1.3	Not Detected	5.5	Not Detected
1,3-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
1,4-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
1,2-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
1,2,4-Trichlorobenzene	5.1	Not Detected	38	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	104	70-130
4-Bromofluorobenzene	93	70-130

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Client Sample ID: SS-12_20190522

Lab ID#: 1905571-21A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17060714**	**Date of Collection:**	**5/22/19 4:20:00 PM**
Dil. Factor:	**2.46**	**Date of Analysis:**	**6/7/19 09:19 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	Not Detected	6.1	Not Detected
Vinyl Chloride	1.2	Not Detected	3.1	Not Detected
Freon 11	1.2	1.4	6.9	8.1
Freon 113	1.2	1.5	9.4	11
1,1-Dichloroethene	1.2	Not Detected	4.9	Not Detected
Acetone	12	14	29	34
Methylene Chloride	12	Not Detected	43	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	4.9	Not Detected
1,1,1-Trichloroethane	1.2	Not Detected	6.7	Not Detected
Carbon Tetrachloride	1.2	Not Detected	7.7	Not Detected
Benzene	1.2	Not Detected	3.9	Not Detected
Trichloroethene	1.2	18	6.6	99
Toluene	1.2	Not Detected	4.6	Not Detected
Tetrachloroethene	1.2	35	8.3	240
Chlorobenzene	1.2	Not Detected	5.7	Not Detected
Ethyl Benzene	1.2	Not Detected	5.3	Not Detected
m,p-Xylene	1.2	Not Detected	5.3	Not Detected
o-Xylene	1.2	Not Detected	5.3	Not Detected
1,3-Dichlorobenzene	1.2	Not Detected	7.4	Not Detected
1,4-Dichlorobenzene	1.2	Not Detected	7.4	Not Detected
1,2-Dichlorobenzene	1.2	Not Detected	7.4	Not Detected
1,2,4-Trichlorobenzene	4.9	Not Detected	36	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	103	70-130
4-Bromofluorobenzene	95	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1905571-22A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a060505**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/5/19 11:18 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
Freon 11	0.50	Not Detected	2.8	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Acetone	5.0	Not Detected	12	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
Chlorobenzene	0.50	Not Detected	2.3	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,2,4-Trichlorobenzene	2.0	Not Detected	15	Not Detected

Container Type: NA - Not Applicable

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

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Client Sample ID: Lab Blank

Lab ID#: 1905571-22B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a060606**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/6/19 01:46 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
Freon 11	0.50	Not Detected	2.8	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Acetone	5.0	Not Detected	12	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
Chlorobenzene	0.50	Not Detected	2.3	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,2,4-Trichlorobenzene	2.0	Not Detected	15	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	99	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1905571-22C

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17060706**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/7/19 02:22 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
Freon 11	0.50	Not Detected	2.8	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Acetone	5.0	Not Detected	12	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
Chlorobenzene	0.50	Not Detected	2.3	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,2,4-Trichlorobenzene	2.0	Not Detected	15	Not Detected

Container Type: NA - Not Applicable

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

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Client Sample ID: CCV

Lab ID#: 1905571-23A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a060502**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/5/19 09:26 AM**	

Compound	%Recovery
Freon 12	101
Vinyl Chloride	99
Freon 11	101
Freon 113	102
1,1-Dichloroethene	108
Acetone	96
Methylene Chloride	95
cis-1,2-Dichloroethene	100
1,1,1-Trichloroethane	99
Carbon Tetrachloride	99
Benzene	102
Trichloroethene	102
Toluene	98
Tetrachloroethene	107
Chlorobenzene	103
Ethyl Benzene	108
m,p-Xylene	105
o-Xylene	107
1,3-Dichlorobenzene	100
1,4-Dichlorobenzene	98
1,2-Dichlorobenzene	97
1,2,4-Trichlorobenzene	85

Container Type: NA - Not Applicable

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

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Client Sample ID: CCV

Lab ID#: 1905571-23B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a060602**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/6/19 11:16 AM**	

Compound	%Recovery
Freon 12	104
Vinyl Chloride	101
Freon 11	106
Freon 113	103
1,1-Dichloroethene	110
Acetone	103
Methylene Chloride	101
cis-1,2-Dichloroethene	102
1,1,1-Trichloroethane	100
Carbon Tetrachloride	101
Benzene	102
Trichloroethene	101
Toluene	98
Tetrachloroethene	109
Chlorobenzene	103
Ethyl Benzene	110
m,p-Xylene	109
o-Xylene	106
1,3-Dichlorobenzene	99
1,4-Dichlorobenzene	98
1,2-Dichlorobenzene	96
1,2,4-Trichlorobenzene	84

Container Type: NA - Not Applicable

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

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Client Sample ID: CCV

Lab ID#: 1905571-23C

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17060702**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/7/19 11:53 AM**	

Compound	%Recovery
Freon 12	108
Vinyl Chloride	118
Freon 11	104
Freon 113	104
1,1-Dichloroethene	110
Acetone	116
Methylene Chloride	112
cis-1,2-Dichloroethene	114
1,1,1-Trichloroethane	108
Carbon Tetrachloride	106
Benzene	111
Trichloroethene	109
Toluene	105
Tetrachloroethene	103
Chlorobenzene	101
Ethyl Benzene	101
m,p-Xylene	105
o-Xylene	103
1,3-Dichlorobenzene	101
1,4-Dichlorobenzene	102
1,2-Dichlorobenzene	101
1,2,4-Trichlorobenzene	105

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	108	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: LCS

Lab ID#: 1905571-24A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a060503**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/5/19 10:26 AM**	

Compound	%Recovery	Method Limits
Freon 12	103	70-130
Vinyl Chloride	100	70-130
Freon 11	104	70-130
Freon 113	100	70-130
1,1-Dichloroethene	106	70-130
Acetone	98	70-130
Methylene Chloride	94	70-130
cis-1,2-Dichloroethene	110	70-130
1,1,1-Trichloroethane	98	70-130
Carbon Tetrachloride	97	70-130
Benzene	100	70-130
Trichloroethene	97	70-130
Toluene	97	70-130
Tetrachloroethene	104	70-130
Chlorobenzene	98	70-130
Ethyl Benzene	102	70-130
m,p-Xylene	102	70-130
o-Xylene	103	70-130
1,3-Dichlorobenzene	98	70-130
1,4-Dichlorobenzene	97	70-130
1,2-Dichlorobenzene	96	70-130
1,2,4-Trichlorobenzene	91	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	99	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: LCSD

Lab ID#: 1905571-24AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a060504**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/5/19 10:51 AM**	

Compound	%Recovery	Method Limits
Freon 12	101	70-130
Vinyl Chloride	99	70-130
Freon 11	102	70-130
Freon 113	98	70-130
1,1-Dichloroethene	106	70-130
Acetone	100	70-130
Methylene Chloride	93	70-130
cis-1,2-Dichloroethene	112	70-130
1,1,1-Trichloroethane	96	70-130
Carbon Tetrachloride	96	70-130
Benzene	99	70-130
Trichloroethene	97	70-130
Toluene	96	70-130
Tetrachloroethene	103	70-130
Chlorobenzene	100	70-130
Ethyl Benzene	105	70-130
m,p-Xylene	104	70-130
o-Xylene	106	70-130
1,3-Dichlorobenzene	102	70-130
1,4-Dichlorobenzene	100	70-130
1,2-Dichlorobenzene	98	70-130
1,2,4-Trichlorobenzene	100	70-130

Container Type: NA - Not Applicable

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

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Client Sample ID: LCS

Lab ID#: 1905571-24B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a060603**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/6/19 11:41 AM**	

Compound	%Recovery	Method Limits
Freon 12	104	70-130
Vinyl Chloride	100	70-130
Freon 11	106	70-130
Freon 113	99	70-130
1,1-Dichloroethene	106	70-130
Acetone	101	70-130
Methylene Chloride	97	70-130
cis-1,2-Dichloroethene	112	70-130
1,1,1-Trichloroethane	98	70-130
Carbon Tetrachloride	97	70-130
Benzene	100	70-130
Trichloroethene	98	70-130
Toluene	97	70-130
Tetrachloroethene	107	70-130
Chlorobenzene	102	70-130
Ethyl Benzene	108	70-130
m,p-Xylene	106	70-130
o-Xylene	108	70-130
1,3-Dichlorobenzene	102	70-130
1,4-Dichlorobenzene	100	70-130
1,2-Dichlorobenzene	100	70-130
1,2,4-Trichlorobenzene	95	70-130

Container Type: NA - Not Applicable

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

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Client Sample ID: LCSD

Lab ID#: 1905571-24BB

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a060604**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/6/19 12:06 PM**	

Compound	%Recovery	Method Limits
Freon 12	109	70-130
Vinyl Chloride	103	70-130
Freon 11	109	70-130
Freon 113	102	70-130
1,1-Dichloroethene	112	70-130
Acetone	104	70-130
Methylene Chloride	99	70-130
cis-1,2-Dichloroethene	115	70-130
1,1,1-Trichloroethane	100	70-130
Carbon Tetrachloride	99	70-130
Benzene	103	70-130
Trichloroethene	98	70-130
Toluene	99	70-130
Tetrachloroethene	104	70-130
Chlorobenzene	101	70-130
Ethyl Benzene	107	70-130
m,p-Xylene	106	70-130
o-Xylene	108	70-130
1,3-Dichlorobenzene	102	70-130
1,4-Dichlorobenzene	102	70-130
1,2-Dichlorobenzene	101	70-130
1,2,4-Trichlorobenzene	97	70-130

Container Type: NA - Not Applicable

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

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Client Sample ID: LCS

Lab ID#: 1905571-24C

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17060703**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/7/19 12:19 PM**	

Compound	%Recovery	Method Limits
Freon 12	98	70-130
Vinyl Chloride	106	70-130
Freon 11	94	70-130
Freon 113	93	70-130
1,1-Dichloroethene	98	70-130
Acetone	99	70-130
Methylene Chloride	96	70-130
cis-1,2-Dichloroethene	108	70-130
1,1,1-Trichloroethane	93	70-130
Carbon Tetrachloride	93	70-130
Benzene	104	70-130
Trichloroethene	97	70-130
Toluene	94	70-130
Tetrachloroethene	93	70-130
Chlorobenzene	89	70-130
Ethyl Benzene	85	70-130
m,p-Xylene	88	70-130
o-Xylene	92	70-130
1,3-Dichlorobenzene	92	70-130
1,4-Dichlorobenzene	90	70-130
1,2-Dichlorobenzene	91	70-130
1,2,4-Trichlorobenzene	92	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	97	70-130

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Client Sample ID: LCSD

Lab ID#: 1905571-24CC

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17060704**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/7/19 12:46 PM**	

Compound	%Recovery	Method Limits
Freon 12	98	70-130
Vinyl Chloride	109	70-130
Freon 11	96	70-130
Freon 113	96	70-130
1,1-Dichloroethene	99	70-130
Acetone	91	70-130
Methylene Chloride	96	70-130
cis-1,2-Dichloroethene	105	70-130
1,1,1-Trichloroethane	94	70-130
Carbon Tetrachloride	92	70-130
Benzene	103	70-130
Trichloroethene	101	70-130
Toluene	95	70-130
Tetrachloroethene	95	70-130
Chlorobenzene	94	70-130
Ethyl Benzene	92	70-130
m,p-Xylene	92	70-130
o-Xylene	95	70-130
1,3-Dichlorobenzene	94	70-130
1,4-Dichlorobenzene	93	70-130
1,2-Dichlorobenzene	93	70-130
1,2,4-Trichlorobenzene	98	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	96	70-130

