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REPORT OF FINDINGS

BUILDING 001 VOC SOURCE ASSESSMENT

IBM Poughkeepsie Facility
Poughkeepsie, New York

IBM
Poughkeepsie, New York

Prepared for IBM Corporation
File No. 3463.00
April 2014

2455 South Road
Poughkeepsie, NY 12601

April 21, 2014

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Re: Report of Findings
Building 001 VOC Source Assessment – RCRA Facility Investigation
IBM Poughkeepsie Facility
Poughkeepsie, New York
EPA ID No. NYD080480734, NYSDEC Site No. 314001

Dear Mr. Czuhanich and Ms. Kulow:

The enclosed report presents the findings of our assessment of sources of certain volatile organic compounds (VOCs) in indoor air in Building 001 at the IBM Poughkeepsie facility located at 2455 South Road, Poughkeepsie, New York. This work was conducted consistent with the objectives and procedures described in IBM's Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Work Plan, which was approved by the New York State Department of Environmental Conservation and the New York State Department of Health (the Agencies) in an August 12, 2013 letter to IBM.

IBM is moving forward with the detailed design of a subslab soil vapor extraction (SVE) system, targeting construction beginning in the third quarter of 2014 and startup at the end of the fourth quarter of 2014. IBM understands that construction and operation of the remediation system can proceed once the Agencies have accepted this report.

If you wish to further discuss this document or have questions, please contact Mr. Steve Brannen of IBM at (845) 433-1509.

Sincerely,
International Business Machines Corporation

Michael Phelan, Manager
Environmental, Planning and Site Support Services

cc: W. Palomino, USEPA Region 2 (cover letter only)
A. Everett, USEPA Region 2 (cover letter only)

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EXECUTIVE SUMMARY

This report presents the findings of investigations, testing, and actions taken to evaluate the anomalous presence and source of volatile organic compounds (VOCs) in the indoor air of Building 001 (B001) at the IBM Poughkeepsie facility (the Site). The work was conducted consistent with the objectives and procedures described in IBM's Resource Conservation and Recovery Act (RCRA) Facility Investigation Work Plan, which was approved by the New York State Department of Environmental Conservation and the New York State Department of Health (collectively, the Agencies) on August 12, 2013.

B001 was designated in the Work Plan for indoor air sampling because it overlies VOC-containing groundwater, and it is routinely occupied. Initial field screening of indoor air as part of this investigation indicated the presence of VOCs, predominantly trichloroethene (TCE), consistent with a vapor intrusion source. Based on this finding, IBM elected to conduct a VOC source assessment to understand the origin and potential pathways for VOC vapor entry into the building, and to support possible design and implementation of source remediation measures, if appropriate.

Indoor air screening conducted as part of this work indicated TCE presence throughout B001. Indoor air VOC concentrations were greatest in the north-central and northeast corner of the building, corresponding to a former office area and parts storage room. TCE screening concentrations generally decrease toward the south (in the warehouse area) and west side of the building.

Subsequent screening of subslab vapor indicated that while VOC-containing vapor is widespread under the building, the highest concentrations coincide with the areas where indoor air VOC levels are greatest, i.e., the north-central and northeast area. Subslab vapor screening defined an area of about 4,500 square feet of this 142,000 square foot building where TCE concentrations in subslab vapor are greater than 100,000 micrograms per cubic meter ($\mu g/m^3$). In addition, subslab-to-indoor air pressure differentials throughout B001 were found to range from neutral to slightly favorable for vapor entry into the building.

Building reconnaissance, review of HVAC system configuration and operation, and targeted screening revealed potential pathways for VOC vapor entry and unfavorable effects on indoor air quality. In response to these findings, IBM sealed certain pathways for VOC vapor entry and made operational adjustments to the HVAC system. While these efforts represented reasonable and practical actions, they were unsuccessful in reducing TCE levels in indoor air. Therefore, subslab soil vapor extraction (SVE) was evaluated as a means to capture VOCs that might otherwise enter the building.

Subslab SVE testing confirmed the viability of this method of intercepting VOC mass transport into the building through the floor slab. A design basis for a subslab SVE and treatment system has been developed from the results of pilot testing. The design basis is intended to achieve the goals of VOC mass removal and control of subslab-to-indoor air pressure differentials to reduce VOC mass entry into the building, while also providing for operating flexibility, redundancy, and future expansion, if appropriate.

IBM is moving forward with the detailed design of VOC source remediation using subslab SVE, targeting construction beginning in third quarter 2014 and startup in fourth quarter 2014. IBM understands that construction and operation of the remediation system can proceed once the Agencies have accepted this report.

1.0 INTRODUCTION

This report presents the findings of investigations, testing, and actions taken to evaluate the anomalous presence and source of volatile organic compounds (VOCs) in the indoor air of Building 001 (B001) at the IBM Poughkeepsie facility (the Site). A Site locus plan is provided as Figure 1, and the location of B001 on the Site is shown on Figure 2.

This work was conducted consistent with the objectives and procedures described in IBM's Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Work Plan, which was submitted to the New York State Department of Environmental Conservation and the New York State Department of Health (collectively, the Agencies) on October 23, 2012. The Agencies approved the Work Plan in an August 12, 2013 letter to IBM.

B001 was designated in the Work Plan for indoor air sampling because it overlies VOC-containing groundwater, and it is routinely occupied. Initial field screening of indoor air as part of this investigation indicated the presence of VOCs, predominantly trichloroethene (TCE), consistent with a vapor intrusion source. Based on this finding, IBM elected to conduct a VOC source assessment, which is defined for the purposes of the Work Plan as investigation and testing activities to understand the origin and potential pathways for VOC vapor entry into the building, and to support possible design and implementation of source remediation measures, if appropriate.

Sanborn, Head Engineering P.C. (SHPC) conducted the B001 source assessment beginning in August 2013 through February 2014. Progress updates and preliminary data associated with this work have been communicated to the Agencies through routine correspondence and meetings. The investigation and this report are subject to the standard limitation for this type of work, as described in Appendix A.

1.1 Report Organization

This report is organized into six sections as described below:

Section 1 presents a general introduction, including the objectives and scope of the assessment.

Section 2 provides background on B001 infrastructure, past investigation findings, regulatory status, and an overview of the building's heating, ventilating, and air conditioning (HVAC) system.

Section 3 presents a summary of source assessment activities and findings, including results of field screening, actions taken to-date, and subslab vapor screening.

Section 4 describes pilot testing of subslab soil vapor extraction (SVE) for VOC capture.

Section 5 presents the design basis for a subslab SVE system resulting from the pilot testing work.

Section 6 presents the conclusions of the assessment and this report.

1.2 Objectives and Scope

The objectives of this work were to: 1) evaluate the extent of VOC presence in indoor air, 2) identify the source and distribution of VOC mass below the floor slab, and 3) assess the feasibility of subslab SVE to remove VOC mass and control air pressure gradients across the slab in certain areas that have higher potential for VOC vapor entry into the building.

To meet these objectives, the work included:

- Implementation of an indoor air screening survey using a field-portable gas chromatograph/mass spectrometer (GC/MS) (i.e., HAPSITE manufactured by Inficon of East Syracuse, New York) to assess VOC presence in indoor air.
- Reconnaissance of B001 for potential pathways for VOC entry into the building, including use of a portable GC/MS to screen potential pathways (e.g., floor cracks, sumps).
- Review of the configuration and operating conditions of the building's HVAC systems.
- Implementation of a subslab vapor screening survey using a portable GC/MS to identify the source and distribution of VOC vapor beneath the floor slab and support remediation design.
- Vapor extraction testing from subslab ports to evaluate the method for VOC source remediation and to obtain data to support design of a full-scale subslab SVE system.

2.0 BACKGROUND INFORMATION

This section provides a summary of background information relevant to the assessment work being conducted in B001.

2.1 B001 Overview

B001 is a one-story structure originally constructed in 1942, including several additions and modifications during its history. It has a current footprint of about 142,000 square feet.

Figure 3 shows the B001 layout. The building is largely unoccupied except for a print shop in the central portion of the building. The loading dock area on the north side and the warehouse on the south side are intermittently occupied for short periods. The office and storage crib areas in the northeast area are unoccupied.

2.2 B001 Infrastructure

B001 is constructed of a reinforced poured concrete foundation with reinforced poured-in-place concrete floors and a steel column and truss framing system. Exterior walls are constructed of concrete block. B001 was constructed in at least two phases, based on foundation design drawings.

Crawl spaces open to the outdoors are present below the corridor and loading dock area on the north side of the building. There are approximately two to three feet of void space beneath the concrete floors in these locations.

B001 does not have a foundation underdrain system; however, as shown on Figure 3, storm drain lines connected to roof drains run under B001 and exit the north side where they connect to the site storm sewer system.

Inactive, former industrial waste (IW) drains are present beneath B001. In addition, exterior subsurface piping and manholes associated with the former IW sewer system were located outside the south, east, and north sides of B001 (RCRA Solid Waste Management Unit [SWMU] 194 – Former IW Drainage System). The exterior IW sewer lines were suspected of leaking up until the early 1980s, when the system was removed from service.[1] TCE presence in groundwater beneath and proximate to B001 has been attributed to releases from the IW sewer system.[2]

Three former underground storage tanks (USTs) were located in the alcove at the northeast corner of B001 (RCRA SWMU 203). One 3,500-gallon capacity UST was used to store steam clean waste and waste oil. The two other tanks were each 1,500-gallon capacity and used to store steam clean waste. The date of removal of the alcove USTs is uncertain, but is estimated to have occurred in the mid-1980s.

2.3 Remediation and Regulatory Status

IBM voluntarily initiated a Groundwater Protection Program at the Site in 1978 to characterize and remediate sources of contaminated media.[3] Several VOC groundwater plumes were identified during that investigation. The plume beneath and proximate to B001 is referred to at the Site Gravel Plume, which is identified as Area of Concern (AOC) B in the RCRA Part 373 Permit for the Site.[4] Two groundwater extraction wells are currently operating in the Site Gravel Plume. One of these wells, T-8S, is located in the B001 alcove. The other extraction well, T-315S, is located to the east of B001 in the alcove between Building 002 and Building 012. Combined, these wells withdraw approximately 50 to 60 gallons per minute and are controlling migration of the plume and reducing the mass of TCE discharging to the on-site tributary (designated H-107) that leads to the Hudson River.

As a condition of the Site's RCRA Part 373 permit renewal in 1997, NYSDEC required further assessment of the former UST area in the B001 alcove (RCRA SWMU 203). A RCRA Facility Assessment Sampling Visit conducted in 1997 in the alcove area indicated detections of certain VOCs, including TCE, in soil and groundwater. However, the detections were not

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1 *IBM Poughkeepsie Groundwater RCRA Facility Investigation, Main Plant Site*, prepared by Groundwater Sciences Corporation, December 12, 1997.

2 *IBM Poughkeepsie Statement of Basis: Proposed Final Corrective Measures*, prepared by Groundwater Sciences Corporation, March 14, 2007.

3 *IBM Poughkeepsie Groundwater RCRA Facility Investigation, Main Plant Site*, prepared by Groundwater Sciences Corporation, December 12, 1997.

4 6NYCRR Part 373 Permit, DEC Hazardous Waste Permit 3-1346-00035/00123, EPA ID No. NYD080480734, Attachment XI, Corrective Action, 2009.

considered to be responsible for the TCE in the Site Gravel Plume, the source of which had been previously attributed to the former IW sewer system (RCRA SWMU 194). In a letter to IBM dated July 24, 1998, NYSDEC concurred with the finding that no further action was necessary for the B001 alcove area.[5]

IBM has obtained approved Final Corrective Measures status from NYSDEC for groundwater investigation and remediation matters addressed under the RCRA Part 373 Permit. A groundwater monitoring program (GMP) associated with corrective actions at the Site is currently being implemented in accordance with the 2009 RCRA Part 373 Permit.

2.4 Subsurface Conditions

The following sections provide a summary of the subsurface conditions beneath B001, including a discussion of the hydrogeology and subsurface contaminant distribution.

2.4.1 Hydrogeologic Conditions

Groundwater is present in both the overburden and bedrock units beneath the Site. Overburden thickness ranges from approximately 0 to 95 feet across the Site, corresponding with a highly irregular top-of-bedrock surface. Figure 2 shows the approximate areas at the Site where there is no saturated overburden because of the shallow bedrock in those areas.