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7/16/2019

Ms. Jennifer Sanborn
Sanborn, Head & Associates
20 Foundry Street

Concord NH 03301

Project Name: 2999.13
Project #: 2999.13
Workorder #: 1906475R1

Dear Ms. Jennifer Sanborn

The following report includes the data for the above referenced project for sample(s) received on 6/24/2019 at Air Toxics Ltd.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

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

Regards,

Ausha Scott

Project Manager

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WORK ORDER #: 1906475R1

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 #**	2999.13 2999.13
DATE RECEIVED:	06/24/2019	**CONTACT:**	Ausha Scott
DATE COMPLETED:	07/08/2019		
DATE REISSUED:	07/16/2019		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	EP-211_20190618	TO-15	5.1 "Hg	15.6 psi
02A	EP-212_20190618	TO-15	5.9 "Hg	16.3 psi
03A	EP-213_20190619	TO-15	3.7 "Hg	16.1 psi
04A	EP-214_20190619	TO-15	3.1 "Hg	15.9 psi
05A	EP-215_20190619	TO-15	3.9 "Hg	16.1 psi
06A	EP-217_20190619	TO-15	2.6 "Hg	15 psi
07A	EP-216_20190619	TO-15	3.5 "Hg	16 psi
08A	EP-212_EP-215_20190620	TO-15	4.5 "Hg	15.5 psi
09A	Lab Blank	TO-15	NA	NA
09B	Lab Blank	TO-15	NA	NA
10A	CCV	TO-15	NA	NA
10B	CCV	TO-15	NA	NA
11A	LCS	TO-15	NA	NA
11AA	LCSD	TO-15	NA	NA
11B	LCS	TO-15	NA	NA
11BB	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 07/15/19

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP - E8 , LA NELAP - 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP CA009332018-10, VA NELAP - 9505, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-011, Effective date: 10/18/2018, Expiration date: 10/17/2019.
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) 985-1020

LABORATORY NARRATIVE
EPA Method TO-15
Sanborn, Head & Associates
Workorder# 1906475R1

Eight 1 Liter Summa Canister samples were received on June 24, 2019. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

Dilution was performed on samples EP-212_20190618, EP-213_20190619, EP-214_20190619, EP-215_20190619, EP-217_20190619, EP-216_20190619 and EP-212_EP-215_20190620 due to the presence of high level target species.

The workorder was reissued on 7/16/19 to report trans-1,2-Dichloroethene for all samples per client request.

Definition of Data Qualifying Flags

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

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

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

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

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

N - The identification is based on presumptive evidence.

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

CN - See Case Narrative.

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

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

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

Client Sample ID: EP-211_20190618

Lab ID#: 1906475R1-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	3.5	6.1	17
Freon 11	1.2	1.5	7.0	8.4
Freon 113	1.2	85	9.5	650
Acetone	12	61	29	140
cis-1,2-Dichloroethene	1.2	2.8	4.9	11
1,1,1-Trichloroethane	1.2	6.5	6.8	35
Trichloroethene	1.2	280	6.7	1500
Tetrachloroethene	1.2	140	8.4	920

Client Sample ID: EP-212_20190618

Lab ID#: 1906475R1-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	13	51	65	250
Freon 113	13	110	100	840
cis-1,2-Dichloroethene	13	100	52	400
1,1,1-Trichloroethane	13	21	71	110
Trichloroethene	13	3200	70	17000
Tetrachloroethene	13	1100	89	7200

Client Sample ID: EP-213_20190619

Lab ID#: 1906475R1-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	8.0	470	39	2300
Freon 113	8.0	31	61	240
cis-1,2-Dichloroethene	8.0	67	32	260
Trichloroethene	8.0	1900	43	10000
Tetrachloroethene	8.0	760	54	5200

Client Sample ID: EP-214_20190619

Lab ID#: 1906475R1-04A

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

Client Sample ID: EP-214_20190619

Lab ID#: 1906475R1-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	12	220	57	1100
Freon 113	12	230	89	1700
cis-1,2-Dichloroethene	12	28	46	110
1,1,1-Trichloroethane	12	13	63	71
Trichloroethene	12	2500	62	13000
Tetrachloroethene	12	2500	79	17000

Client Sample ID: EP-215_20190619

Lab ID#: 1906475R1-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	2.4	34	12	170
Freon 11	2.4	6.6	14	37
Freon 113	2.4	84	18	640
Trichloroethene	2.4	190	13	1000
Tetrachloroethene	2.4	610	16	4100

Client Sample ID: EP-217_20190619

Lab ID#: 1906475R1-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	2.2	26	11	130
Freon 11	2.2	3.7	12	21
Freon 113	2.2	68	17	520
Trichloroethene	2.2	230	12	1200
Tetrachloroethene	2.2	480	15	3200

Client Sample ID: EP-216_20190619

Lab ID#: 1906475R1-07A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	2.6	28	13	140

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

Client Sample ID: EP-216_20190619

Lab ID#: 1906475R1-07A

Freon 11	2.6	6.9	15	39
Freon 113	2.6	180	20	1300
Trichloroethene	2.6	370	14	2000
Tetrachloroethene	2.6	970	18	6600

Client Sample ID: EP-212_EP-215_20190620

Lab ID#: 1906475R1-08A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	9.6	44	48	220
Freon 113	9.6	95	74	730
cis-1,2-Dichloroethene	9.6	75	38	300
1,1,1-Trichloroethane	9.6	18	53	100
Benzene	9.6	20	31	63
Trichloroethene	9.6	2400	52	13000
Tetrachloroethene	9.6	930	65	6300

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Client Sample ID: EP-211_20190618

Lab ID#: 1906475R1-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17062610R1**	**Date of Collection:**	**6/18/19 2:28:00 PM**
Dil. Factor:	**2.48**	**Date of Analysis:**	**6/26/19 04:21 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	3.5	6.1	17
Vinyl Chloride	1.2	Not Detected	3.2	Not Detected
Freon 11	1.2	1.5	7.0	8.4
Freon 113	1.2	85	9.5	650
1,1-Dichloroethene	1.2	Not Detected	4.9	Not Detected
Acetone	12	61	29	140
Methylene Chloride	12	Not Detected	43	Not Detected
trans-1,2-Dichloroethene	1.2	Not Detected	4.9	Not Detected
cis-1,2-Dichloroethene	1.2	2.8	4.9	11
1,1,1-Trichloroethane	1.2	6.5	6.8	35
Carbon Tetrachloride	1.2	Not Detected	7.8	Not Detected
Benzene	1.2	Not Detected	4.0	Not Detected
Trichloroethene	1.2	280	6.7	1500
Toluene	1.2	Not Detected	4.7	Not Detected
Tetrachloroethene	1.2	140	8.4	920
Chlorobenzene	1.2	Not Detected	5.7	Not Detected
Ethyl Benzene	1.2	Not Detected	5.4	Not Detected
m,p-Xylene	1.2	Not Detected	5.4	Not Detected
o-Xylene	1.2	Not Detected	5.4	Not Detected
1,3-Dichlorobenzene	1.2	Not Detected	7.4	Not Detected
1,4-Dichlorobenzene	1.2	Not Detected	7.4	Not Detected
1,2-Dichlorobenzene	1.2	Not Detected	7.4	Not Detected
1,2,4-Trichlorobenzene	5.0	Not Detected	37	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	97	70-130
4-Bromofluorobenzene	95	70-130

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Client Sample ID: EP-212_20190618

Lab ID#: 1906475R1-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p062816R1**	**Date of Collection:**	**6/18/19 4:15:00 PM**
Dil. Factor:	**26.2**	**Date of Analysis:**	**6/28/19 11:16 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	13	51	65	250
Vinyl Chloride	13	Not Detected	33	Not Detected
Freon 11	13	Not Detected	74	Not Detected
Freon 113	13	110	100	840
1,1-Dichloroethene	13	Not Detected	52	Not Detected
Acetone	130	Not Detected	310	Not Detected
Methylene Chloride	130	Not Detected	460	Not Detected
trans-1,2-Dichloroethene	13	Not Detected	52	Not Detected
cis-1,2-Dichloroethene	13	100	52	400
1,1,1-Trichloroethane	13	21	71	110
Carbon Tetrachloride	13	Not Detected	82	Not Detected
Benzene	13	Not Detected	42	Not Detected
Trichloroethene	13	3200	70	17000
Toluene	13	Not Detected	49	Not Detected
Tetrachloroethene	13	1100	89	7200
Chlorobenzene	13	Not Detected	60	Not Detected
Ethyl Benzene	13	Not Detected	57	Not Detected
m,p-Xylene	13	Not Detected	57	Not Detected
o-Xylene	13	Not Detected	57	Not Detected
1,3-Dichlorobenzene	13	Not Detected	79	Not Detected
1,4-Dichlorobenzene	13	Not Detected	79	Not Detected
1,2-Dichlorobenzene	13	Not Detected	79	Not Detected
1,2,4-Trichlorobenzene	52	Not Detected	390	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	89	70-130

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Client Sample ID: EP-213_20190619

Lab ID#: 1906475R1-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17062619R1**	**Date of Collection:**	**6/19/19 9:15:00 AM**
Dil. Factor:	**15.9**	**Date of Analysis:**	**6/26/19 09:58 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	8.0	470	39	2300
Vinyl Chloride	8.0	Not Detected	20	Not Detected
Freon 11	8.0	Not Detected	45	Not Detected
Freon 113	8.0	31	61	240
1,1-Dichloroethene	8.0	Not Detected	32	Not Detected
Acetone	80	Not Detected	190	Not Detected
Methylene Chloride	80	Not Detected	280	Not Detected
trans-1,2-Dichloroethene	8.0	Not Detected	32	Not Detected
cis-1,2-Dichloroethene	8.0	67	32	260
1,1,1-Trichloroethane	8.0	Not Detected	43	Not Detected
Carbon Tetrachloride	8.0	Not Detected	50	Not Detected
Benzene	8.0	Not Detected	25	Not Detected
Trichloroethene	8.0	1900	43	10000
Toluene	8.0	Not Detected	30	Not Detected
Tetrachloroethene	8.0	760	54	5200
Chlorobenzene	8.0	Not Detected	36	Not Detected
Ethyl Benzene	8.0	Not Detected	34	Not Detected
m,p-Xylene	8.0	Not Detected	34	Not Detected
o-Xylene	8.0	Not Detected	34	Not Detected
1,3-Dichlorobenzene	8.0	Not Detected	48	Not Detected
1,4-Dichlorobenzene	8.0	Not Detected	48	Not Detected
1,2-Dichlorobenzene	8.0	Not Detected	48	Not Detected
1,2,4-Trichlorobenzene	32	Not Detected	240	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	99	70-130
4-Bromofluorobenzene	93	70-130

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Client Sample ID: EP-214_20190619

Lab ID#: 1906475R1-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17062621R1**	**Date of Collection:**	**6/19/19 10:25:00 AM**
Dil. Factor:	**23.2**	**Date of Analysis:**	**6/26/19 10:51 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	12	220	57	1100
Vinyl Chloride	12	Not Detected	30	Not Detected
Freon 11	12	Not Detected	65	Not Detected
Freon 113	12	230	89	1700
1,1-Dichloroethene	12	Not Detected	46	Not Detected
Acetone	120	Not Detected	280	Not Detected
Methylene Chloride	120	Not Detected	400	Not Detected
trans-1,2-Dichloroethene	12	Not Detected	46	Not Detected
cis-1,2-Dichloroethene	12	28	46	110
1,1,1-Trichloroethane	12	13	63	71
Carbon Tetrachloride	12	Not Detected	73	Not Detected
Benzene	12	Not Detected	37	Not Detected
Trichloroethene	12	2500	62	13000
Toluene	12	Not Detected	44	Not Detected
Tetrachloroethene	12	2500	79	17000
Chlorobenzene	12	Not Detected	53	Not Detected
Ethyl Benzene	12	Not Detected	50	Not Detected
m,p-Xylene	12	Not Detected	50	Not Detected
o-Xylene	12	Not Detected	50	Not Detected
1,3-Dichlorobenzene	12	Not Detected	70	Not Detected
1,4-Dichlorobenzene	12	Not Detected	70	Not Detected
1,2-Dichlorobenzene	12	Not Detected	70	Not Detected
1,2,4-Trichlorobenzene	46	Not Detected	340	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	99	70-130
4-Bromofluorobenzene	93	70-130

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Client Sample ID: EP-215_20190619

Lab ID#: 1906475R1-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17062611R1**	**Date of Collection: 6/19/19 1:05:00 PM**	
Dil. Factor:	**4.82**	**Date of Analysis: 6/26/19 04:47 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	2.4	34	12	170
Vinyl Chloride	2.4	Not Detected	6.2	Not Detected
Freon 11	2.4	6.6	14	37
Freon 113	2.4	84	18	640
1,1-Dichloroethene	2.4	Not Detected	9.6	Not Detected
Acetone	24	Not Detected	57	Not Detected
Methylene Chloride	24	Not Detected	84	Not Detected
trans-1,2-Dichloroethene	2.4	Not Detected	9.6	Not Detected
cis-1,2-Dichloroethene	2.4	Not Detected	9.6	Not Detected
1,1,1-Trichloroethane	2.4	Not Detected	13	Not Detected
Carbon Tetrachloride	2.4	Not Detected	15	Not Detected
Benzene	2.4	Not Detected	7.7	Not Detected
Trichloroethene	2.4	190	13	1000
Toluene	2.4	Not Detected	9.1	Not Detected
Tetrachloroethene	2.4	610	16	4100
Chlorobenzene	2.4	Not Detected	11	Not Detected
Ethyl Benzene	2.4	Not Detected	10	Not Detected
m,p-Xylene	2.4	Not Detected	10	Not Detected
o-Xylene	2.4	Not Detected	10	Not Detected
1,3-Dichlorobenzene	2.4	Not Detected	14	Not Detected
1,4-Dichlorobenzene	2.4	Not Detected	14	Not Detected
1,2-Dichlorobenzene	2.4	Not Detected	14	Not Detected
1,2,4-Trichlorobenzene	9.6	Not Detected	72	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	100	70-130
4-Bromofluorobenzene	95	70-130

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Client Sample ID: EP-217_20190619

Lab ID#: 1906475R1-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17062613R1**	**Date of Collection:**	**6/19/19 3:18:00 PM**
Dil. Factor:	**4.42**	**Date of Analysis:**	**6/26/19 06:07 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	2.2	26	11	130
Vinyl Chloride	2.2	Not Detected	5.6	Not Detected
Freon 11	2.2	3.7	12	21
Freon 113	2.2	68	17	520
1,1-Dichloroethene	2.2	Not Detected	8.8	Not Detected
Acetone	22	Not Detected	52	Not Detected
Methylene Chloride	22	Not Detected	77	Not Detected
trans-1,2-Dichloroethene	2.2	Not Detected	8.8	Not Detected
cis-1,2-Dichloroethene	2.2	Not Detected	8.8	Not Detected
1,1,1-Trichloroethane	2.2	Not Detected	12	Not Detected
Carbon Tetrachloride	2.2	Not Detected	14	Not Detected
Benzene	2.2	Not Detected	7.1	Not Detected
Trichloroethene	2.2	230	12	1200
Toluene	2.2	Not Detected	8.3	Not Detected
Tetrachloroethene	2.2	480	15	3200
Chlorobenzene	2.2	Not Detected	10	Not Detected
Ethyl Benzene	2.2	Not Detected	9.6	Not Detected
m,p-Xylene	2.2	Not Detected	9.6	Not Detected
o-Xylene	2.2	Not Detected	9.6	Not Detected
1,3-Dichlorobenzene	2.2	Not Detected	13	Not Detected
1,4-Dichlorobenzene	2.2	Not Detected	13	Not Detected
1,2-Dichlorobenzene	2.2	Not Detected	13	Not Detected
1,2,4-Trichlorobenzene	8.8	Not Detected	66	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	95	70-130

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Client Sample ID: EP-216_20190619

Lab ID#: 1906475R1-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17062614R1**	**Date of Collection: 6/19/19 4:30:00 PM**	
Dil. Factor:	**5.25**	**Date of Analysis: 6/26/19 06:33 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	2.6	28	13	140
Vinyl Chloride	2.6	Not Detected	6.7	Not Detected
Freon 11	2.6	6.9	15	39
Freon 113	2.6	180	20	1300
1,1-Dichloroethene	2.6	Not Detected	10	Not Detected
Acetone	26	Not Detected	62	Not Detected
Methylene Chloride	26	Not Detected	91	Not Detected
trans-1,2-Dichloroethene	2.6	Not Detected	10	Not Detected
cis-1,2-Dichloroethene	2.6	Not Detected	10	Not Detected
1,1,1-Trichloroethane	2.6	Not Detected	14	Not Detected
Carbon Tetrachloride	2.6	Not Detected	16	Not Detected
Benzene	2.6	Not Detected	8.4	Not Detected
Trichloroethene	2.6	370	14	2000
Toluene	2.6	Not Detected	9.9	Not Detected
Tetrachloroethene	2.6	970	18	6600
Chlorobenzene	2.6	Not Detected	12	Not Detected
Ethyl Benzene	2.6	Not Detected	11	Not Detected
m,p-Xylene	2.6	Not Detected	11	Not Detected
o-Xylene	2.6	Not Detected	11	Not Detected
1,3-Dichlorobenzene	2.6	Not Detected	16	Not Detected
1,4-Dichlorobenzene	2.6	Not Detected	16	Not Detected
1,2-Dichlorobenzene	2.6	Not Detected	16	Not Detected
1,2,4-Trichlorobenzene	10	Not Detected	78	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	95	70-130

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Client Sample ID: EP-212_EP-215_20190620

Lab ID#: 1906475R1-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17062620R1**	**Date of Collection: 6/20/19 8:35:00 AM**	
Dil. Factor:	**19.3**	**Date of Analysis: 6/26/19 10:24 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	9.6	44	48	220
Vinyl Chloride	9.6	Not Detected	25	Not Detected
Freon 11	9.6	Not Detected	54	Not Detected
Freon 113	9.6	95	74	730
1,1-Dichloroethene	9.6	Not Detected	38	Not Detected
Acetone	96	Not Detected	230	Not Detected
Methylene Chloride	96	Not Detected	340	Not Detected
trans-1,2-Dichloroethene	9.6	Not Detected	38	Not Detected
cis-1,2-Dichloroethene	9.6	75	38	300
1,1,1-Trichloroethane	9.6	18	53	100
Carbon Tetrachloride	9.6	Not Detected	61	Not Detected
Benzene	9.6	20	31	63
Trichloroethene	9.6	2400	52	13000
Toluene	9.6	Not Detected	36	Not Detected
Tetrachloroethene	9.6	930	65	6300
Chlorobenzene	9.6	Not Detected	44	Not Detected
Ethyl Benzene	9.6	Not Detected	42	Not Detected
m,p-Xylene	9.6	Not Detected	42	Not Detected
o-Xylene	9.6	Not Detected	42	Not Detected
1,3-Dichlorobenzene	9.6	Not Detected	58	Not Detected
1,4-Dichlorobenzene	9.6	Not Detected	58	Not Detected
1,2-Dichlorobenzene	9.6	Not Detected	58	Not Detected
1,2,4-Trichlorobenzene	39	Not Detected	290	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	95	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1906475R1-09A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17062606dR1**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/26/19 01:41 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
Freon 11	0.50	Not Detected	2.8	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Acetone	5.0	Not Detected	12	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
Chlorobenzene	0.50	Not Detected	2.3	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,2,4-Trichlorobenzene	2.0	Not Detected	15	Not Detected

Container Type: NA - Not Applicable

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

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Client Sample ID: Lab Blank

Lab ID#: 1906475R1-09B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p062806**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/28/19 04:11 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
Freon 11	0.50	Not Detected	2.8	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Acetone	5.0	Not Detected	12	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
Chlorobenzene	0.50	Not Detected	2.3	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,2,4-Trichlorobenzene	2.0	Not Detected	15	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	95	70-130
4-Bromofluorobenzene	97	70-130

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Client Sample ID: CCV

Lab ID#: 1906475R1-10A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17062602**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/26/19 11:38 AM**	

Compound	%Recovery
Freon 12	94
Vinyl Chloride	112
Freon 11	90
Freon 113	93
1,1-Dichloroethene	104
Acetone	112
Methylene Chloride	102
trans-1,2-Dichloroethene	110
cis-1,2-Dichloroethene	114
1,1,1-Trichloroethane	101
Carbon Tetrachloride	96
Benzene	114
Trichloroethene	107
Toluene	106
Tetrachloroethene	102
Chlorobenzene	102
Ethyl Benzene	102
m,p-Xylene	104
o-Xylene	103
1,3-Dichlorobenzene	103
1,4-Dichlorobenzene	101
1,2-Dichlorobenzene	100
1,2,4-Trichlorobenzene	105

Container Type: NA - Not Applicable

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

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Client Sample ID: CCV

Lab ID#: 1906475R1-10B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p062802**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/28/19 01:43 PM**	

Compound	%Recovery
Freon 12	90
Vinyl Chloride	87
Freon 11	90
Freon 113	92
1,1-Dichloroethene	90
Acetone	86
Methylene Chloride	86
trans-1,2-Dichloroethene	93
cis-1,2-Dichloroethene	94
1,1,1-Trichloroethane	90
Carbon Tetrachloride	95
Benzene	88
Trichloroethene	87
Toluene	89
Tetrachloroethene	88
Chlorobenzene	86
Ethyl Benzene	93
m,p-Xylene	94
o-Xylene	97
1,3-Dichlorobenzene	78
1,4-Dichlorobenzene	81
1,2-Dichlorobenzene	78
1,2,4-Trichlorobenzene	75

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: LCS

Lab ID#: 1906475R1-11A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17062604**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/26/19 12:45 PM**	

Compound	%Recovery	Method Limits
Freon 12	103	70-130
Vinyl Chloride	120	70-130
Freon 11	95	70-130
Freon 113	97	70-130
1,1-Dichloroethene	107	70-130
Acetone	113	70-130
Methylene Chloride	105	70-130
trans-1,2-Dichloroethene	98	70-130
cis-1,2-Dichloroethene	128	70-130
1,1,1-Trichloroethane	107	70-130
Carbon Tetrachloride	102	70-130
Benzene	115	70-130
Trichloroethene	107	70-130
Toluene	108	70-130
Tetrachloroethene	101	70-130
Chlorobenzene	101	70-130
Ethyl Benzene	102	70-130
m,p-Xylene	105	70-130
o-Xylene	107	70-130
1,3-Dichlorobenzene	103	70-130
1,4-Dichlorobenzene	102	70-130
1,2-Dichlorobenzene	102	70-130
1,2,4-Trichlorobenzene	104	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	103	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: LCSD

Lab ID#: 1906475R1-11AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17062605**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/26/19 01:12 PM**	