The bedrock surface beneath B001 forms an apparent trough with a northeast to southwest alignment. At the deepest point, along the west-central edge of the building, bedrock is about 55 feet below ground surface (bgs), while bedrock is generally about 25 feet bgs at the northwest and southeast corners of the building. [6] The overburden beneath B001 consists of up to approximately 15 feet of medium to coarse-grained fill underlain by sand and gravel (west) and silt (east). Overburden groundwater beneath B001 generally flows from east to west and is locally influenced by the Site Gravel Plume extraction wells to the northeast. Overburden groundwater is present at depths of between approximately 15 feet (east) and 25 feet (west) below the building floor slab.[7]

2.4.2 Contaminant Distribution

VOCs have been detected in soil and groundwater surrounding B001 during previous investigations. Figure 2 shows the inferred extent of total VOCs in overburden groundwater at the Site, with B001 located above the eastern part of the Site Gravel Plume. A summary of TCE detections (the chemical detected at the highest concentration and greatest frequency) in soil and groundwater in the vicinity of B001 is provided below:

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[5] *IBM Poughkeepsie Statement of Basis: Proposed Final Corrective Measures*, prepared by Groundwater Sciences Corporation, March 14, 2007.

[6] Based on Bedrock Surface contours provided on Plate 12 of the *IBM Poughkeepsie Groundwater RCRA Facility Investigation, Main Plant Site Report,* prepared by Groundwater Sciences Corporation, December 12, 1997.

[7] Based on floor slab elevation provided on Plate 13 of the *IBM Poughkeepsie Groundwater RCRA Facility Investigation, Main Plant Site Report,* prepared by Groundwater Sciences Corporation, December 12, 1997 and groundwater elevation data presented in Groundwater Sciences Corporation's 2011 Annual Groundwater Monitoring Report Main Plant Site, dated April 26, 2012.

- **Soil:** Soil samples were collected as part of the RCRA Facility Assessment process. TCE concentrations in these samples ranged from non-detect to approximately 4,500 micrograms per kilogram (µg/kg) in the alcove just outside the northeast corner of B001.

- **Groundwater:** TCE concentrations up to 1,700 micrograms per liter (µg/L) were observed in groundwater samples collected in 2012 from a monitoring well located north of the northeast corner of B001.

2.5 HVAC System Overview

The HVAC system in B001 includes 4 active air handling units (AHUs) that serve 3 zones of the building. The AHUs are located in mechanical rooms within B001. The AHU mechanical rooms and zones they serve are shown on Figure 3.

A summary of AHU operating conditions when assessment activities were initiated in August 2013 is provided in Exhibit 2.1 below.

AHU No.	Area Served	Operating Schedule	Outside Air Flow / Exchange Rate
AC-1	Print shop (east side storage area)	Shut off	None
AC-2	Print shop (center)	24 hrs/day	Unknown
AC-5	Warehouse	0700 - 1600	Unknown
AC-21	Office space	0600 - 1800	None – recirculation only
AC-31	None	Out of service	None
AC-32	Print shop (west side)	24 hrs/day	Unknown

Exhibit 2.1 Summary of B001 AHU Operational Conditions

Operating conditions and features of the AHUs relevant to the indoor VOC levels and source assessment are as follows:

- Due to infrastructure and access constraints associated with the AHU equipment, outside and return air flows cannot be measured or estimated accurately; thus, air exchange rates for B001 are unknown.

- The AHU serving the currently vacant office space (AC-21) is a return/recirculation air unit only; outside air is not being directly provided to this space.

- The parts storage/crib area in the northeast corner is served by space heaters only; outside air is not being directly provided to this space.

- The loading dock and adjacent areas in the northwest corner are served by space heaters and ventilation fans.

3.0 VOC SOURCE ASSESSMENT AND FINDINGS

VOC source assessment activities were initiated in August 2013 and included the following steps:

- Field screening of indoor air and targeted screening of certain features of the building;
- Re-screening of indoor air after actions were taken to seal certain floor penetrations and implement HVAC operational adjustments;
- Field screening of subslab vapor; and
- Monitoring of subslab-to-indoor air differential pressures.

The following sections provide details and discussion of the investigation methods and results in the general sequence they were conducted. The field methods were implemented in general accordance with the procedures and protocols provided in the RFI Work Plan, Appendix A; field screening of subslab vapor using a portable GC/MS was conducted in accordance with the procedures described in a letter from IBM to NYSDEC dated January 22, 2014. Refer to Appendix B of this report for further details and documentation of the field methods and data quality assurance/quality control (QA/QC).

3.1 Initial Field Screening

Initial field screening for VOCs in indoor air was conducted at 60 locations throughout B001. The purpose of field screening was to: 1) obtain an initial understanding of the potential presence and levels of VOCs in indoor air, 2) support the selection of targeted field screening locations such as floor cracks and sump covers, and 3) support the selection of subslab monitoring and screening locations.

Field screening was conducted using a portable GC/MS. The samples were screened for a focused list of analytes that serve as indicators of potential VOC vapor entry, including 1,1-dichloroethane (1,1-DCA), 1,1-dichloroethene (1,1-DCE), cis-1,2-dichloroethene (c-1,2-DCE), trans-1,2-dichloroethene (t-1,2-DCE), tetrachloroethene (PCE), and TCE. The portable GC/MS data were used for general screening purposes only.

3.1.1 Indoor Air Screening Results

The initial indoor air screening event was conducted in August and September 2013. Subsequent screening was conducted after sealing of certain potential vapor entry pathways and limited HVAC operational adjustments, described further in Section 3.2. All of the screening results are presented in Table 1. Figure 4 shows the initial indoor air screening results for TCE.

TCE was detected at almost all screening locations at concentrations consistently greater than other analytes. For the initial screening event, TCE detections in indoor air ranged from 0.75 to 2,900 micrograms per cubic meter (µg/m^3). The highest TCE concentrations, typically greater than 100 µg/m^3, were generally observed within the currently vacant office space in the north-central area, and in the currently vacant parts storage/crib area in the

northeast corner of B001. TCE screening concentrations generally decrease toward the south (in the warehouse area) and west side of the building.

In the northeast corner, the parts crib is not served by an AHU, while the AHU serving the vacant office space is a recirculation air system only; it does not currently provide any outside air to the vacant office space.

At two of the screening locations for indoor air (IA2001 and IA2024), grab air samples were collected into Summa canisters at about the same time as the portable GC/MS screening. The Summa data is shown in Table 1. Although the Summa samples do not represent actual field duplicate samples, the portable GC/MS screening and laboratory results exhibit order of magnitude agreement. Figure 4 shows the TCE result for portable GC/MS screening alongside the laboratory result at location IA2001. The Summa grab sample for IA2024 was collected during an intermediate screening event and is only shown in Table 1.

Indoor air screening results after sealing of certain pathways and limited HVAC operational adjustments are shown on Figure 4 and discussed in Section 3.2.3.

3.1.2 Targeted Screening Results

Targeted screening of certain features of the floor and building infrastructure was conducted using a portable GC/MS with the goal of evaluating them as potential pathways for subslab VOCs to enter the indoor air. Targeted screening included floor cracks, expansion joints, sump pit covers, and various utility penetrations through the slab. A total of 27 targeted air locations were screened.

Exhibit 3.1 shows the results of targeted screening of a utility pipe penetration through the wall of the mechanical room housing AHU AC-21. These results show the utility feature as a potential source for VOCs to be drawn into AC-21 and subsequently distributed to the adjacent former office area.

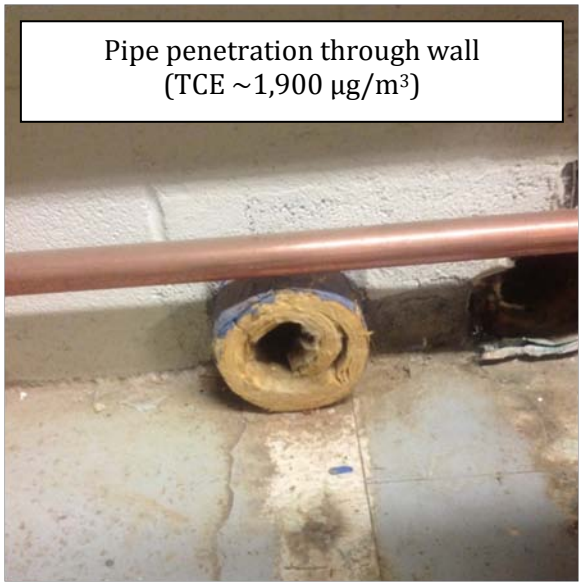


Exhibit 3.1 – Targeted Screening Results in AHU-21 Mechanical Room

Based on the results of the targeted screening, IBM implemented a program to seal potential pathways for VOC entry into indoor air. These actions are described below.

3.2 Actions Taken and Re-Screening Results

IBM undertook reasonable and practical actions to seal certain pathways for VOC vapor entry and to make operational adjustments to the HVAC system. These actions were followed by re-screening of indoor air.

3.2.1 Sealing of Floor Slab Penetrations and Features

Sealing of certain floor slab features was conducted using a combination of materials, including expanding foam, silicone and polyurethane sealants, and non-shrinking grout. The types of features sealed included:

- Gaps around the steel plates covering the sump pits currently receiving condensate from the HVAC system;
- Pipe penetrations through the covers of the sump pits;
- Floor slab/wall utility penetrations;
- Expansion joints; and
- Cracks and holes in the concrete floor or subfloor.

While sealing was completed for accessible features that exhibited relatively higher VOC screening results, it was not practical to seal all floor cracks, joints, and penetrations because much of the building slab is inaccessible under raised flooring. Subslab vapor extraction would be better suited to address these areas.

3.2.2 HVAC System Operational Adjustments

Exhibit 3.2 summarizes the operational adjustments that IBM made to certain AHUs, showing changes from previous conditions highlighted.

AHU No.	Area Served	Pre-Adjustment Schedule	Post-Adjustment Schedule	Other Adjustments	Outside Air Flow (cfm)
AC-1	Print shop	Shut off	24 hrs/day	Changed outside air damper from 50% to 100% open	Unknown
AC-2	Print shop	24 hrs/day	24 hrs/day	Changed outside air damper from 50% to 100% open	Unknown
AC-5	Warehouse	0700 - 1600	24 hrs/day	Increased outside air	Increased from 150 to 2,000
AC-21	Vacant office space	0600 - 1800	24 hrs/day	None	None
AC-31	None	Out of service	Out of service	None	None
AC-32	Print shop	24 hrs/day	24 hrs/day	None	Unknown

Red font indicates modified condition.

Exhibit 3.2 – Summary of AHU Operational Adjustments

The above adjustments bring more outside air into B001; however, it was not possible to accurately estimate the additional outside air flow due to the physical constraints of the existing AHU infrastructure.

3.2.3 Re-Screening of Indoor Air

After completion of the sealing work and HVAC operational adjustments described above, indoor air was re-screened at certain locations using a portable GC/MS in October and November 2013. All the portable GC/MS screening data in presented in Table 1. As shown on Figure 4, the TCE concentrations at re-screened locations generally increased in the print shop and the vacant office space, and decreased slightly in the warehouse.

Overall, the HVAC adjustments were unsuccessful in reducing TCE levels in indoor air. Since conditions did not improve, IBM elected to return to the prior operating conditions for AC-1 (print shop) and AC-21 (vacant office space).

Given the results of these actions, source remediation is planned for VOC capture and reduction of VOC migration into indoor air.

3.3 Subslab Vapor and Differential Pressure Assessment

An assessment of subslab VOC presence and subslab-to-air differential pressure conditions was conducted to: 1) evaluate the source and extent of the VOCs below the floor slab, 2) obtain an understanding of differential pressures relevant to potential VOC entry into indoor air, and 3) establish a subslab testing and monitoring network to support potential VOC source remediation.

Figure 5 shows the location of subslab monitoring and vapor extraction ports installed throughout B001. The network includes 49 subslab vapor monitoring points and 15 subslab vapor extraction ports. The subslab port network provides broad coverage of the building, with higher spatial density in the north and northeast areas where indoor air and targeted screening indicated relatively higher VOC concentrations.

The subslab monitoring and extraction ports were constructed in general accordance with the procedures and protocols provided in the RFI Work Plan, Appendix A. Refer to Appendix B of this report for further details and documentation of the field methods, including the results of integrity testing.