Compound	%Recovery	Method Limits
Freon 12	98	70-130
Vinyl Chloride	113	70-130
Freon 11	92	70-130
Freon 113	94	70-130
1,1-Dichloroethene	104	70-130
Acetone	109	70-130
Methylene Chloride	101	70-130
trans-1,2-Dichloroethene	94	70-130
cis-1,2-Dichloroethene	124	70-130
1,1,1-Trichloroethane	104	70-130
Carbon Tetrachloride	100	70-130
Benzene	112	70-130
Trichloroethene	105	70-130
Toluene	106	70-130
Tetrachloroethene	104	70-130
Chlorobenzene	105	70-130
Ethyl Benzene	104	70-130
m,p-Xylene	107	70-130
o-Xylene	111	70-130
1,3-Dichlorobenzene	106	70-130
1,4-Dichlorobenzene	107	70-130
1,2-Dichlorobenzene	106	70-130
1,2,4-Trichlorobenzene	111	70-130

Container Type: NA - Not Applicable

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

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Client Sample ID: LCS

Lab ID#: 1906475R1-11B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p062803**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/28/19 02:09 PM**	

Compound	%Recovery	Method Limits
Freon 12	94	70-130
Vinyl Chloride	97	70-130
Freon 11	96	70-130
Freon 113	93	70-130
1,1-Dichloroethene	93	70-130
Acetone	88	70-130
Methylene Chloride	89	70-130
trans-1,2-Dichloroethene	81	70-130
cis-1,2-Dichloroethene	108	70-130
1,1,1-Trichloroethane	91	70-130
Carbon Tetrachloride	92	70-130
Benzene	90	70-130
Trichloroethene	88	70-130
Toluene	93	70-130
Tetrachloroethene	92	70-130
Chlorobenzene	90	70-130
Ethyl Benzene	97	70-130
m,p-Xylene	97	70-130
o-Xylene	103	70-130
1,3-Dichlorobenzene	87	70-130
1,4-Dichlorobenzene	90	70-130
1,2-Dichlorobenzene	90	70-130
1,2,4-Trichlorobenzene	116	70-130

Container Type: NA - Not Applicable

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

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Client Sample ID: LCSD

Lab ID#: 1906475R1-11BB

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p062804**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/28/19 02:35 PM**	

Compound	%Recovery	Method Limits
Freon 12	96	70-130
Vinyl Chloride	100	70-130
Freon 11	98	70-130
Freon 113	97	70-130
1,1-Dichloroethene	94	70-130
Acetone	90	70-130
Methylene Chloride	91	70-130
trans-1,2-Dichloroethene	84	70-130
cis-1,2-Dichloroethene	112	70-130
1,1,1-Trichloroethane	94	70-130
Carbon Tetrachloride	95	70-130
Benzene	90	70-130
Trichloroethene	89	70-130
Toluene	92	70-130
Tetrachloroethene	92	70-130
Chlorobenzene	90	70-130
Ethyl Benzene	97	70-130
m,p-Xylene	98	70-130
o-Xylene	105	70-130
1,3-Dichlorobenzene	88	70-130
1,4-Dichlorobenzene	92	70-130
1,2-Dichlorobenzene	91	70-130
1,2,4-Trichlorobenzene	113	70-130

Container Type: NA - Not Applicable

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

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9/23/2019
Ms. Jennifer Sanborn
Sanborn, Head & Associates
20 Foundry Street

Concord NH 03301

Project Name: EFK
Project #: 2999.13
Workorder #: 1909182R1

Dear Ms. Jennifer Sanborn

The following report includes the data for the above referenced project for sample(s) received on 9/9/2019 at Air Toxics Ltd.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

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

Regards,

Ausha Scott

Project Manager

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WORK ORDER #: 1909182R1

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 #**	2999.13 EFK
DATE RECEIVED:	09/09/2019	**CONTACT:**	Ausha Scott
DATE COMPLETED:	09/20/2019		
DATE REISSUED:	09/23/2019		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	SS-173_20190905	TO-15	4.9 "Hg	15 psi
02A	FD-01_20190905	TO-15	5.5 "Hg	15 psi
03A	SS-174_20190905	TO-15	4.7 "Hg	15 psi
04A	SS-175_20190905	TO-15	6.7 "Hg	15.3 psi
05A	SS-176_20190905	TO-15	7.1 "Hg	14.8 psi
06A	SS-177_20190905	TO-15	4.3 "Hg	16.1 psi
07A	SS-178_20190905	TO-15	5.9 "Hg	15.4 psi
08A	SS-179_20190905	TO-15	4.5 "Hg	16.2 psi
09A	SS-180_20190905	TO-15	5.9 "Hg	15.3 psi
10A	SS-181_20190905	TO-15	4.5 "Hg	16 psi
11A	SS-182_20190905	TO-15	7.8 "Hg	14.9 psi
12A	SS-13_20190905	TO-15	6.1 "Hg	15 psi
13A	SS-21_20190905	TO-15	6.3 "Hg	14.9 psi
14A	Lab Blank	TO-15	NA	NA
14B	Lab Blank	TO-15	NA	NA
14C	Lab Blank	TO-15	NA	NA
14D	Lab Blank	TO-15	NA	NA
15A	CCV	TO-15	NA	NA
15B	CCV	TO-15	NA	NA
15C	CCV	TO-15	NA	NA
15D	CCV	TO-15	NA	NA
16A	LCS	TO-15	NA	NA
16AA	LCSD	TO-15	NA	NA

Continued on next page

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WORK ORDER #: 1909182R1

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 #**	2999.13 EFK
DATE RECEIVED:	09/09/2019	**CONTACT:**	Ausha Scott
DATE COMPLETED:	09/20/2019		
DATE REISSUED:	09/23/2019		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
16B	LCS	TO-15	NA	NA
16BB	LCSD	TO-15	NA	NA
16C	LCS	TO-15	NA	NA
16CC	LCSD	TO-15	NA	NA
16D	LCS	TO-15	NA	NA
16DD	LCSD	TO-15	NA	NA

CERTIFIED BY:  DATE: 09/23/19

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP – CA009332019-11, VA NELAP - 460197, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-011, Effective date: 10/18/2018, Expiration date: 10/17/2019.
Eurofins Air Toxics Inc.. 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) 985-1020

LABORATORY NARRATIVE
EPA Method TO-15
Sanborn, Head & Associates
Workorder# 1909182R1

Thirteen 1 Liter Summa Canister samples were received on September 09, 2019. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Receiving Notes

The Chain of Custody (COC) was not relinquished properly. A time was not provided by the field sampler.

The Chain of Custody contained incorrect method information. EATL proceeded with the analysis as per the original contract or verbal agreement.

Due to omission of the sampling date from the ID format on the sample tag, the information on the Chain of Custody (COC) for samples SS-173_20190905, FD-01_20190905, SS-174_20190905, SS-175_20190905, SS-176_20190905, SS-177_20190905, SS-178_20190905, SS-179_20190905, SS-180_20190905, SS-181_20190905, SS-182_20190905, SS-13_20190905 and SS-12_20190905 was used to process and report the samples.

The work order was reissued on 9/23/2019 to change identification of sample SS-21_20190905 per the revised Chain of Custody (COC) provided by the client.

Analytical Notes

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

Dilution was performed on samples SS-173_20190905, FD-01_20190905, SS-175_20190905, SS-177_20190905, SS-178_20190905, SS-181_20190905, SS-182_20190905 and SS-12_20190905 due to the presence of high level target species.

Definition of Data Qualifying Flags

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

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

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

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

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

N - The identification is based on presumptive evidence.

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

CN - See Case Narrative.

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

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

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

Client Sample ID: SS-173_20190905

Lab ID#: 1909182R1-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	12	14	68	82
Freon 113	12	560	92	4300
cis-1,2-Dichloroethene	12	30	48	120
1,1,1-Trichloroethane	12	63	66	340
Trichloroethene	12	11000	65	58000
Tetrachloroethene	12	2100	82	14000

Client Sample ID: FD-01_20190905

Lab ID#: 1909182R1-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	12	17	70	94
Freon 113	12	600	95	4600
cis-1,2-Dichloroethene	12	30	49	120
1,1,1-Trichloroethane	12	69	68	380
Trichloroethene	12	11000	67	59000
Tetrachloroethene	12	2200	84	15000

Client Sample ID: SS-174_20190905

Lab ID#: 1909182R1-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	1.2	5.9	6.1
Freon 11	1.2	9.6	6.7	54
Freon 113	1.2	66	9.2	500
1,1,1-Trichloroethane	1.2	1.3	6.5	7.1
Trichloroethene	1.2	260	6.4	1400
Tetrachloroethene	1.2	240	8.1	1600

Client Sample ID: SS-175_20190905

Lab ID#: 1909182R1-04A

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

Client Sample ID: SS-175_20190905

Lab ID#: 1909182R1-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 113	18	240	130	1800
1,1,1-Trichloroethane	18	22	95	120
Trichloroethene	18	3800	94	20000
Tetrachloroethene	18	900	120	6100

Client Sample ID: SS-176_20190905

Lab ID#: 1909182R1-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	1.3	17	7.4	98
Freon 113	1.3	58	10	440
Acetone	13	21	31	50
Trichloroethene	1.3	140	7.1	760
Tetrachloroethene	1.3	230	8.9	1500

Client Sample ID: SS-177_20190905

Lab ID#: 1909182R1-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	16	56	81	280
Freon 113	16	35	120	270
Trichloroethene	16	3900	88	21000
Tetrachloroethene	16	4900	110	33000

Client Sample ID: SS-178_20190905

Lab ID#: 1909182R1-07A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	2.6	3.9	13	19
Freon 11	2.6	52	14	290
Freon 113	2.6	360	20	2700
Trichloroethene	2.6	92	14	490

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

Client Sample ID: SS-178_20190905

Lab ID#: 1909182R1-07A

Tetrachloroethene	2.6	530	17	3600

Client Sample ID: SS-179_20190905

Lab ID#: 1909182R1-08A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	1.2	12	6.9	68
Freon 113	1.2	35	9.5	270
Acetone	12	13	29	31
Trichloroethene	1.2	140	6.6	770
Tetrachloroethene	1.2	440	8.4	3000

Client Sample ID: SS-180_20190905

Lab ID#: 1909182R1-09A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	1.3	13	7.1	74
Freon 113	1.3	3.4	9.7	26
Acetone	13	22	30	51
Trichloroethene	1.3	52	6.8	280
Tetrachloroethene	1.3	97	8.6	660

Client Sample ID: SS-181_20190905

Lab ID#: 1909182R1-10A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	3.5	20	20	110
Freon 113	3.5	14	27	100
Acetone	35	210	83	510
Trichloroethene	3.5	81	19	440
Tetrachloroethene	3.5	960	24	6500

Client Sample ID: SS-182_20190905

Lab ID#: 1909182R1-11A

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

Client Sample ID: SS-182_20190905

Lab ID#: 1909182R1-11A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	14	19	76	110
Freon 113	14	82	100	620
Acetone	140	2500	320	5900
Trichloroethene	14	46	73	240
Tetrachloroethene	14	800	92	5400

Client Sample ID: SS-13_20190905

Lab ID#: 1909182R1-12A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	1.3	17	7.1	95
Freon 113	1.3	74	9.7	560
1,1,1-Trichloroethane	1.3	1.9	6.9	10
Trichloroethene	1.3	66	6.8	360
Tetrachloroethene	1.3	440	8.6	3000

Client Sample ID: SS-21_20190905

Lab ID#: 1909182R1-13A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 113	26	220	200	1700
1,1,1-Trichloroethane	26	50	140	270
Trichloroethene	26	5200	140	28000
Tetrachloroethene	26	4800	170	32000

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Client Sample ID: SS-173_20190905