3.3.1 Subslab Vapor Screening Results

Subslab vapor samples were initially collected at 42 monitoring points and 12 extraction ports. The samples were collected into 1-liter gas sampling bags and screened using a portable GC/MS for the same analytes screened in indoor air. The subslab vapor screening results are presented in Table 2. Similar to the indoor air screening, TCE, and to a much lesser extent c-1,2-DCE, were the compounds detected at the highest concentrations in almost all of the samples. At many locations, multiple screenings were conducted using two different portable GC/MS methods to achieve a lower reporting limit when initial results were less than the reporting limit.

Figure 6 shows the TCE concentrations observed in the subslab vapor screening samples, where the posted TCE result typically represents the highest concentration detected at each location. The inferred TCE isopleths shown on Figure 6 indicate concentrations greater than 100,000 µg/m^3 beneath about 4,500 square feet in the north-northeastern area of the building. This area corresponds to the currently vacant areas of relatively higher indoor TCE screening levels and where outdoor air exchange is limited. TCE concentrations in subslab vapor gradually decrease with increasing distance from the northeast portion of B001.

For data comparison purposes, subslab vapor samples at three locations (EP2005, SSV2010, and SSV2016) were collected into Summa canisters at about the same time as the portable GC/MS screening. The Summa data is shown in Table 2. Figure 6 shows the TCE results for portable GC/MS screening alongside the laboratory results for the initial screening event[8]. Although the portable GC/MS and Summa data do not represent true field duplicate samples, the portable GC/MS and Summa TCE results compare very well for the samples at EP2005 and SSV2010, where relative percent differences (RPD) were 5% for EP2005 and 23% for SSV2010. In aggregate, the portable GC/MS data quality is considered appropriate to support the objectives of subslab VOC source assessment and remediation design support. Further discussion of subslab vapor screening data QA/QC is provided in Appendix B.

3.3.2 Subslab-to-Indoor Air Differential Pressure Monitoring

Observations of subslab pressure relative to the indoor air pressure were obtained at the monitoring ports using digital micro-manometers. Figure 7 shows the results at each location using color-coding to indicate where subslab pressure was greater than or neutral relative to indoor air. Review of these data indicate that all of the locations exhibit neutral to slightly positive pressure differentials relative to indoor air, conditions which support migration of VOCs from the subsurface to indoor air.

4.0 VAPOR EXTRACTION PILOT TESTING

Subslab SVE testing was conducted in February 2014 to: 1) evaluate the method as a potential source reduction/remediation measure to remove VOC mass from beneath the building, and 2) obtain observational data that could be used to support design of a full-scale remediation system. This section provides a summary of the testing procedures, results, and implications for remediation system design.

4.1 Testing Procedures

Subslab SVE testing was conducted at 15 extraction ports that were installed throughout B001. The extraction ports are identified with the prefix "EP" and their locations are shown on Figure 5. Each extraction port was constructed by coring a hole through the concrete floor slab and installing a 1 ¼ -in.-diameter by 1-ft-long PVC screen equipped with a capped port flush with the floor. To test each port for soil vapor extraction, a regenerative vacuum

[8] The Summa canister data for SSV2010 is not shown on Figure 6 because it was not collected during the round with the highest TCE detection.

blower mounted on a portable cart, shown in Exhibit 4.1 below, was used to withdraw vapor from the ports for durations of approximately 60 minutes each. The vapor flow rate and applied vacuum was monitored and recorded at each extraction port using the assembly shown in Exhibit 4.1. For each test, the differential pressure response between the subslab and indoor air was monitored at the other nearby subslab ports using digital manometers.

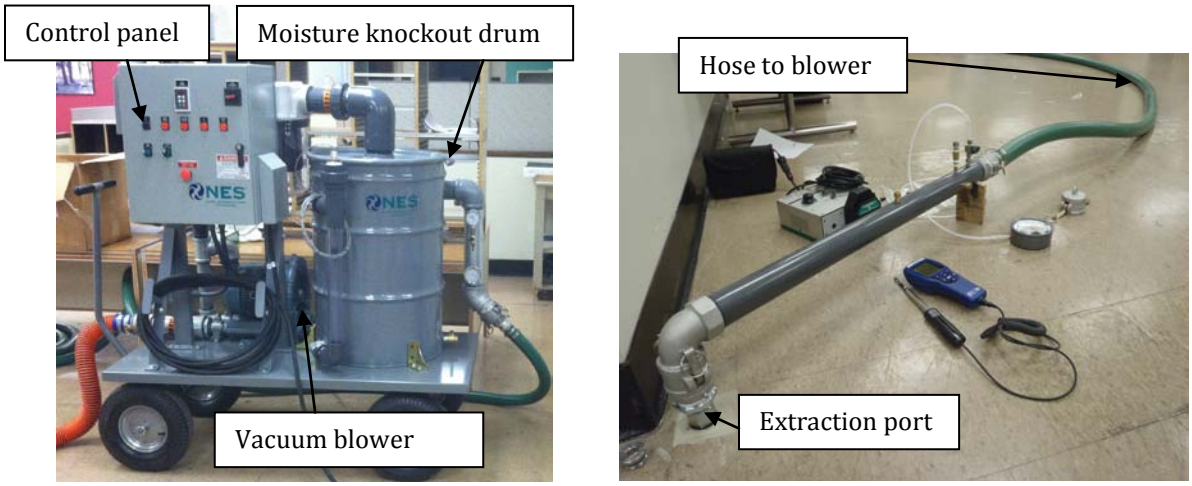


Exhibit 4.1 – Subslab Extraction Testing Setup.
Blower cart (left) and extraction port test assembly (right)

4.2 Testing Results

Figure 8 summarizes the vapor extraction conditions and inferred combined extent of subslab pressure response for all 15 extraction tests. Please note that the results of the individual tests are superimposed on Figure 8; simultaneous extraction would likely result in a somewhat different response pattern. The subslab pressure response for each individual test is shown on Figures C-1 through C-15 in Appendix C. On these figures, the inferred extent of subslab pressure response is depicted by the pressure differential isopleths 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 isopleths.

The test results indicate a wide range of variability in the extent of subslab pressure response and extraction flow rate, which is typical for an older industrial building. For example, while the applied vacuum at the ports generally ranged from 40 to 60 in. wc, the resulting extraction rates ranged from less than 10 cubic feet per minute (cfm) up to 110 cfm. At some ports, vacuum influence was observed at radial distances of 100 feet or more (e.g, EP2004); other ports yielded low flow with limited subslab vacuum response (e.g, EP2014).

Although the individual test results varied, the aggregate results indicate that significant and extensive depressurization can be achieved under the central and northern area of B001 by concurrent extraction from the installed port network. In particular, simultaneous

extraction from several ports installed in the north-central and northeast areas of the building (within the vacant office area and former parts crib) will effectively depressurize this area where subslab TCE concentrations are greater than 100,000 µg/m^3, the area that represents the primary source of VOCs in the indoor air of B001.

During each test, a sample of the vapor stream was collected into a Tedlar bag and screened using a PID. Near the conclusion of most tests, a grab sample of the vapor stream was collected into a Summa canister for analysis by USEPA Method TO-15 for the project-specific analyte list. The screening and laboratory data for each test are summarized in Exhibit 4.2 below. The complete analytical results for the extraction test vapor samples are provided in Table 3.

Port Location	Applied Vacuum [in. wc]	Extracted Flow Rate [cfm]	PID Screening [ppmv]	Total VOCs - Laboratory Analysis		VOC Removal Rate [lbs/hr]
				[ppmv]	[µg/m^3]	
EP2001	57	26	6.8	NS	NS	NS
EP2002	57	25	6.4	1.1	6,100	5.6E-04
EP2003	37	110	11	0.27	1,400	5.8E-04
EP2004	57	48	11	1.0	5,600	9.7E-04
EP2005	55	25	13	NS	NS	NS
EP2006	56	6.6	19	1.8	9,900	2.4E-04
EP2007	60	38	24	0.55	3,000	4.2E-04
EP2008	60	110	19	7.6	41,000	1.6E-02
EP2009	39	110	99	83	440,000	1.9E-01
EP2010	38	110	12	0.25	1,300	5.4E-04
EP2011	58	13	7.0	1.9	10,000	4.8E-04
EP2012	39	97	18	5.3	29,000	1.0E-02
EP2013	59	34	4.7	0.45	2,400	3.1E-04
EP2014	54	15	6.0	NS	NS	NS
EP2015	58	58	6.2	NS	NS	NS

Exhibit 4.2: Subslab SVE Testing Data Summary
Red font indicates port planned for full-scale operation; NS = Not Sampled

The subslab SVE test data indicate substantial depressurization and interception of VOC mass flux can be achieved by four ports (EP2008, EP2009, EP2010, EP2012) located within the approximately 4,500 ft^2 area delineated by the 100,000 µg/m^3 TCE isopleth encompassing the north-central and northeast area of the building that is the primary source of indoor air VOC presence. However, extraction from more ports than is necessary to address the primary source area would be a prudent measure in that it provides redundancy and flexibility to adjust system operations if appropriate based on future observed conditions.

5.0 REMEDIATION SYSTEM DESIGN BASIS

This section presents the design basis for VOC source remediation beneath B001. The remediation design is based on the results of vapor extraction pilot testing, which indicates

that subslab SVE will achieve the goals of removal of VOC source mass from below the slab and capture of VOC vapor migrating into the building space. The design of the subslab SVE and treatment system is described below, including the 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

As indicated in Section 4.2, subslab SVE from 4 ports would effectively depressurize and remove VOC mass from the primary VOC source area delineated by the 100,000 µg/m^3 subslab TCE isopleths located in the north-central and northeast area of the building. However, initially, vapor extraction from a sufficient number of ports to encompass much of the 10,000 µg/m^3 subslab TCE isopleths are planned as a conservative measure to provide redundancy and operating flexibility.

A total of 9 of the 15 extraction ports used for pilot testing, and one new extraction port to be installed in the northeast corner of the building, will be incorporated into the full-scale system. The 9 existing ports, which are shown in red font in Exhibit 4.2 and shown on the system layout on Figure 9, were selected because they exhibited favorable test results with respect to extraction rate and area of influence. The tenth port (EP2016 shown on Figure 9) will be installed approximately 30 feet to the east of EP2012 and, for design purposes, is assumed to have similar extraction properties (flow rate vs. applied vacuum, radius of influence) as EP2012.

The design target for the applied vacuum at the extraction ports will be 60 in. wc because this was the vacuum during pilot testing that provided a reasonable balance among extraction flow, vacuum influence, and the efficient operating range of blower capability.

At the target applied vacuum, the total subslab SVE rate estimated by summing the extraction rates observed during pilot testing at the 10 ports would be about 650 cfm. The actual withdrawal rate during simultaneous extraction from the port network will likely be lower than estimated above due in part to superposition effects and competition among extraction ports. Overall, the planned extraction port network and target operating conditions will provide for operating flexibility and redundancy via overlapping areas of influence. Additional ports 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 system is shown in Exhibit 5.1. Subslab soil vapor will be withdrawn from the extraction ports using a duplex vacuum blower system. Before entering the blower(s), the vapor will pass through two granular activated carbon (GAC) units plumbed in series. Placing the GAC units on the suction side of the blower(s) has several advantages, including 1) maintaining under vacuum all pipe and equipment with VOC-containing vapor, 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 treated vapor passing through the vacuum blower will be discharged outside via a new exhaust stack.

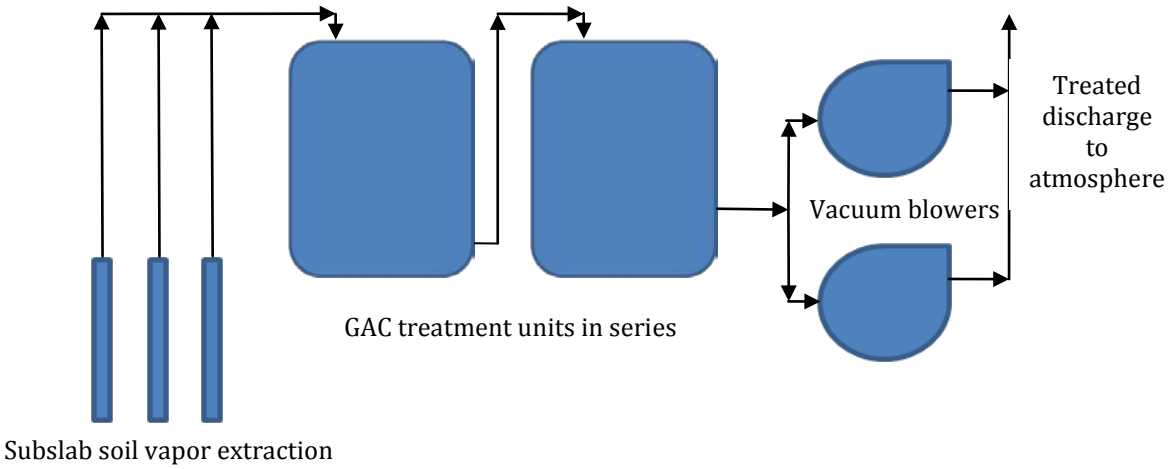


Exhibit 5.1 – Subslab Vapor Extraction Process Flow Diagram

A duplex blower system will be used to provide operating flexibility, redundancy, and allow for future system expansion if determined necessary. Each vacuum blower will be sized to achieve an applied vacuum at the extraction ports of 60 in. wc at a total vapor extraction rate of about 500 cfm. The blowers will be sized to account for combined head loss through the piping network and GAC filled vessels. The blowers will be regenerative type blowers such as FPZ's Model K11-MS with an estimated 10 to 15 horsepower motor and variable frequency drive (VFD). The VFDs will allow for lower power consumption when operating at conditions less than the capacity of the blowers.

5.3 VOC Mass Removal and Treatment

The sum of the VOC mass removal rates observed during short-term testing of the 10 ports planned for full-scale operation was about 0.2 lb/hr (5 lbs/day). Over time, we expect the actual VOC mass recovery rate will decrease according to an exponential decay curve that approaches an asymptote that represents the mass transfer limitations in the subsurface.

While the projected VOC removal rate is expected to be less than the emission rate potential threshold of 0.5 lbs/hr that would require air pollution controls under NYSDEC Division of Environmental Remediation guidelines[9], installation of GAC for emissions control is planned. VOC mass in the vapor stream will be treated using coconut-shell GAC units installed in a lead-lag configuration. Each GAC unit will contain about 700 lbs of GAC. Assuming an adsorption capacity of about 0.1 lb VOC per lb GAC, and that the initial average VOC loading will be 50% of that observed during pilot testing (i.e. 2.5 lbs/day), a 700 lb GAC unit would need to be replaced after about 28 days. The GAC replacement frequency will gradually decrease as the VOC mass recovery rate declines. GAC treatment may be removed in the future if emissions will not cause air pollution as indicated by an air quality impact analysis conducted in accordance with NYSDEC Division of Air Resources guidance.

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

Monitoring of the VOC breakthrough of the lead unit will be conducted, and when the lead unit has exhausted its capacity, the lag unit could be moved to the lead position, and a fresh GAC unit could be placed in the lag position. Spent GAC will be sent off-Site for reactivation or disposal.

5.4 System Location and Safeguards

The subslab SVE and treatment equipment is planned for installation in a current storage room adjacent to the loading bays on the north end of Building 001 (see Figure 9). This area of the building is not routinely occupied and is not served by an AHU, only by space heaters and ventilation fans. The system will include the following engineering design and operational safeguards that will prevent VOC vapors from entering the building during system operation, maintenance shutdowns, or potential system malfunction:

- The vacuum blower will be located downstream of the GAC units such that VOC-containing vapors and the GAC units are maintained under a vacuum condition during operation.
- The discharge from the vacuum blower will contain only treated vapor and will be piped to an exhaust stack that will be installed through the roof of the building.
- For maintenance shutdowns, including GAC replacement, the GAC beds and associated pipe/hose will be purged with clean, indoor air by opening a purge air inlet valve located upstream of the GAC units. This will allow clean indoor air to be drawn through the GAC units to flush out VOC-containing vapor from the system prior to shut down and carbon change outs.
- The equipment room will be equipped with a new exhaust system, such that the equipment area will be ventilated during maintenance shut downs, including when the GAC vessels are opened for carbon change outs.
- The equipment room and surrounding area is not served by an AHU; therefore, potential indoor air communication with other areas of the building is limited.
- The system will be equipped with several sensors and alarms (e.g., low vacuum, high temperature) that will automatically shut down the system, and that will be interconnected with the Site-wide alarm system that is monitored around the clock.

6.0 CONCLUSIONS

The results of this work have met the objectives of: 1) evaluating the extent of VOC presence in indoor air, 2) identifying the source and distribution of VOC mass below the floor slab, and 3) evaluating the feasibility of subslab SVE to remove VOC mass and control air pressure gradients across the slab in certain areas that have higher potential for VOC vapor entry into the building.

Indoor air screening indicates VOC presence throughout B001. The indoor VOC presence can be explained by vapor entry from residual VOC source mass in soil and groundwater

beneath the building. Indoor air VOC concentrations were greatest in the north-central and northeast corner of the building, corresponding to the area where subslab vapor screening indicated the highest VOC concentrations under the building. Subslab vapor screening defined an area of about 4,500 square feet where TCE presence in subslab vapor is greater than 100,000 µg/m^3. This area also corresponds to rooms that are not served by AHUs (the former parts crib) or where air exchange is limited (the former office area).

Monitoring of subslab-to-indoor air pressure differentials throughout B001 indicate that in most areas, generally neutral to slightly positive subslab pressure exists, conditions that are favorable to migration of VOCs from the subsurface to indoor air.

Subslab SVE testing confirmed the viability of this method of intercepting VOC mass transport into the building through the floor slab. A design basis for a subslab SVE and treatment system has been developed from the results of pilot testing. The design basis is intended to achieve the goals of VOC mass removal and control of subslab-to-indoor air pressure differentials to reduce VOC mass entry into the building, while also providing for operating flexibility, redundancy, and future expansion, if appropriate.

IBM is moving forward with the detailed design of VOC source remediation using subslab SVE, targeting construction beginning in third quarter 2014 and startup in fourth quarter 2014. IBM understands that construction and operation of the remediation system can proceed once the Agencies have accepted this report.

S:\CONDATA\3400s\3463.00\Source Files\B001\2014 Source Investigation Report\20140421-B001 Findings.doc

TABLES

TABLE 1
Summary of Portable GC/MS Indoor Air Screening Results
Building 001
IBM Poughkeepsie Facility
Poughkeepsie, New York

Sample Location	Collection Date	Sample Type	Location Description	PID	1,1-DCA	1,1-DCE	c-1,2-DCE	t-1,2-DCE	PCE	TCE
				ppbv	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³
IA2001	8/27/13 11:37	Portable GC/MS - Room Air	Office Area	158	<0.40	<0.40	0.87	<0.40	<0.68	240
IA2001	9/13/13 13:51	Portable GC/MS - Room Air	Office Area	100	<0.40	3.3	1.2	<0.40	<0.68	380
IA2001	9/13/13 13:58	SUMMA Grab - Room Air	Office Area	NA	<0.23	<0.23	0.25	<0.23	<0.39	160
IA2001	10/29/13 11:22	Portable GC/MS - Room Air	Office Area	NA	<2.0	<2.0	<2.0	<2.0	<0.68	1,200
IA2001	11/20/13 12:59	Portable GC/MS - Room Air	Office Area	283	<4.0	<4.0	<4.0	<4.0	<1.4	1,300
IA2001	11/21/13 17:39	Portable GC/MS - Room Air	Office Area	490	<4.0	<4.0	<4.0	<4.0	<1.4	1,100
IA2002	8/27/13 11:47	Portable GC/MS - Room Air	Office Area	170	<0.40	4.8	0.75	<0.40	<0.68	230
IA2003	8/27/13 13:00	Portable GC/MS - Room Air	Print Room	135	<0.40	<0.40	0.56	<0.40	<0.68	47
IA2003	10/29/13 13:42	Portable GC/MS - Room Air	Print Room	NA	<2.0	<2.0	<2.0	<2.0	<0.68	75
IA2003	11/20/13 11:08	Portable GC/MS - Room Air	Print Room	86	<2.0	<2.0	<2.0	<2.0	<0.68	70
IA2003	11/21/13 15:53	Portable GC/MS - Room Air	Print Room	190	<2.0	<2.0	<2.0	<2.0	<0.68	100
IA2004	8/27/13 13:12	Portable GC/MS - Room Air	Print Room	146	<0.40	<0.40	0.44	<0.40	<0.68	48
IA2005	8/27/13 13:25	Portable GC/MS - Room Air	Print Room	148	<0.40	<0.40	<0.40	<0.40	<0.68	48
IA2005	10/29/13 13:52	Portable GC/MS - Room Air	Print Room	NA	<2.0	<2.0	<2.0	<2.0	<0.68	70
IA2006	8/27/13 13:35	Portable GC/MS - Room Air	Print Room	147	<0.40	<0.40	<0.40	<0.40	<0.68	39
IA2007	8/27/13 13:50	Portable GC/MS - Room Air	Print Room	NA	<0.40	3.8	<0.40	<0.40	<0.68	43
IA2008	8/27/13 15:04	Portable GC/MS - Room Air	Warehouse Area	NA	<0.40	<0.40	<0.40	<0.40	1.2	15
IA2009	8/27/13 15:16	Portable GC/MS - Room Air	Warehouse Area	90	<0.40	<0.40	<0.40	<0.40	0.75	12
IA2010	8/27/13 15:28	Portable GC/MS - Room Air	Warehouse Area	125	<0.40	<0.40	0.63	<0.40	0.81	12
IA2011	8/27/13 16:00	Portable GC/MS - Room Air	Warehouse Area	123	<0.40	<0.40	<0.40	<0.40	1.4	23
IA2012	8/27/13 16:10	Portable GC/MS - Room Air	Warehouse Area	121	<0.40	<0.40	<0.40	<0.40	0.88	9.1
IA2012	10/29/13 11:55	Portable GC/MS - Room Air	Warehouse Area	NA	<2.0	<2.0	<2.0	<2.0	<0.68	7.0
IA2013	8/27/13 16:21	Portable GC/MS - Room Air	Warehouse Area	111	<0.40	<0.40	<0.40	<0.40	<0.68	9.7
IA2013	10/29/13 12:05	Portable GC/MS - Room Air	Warehouse Area	NA	<2.0	<2.0	<2.0	<2.0	<0.68	7.5
IA2014	8/27/13 16:29	Portable GC/MS - Room Air	Warehouse Area	107	<0.40	<0.40	0.44	<0.40	0.75	8.6
IA2015	8/27/13 16:39	Portable GC/MS - Room Air	Warehouse Area	100	<0.40	<0.40	0.48	<0.40	<0.68	9.1
IA2016	8/27/13 16:48	Portable GC/MS - Room Air	Warehouse Area	95	<0.40	<0.40	<0.40	<0.40	<0.68	9.7
IA2016	10/29/13 12:17	Portable GC/MS - Room Air	Warehouse Area	NA	<2.0	<2.0	<2.0	<2.0	<0.68	7.0
IA2017	8/27/13 17:01	Portable GC/MS - Room Air	Warehouse Area	99	<0.40	<0.40	<0.40	<0.40	0.75	10
IA2017	10/29/13 11:45	Portable GC/MS - Room Air	Warehouse Area	NA	<2.0	<2.0	<2.0	<2.0	<0.68	8.6
IA2018	8/27/13 17:11	Portable GC/MS - Room Air	Warehouse Area	90	<0.40	<0.40	<0.40	<0.40	<0.68	9.7
IA2019	8/27/13 17:24	Portable GC/MS - Room Air	Warehouse Area	86	<0.40	<0.40	0.52	<0.40	<0.68	9.7
IA2020	8/27/13 17:32	Portable GC/MS - Room Air	Hallway	74	<0.40	<0.40	0.48	<0.40	<0.68	9.7
IA2021	8/27/13 17:41	Portable GC/MS - Room Air	Hallway	75	<0.40	<0.40	<0.40	<0.40	<0.68	11
IA2022	8/28/13 8:47	Portable GC/MS - Room Air	East Hallway	161	<0.40	<0.40	<0.40	<0.40	<0.68	43
IA2022	10/29/13 9:40	Portable GC/MS - Room Air	East Hallway	NA	<2.0	<2.0	<2.0	<2.0	<0.68	51
IA2023	8/28/13 9:29	Portable GC/MS - Room Air	East Hallway	192	<0.40	4.8 J	<0.40	<0.40	<0.68	38
IA2024	8/28/13 9:52	Portable GC/MS - Room Air	Parts Crib	573	1.2	<0.40	5.9	<0.40	17	1,200
IA2024	10/29/13 14:24	Portable GC/MS - Room Air	Parts Crib	NA	<2.0	<2.0	3.4	<2.0	8.1	590
IA2024	10/29/13 14:24	SUMMA Grab - Room Air	Parts Crib	NA	0.62	<0.20	3.0	<0.20	7.1	450
IA2024	11/20/13 14:02	Portable GC/MS - Room Air	Parts Crib	314	<4.0	<4.0	6.7	<4.0	14	910
IA2024	11/21/13 17:05	Portable GC/MS - Room Air	Parts Crib	556	<4.0	<4.0	4.4	<4.0	14	910
IA2025	8/28/13 10:04	Portable GC/MS - Room Air	Parts Crib	625	1.3	<0.40	6.7	<0.40	20	1,300
IA2026	8/28/13 10:58	Portable GC/MS - Room Air	HVAC Room East	95	<0.40	<0.40	0.71	<0.40	<0.68	260
IA2026	10/29/13 15:43	Portable GC/MS - Room Air	HVAC Room East	NA	<2.0	<2.0	<2.0	<2.0	<0.68	640
IA2026	11/20/13 10:04	Portable GC/MS - Room Air	HVAC Room East	220	<2.0	<2.0	<2.0	<2.0	<0.68	590
IA2026	11/21/13 17:26	Portable GC/MS - Room Air	HVAC Room East	344	<2.0	<2.0	<2.0	<2.0	<0.68	540
IA2027	8/28/13 11:11	Portable GC/MS - Room Air	HVAC Room West	26	<0.40	<0.40	<0.40	<0.40	<0.68	30
IA2027	10/29/13 12:47	Portable GC/MS - Room Air	HVAC Room West	NA	<2.0	<2.0	<2.0	<2.0	<0.68	120
IA2027	11/20/13 13:42	Portable GC/MS - Room Air	HVAC Room West	12	<2.0	<2.0	<2.0	<2.0	<0.68	70
IA2027	11/21/13 17:15	Portable GC/MS - Room Air	HVAC Room West	237	<2.0	<2.0	<2.0	<2.0	<0.68	160
IA2028	8/28/13 11:19	Portable GC/MS - Room Air	HVAC Room West	22	<0.40	5.2 J	<0.40	<0.40	<0.68	31
IA2028	10/29/13 12:56	Portable GC/MS - Room Air	HVAC Room West	NA	<2.0	<2.0	<2.0	<2.0	<0.68	70
IA2029	8/28/13 11:28	Portable GC/MS - Room Air	HVAC Room West	30	<0.40	<0.40	<0.40	<0.40	<0.68	25
IA2030	8/28/13 11:39	Portable GC/MS - Room Air	HVAC Room West	35	<0.40	6.7 J	<0.40	<0.40	<0.68	27
IA2031	8/28/13 13:07	Portable GC/MS - Room Air	Storage Room	44	<0.40	<0.40	<0.40	<0.40	<0.68	24
IA2032	8/28/13 13:47	Portable GC/MS - Room Air	NW Corner Storage Area	178	<0.40	<0.40	<0.40	<0.40	<0.68	0.75
IA2032	10/29/13 10:50	Portable GC/MS - Room Air	NW Corner Storage Area	NA	<2.0	<2.0	<2.0	<2.0	<0.68	<0.54
IA2033	8/28/13 14:07	Portable GC/MS - Room Air	SW Mechanical Room	130	<0.40	<0.40	<0.40	<0.40	0.95	13
IA2034	8/28/13 14:14	Portable GC/MS - Room Air	SW Mechanical Room	NA	<0.40	<0.40	<0.40	<0.40	1.0	13
IA2034	10/29/13 17:54	Portable GC/MS - Room Air	SW Mechanical Room	NA	<2.0	<2.0	<2.0	<2.0	<0.68	7.5
IA2035	8/28/13 14:28	Portable GC/MS - Room Air	Server Room	128	<0.40	<0.40	<0.40	<0.40	<0.68	36
IA2036	8/28/13 14:41	Portable GC/MS - Room Air	Warehouse Area	130	<0.40	<0.40	0.91	<0.40	<0.68	15