Lab ID#: 1909182R1-01A

EPA METHOD TO-15 GC/MS

File Name:	**14091617**	**Date of Collection:**	**9/5/19 10:32:00 AM**
Dil. Factor:	**2.41**	**Date of Analysis:**	**9/16/19 02:45 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	12	Not Detected	60	Not Detected
Vinyl Chloride	12	Not Detected	31	Not Detected
Freon 11	12	14	68	82
Freon 113	12	560	92	4300
1,1-Dichloroethene	12	Not Detected	48	Not Detected
Acetone	48	Not Detected	110	Not Detected
Methylene Chloride	48	Not Detected	170	Not Detected
cis-1,2-Dichloroethene	12	30	48	120
1,1,1-Trichloroethane	12	63	66	340
Carbon Tetrachloride	12	Not Detected	76	Not Detected
Benzene	12	Not Detected	38	Not Detected
Trichloroethene	12	11000	65	58000
Toluene	12	Not Detected	45	Not Detected
Tetrachloroethene	12	2100	82	14000
Chlorobenzene	12	Not Detected	55	Not Detected
Ethyl Benzene	12	Not Detected	52	Not Detected
m,p-Xylene	12	Not Detected	52	Not Detected
o-Xylene	12	Not Detected	52	Not Detected
1,3-Dichlorobenzene	12	Not Detected	72	Not Detected
1,4-Dichlorobenzene	12	Not Detected	72	Not Detected
1,2-Dichlorobenzene	12	Not Detected	72	Not Detected
1,2,4-Trichlorobenzene	48	Not Detected	360	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: FD-01_20190905

Lab ID#: 1909182R1-02A

EPA METHOD TO-15 GC/MS

File Name:	**14091618**	**Date of Collection:**	**9/5/19 10:32:00 AM**
Dil. Factor:	**2.48**	**Date of Analysis:**	**9/16/19 03:11 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	12	Not Detected	61	Not Detected
Vinyl Chloride	12	Not Detected	32	Not Detected
Freon 11	12	17	70	94
Freon 113	12	600	95	4600
1,1-Dichloroethene	12	Not Detected	49	Not Detected
Acetone	50	Not Detected	120	Not Detected
Methylene Chloride	50	Not Detected	170	Not Detected
cis-1,2-Dichloroethene	12	30	49	120
1,1,1-Trichloroethane	12	69	68	380
Carbon Tetrachloride	12	Not Detected	78	Not Detected
Benzene	12	Not Detected	40	Not Detected
Trichloroethene	12	11000	67	59000
Toluene	12	Not Detected	47	Not Detected
Tetrachloroethene	12	2200	84	15000
Chlorobenzene	12	Not Detected	57	Not Detected
Ethyl Benzene	12	Not Detected	54	Not Detected
m,p-Xylene	12	Not Detected	54	Not Detected
o-Xylene	12	Not Detected	54	Not Detected
1,3-Dichlorobenzene	12	Not Detected	74	Not Detected
1,4-Dichlorobenzene	12	Not Detected	74	Not Detected
1,2-Dichlorobenzene	12	Not Detected	74	Not Detected
1,2,4-Trichlorobenzene	50	Not Detected	370	Not Detected

Container Type: 1 Liter Summa Canister

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

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Client Sample ID: SS-174_20190905

Lab ID#: 1909182R1-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3091212**	**Date of Collection:**	**9/5/19 9:15:00 AM**
Dil. Factor:	**2.40**	**Date of Analysis:**	**9/12/19 06:07 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	1.2	5.9	6.1
Vinyl Chloride	1.2	Not Detected	3.1	Not Detected
Freon 11	1.2	9.6	6.7	54
Freon 113	1.2	66	9.2	500
1,1-Dichloroethene	1.2	Not Detected	4.8	Not Detected
Acetone	12	Not Detected	28	Not Detected
Methylene Chloride	12	Not Detected	42	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	4.8	Not Detected
1,1,1-Trichloroethane	1.2	1.3	6.5	7.1
Carbon Tetrachloride	1.2	Not Detected	7.6	Not Detected
Benzene	1.2	Not Detected	3.8	Not Detected
Trichloroethene	1.2	260	6.4	1400
Toluene	1.2	Not Detected	4.5	Not Detected
Tetrachloroethene	1.2	240	8.1	1600
Chlorobenzene	1.2	Not Detected	5.5	Not Detected
Ethyl Benzene	1.2	Not Detected	5.2	Not Detected
m,p-Xylene	1.2	Not Detected	5.2	Not Detected
o-Xylene	1.2	Not Detected	5.2	Not Detected
1,3-Dichlorobenzene	1.2	Not Detected	7.2	Not Detected
1,4-Dichlorobenzene	1.2	Not Detected	7.2	Not Detected
1,2-Dichlorobenzene	1.2	Not Detected	7.2	Not Detected
1,2,4-Trichlorobenzene	4.8	Not Detected	36	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	103	70-130

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Client Sample ID: SS-175_20190905

Lab ID#: 1909182R1-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3091214**	**Date of Collection:**	**9/5/19 9:04:00 AM**
Dil. Factor:	**35.0**	**Date of Analysis:**	**9/12/19 06:58 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	18	Not Detected	86	Not Detected
Vinyl Chloride	18	Not Detected	45	Not Detected
Freon 11	18	Not Detected	98	Not Detected
Freon 113	18	240	130	1800
1,1-Dichloroethene	18	Not Detected	69	Not Detected
Acetone	180	Not Detected	420	Not Detected
Methylene Chloride	180	Not Detected	610	Not Detected
cis-1,2-Dichloroethene	18	Not Detected	69	Not Detected
1,1,1-Trichloroethane	18	22	95	120
Carbon Tetrachloride	18	Not Detected	110	Not Detected
Benzene	18	Not Detected	56	Not Detected
Trichloroethene	18	3800	94	20000
Toluene	18	Not Detected	66	Not Detected
Tetrachloroethene	18	900	120	6100
Chlorobenzene	18	Not Detected	80	Not Detected
Ethyl Benzene	18	Not Detected	76	Not Detected
m,p-Xylene	18	Not Detected	76	Not Detected
o-Xylene	18	Not Detected	76	Not Detected
1,3-Dichlorobenzene	18	Not Detected	100	Not Detected
1,4-Dichlorobenzene	18	Not Detected	100	Not Detected
1,2-Dichlorobenzene	18	Not Detected	100	Not Detected
1,2,4-Trichlorobenzene	70	Not Detected	520	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	99	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: SS-176_20190905

Lab ID#: 1909182R1-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3091213**	**Date of Collection:**	**9/5/19 9:02:00 AM**
Dil. Factor:	**2.63**	**Date of Analysis:**	**9/12/19 06:33 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.3	Not Detected	6.5	Not Detected
Vinyl Chloride	1.3	Not Detected	3.4	Not Detected
Freon 11	1.3	17	7.4	98
Freon 113	1.3	58	10	440
1,1-Dichloroethene	1.3	Not Detected	5.2	Not Detected
Acetone	13	21	31	50
Methylene Chloride	13	Not Detected	46	Not Detected
cis-1,2-Dichloroethene	1.3	Not Detected	5.2	Not Detected
1,1,1-Trichloroethane	1.3	Not Detected	7.2	Not Detected
Carbon Tetrachloride	1.3	Not Detected	8.3	Not Detected
Benzene	1.3	Not Detected	4.2	Not Detected
Trichloroethene	1.3	140	7.1	760
Toluene	1.3	Not Detected	5.0	Not Detected
Tetrachloroethene	1.3	230	8.9	1500
Chlorobenzene	1.3	Not Detected	6.0	Not Detected
Ethyl Benzene	1.3	Not Detected	5.7	Not Detected
m,p-Xylene	1.3	Not Detected	5.7	Not Detected
o-Xylene	1.3	Not Detected	5.7	Not Detected
1,3-Dichlorobenzene	1.3	Not Detected	7.9	Not Detected
1,4-Dichlorobenzene	1.3	Not Detected	7.9	Not Detected
1,2-Dichlorobenzene	1.3	Not Detected	7.9	Not Detected
1,2,4-Trichlorobenzene	5.3	Not Detected	39	Not Detected

Container Type: 1 Liter Summa Canister

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

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Client Sample ID: SS-177_20190905

Lab ID#: 1909182R1-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3091215**	**Date of Collection:**	**9/5/19 9:36:00 AM**
Dil. Factor:	**32.6**	**Date of Analysis:**	**9/12/19 07:23 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	16	56	81	280
Vinyl Chloride	16	Not Detected	42	Not Detected
Freon 11	16	Not Detected	92	Not Detected
Freon 113	16	35	120	270
1,1-Dichloroethene	16	Not Detected	65	Not Detected
Acetone	160	Not Detected	390	Not Detected
Methylene Chloride	160	Not Detected	570	Not Detected
cis-1,2-Dichloroethene	16	Not Detected	65	Not Detected
1,1,1-Trichloroethane	16	Not Detected	89	Not Detected
Carbon Tetrachloride	16	Not Detected	100	Not Detected
Benzene	16	Not Detected	52	Not Detected
Trichloroethene	16	3900	88	21000
Toluene	16	Not Detected	61	Not Detected
Tetrachloroethene	16	4900	110	33000
Chlorobenzene	16	Not Detected	75	Not Detected
Ethyl Benzene	16	Not Detected	71	Not Detected
m,p-Xylene	16	Not Detected	71	Not Detected
o-Xylene	16	Not Detected	71	Not Detected
1,3-Dichlorobenzene	16	Not Detected	98	Not Detected
1,4-Dichlorobenzene	16	Not Detected	98	Not Detected
1,2-Dichlorobenzene	16	Not Detected	98	Not Detected
1,2,4-Trichlorobenzene	65	Not Detected	480	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	99	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: SS-178_20190905

Lab ID#: 1909182R1-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p091713**	**Date of Collection:**	**9/5/19 9:18:00 AM**
Dil. Factor:	**5.10**	**Date of Analysis:**	**9/17/19 04:38 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	2.6	3.9	13	19
Vinyl Chloride	2.6	Not Detected	6.5	Not Detected
Freon 11	2.6	52	14	290
Freon 113	2.6	360	20	2700
1,1-Dichloroethene	2.6	Not Detected	10	Not Detected
Acetone	26	Not Detected	60	Not Detected
Methylene Chloride	26	Not Detected	88	Not Detected
cis-1,2-Dichloroethene	2.6	Not Detected	10	Not Detected
1,1,1-Trichloroethane	2.6	Not Detected	14	Not Detected
Carbon Tetrachloride	2.6	Not Detected	16	Not Detected
Benzene	2.6	Not Detected	8.1	Not Detected
Trichloroethene	2.6	92	14	490
Toluene	2.6	Not Detected	9.6	Not Detected
Tetrachloroethene	2.6	530	17	3600
Chlorobenzene	2.6	Not Detected	12	Not Detected
Ethyl Benzene	2.6	Not Detected	11	Not Detected
m,p-Xylene	2.6	Not Detected	11	Not Detected
o-Xylene	2.6	Not Detected	11	Not Detected
1,3-Dichlorobenzene	2.6	Not Detected	15	Not Detected
1,4-Dichlorobenzene	2.6	Not Detected	15	Not Detected
1,2-Dichlorobenzene	2.6	Not Detected	15	Not Detected
1,2,4-Trichlorobenzene	10	Not Detected	76	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	106	70-130
1,2-Dichloroethane-d4	92	70-130
4-Bromofluorobenzene	109	70-130

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Client Sample ID: SS-179_20190905