TABLE 1
Summary of Portable GC/MS Indoor Air Screening Results
Building 001
IBM Poughkeepsie Facility
Poughkeepsie, New York

Sample Location	Collection Date	Sample Type	Location Description	PID	1,1-DCA	1,1-DCE	c-1,2-DCE	t-1,2-DCE	PCE	TCE
				ppbv	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³
IA2037	8/28/13 14:59	Portable GC/MS - Room Air	Print Room	122	<0.40	<0.40	<0.40	<0.40	<0.68	24
IA2037	10/29/13 13:30	Portable GC/MS - Room Air	Print Room	NA	<2.0	<2.0	<2.0	<2.0	<0.68	70
IA2037	11/20/13 10:57	Portable GC/MS - Room Air	Print Room	90	<2.0	<2.0	<2.0	<2.0	<0.68	54
IA2037	11/21/13 15:39	Portable GC/MS - Room Air	Print Room	204	<2.0	<2.0	<2.0	<2.0	<0.68	110
IA2038	8/28/13 15:11	Portable GC/MS - Room Air	Print Room	145	<0.40	<0.40	<0.40	<0.40	<0.68	30
IA2038	10/29/13 14:00	Portable GC/MS - Room Air	Print Room	NA	<2.0	<2.0	<2.0	<2.0	<0.68	70
IA2038	11/20/13 11:34	Portable GC/MS - Room Air	Print Room	76	<2.0	<2.0	<2.0	<2.0	<0.68	140
IA2038	11/21/13 16:06	Portable GC/MS - Room Air	Print Room	193	<2.0	<2.0	<2.0	<2.0	<0.68	100
IA2039	8/28/13 15:21	Portable GC/MS - Room Air	Print Room	131	<0.40	<0.40	<0.40	<0.40	<0.68	29
IA2039	10/29/13 14:08	Portable GC/MS - Room Air	Print Room	NA	<2.0	<2.0	<2.0	<2.0	<0.68	70
IA2040	8/28/13 15:33	Portable GC/MS - Room Air	Print Room	146	<0.40	<0.40	<0.40	<0.40	<0.68	32
IA2041	8/28/13 15:49	Portable GC/MS - Room Air	NW Corner Storage Area	105	<0.40	<0.40	<0.40	<0.40	<0.68	<0.54
IA2042	8/28/13 16:00	Portable GC/MS - Room Air	NW Corner Storage Area	293	<0.40	<0.40	<0.40	<0.40	<0.68	0.81
IA2043	8/28/13 16:15	Portable GC/MS - Room Air	NW Corner Storage Area	230	<0.40	<0.40	<0.40	<0.40	<0.68	<0.54
IA2044	8/28/13 17:08	Portable GC/MS - Room Air	Office Area	180	<0.40	3.0 J	<0.40	<0.40	<0.68	100
IA2045	8/28/13 17:38	Portable GC/MS - Room Air	Office Area	NA	<0.40	2.8 J	<0.40	<0.40	<0.68	100
IA2046	8/29/13 8:52	Portable GC/MS - Room Air	Parts Crib	170	<0.40	<0.40	2.2	<0.40	4.0	210
IA2047	8/29/13 9:03	Portable GC/MS - Room Air	Closet	850	1.5	<0.40	39	<0.40	62	2,900
IA2047	10/29/13 9:54	Portable GC/MS - Room Air	Closet	NA	<8.1	<7.9	<7.9	<7.9	4.6	300
IA2048	8/29/13 9:23	Portable GC/MS - Room Air	Hallway	218	<0.40	<0.40	2.1	<0.40	3.7	200
IA2049	8/29/13 9:32	Portable GC/MS - Room Air	Hallway	270	<0.40	<0.40	2.0	<0.40	3.7	200
IA2050	8/29/13 10:02	Portable GC/MS - Room Air	Print Room	174	<0.40	<0.40	<0.40	<0.40	<0.68	25
IA2051	8/29/13 10:15	Portable GC/MS - Room Air	Electrical Room	160	<0.40	<0.40	<0.40	<0.40	<0.68	24
IA2052	8/29/13 10:40	Portable GC/MS - Room Air	Parts Crib	450	1.3	<0.40	5.9	<0.40	18	1,100
IA2053	8/29/13 10:57	Portable GC/MS - Room Air	Parts Crib	440	1.2	<0.40	5.6	<0.40	17	1,100
IA2054	8/29/13 13:26	Portable GC/MS - Room Air	Hallway	110	<0.40	<0.40	1.5	<0.40	2.6	160
IA2054	10/29/13 10:04	Portable GC/MS - Room Air	Hallway	NA	<2.0	<2.0	<2.0	<2.0	1.2	130
IA2055	8/29/13 17:56	Portable GC/MS - Room Air	Hallway	204	<0.40	3.4 J	<0.40	<0.40	<0.68	16
IA2056	8/30/13 11:36	Portable GC/MS - Room Air	B002 Linkway	127	<0.40	<0.40	0.48	<0.40	<0.68	59
IA2057	8/30/13 11:47	Portable GC/MS - Room Air	B002 Linkway	152	<0.40	<0.40	<0.40	<0.40	<0.68	53
IA2058	8/30/13 11:59	Portable GC/MS - Room Air	Loading Dock Storage	78	<0.40	<0.40	<0.40	<0.40	<0.68	2.7
IA2059	8/30/13 12:59	Portable GC/MS - Room Air	Hallway	180	<0.40	4.0 J	<0.40	<0.40	<0.68	33
IA2060	9/11/13 9:56	Portable GC/MS - Room Air	B002 Tunnel	200	<0.40	<0.40	1.4	<0.40	1.6	23
Field Blank	8/27/13 11:10	Portable GC/MS - Outside Air	Outside Stair #3 (B003)	NA	<0.40	<0.40	<0.40	<0.40	<0.68	<0.54
Field Blank	8/28/13 8:16	Portable GC/MS - Outside Air	Outside Stair #3 (B003)	NA	<0.40	<0.40	<0.40	<0.40	<0.68	0.75
Field Blank	8/29/13 8:40	Portable GC/MS - Outside Air	Outside B001	NA	<0.40	<0.40	<0.40	<0.40	<0.68	0.97
Field Blank	8/30/13 11:20	Portable GC/MS - Outside Air	Outside B001	NA	<0.40	<0.40	<0.40	<0.40	<0.68	2.1
Field Blank	8/30/13 13:21	Portable GC/MS - Outside Air	Outside B001	NA	<0.40	<0.40	<0.40	<0.40	<0.68	2.1
Field Blank	10/29/13 13:10	Portable GC/MS - Outside Air	Outside B001	NA	<2.0	<2.0	<2.0	<2.0	<0.68	<0.54
Field Blank	10/29/13 14:55	Portable GC/MS - Outside Air	Outside B001	NA	<2.0	<2.0	<2.0	<2.0	<0.68	0.97
Field Blank	10/29/13 16:07	Portable GC/MS - Outside Air	Outside B001	NA	<2.0	<2.0	<2.0	<2.0	<0.68	<0.54
Field Blank	11/20/13 9:50	Portable GC/MS - Outside Air	Outside Stair #3 (B003)	NA	<2.0	<2.0	<2.0	<2.0	<0.68	<0.54
Field Blank	11/20/13 10:42	Portable GC/MS - Outside Air	Outside B001	NA	<2.0	<2.0	<2.0	<2.0	<0.68	<0.54
Field Blank	11/20/13 13:24	Portable GC/MS - Outside Air	Outside B001	NA	<2.0	<2.0	<2.0	<2.0	<0.68	0.75

Notes:
1. This table summarizes data recorded during field screening of grab indoor air samples using a HAPSITE Smart portable gas chromatograph/mass spectrometer (GC/MS), manufactured by Inficon. The instrument was calibrated to manufacturer prepared standards ranging from 0.1 part per billion on a volumetric basis (ppbv) to 50 ppbv, for the following compounds: tetrachloroethene (PCE), trichloroethene (TCE), cis-1,2-dichloroethene (c-1,2-DCE), trans-1,2-dichloroethene (t-1,2-DCE), 1,1-dichloroethene (1,1-DCE), and 1,1-dichloroethane (1,1-DCA). The field samples were collected by Sanborn Head personnel directly into the portable GC/MS sampling probe from the location and on the dates noted in the table. The samples were screened using the portable GC/MS in selective ion monitoring (SIM) mode. Results were converted to micrograms per cubic meter (µg/m^3) by Sanborn Head assuming standard temperature (25 °C) and pressure (1 atmosphere) for the conversion. Results were rounded to two significant figures.