Lab ID#: 1909182R1-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p091313**	**Date of Collection:**	**9/5/19 9:25:00 AM**
Dil. Factor:	**2.47**	**Date of Analysis:**	**9/13/19 06:01 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	Not Detected	6.1	Not Detected
Vinyl Chloride	1.2	Not Detected	3.2	Not Detected
Freon 11	1.2	12	6.9	68
Freon 113	1.2	35	9.5	270
1,1-Dichloroethene	1.2	Not Detected	4.9	Not Detected
Acetone	12	13	29	31
Methylene Chloride	12	Not Detected	43	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	4.9	Not Detected
1,1,1-Trichloroethane	1.2	Not Detected	6.7	Not Detected
Carbon Tetrachloride	1.2	Not Detected	7.8	Not Detected
Benzene	1.2	Not Detected	3.9	Not Detected
Trichloroethene	1.2	140	6.6	770
Toluene	1.2	Not Detected	4.6	Not Detected
Tetrachloroethene	1.2	440	8.4	3000
Chlorobenzene	1.2	Not Detected	5.7	Not Detected
Ethyl Benzene	1.2	Not Detected	5.4	Not Detected
m,p-Xylene	1.2	Not Detected	5.4	Not Detected
o-Xylene	1.2	Not Detected	5.4	Not Detected
1,3-Dichlorobenzene	1.2	Not Detected	7.4	Not Detected
1,4-Dichlorobenzene	1.2	Not Detected	7.4	Not Detected
1,2-Dichlorobenzene	1.2	Not Detected	7.4	Not Detected
1,2,4-Trichlorobenzene	4.9	Not Detected	37	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	108	70-130
1,2-Dichloroethane-d4	94	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: SS-180_20190905

Lab ID#: 1909182R1-09A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p091314**	**Date of Collection:**	**9/5/19 10:40:00 AM**
Dil. Factor:	**2.54**	**Date of Analysis:**	**9/13/19 08:09 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.3	Not Detected	6.3	Not Detected
Vinyl Chloride	1.3	Not Detected	3.2	Not Detected
Freon 11	1.3	13	7.1	74
Freon 113	1.3	3.4	9.7	26
1,1-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Acetone	13	22	30	51
Methylene Chloride	13	Not Detected	44	Not Detected
cis-1,2-Dichloroethene	1.3	Not Detected	5.0	Not Detected
1,1,1-Trichloroethane	1.3	Not Detected	6.9	Not Detected
Carbon Tetrachloride	1.3	Not Detected	8.0	Not Detected
Benzene	1.3	Not Detected	4.0	Not Detected
Trichloroethene	1.3	52	6.8	280
Toluene	1.3	Not Detected	4.8	Not Detected
Tetrachloroethene	1.3	97	8.6	660
Chlorobenzene	1.3	Not Detected	5.8	Not Detected
Ethyl Benzene	1.3	Not Detected	5.5	Not Detected
m,p-Xylene	1.3	Not Detected	5.5	Not Detected
o-Xylene	1.3	Not Detected	5.5	Not Detected
1,3-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
1,4-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
1,2-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
1,2,4-Trichlorobenzene	5.1	Not Detected	38	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	107	70-130
1,2-Dichloroethane-d4	94	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: SS-181_20190905

Lab ID#: 1909182R1-10A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p091315**	**Date of Collection: 9/5/19 9:37:00 AM**	
Dil. Factor:	**7.02**	**Date of Analysis: 9/13/19 08:33 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	3.5	Not Detected	17	Not Detected
Vinyl Chloride	3.5	Not Detected	9.0	Not Detected
Freon 11	3.5	20	20	110
Freon 113	3.5	14	27	100
1,1-Dichloroethene	3.5	Not Detected	14	Not Detected
Acetone	35	210	83	510
Methylene Chloride	35	Not Detected	120	Not Detected
cis-1,2-Dichloroethene	3.5	Not Detected	14	Not Detected
1,1,1-Trichloroethane	3.5	Not Detected	19	Not Detected
Carbon Tetrachloride	3.5	Not Detected	22	Not Detected
Benzene	3.5	Not Detected	11	Not Detected
Trichloroethene	3.5	81	19	440
Toluene	3.5	Not Detected	13	Not Detected
Tetrachloroethene	3.5	960	24	6500
Chlorobenzene	3.5	Not Detected	16	Not Detected
Ethyl Benzene	3.5	Not Detected	15	Not Detected
m,p-Xylene	3.5	Not Detected	15	Not Detected
o-Xylene	3.5	Not Detected	15	Not Detected
1,3-Dichlorobenzene	3.5	Not Detected	21	Not Detected
1,4-Dichlorobenzene	3.5	Not Detected	21	Not Detected
1,2-Dichlorobenzene	3.5	Not Detected	21	Not Detected
1,2,4-Trichlorobenzene	14	Not Detected	100	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	106	70-130
1,2-Dichloroethane-d4	94	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: SS-182_20190905

Lab ID#: 1909182R1-11A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p091316**	**Date of Collection:**	**9/5/19 9:23:00 AM**
Dil. Factor:	**27.2**	**Date of Analysis:**	**9/13/19 08:56 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	14	Not Detected	67	Not Detected
Vinyl Chloride	14	Not Detected	35	Not Detected
Freon 11	14	19	76	110
Freon 113	14	82	100	620
1,1-Dichloroethene	14	Not Detected	54	Not Detected
Acetone	140	2500	320	5900
Methylene Chloride	140	Not Detected	470	Not Detected
cis-1,2-Dichloroethene	14	Not Detected	54	Not Detected
1,1,1-Trichloroethane	14	Not Detected	74	Not Detected
Carbon Tetrachloride	14	Not Detected	86	Not Detected
Benzene	14	Not Detected	43	Not Detected
Trichloroethene	14	46	73	240
Toluene	14	Not Detected	51	Not Detected
Tetrachloroethene	14	800	92	5400
Chlorobenzene	14	Not Detected	63	Not Detected
Ethyl Benzene	14	Not Detected	59	Not Detected
m,p-Xylene	14	Not Detected	59	Not Detected
o-Xylene	14	Not Detected	59	Not Detected
1,3-Dichlorobenzene	14	Not Detected	82	Not Detected
1,4-Dichlorobenzene	14	Not Detected	82	Not Detected
1,2-Dichlorobenzene	14	Not Detected	82	Not Detected
1,2,4-Trichlorobenzene	54	Not Detected	400	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	108	70-130
1,2-Dichloroethane-d4	94	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: SS-13_20190905

Lab ID#: 1909182R1-12A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p091714**	**Date of Collection:**	**9/5/19 9:20:00 AM**
Dil. Factor:	**2.54**	**Date of Analysis:**	**9/17/19 05:04 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.3	Not Detected	6.3	Not Detected
Vinyl Chloride	1.3	Not Detected	3.2	Not Detected
Freon 11	1.3	17	7.1	95
Freon 113	1.3	74	9.7	560
1,1-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Acetone	13	Not Detected	30	Not Detected
Methylene Chloride	13	Not Detected	44	Not Detected
cis-1,2-Dichloroethene	1.3	Not Detected	5.0	Not Detected
1,1,1-Trichloroethane	1.3	1.9	6.9	10
Carbon Tetrachloride	1.3	Not Detected	8.0	Not Detected
Benzene	1.3	Not Detected	4.0	Not Detected
Trichloroethene	1.3	66	6.8	360
Toluene	1.3	Not Detected	4.8	Not Detected
Tetrachloroethene	1.3	440	8.6	3000
Chlorobenzene	1.3	Not Detected	5.8	Not Detected
Ethyl Benzene	1.3	Not Detected	5.5	Not Detected
m,p-Xylene	1.3	Not Detected	5.5	Not Detected
o-Xylene	1.3	Not Detected	5.5	Not Detected
1,3-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
1,4-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
1,2-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
1,2,4-Trichlorobenzene	5.1	Not Detected	38	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	107	70-130
1,2-Dichloroethane-d4	91	70-130
4-Bromofluorobenzene	104	70-130

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Client Sample ID: SS-21_20190905

Lab ID#: 1909182R1-13A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p091715**	**Date of Collection:**	**9/5/19 9:21:00 AM**
Dil. Factor:	**51.0**	**Date of Analysis:**	**9/17/19 05:27 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	26	Not Detected	130	Not Detected
Vinyl Chloride	26	Not Detected	65	Not Detected
Freon 11	26	Not Detected	140	Not Detected
Freon 113	26	220	200	1700
1,1-Dichloroethene	26	Not Detected	100	Not Detected
Acetone	260	Not Detected	600	Not Detected
Methylene Chloride	260	Not Detected	880	Not Detected
cis-1,2-Dichloroethene	26	Not Detected	100	Not Detected
1,1,1-Trichloroethane	26	50	140	270
Carbon Tetrachloride	26	Not Detected	160	Not Detected
Benzene	26	Not Detected	81	Not Detected
Trichloroethene	26	5200	140	28000
Toluene	26	Not Detected	96	Not Detected
Tetrachloroethene	26	4800	170	32000
Chlorobenzene	26	Not Detected	120	Not Detected
Ethyl Benzene	26	Not Detected	110	Not Detected
m,p-Xylene	26	Not Detected	110	Not Detected
o-Xylene	26	Not Detected	110	Not Detected
1,3-Dichlorobenzene	26	Not Detected	150	Not Detected
1,4-Dichlorobenzene	26	Not Detected	150	Not Detected
1,2-Dichlorobenzene	26	Not Detected	150	Not Detected
1,2,4-Trichlorobenzene	100	Not Detected	760	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130
1,2-Dichloroethane-d4	92	70-130
4-Bromofluorobenzene	103	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1909182R1-14A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3091206**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/12/19 01:15 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
Freon 11	0.50	Not Detected	2.8	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Acetone	5.0	Not Detected	12	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
Chlorobenzene	0.50	Not Detected	2.3	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,2,4-Trichlorobenzene	2.0	Not Detected	15	Not Detected

Container Type: NA - Not Applicable

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

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Client Sample ID: Lab Blank

Lab ID#: 1909182R1-14B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p091311**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/13/19 04:41 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
Freon 11	0.50	Not Detected	2.8	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Acetone	5.0	Not Detected	12	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
Chlorobenzene	0.50	Not Detected	2.3	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,2,4-Trichlorobenzene	2.0	Not Detected	15	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	106	70-130
1,2-Dichloroethane-d4	91	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1909182R1-14C

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p091706**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/17/19 12:28 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
Freon 11	0.50	Not Detected	2.8	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Acetone	5.0	Not Detected	12	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
Chlorobenzene	0.50	Not Detected	2.3	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,2,4-Trichlorobenzene	2.0	Not Detected	15	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	107	70-130
1,2-Dichloroethane-d4	94	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1909182R1-14D

EPA METHOD TO-15 GC/MS

File Name:	**14091616**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/16/19 01:44 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	5.0	Not Detected	25	Not Detected
Vinyl Chloride	5.0	Not Detected	13	Not Detected
Freon 11	5.0	Not Detected	28	Not Detected
Freon 113	5.0	Not Detected	38	Not Detected
1,1-Dichloroethene	5.0	Not Detected	20	Not Detected
Acetone	20	Not Detected	48	Not Detected
Methylene Chloride	20	Not Detected	69	Not Detected
cis-1,2-Dichloroethene	5.0	Not Detected	20	Not Detected
1,1,1-Trichloroethane	5.0	Not Detected	27	Not Detected
Carbon Tetrachloride	5.0	Not Detected	31	Not Detected
Benzene	5.0	Not Detected	16	Not Detected
Trichloroethene	5.0	Not Detected	27	Not Detected
Toluene	5.0	Not Detected	19	Not Detected
Tetrachloroethene	5.0	Not Detected	34	Not Detected
Chlorobenzene	5.0	Not Detected	23	Not Detected
Ethyl Benzene	5.0	Not Detected	22	Not Detected
m,p-Xylene	5.0	Not Detected	22	Not Detected
o-Xylene	5.0	Not Detected	22	Not Detected
1,3-Dichlorobenzene	5.0	Not Detected	30	Not Detected
1,4-Dichlorobenzene	5.0	Not Detected	30	Not Detected
1,2-Dichlorobenzene	5.0	Not Detected	30	Not Detected
1,2,4-Trichlorobenzene	20	Not Detected	150	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	107	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: CCV