2. The portable GC/MS was used as a field screening tool; therefore, the data should be considered estimated and not suitable for final decision-making. The findings should be considered in conjunction with results of samples analyzed in accordance with USEPA TO-15 protocol.

3. "PID" indicates photoionization detector data presented in ppbv.

4. Legend / Flags
< - The analyte was not detected above the indicated reporting limit.
J - The analyte should be considered estimated.
NA - Not analyzed.
ND - Not detected above the PID reporting limit.

TABLE 2
Summary of Portable GC/MS Subslab Vapor Screening Results
Building 001
IBM Poughkeepsie Facility
Poughkeepsie, New York

Sample Location	Collection Date	Sample Type	Location Description	PID ppbv	1,1-DCA µg/m³	1,1-DCE µg/m³	c-1,2-DCE µg/m³	t-1,2-DCE µg/m³	PCE µg/m³	TCE µg/m³
EP2001	1/15/14 14:19	Portable GC/MS - Subslab Vapor	SW Mechanical Room	1,500	<1.6	<1.2	<17	1.8	95	1,000 JL
EP2001	1/15/14 15:30	Portable GC/MS - Subslab Vapor	SW Mechanical Room	NA	<1.7	<1.2	<9.1	<1.2	88	19 JL
EP2001	1/22/14 14:17	Portable GC/MS - Subslab Vapor	SW Mechanical Room	2,300	<3.1	<4.0	<0.59	<0.87	9.5 JL	240 JL
EP2001	3/12/14 10:54	Portable GC/MS - Subslab Vapor	SW Mechanical Room	3,700	<6,800	<4,000	<4,000	<4,000	<4,000	5,400
EP2002	1/17/14 9:02	Portable GC/MS - Subslab Vapor	Warehouse Area	3,500	<4.0	<4.0	<4.0	<4.0	<6,800	7,000
EP2003	1/16/14 15:49	Portable GC/MS - Subslab Vapor	Print Room	2,000	<4,100	<4.0	<4.0	<4.0	<6,800	<5,400
EP2003	1/23/14 10:35	Portable GC/MS - Subslab Vapor	Print Room	1,000	2.1	3.5	<1.5	3.5	31	1,100
EP2004	1/16/14 15:26	Portable GC/MS - Subslab Vapor	Print Room	2,200	<4.0	<4.0	<4.0	<4.0	<6,800	4,800 J
EP2004	1/21/14 15:28	Portable GC/MS - Subslab Vapor	Print Room	2,600	<4.0	<4.0	<4.0	<4.0	<6,800	7,500
EP2005	1/16/14 14:29	Portable GC/MS - Subslab Vapor	Print Room	30,000	<4,000	<4,000	<4,000	<4,000	<6,800	45,000
EP2005	1/16/14 14:29	SUMMA Canister	Print Room	NA	<21	<20	660	<20	180	43,000
EP2005	1/21/14 16:14	Portable GC/MS - Subslab Vapor	Print Room	16,000	<4,000	<4,000	<4,000	<4,000	<6,800	41,000
EP2006	1/16/14 11:23	Portable GC/MS - Subslab Vapor	HVAC Room West	3,800	<4,000	<4,000	<4,000	<4,000	<6,800	12,000
EP2007	1/16/14 10:59	Portable GC/MS - Subslab Vapor	Electrical Room	1,600	<4,000	<4,000	<4,000	<4,000	<6,800	3,400 J
EP2007	1/21/14 16:06	Portable GC/MS - Subslab Vapor	Electrical Room	1,500	<4,000	<4,000	<4,000	<4,000	<6,800	<5,400
EP2007	1/22/14 18:07	Portable GC/MS - Subslab Vapor	Electrical Room	1,600	2.9	<1.2	1.8	<2.1	15	30 JL
EP2007	1/23/14 11:06	Portable GC/MS - Subslab Vapor	Electrical Room	1,600	<3.1	<0.40	<0.40	<0.40	1.8 JL	4,600 JL
EP2008	1/16/14 8:49	Portable GC/MS - Subslab Vapor	Office Area	2,300	<8,100	<7,900	<7,900	<7,900	<14,000	11,000
EP2008	1/16/14 9:47	Portable GC/MS - Subslab Vapor	Office Area	2,300	<4,000	<4,000	<4,000	<4,000	<6,800	7,000
EP2008	1/21/14 14:29	Portable GC/MS - Subslab Vapor	Office Area	2,200	<4,000	<4,000	<4,000	<4,000	<6,800	5,900
EP2009	1/16/14 9:36	Portable GC/MS - Subslab Vapor	Office Area	390,000	<32,000	<32,000	<32,000	<32,000	<54,000	1,100,000
EP2010	1/16/14 16:56	Portable GC/MS - Subslab Vapor	Crib Area	1,300	<4,000	<4,000	<4,000	<4,000	<6,800	<5,400
EP2010	1/16/14 17:15	Portable GC/MS - Subslab Vapor	Crib Area	1,300	<4,000	<4,000	<4,000	<4,000	<6,800	<5,400
EP2010	1/21/14 16:34	Portable GC/MS - Subslab Vapor	Crib Area	482	<4,000	<4,000	<4,000	<4,000	<6,800	<5,400
EP2010	1/23/14 8:24	Portable GC/MS - Subslab Vapor	Crib Area	1,300	1.9	2.1	<1.9	<6.3	<2.0	110
EP2011	1/16/14 14:13	Portable GC/MS - Subslab Vapor	Print Room	2,800	<4,000	<4,000	<4,000	<4,000	<6,800	15,000
EP2012	1/16/14 17:08	Portable GC/MS - Subslab Vapor	Crib Area	8,600	<4,000	<4,000	<4,000	<4,000	<6,800	10,000
EP2012	1/21/14 16:51	Portable GC/MS - Subslab Vapor	Crib Area	4,000	<4,000	<4,000	<4,000	<4,000	<6,800	7,500
EP2015	3/12/14 17:27	Portable GC/MS - Subslab Vapor	HVAC Room East	900	<1.6	<1.6	<1.6	<1.6	4.5	1,100
SSV2001	1/15/14 11:33	Portable GC/MS - Subslab Vapor	Warehouse Area	1,700	<4,000	<4,000	<4,000	<4,000	<6,800	<5,400
SSV2001	1/22/14 12:30	Portable GC/MS - Subslab Vapor	Warehouse Area	647	<1.2	2.5	<4.4	<1.2	<2.0	81
SSV2002	1/22/14 11:41	Portable GC/MS - Subslab Vapor	Warehouse Area	843	2.2	<1.2	<4.4	<1.2	2.5	590
SSV2003	1/22/14 10:58	Portable GC/MS - Subslab Vapor	Warehouse Area	586	2.6	<0.4	1.8	<0.40	52	590 JL
SSV2004	1/22/14 13:10	Portable GC/MS - Subslab Vapor	Warehouse Area	2,500	7.7	<1.2	2.3	<1.2	<2.0	21 JL
SSV2004	3/12/14 11:07	Portable GC/MS - Subslab Vapor	Warehouse Area	4,000	<4,000	<4,000	<4,000	<4,000	<6,800	9,100
SSV2005	1/15/14 13:43	Portable GC/MS - Subslab Vapor	SW Mechanical Room	1,100,000	<4,000	<4,000	<4,000	<4,000	<6,800	<5,400
SSV2005	1/22/14 13:00	Portable GC/MS - Subslab Vapor	SW Mechanical Room	1,300	<1.2	<1.2	<4.4	<1.2	3.2	1,300
SSV2006	1/17/14 10:13	Portable GC/MS - Subslab Vapor	Warehouse Area	7,500	<4,000	<4,000	<4,000	<4,000	<6,800	3,800 J
SSV2006	1/22/14 18:35	Portable GC/MS - Subslab Vapor	Warehouse Area	25,000	<13	<1.6	<1.9	<2.9	<2.7	410 JL
SSV2007	1/22/14 12:39	Portable GC/MS - Subslab Vapor	Warehouse Area	948	<1.2	<1.2	<4.4	<1.2	3.7	1,100
SSV2008	1/22/14 11:53	Portable GC/MS - Subslab Vapor	Warehouse Area	681	1.8	<1.2	<4.4	<1.2	<2.0	39
SSV2009	1/22/14 10:33	Portable GC/MS - Subslab Vapor	Warehouse Area	726	2.2	3.9	1.6	3.9	29	590 JL
SSV2010	1/15/14 17:27	Portable GC/MS - Subslab Vapor	Crib Area	150,000	<12,000	14,000	<12,000	12,000	<20,000	1,100,000
SSV2010	1/16/14 16:53	SUMMA Canister	Crib Area	NA	360	<269	5,200	<269	7,700	580,000
SSV2010	1/16/14 17:29	Portable GC/MS - Subslab Vapor	Crib Area	150,000	<12,000	<12,000	<12,000	<12,000	<20,000	460,000
SSV2010	1/21/14 17:03	Portable GC/MS - Subslab Vapor	Crib Area	330,000	<32,000	<32,000	<32,000	<32,000	<54,000	860,000
SSV2011	1/22/14 10:22	Portable GC/MS - Subslab Vapor	Warehouse Area	646	2.1	0.52	1.9	0.52	2.3	26
SSV2012	1/22/14 10:10	Portable GC/MS - Subslab Vapor	Warehouse Area	446	3.2	13	4.8	7.1	17	240
SSV2013	1/17/14 9:55	Portable GC/MS - Subslab Vapor	Warehouse Area	5,000	<4,000	<4,000	<4,000	<4,000	<6,800	8,100
SSV2014	1/17/14 9:44	Portable GC/MS - Subslab Vapor	Warehouse Area	2,800	<4,000	<4,000	<4,000	<4,000	<6,800	4,800 J
SSV2014	1/22/14 15:12	Portable GC/MS - Subslab Vapor	Warehouse Area	3,400	<2.4	<2.4	<3.6	<5.2	<4.1	200
SSV2015	1/15/14 13:17	Portable GC/MS - Subslab Vapor	SW Mechanical Room	800	<4,000	<4,000	<4,000	<4,000	<6,800	<5,400
SSV2015	1/15/14 15:46	Portable GC/MS - Subslab Vapor	SW Mechanical Room	NA	7.3	2.3	<9.1	1.3	9.5	700 JL
SSV2015	1/22/14 12:48	Portable GC/MS - Subslab Vapor	SW Mechanical Room	1,000	<1.2	<1.2	<4.4	<1.2	6.2	600
SSV2015	3/12/14 15:58	Portable GC/MS - Subslab Vapor	SW Mechanical Room	NA	<1.6	15	<1.6	<1.6	18	1,300
SSV2016	1/16/14 17:45	Portable GC/MS - Subslab Vapor	Hallway	1,400	<4,000	<4,000	<4,000	<4,000	<6,800	4,700 J
SSV2016	1/22/14 13:05	SUMMA Canister	Hallway	NA	<1.9	<1.9	2.9	<1.9	14	4,800
SSV2016	1/22/14 14:38	Portable GC/MS - Subslab Vapor	Hallway	1,900	<3.1	<0.40	1.2 JL	1.2 JL	<0.68	230 JL
SSV2017	1/17/14 9:15	Portable GC/MS - Subslab Vapor	Server Room	7,000	<4,000	<4,000	<4,000	<4,000	<6,800	11,000
SSV2018	1/16/14 15:12	Portable GC/MS - Subslab Vapor	Print Room	1,000	<4,000	<4,000	<4,000	<4,000	<6,800	12,000
SSV2019	1/16/14 15:33	Portable GC/MS - Subslab Vapor	Print Room	4,200	<4,000	<4,000	<4,000	<4,000	<6,800	9,700
SSV2020	1/16/14 16:13	Portable GC/MS - Subslab Vapor	Print Room	420	<4,000	<4,000	<4,000	<4,000	<6,800	<5,400
SSV2020	1/23/14 9:56	Portable GC/MS - Subslab Vapor	Print Room	617	1.3	<0.75	0.63	0.79	18	160
SSV2021	1/16/14 16:04	Portable GC/MS - Subslab Vapor	Print Room	600	<4,000	<4,000	<4,000	<4,000	<6,800	<5,400
SSV2021	1/23/14 10:07	Portable GC/MS - Subslab Vapor	Print Room	900	2.5	<2.3	<1.5	<2.4	37	1,100
SSV2022	1/16/14 15:41	Portable GC/MS - Subslab Vapor	Print Room	480	<4,000	<4,000	<4,000	<4,000	<6,800	<5,400
SSV2022	1/23/14 9:19	Portable GC/MS - Subslab Vapor	Print Room	782	4.9	2.1	1.1	2.1	16	590 JL
SSV2022	3/12/14 14:17	SUMMA Canister	Print Room	NA	0.33	<0.20	1.9	0.22	15	430
SSV2022	3/12/14 14:13	Portable GC/MS - Subslab Vapor	Print Room	NA	<0.81	13	<0.79	<0.79	22	860
SSV2023	1/16/14 15:02	Portable GC/MS - Subslab Vapor	Print Room	300	<4,000	<4,000	<4,000	<4,000	<6,800	<5,400
SSV2023	1/21/14 15:42	Portable GC/MS - Subslab Vapor	Print Room	640	<4,000	<4,000	<4,000	<4,000	<6,800	<5,400
SSV2023	1/23/14 9:06	Portable GC/MS - Subslab Vapor	Print Room	654	2.3	4.8	<1.9	4.8	<2.0	19 JL
SSV2023	3/12/14 14:36	Portable GC/MS - Subslab Vapor	Print Room	NA	<1.6	<1.6	<1.6	<1.6	3.8	110
SSV2024	1/16/14 14:41	Portable GC/MS - Subslab Vapor	Print Room	368	<4,000	<4,000	<4,000	<4,000	<6,800	19,000
SSV2025	1/16/14 14:00	Portable GC/MS - Subslab Vapor	Print Room	2,000	<4,000	<4,000	<4,000	<4,000	<6,800	7,000
SSV2026	1/16/14 14:51	Portable GC/MS - Subslab Vapor	Print Room	5,000	<4,000	<4,000	<4,000	<4,000	<6,800	18,000

TABLE 2
Summary of Portable GC/MS Subslab Vapor Screening Results
Building 001
IBM Poughkeepsie Facility
Poughkeepsie, New York

Sample Location	Collection Date	Sample Type	Location Description	PID ppbv	1,1-DCA µg/m³	1,1-DCE µg/m³	c-1,2-DCE µg/m³	t-1,2-DCE µg/m³	PCE µg/m³	TCE µg/m³
SSV2027	1/15/14 16:27	Portable GC/MS - Subslab Vapor	Hallway	260	<0.57	<0.40	4.8	0.79	20	4.9 JL
SSV2027	1/22/14 14:40	Portable GC/MS - Subslab Vapor	Hallway	1,100	<3.1	<0.40	2.0 JL	1.9 JL	1.4 JL	190 JL
SSV2027	3/12/14 16:08	Portable GC/MS - Subslab Vapor	Hallway	NA	<1.6	9.1	<1.6	<1.6	27	2,100 JL
SSV2028	1/17/14 9:24	Portable GC/MS - Subslab Vapor	Storage Room	2,900	<4,000	<4,000	<4,000	<4,000	<6,800	7,000
SSV2029	1/17/14 8:27	Portable GC/MS - Subslab Vapor	Loading Dock Area	42	<4,000	<4,000	<4,000	<4,000	<6,800	<5,400
SSV2029	1/22/14 17:08	Portable GC/MS - Subslab Vapor	Loading Dock Area	42	1.5	0.56	<1.1	0.56	<0.68	15
SSV2030	1/16/14 11:30	Portable GC/MS - Subslab Vapor	HVAC Room West	1,100	<4,000	<4,000	<4,000	<4,000	<6,800	5,200 J
SSV2030	1/21/14 15:50	Portable GC/MS - Subslab Vapor	HVAC Room West	2,000	<4,000	<4,000	<4,000	<4,000	<6,800	4,800 J
SSV2030	1/22/14 18:19	Portable GC/MS - Subslab Vapor	HVAC Room West	1,100	<2.4	<2.4	<2.9	<4.4	18	47 JL
SSV2030	1/23/14 11:20	Portable GC/MS - Subslab Vapor	HVAC Room West	1,100	<3.1	<0.4	<0.4	<0.4	1.8 JL	320 JL
SSV2031	1/16/14 11:15	Portable GC/MS - Subslab Vapor	Former Tank Room	742	<4,000	<4,000	<4,000	<4,000	<6,800	<5,400
SSV2031	1/22/14 17:58	Portable GC/MS - Subslab Vapor	Former Tank Room	834	<1.2	<1.2	<1.4	<2.1	4.6	590
SSV2032	1/16/14 11:07	Portable GC/MS - Subslab Vapor	Electrical Room East	16,000	<4,000	<4,000	<4,000	<4,000	<6,800	65,000
SSV2033	1/16/14 16:22	Portable GC/MS - Subslab Vapor	North Hallway	76	<4,000	<4,000	<4,000	<4,000	<6,800	<5,400
SSV2033	1/22/14 17:44	Portable GC/MS - Subslab Vapor	North Hallway	76	1.3	0.83	0.67	0.83	2.8	35
SSV2034	1/16/14 9:04	Portable GC/MS - Subslab Vapor	Office Area	60,000	<8,100	<7,900	<7,900	<7,900	<14,000	360,000
SSV2035	1/16/14 9:24	Portable GC/MS - Subslab Vapor	Office Area	400,000	<36,000	<36,000	<36,000	<36,000	<61,000	2,100,000
SSV2036	1/16/14 16:28	Portable GC/MS - Subslab Vapor	North Hallway	120	<4,000	<4,000	<4,000	<4,000	<6,800	<5,400
SSV2036	1/22/14 17:01	Portable GC/MS - Subslab Vapor	North Hallway	120	0.97	0.63	<1.1	0.63	<0.68	21
SSV2037	1/16/14 9:09	Portable GC/MS - Subslab Vapor	Office Area	3,700	<4,000	<4,000	<4,000	<4,000	<6,800	12,000
SSV2037	1/21/14 14:39	Portable GC/MS - Subslab Vapor	Office Area	3,800	<4,000	<4,000	<4,000	<4,000	<6,800	15,000
SSV2038	1/16/14 16:39	Portable GC/MS - Subslab Vapor	Crib Area	2,900	<4,000	<4,000	<4,000	<4,000	<6,800	7,500
SSV2038	1/21/14 16:44	Portable GC/MS - Subslab Vapor	Crib Area	3,000	<4,000	<4,000	<4,000	<4,000	<6,800	5,900
SSV2039	1/17/14 8:35	Portable GC/MS - Subslab Vapor	Recycling Storage Area	359	<4,000	<4,000	<4,000	<4,000	<6,800	<5,400
SSV2039	1/22/14 17:19	Portable GC/MS - Subslab Vapor	Recycling Storage Area	359	0.85	0.99	<1.1	0.99	11	590 JL
SSV2040	1/23/14 12:04	Portable GC/MS - Subslab Vapor	Crib Area	80,000	<8,100	<7,900	<7,900	<7,900	<14,000	240,000
SSV2041	1/23/14 11:40	Portable GC/MS - Subslab Vapor	Crib Area	3,900	<4,000	<4,000	<4,000	<4,000	<6,800	<5,400
SSV2041	1/24/14 10:34	Portable GC/MS - Subslab Vapor	Crib Area	3,900	21	<13	<27	<13	26	1,000
SSV2042	1/23/14 11:56	Portable GC/MS - Subslab Vapor	Office Area	5,800	<4,000	<4,000	<4,000	<4,000	<6,800	13,000
SSV2046	3/12/14 17:02	Portable GC/MS - Subslab Vapor	Print Room	500	<1.6	5.2	<1.6	<1.6	4.5	810
Equipment Blank	1/15/14 10:56	Nitrogen Blank	B003/B001	NA	0.53	<0.40	5.6	<0.40	1.4	4.1
Equipment Blank	1/15/14 15:15	Nitrogen Blank	B003/B001	NA	0.57	<0.40	3.0	<0.40	1.2	5.4
Equipment Blank	1/16/14 8:10	Nitrogen Blank	B003/B001	NA	<4,000	<4,000	<4,000	<4,000	<6,800	<5,400
Equipment Blank	1/16/14 10:00	Nitrogen Blank	B003/B001	NA	<4,000	<4,000	<4,000	<4,000	<6,800	<5,400
Equipment Blank	1/17/14 7:51	Nitrogen Blank	B003/B001	NA	<4,000	<4,000	<4,000	<4,000	<6,800	<5,400
Equipment Blank	1/21/14 13:19	Nitrogen Blank	B003/B001	NA	<4,000	<4,000	<4,000	<4,000	<6,800	<5,400
Equipment Blank	1/21/14 16:25	Nitrogen Blank	B003/B001	NA	<4,000	<4,000	<4,000	<4,000	<6,800	<5,400
Equipment Blank	1/21/14 17:18	Nitrogen Blank	B003/B001	NA	<4,000	<4,000	<4,000	<4,000	<6,800	<5,400
Equipment Blank	1/22/14 9:15	Nitrogen Blank	B003/B001	NA	<0.40	<0.40	1.1	<0.40	<0.68	7.5
Equipment Blank	1/22/14 10:43	Nitrogen Blank	B003/B001	NA	<0.40	<0.40	1.5	<0.40	<0.68	11
Equipment Blank	1/22/14 11:30	Nitrogen Blank	B003/B001	NA	<0.40	<0.40	1.4	<0.40	<0.68	10
Equipment Blank	1/22/14 13:40	Nitrogen Blank	B003/B001	NA	<0.40	<0.40	0.59	0.87	<0.68	5.3
Equipment Blank	1/22/14 16:49	Nitrogen Blank	B003/B001	NA	<0.40	<0.40	1.1	<0.40	<0.68	7.5
Equipment Blank	1/22/14 17:33	Nitrogen Blank	B003/B001	NA	<0.40	<0.40	0.48	0.71	<0.68	4.4
Equipment Blank	1/23/14 7:42	Nitrogen Blank	B003/B001	NA	<0.40	<0.40	0.63	0.95	<0.68	4.6
Equipment Blank	1/23/14 9:35	Nitrogen Blank	B003/B001	NA	<0.40	0.75	0.52	0.79	<0.68	7.0
Equipment Blank	1/23/14 11:34	Nitrogen Blank	B003/B001	NA	<4,000	<4,000	<4,000	<4,000	<6,800	<5,400
Equipment Blank	1/23/14 10:58	Nitrogen Blank	B003/B001	NA	<3.1	<0.40	<0.40	<0.40	<0.68	0.64 JL
Equipment Blank	1/24/14 10:22	Nitrogen Blank	B003/B001	NA	1.5	3.3	6.7	3.3	<0.68	16
Equipment Blank	3/12/14 8:45	Nitrogen Blank	B003/B001	NA	<0.4	<0.4	<0.4	<0.4	<0.68	<0.54
Equipment Blank	3/12/14 13:29	Nitrogen Blank	B003/B001	NA	<0.4	<0.4	<0.4	<0.4	<0.68	1.8
Equipment Blank	3/12/14 16:52	Nitrogen Blank	B003/B001	NA	<0.4	<0.4	<0.4	<0.4	<0.68	7.5
Equipment Blank	3/12/14 8:55	Nitrogen Blank	B003/B001	NA	<4,000	<4,000	<4,000	<4,000	<6,800	<5,400

Notes:
1. This table summarizes data recorded during field screening subslab vapor samples using a HAPSITE Smart portable gas chromatograph/mass spectrometer (GC/MS), manufactured by Inficon. The instrument was calibrated to manufacturer prepared standards ranging from 0.1 part per billion on a volumetric basis (ppbv) to 50 ppbv and 1 part per million on a volumetric basis (ppmv) to 50 ppmv, for the following compounds: tetrachloroethene (PCE), trichloroethene (TCE), cis-1,2-dichloroethene (c-1,2-DCE), trans-1,2-dichloroethene (t-1,2-DCE), 1,1-dichloroethene (1,1-DCE), and 1,1-dichloroethane (1,1-DCA). The field samples were collected by Sanborn Head personnel using a syringe and were transferred into Tedlar bags for portable GC/MS screening. Samples were collected from the location and on the dates noted in the table. Samples screened using the 0.1 to 50 ppbv range were screened using the portable GC/MS in selective ion monitoring (SIM) mode. Results were converted to micrograms per cubic meter (µg/m^3) assuming standard temperature (25 °C) and pressure (1 atmosphere) for the conversion. Results were rounded to two significant figures.