Lab ID#: 1909182R1-15A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3091202**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/12/19 10:38 AM**	

Compound	%Recovery
Freon 12	100
Vinyl Chloride	87
Freon 11	100
Freon 113	99
1,1-Dichloroethene	98
Acetone	101
Methylene Chloride	93
cis-1,2-Dichloroethene	100
1,1,1-Trichloroethane	98
Carbon Tetrachloride	102
Benzene	98
Trichloroethene	96
Toluene	97
Tetrachloroethene	101
Chlorobenzene	97
Ethyl Benzene	100
m,p-Xylene	101
o-Xylene	101
1,3-Dichlorobenzene	98
1,4-Dichlorobenzene	100
1,2-Dichlorobenzene	100
1,2,4-Trichlorobenzene	102

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	99	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: CCV

Lab ID#: 1909182R1-15B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p091303**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 9/13/19 11:15 AM**

Compound	%Recovery
Freon 12	97
Vinyl Chloride	93
Freon 11	100
Freon 113	98
1,1-Dichloroethene	75
Acetone	86
Methylene Chloride	96
cis-1,2-Dichloroethene	96
1,1,1-Trichloroethane	94
Carbon Tetrachloride	105
Benzene	106
Trichloroethene	102
Toluene	108
Tetrachloroethene	120
Chlorobenzene	104
Ethyl Benzene	100
m,p-Xylene	101
o-Xylene	98
1,3-Dichlorobenzene	117
1,4-Dichlorobenzene	119
1,2-Dichlorobenzene	120
1,2,4-Trichlorobenzene	136 Q

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	110	70-130
1,2-Dichloroethane-d4	94	70-130
4-Bromofluorobenzene	109	70-130

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Client Sample ID: CCV

Lab ID#: 1909182R1-15C

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p091702**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/17/19 10:45 AM**	

Compound	%Recovery
Freon 12	100
Vinyl Chloride	99
Freon 11	101
Freon 113	96
1,1-Dichloroethene	74
Acetone	83
Methylene Chloride	101
cis-1,2-Dichloroethene	96
1,1,1-Trichloroethane	97
Carbon Tetrachloride	108
Benzene	110
Trichloroethene	104
Toluene	113
Tetrachloroethene	118
Chlorobenzene	104
Ethyl Benzene	100
m,p-Xylene	100
o-Xylene	97
1,3-Dichlorobenzene	116
1,4-Dichlorobenzene	116
1,2-Dichlorobenzene	118
1,2,4-Trichlorobenzene	127

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	112	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	109	70-130

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Client Sample ID: CCV
Lab ID#: 1909182R1-15D
EPA METHOD TO-15 GC/MS

File Name:	**14091611**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 9/16/19 11:35 AM**

Compound	%Recovery
Freon 12	97
Vinyl Chloride	93
Freon 11	104
Freon 113	99
1,1-Dichloroethene	103
Acetone	104
Methylene Chloride	102
cis-1,2-Dichloroethene	103
1,1,1-Trichloroethane	100
Carbon Tetrachloride	101
Benzene	95
Trichloroethene	97
Toluene	92
Tetrachloroethene	95
Chlorobenzene	89
Ethyl Benzene	93
m,p-Xylene	91
o-Xylene	92
1,3-Dichlorobenzene	90
1,4-Dichlorobenzene	92
1,2-Dichlorobenzene	91
1,2,4-Trichlorobenzene	88

Container Type: NA - Not Applicable

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

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Client Sample ID: LCS

Lab ID#: 1909182R1-16A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3091203**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/12/19 11:03 AM**	

Compound	%Recovery	Method Limits
Freon 12	94	70-130
Vinyl Chloride	88	70-130
Freon 11	96	70-130
Freon 113	96	70-130
1,1-Dichloroethene	97	70-130
Acetone	103	70-130
Methylene Chloride	89	70-130
cis-1,2-Dichloroethene	107	70-130
1,1,1-Trichloroethane	94	70-130
Carbon Tetrachloride	100	70-130
Benzene	95	70-130
Trichloroethene	92	70-130
Toluene	95	70-130
Tetrachloroethene	96	70-130
Chlorobenzene	91	70-130
Ethyl Benzene	98	70-130
m,p-Xylene	96	70-130
o-Xylene	98	70-130
1,3-Dichlorobenzene	93	70-130
1,4-Dichlorobenzene	93	70-130
1,2-Dichlorobenzene	95	70-130
1,2,4-Trichlorobenzene	88	70-130

Container Type: NA - Not Applicable

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

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Client Sample ID: LCSD

Lab ID#: 1909182R1-16AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3091204**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/12/19 11:28 AM**	

Compound	%Recovery	Method Limits
Freon 12	93	70-130
Vinyl Chloride	87	70-130
Freon 11	95	70-130
Freon 113	95	70-130
1,1-Dichloroethene	97	70-130
Acetone	101	70-130
Methylene Chloride	89	70-130
cis-1,2-Dichloroethene	104	70-130
1,1,1-Trichloroethane	93	70-130
Carbon Tetrachloride	99	70-130
Benzene	95	70-130
Trichloroethene	94	70-130
Toluene	98	70-130
Tetrachloroethene	98	70-130
Chlorobenzene	94	70-130
Ethyl Benzene	98	70-130
m,p-Xylene	98	70-130
o-Xylene	100	70-130
1,3-Dichlorobenzene	94	70-130
1,4-Dichlorobenzene	94	70-130
1,2-Dichlorobenzene	96	70-130
1,2,4-Trichlorobenzene	90	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	97	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: LCS

Lab ID#: 1909182R1-16B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p091304**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/13/19 12:06 PM**	

Compound	%Recovery	Method Limits
Freon 12	96	70-130
Vinyl Chloride	100	70-130
Freon 11	101	70-130
Freon 113	94	70-130
1,1-Dichloroethene	78	70-130
Acetone	88	70-130
Methylene Chloride	95	70-130
cis-1,2-Dichloroethene	98	70-130
1,1,1-Trichloroethane	93	70-130
Carbon Tetrachloride	99	70-130
Benzene	106	70-130
Trichloroethene	103	70-130
Toluene	108	70-130
Tetrachloroethene	116	70-130
Chlorobenzene	102	70-130
Ethyl Benzene	97	70-130
m,p-Xylene	100	70-130
o-Xylene	96	70-130
1,3-Dichlorobenzene	115	70-130
1,4-Dichlorobenzene	114	70-130
1,2-Dichlorobenzene	115	70-130
1,2,4-Trichlorobenzene	119	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	109	70-130
1,2-Dichloroethane-d4	93	70-130
4-Bromofluorobenzene	107	70-130

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Client Sample ID: LCSD

Lab ID#: 1909182R1-16BB

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p091305**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/13/19 12:32 PM**	

Compound	%Recovery	Method Limits
Freon 12	95	70-130
Vinyl Chloride	97	70-130
Freon 11	100	70-130
Freon 113	95	70-130
1,1-Dichloroethene	78	70-130
Acetone	87	70-130
Methylene Chloride	95	70-130
cis-1,2-Dichloroethene	97	70-130
1,1,1-Trichloroethane	92	70-130
Carbon Tetrachloride	98	70-130
Benzene	106	70-130
Trichloroethene	102	70-130
Toluene	108	70-130
Tetrachloroethene	117	70-130
Chlorobenzene	102	70-130
Ethyl Benzene	96	70-130
m,p-Xylene	99	70-130
o-Xylene	96	70-130
1,3-Dichlorobenzene	114	70-130
1,4-Dichlorobenzene	114	70-130
1,2-Dichlorobenzene	115	70-130
1,2,4-Trichlorobenzene	120	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	108	70-130
1,2-Dichloroethane-d4	91	70-130
4-Bromofluorobenzene	110	70-130

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Client Sample ID: LCS

Lab ID#: 1909182R1-16C

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p091703**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/17/19 11:11 AM**	

Compound	%Recovery	Method Limits
Freon 12	95	70-130
Vinyl Chloride	95	70-130
Freon 11	100	70-130
Freon 113	92	70-130
1,1-Dichloroethene	75	70-130
Acetone	86	70-130
Methylene Chloride	98	70-130
cis-1,2-Dichloroethene	96	70-130
1,1,1-Trichloroethane	92	70-130
Carbon Tetrachloride	99	70-130
Benzene	108	70-130
Trichloroethene	102	70-130
Toluene	110	70-130
Tetrachloroethene	115	70-130
Chlorobenzene	102	70-130
Ethyl Benzene	96	70-130
m,p-Xylene	99	70-130
o-Xylene	97	70-130
1,3-Dichlorobenzene	113	70-130
1,4-Dichlorobenzene	114	70-130
1,2-Dichlorobenzene	114	70-130
1,2,4-Trichlorobenzene	118	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	111	70-130
1,2-Dichloroethane-d4	94	70-130
4-Bromofluorobenzene	108	70-130

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Client Sample ID: LCSD

Lab ID#: 1909182R1-16CC

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p091704**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/17/19 11:37 AM**	

Compound	%Recovery	Method Limits
Freon 12	97	70-130
Vinyl Chloride	98	70-130
Freon 11	101	70-130
Freon 113	95	70-130
1,1-Dichloroethene	78	70-130
Acetone	87	70-130
Methylene Chloride	100	70-130
cis-1,2-Dichloroethene	98	70-130
1,1,1-Trichloroethane	94	70-130
Carbon Tetrachloride	102	70-130
Benzene	106	70-130
Trichloroethene	102	70-130
Toluene	108	70-130
Tetrachloroethene	113	70-130
Chlorobenzene	101	70-130
Ethyl Benzene	97	70-130
m,p-Xylene	97	70-130
o-Xylene	96	70-130
1,3-Dichlorobenzene	113	70-130
1,4-Dichlorobenzene	113	70-130
1,2-Dichlorobenzene	114	70-130
1,2,4-Trichlorobenzene	118	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	109	70-130
1,2-Dichloroethane-d4	95	70-130
4-Bromofluorobenzene	108	70-130

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Client Sample ID: LCS

Lab ID#: 1909182R1-16D

EPA METHOD TO-15 GC/MS

File Name:	**14091612**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/16/19 11:59 AM**	

Compound	%Recovery	Method Limits
Freon 12	90	70-130
Vinyl Chloride	95	70-130
Freon 11	106	70-130
Freon 113	98	70-130
1,1-Dichloroethene	103	70-130
Acetone	114	70-130
Methylene Chloride	99	70-130
cis-1,2-Dichloroethene	93	70-130
1,1,1-Trichloroethane	98	70-130
Carbon Tetrachloride	99	70-130
Benzene	94	70-130
Trichloroethene	96	70-130
Toluene	91	70-130
Tetrachloroethene	91	70-130
Chlorobenzene	90	70-130
Ethyl Benzene	92	70-130
m,p-Xylene	91	70-130
o-Xylene	93	70-130
1,3-Dichlorobenzene	91	70-130
1,4-Dichlorobenzene	97	70-130
1,2-Dichlorobenzene	96	70-130
1,2,4-Trichlorobenzene	84	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	103	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	106	70-130

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Client Sample ID: LCSD
Lab ID#: 1909182R1-16DD
EPA METHOD TO-15 GC/MS

File Name:	**14091613**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/16/19 12:23 PM**	

Compound	%Recovery	Method Limits
Freon 12	93	70-130
Vinyl Chloride	96	70-130
Freon 11	102	70-130
Freon 113	97	70-130
1,1-Dichloroethene	104	70-130
Acetone	113	70-130
Methylene Chloride	100	70-130
cis-1,2-Dichloroethene	92	70-130
1,1,1-Trichloroethane	97	70-130
Carbon Tetrachloride	100	70-130
Benzene	94	70-130
Trichloroethene	94	70-130
Toluene	93	70-130
Tetrachloroethene	96	70-130
Chlorobenzene	91	70-130
Ethyl Benzene	96	70-130
m,p-Xylene	92	70-130
o-Xylene	95	70-130
1,3-Dichlorobenzene	93	70-130
1,4-Dichlorobenzene	97	70-130
1,2-Dichlorobenzene	93	70-130
1,2,4-Trichlorobenzene	84	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	104	70-130

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10/2/2019
Ms. Jennifer Sanborn
Sanborn, Head & Associates
20 Foundry Street

Concord NH 03301

Project Name: EFK
Project #: 2999.08
Workorder #: 1909487

Dear Ms. Jennifer Sanborn

The following report includes the data for the above referenced project for sample(s) received on 9/23/2019 at Air Toxics Ltd.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

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

Regards,

Ausha Scott

Project Manager

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WORK ORDER #: 1909487

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 #**	2999.08 EFK
DATE RECEIVED:	09/23/2019	**CONTACT:**	Ausha Scott
DATE COMPLETED:	10/02/2019		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	EP-218_20190918	TO-15	3.5 "Hg	15 psi
02A	EP-219_20190918	TO-15	3.5 "Hg	15 psi
03A	EP-220_20190917	TO-15	4.5 "Hg	15 psi
04A	EP-221_20190917	TO-15	5.0 "Hg	15 psi
05A	EP-222_20190917	TO-15	4.0 "Hg	15 psi
06A	EP-223_20190917	TO-15	5.0 "Hg	15 psi
07A	EP-220 & EP-222_20190918	TO-15	4.0 "Hg	15 psi
08A	Lab Blank	TO-15	NA	NA
08B	Lab Blank	TO-15	NA	NA
09A	CCV	TO-15	NA	NA
09B	CCV	TO-15	NA	NA
10A	LCS	TO-15	NA	NA
10AA	LCSD	TO-15	NA	NA
10B	LCS	TO-15	NA	NA
10BB	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 10/02/19

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP – CA009332019-11, VA NELAP - 460197, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-011, Effective date: 10/18/2018, Expiration date: 10/17/2019.
Eurofins Air Toxics Inc.. 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) 985-1020

LABORATORY NARRATIVE
EPA Method TO-15
Sanborn, Head & Associates
Workorder# 1909487

Seven 1 Liter Summa Canister samples were received on September 23, 2019. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Receiving Notes

Due to omission of the sampling date from the ID format on the sample tag, the information on the Chain of Custody (COC) for samples EP-218_20190918, EP-219_20190918, EP-220_20190917, EP-221_20190917, EP-222_20190917, EP-223_20190917, and EP-220 & EP-222_20190918 was used to process and report the samples.

The Chain of Custody (COC) was not relinquished properly. A time was not provided by the field sampler.

Analytical Notes

Dilution was performed on samples EP-218_20190918, EP-220_20190917, EP-221_20190917 and EP-220 & EP-222_20190918 due to the presence of high level target species.

Definition of Data Qualifying Flags

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

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).
J - Estimated value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.
UJ- Non-detected compound associated with low bias in the CCV
N - The identification is based on presumptive evidence.
M - Reported value may be biased due to apparent matrix interferences.
CN - See Case Narrative.

File extensions may have been used on the data analysis sheets and indicates as follows:
a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

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

Client Sample ID: EP-218_20190918

Lab ID#: 1909487-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	11	17000	62	91000
cis-1,2-Dichloroethene	11	390	45	1500
Tetrachloroethene	11	6000	78	40000

Client Sample ID: EP-219_20190918

Lab ID#: 1909487-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.1	68	6.2	370
Tetrachloroethene	1.1	96	7.8	650

Client Sample ID: EP-220_20190917

Lab ID#: 1909487-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	12	9800	64	52000
cis-1,2-Dichloroethene	12	21	47	83
Tetrachloroethene	12	2000	81	13000

Client Sample ID: EP-221_20190917

Lab ID#: 1909487-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	12	7000	65	38000
Tetrachloroethene	12	1700	82	12000

Client Sample ID: EP-222_20190917

Lab ID#: 1909487-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.2	16	6.3	87
Tetrachloroethene	1.2	65	7.9	440

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

Client Sample ID: EP-223_20190917

Lab ID#: 1909487-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.2	21	6.5	110
Tetrachloroethene	1.2	210	8.2	1400

Client Sample ID: EP-220 & EP-222_20190918

Lab ID#: 1909487-07A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	23	3900	120	21000
Tetrachloroethene	23	990	160	6700

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Client Sample ID: EP-218_20190918

Lab ID#: 1909487-01A

EPA METHOD TO-15 GC/MS

File Name:	**14092610**	**Date of Collection:**	**9/18/19 09:11:00**
Dil. Factor:	**2.29**	**Date of Analysis:**	**9/26/19 12:48 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	11	Not Detected	29	Not Detected
trans-1,2-Dichloroethene	11	Not Detected	45	Not Detected
Trichloroethene	11	17000	62	91000
cis-1,2-Dichloroethene	11	390	45	1500
Tetrachloroethene	11	6000	78	40000

Container Type: 1 Liter Summa Canister

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

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Client Sample ID: EP-219_20190918

Lab ID#: 1909487-02A

EPA METHOD TO-15 GC/MS

File Name:	**17092509**	**Date of Collection:**	**9/18/19 10:55:00**
Dil. Factor:	**2.29**	**Date of Analysis:**	**9/25/19 03:31 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.1	Not Detected	2.9	Not Detected
cis-1,2-Dichloroethene	1.1	Not Detected	4.5	Not Detected
Trichloroethene	1.1	68	6.2	370
Tetrachloroethene	1.1	96	7.8	650
trans-1,2-Dichloroethene	1.1	Not Detected	4.5	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	89	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: EP-220_20190917

Lab ID#: 1909487-03A

EPA METHOD TO-15 GC/MS

File Name:	**14092609**	**Date of Collection: 9/17/19 17:40:00**	
Dil. Factor:	**2.38**	**Date of Analysis: 9/26/19 12:07 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	12	Not Detected	30	Not Detected
trans-1,2-Dichloroethene	12	Not Detected	47	Not Detected
Trichloroethene	12	9800	64	52000
cis-1,2-Dichloroethene	12	21	47	83
Tetrachloroethene	12	2000	81	13000

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	104	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: EP-221_20190917

Lab ID#: 1909487-04A

EPA METHOD TO-15 GC/MS

File Name:	**14092608**	**Date of Collection: 9/17/19 15:50:00**	
Dil. Factor:	**2.42**	**Date of Analysis: 9/26/19 11:40 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	12	Not Detected	31	Not Detected
trans-1,2-Dichloroethene	12	Not Detected	48	Not Detected
Trichloroethene	12	7000	65	38000
cis-1,2-Dichloroethene	12	Not Detected	48	Not Detected
Tetrachloroethene	12	1700	82	12000

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	99	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: EP-222_20190917

Lab ID#: 1909487-05A

EPA METHOD TO-15 GC/MS

File Name:	**17092510**	**Date of Collection:**	**9/17/19 11:58:00**
Dil. Factor:	**2.33**	**Date of Analysis:**	**9/25/19 03:59 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.0	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	4.6	Not Detected
Trichloroethene	1.2	16	6.3	87
Tetrachloroethene	1.2	65	7.9	440
trans-1,2-Dichloroethene	1.2	Not Detected	4.6	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	91	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	94	70-130

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Client Sample ID: EP-223_20190917

Lab ID#: 1909487-06A

EPA METHOD TO-15 GC/MS

File Name:	**17092511**	**Date of Collection:**	**9/17/19 13:55:00**
Dil. Factor:	**2.42**	**Date of Analysis:**	**9/25/19 04:27 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.1	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	4.8	Not Detected
Trichloroethene	1.2	21	6.5	110
Tetrachloroethene	1.2	210	8.2	1400
trans-1,2-Dichloroethene	1.2	Not Detected	4.8	Not Detected

Container Type: 1 Liter Summa Canister

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

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Client Sample ID: EP-220 & EP-222_20190918

Lab ID#: 1909487-07A

EPA METHOD TO-15 GC/MS

File Name:	**17092507**	**Date of Collection: 9/18/19 13:05:00**	
Dil. Factor:	**46.6**	**Date of Analysis: 9/25/19 02:35 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	23	Not Detected	60	Not Detected
cis-1,2-Dichloroethene	23	Not Detected	92	Not Detected
Trichloroethene	23	3900	120	21000
Tetrachloroethene	23	990	160	6700
trans-1,2-Dichloroethene	23	Not Detected	92	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	92	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	97	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1909487-08A

EPA METHOD TO-15 GC/MS

File Name:	**17092506**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/25/19 12:12 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected

Container Type: NA - Not Applicable

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

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Client Sample ID: Lab Blank

Lab ID#: 1909487-08B

EPA METHOD TO-15 GC/MS

File Name:	**14092607**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/26/19 11:10 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	5.0	Not Detected	13	Not Detected
trans-1,2-Dichloroethene	5.0	Not Detected	20	Not Detected
Trichloroethene	5.0	Not Detected	27	Not Detected
cis-1,2-Dichloroethene	5.0	Not Detected	20	Not Detected
Tetrachloroethene	5.0	Not Detected	34	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: CCV

Lab ID#: 1909487-09A

EPA METHOD TO-15 GC/MS

File Name:	**17092502**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/25/19 10:25 AM**	

Compound	%Recovery
Vinyl Chloride	99
cis-1,2-Dichloroethene	98
Trichloroethene	98
Tetrachloroethene	99
trans-1,2-Dichloroethene	94

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	89	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: CCV

Lab ID#: 1909487-09B

EPA METHOD TO-15 GC/MS

File Name:	**14092602**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/26/19 09:03 AM**	

Compound	%Recovery
Vinyl Chloride	92
trans-1,2-Dichloroethene	89
Trichloroethene	95
cis-1,2-Dichloroethene	99
Tetrachloroethene	93

Container Type: NA - Not Applicable

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

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Client Sample ID: LCS

Lab ID#: 1909487-10A

EPA METHOD TO-15 GC/MS

File Name:	**17092503**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/25/19 10:52 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	99	70-130
cis-1,2-Dichloroethene	90	70-130
Trichloroethene	97	70-130
Tetrachloroethene	100	70-130
trans-1,2-Dichloroethene	104	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	93	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	97	70-130

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Client Sample ID: LCSD

Lab ID#: 1909487-10AA

EPA METHOD TO-15 GC/MS

File Name:	**17092504**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/25/19 11:18 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	100	70-130
cis-1,2-Dichloroethene	90	70-130
Trichloroethene	95	70-130
Tetrachloroethene	100	70-130
trans-1,2-Dichloroethene	102	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	91	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: LCS

Lab ID#: 1909487-10B

EPA METHOD TO-15 GC/MS

File Name:	**14092603**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/26/19 09:30 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	93	70-130
trans-1,2-Dichloroethene	95	70-130
Trichloroethene	94	70-130
cis-1,2-Dichloroethene	92	70-130
Tetrachloroethene	90	70-130

Container Type: NA - Not Applicable

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

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Client Sample ID: LCSD

Lab ID#: 1909487-10BB

EPA METHOD TO-15 GC/MS

File Name:	**14092604**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/26/19 09:54 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	94	70-130
trans-1,2-Dichloroethene	97	70-130
Trichloroethene	95	70-130
cis-1,2-Dichloroethene	93	70-130
Tetrachloroethene	93	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	104	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	101	70-130