2. The portable GC/MS was used as a field screening tool; therefore, the data should be considered estimated and not suitable for final decision-making. The findings should be considered in conjunction with results of samples analyzed in accordance with USEPA TO-15 protocol.

3. "PID" indicates photoionization detector data presented in ppbv.

4. Legend / Flags
< - The analyte was not detected above the indicated reporting limit.
J - The analyte should be considered estimated.
JL - The analyte should be considered estimated and biased low due to HAPSITE saturation and/or there was low recovery for the analyte during a calibration check.
NA - Not analyzed for this parameter.
ND - Not detected above the PID reporting limit.

Table 3
Summary of Subslab Vapor Extraction Pilot Test Results
Report of Findings -- Building 001 VOC Source Assessment
IBM Poughkeepsie Facility
Poughkeepsie, New York

Sample Location	Collection Date	1,1-DCA	1,1-DCE	c-1,2-DCE	t-1,2-DCE	PCE	TCE	Total VOCs
		ug/m3	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3
EP2001	NS	--	--	--	--	--	--	--
EP2002	2/4/2014	<2.1	<2.0	70	<2.0	73	6,000	6,100
EP2003	2/3/2014	0.72	<0.64	2.9	<0.64	40	1,400	1,400
EP2004	2/3/2014	6.3	2.4	21	3.5	150	5,400	5,600
EP2005	NS	--	--	--	--	--	--	--
EP2006	2/4/2014	<6.1	<5.9	14	<5.9	47	9,800	9,900
EP2007	2/4/2014	<1.1	<1.0	1.5	<1.0	18	3,000	3,000
EP2008	2/4/2014	<20	<20	49	<20	37	41,000	41,000
EP2009	2/4/2014	<96	<94	240	<94	180	440,000	440,000
EP2010	2/3/2014	<0.70	<0.68	2.4	<0.68	12	1,300	1,300
EP2011	2/12/2014	<5.7	<5.6	19	<5.6	38	9,900	10,000
EP2012	2/3/2014	23	<11	260	<11	920	28,000	29,000
EP2013	2/12/2014	<1.0	<1.00	4.1	<1.00	13	2,400	2,400
EP2014	NS	--	--	--	--	--	--	--
EP2015	NS	--	--	--	--	--	--	--

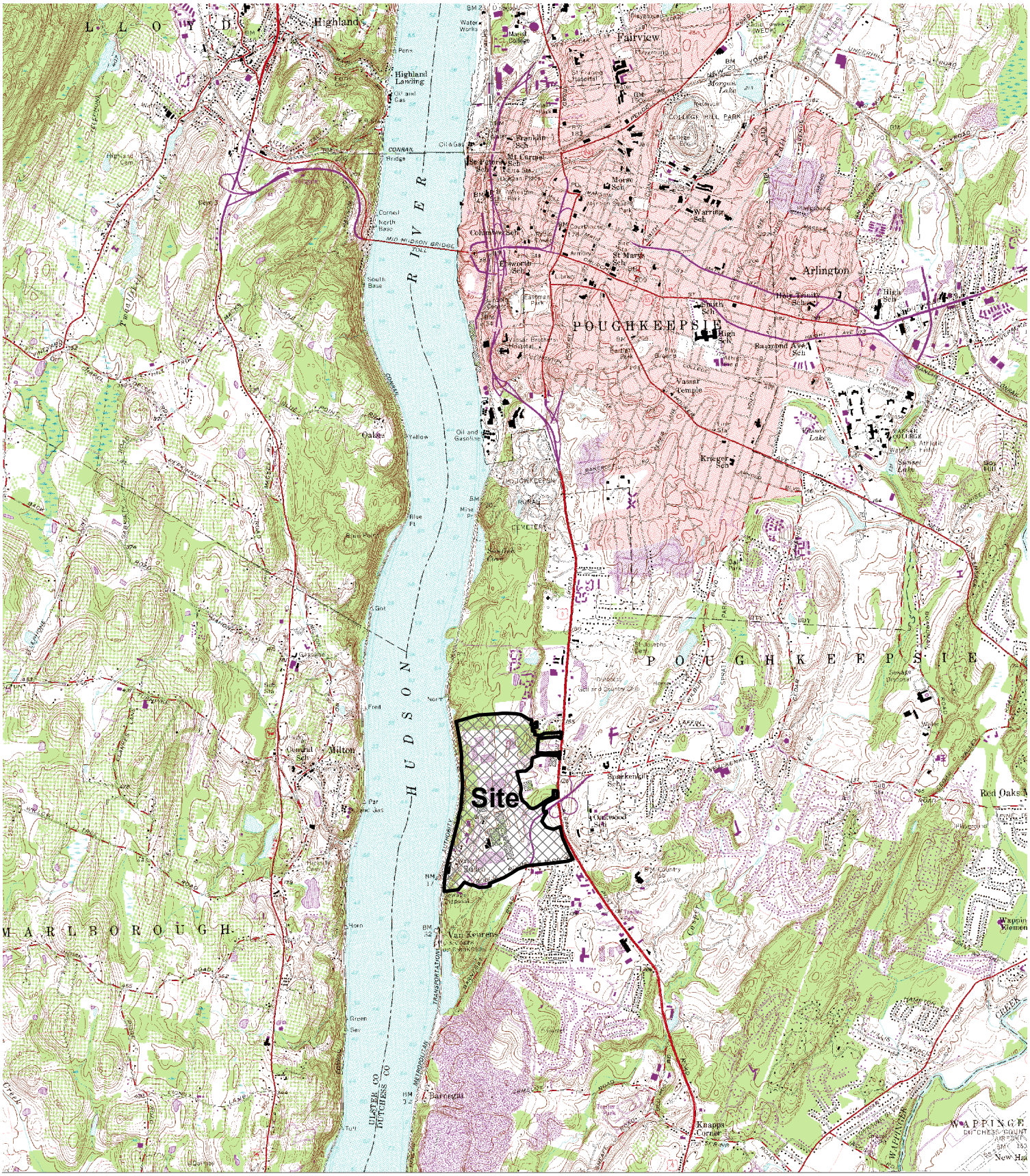
Notes:

1. Samples were collected by Sanborn Head Engineering, PC 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 Alpha Analytical of Westborough, Massachusetts for the project-specific list of volatile organic compounds (VOCs) by United States Environmental Protection Agency (USEPA) Method TO-15 in selective ion monitoring (SIM) mode. "1,1-DCA" is 1,1-dichloroethane, "1,1-DCE" is 1,1-dichloroethene, "c-1,2-DCE" is cis-1,2-dichloroethene, "t-1,2-DCE" is trans-1,2-dichloroethene, "PCE" is tetrachloroethene, and "TCE" is trichloroethene. Results were converted to micrograms per cubic meter ($\mu g/m^3$) assuming standard temperature (25 °C) and pressure (1 atmosphere) for the conversion. Results were rounded to two significant figures.

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.

FIGURES



Note
Base map taken from 15 minute USGS Quadrangle Map: Poughkeepsie, N.Y., dated 1957 (Photorevised 1982)

N
W E
S

Drawn By: E. Wright
Designed By: J. Sanborn/B. Green
Reviewed By: D. Shea
Project No: 3463.00
Date: April 2014

2,000' 0 4,000' Feet

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Figure 1

Locus Plan

Report of Findings
Building 001 VOC Source Assessment

IBM Poughkeepsie Facility
Poughkeepsie, New York

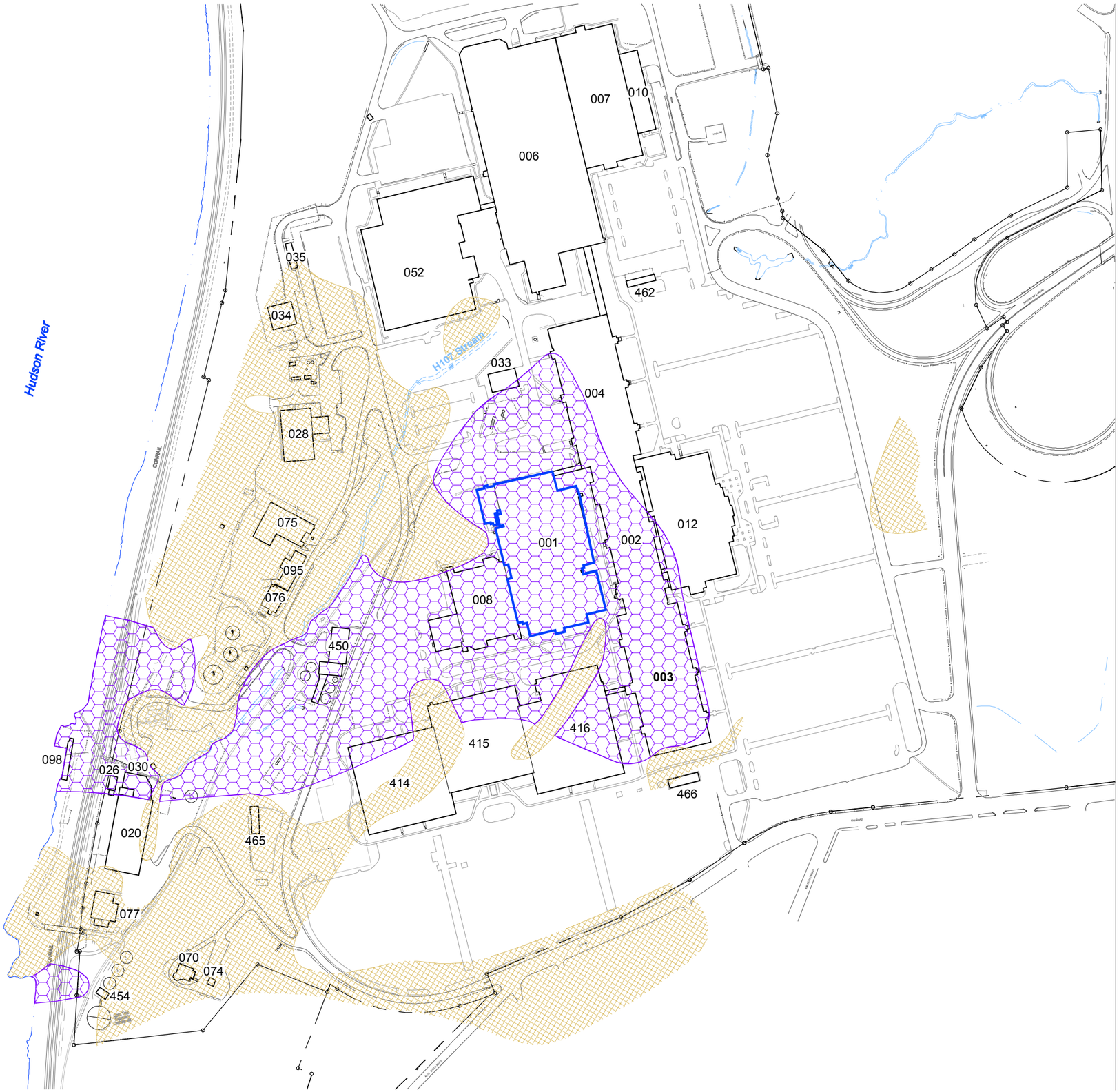

Figure 2

Building 001 Location and VOC Extent in Overburden Groundwater

Report of Findings
Building 001 VOC Source Assessment

IBM Poughkeepsie Facility
Poughkeepsie, New York

Drawn By: E. Wright
Designed By: J. Sanborn / B. Green
Reviewed By: D. Shea
Project No: 3463.00
Date: April 2014

Figure Narrative

This figure shows the Building 001 location, other site buildings, and the inferred extent of total VOCs in overburden groundwater. It is based on the most recent sampling data at existing site overburden monitoring and extraction wells, as well as data and figures presented in the site's 2011 Annual Groundwater Monitoring Report prepared by Groundwater Sciences Corporation (GSC) dated April 26, 2012.

Notes

1. Base plan was prepared using AutoCAD files provided by Grubb & Ellis Management Services, Inc. (GEMS) in December 2009.

2. Groundwater analytical data was provided to Sanborn Head by GSC on August 14, 2012 via electronic file transfer.

3. The area of no saturated overburden was provided in GSC's 2011 Annual Groundwater Monitoring Report, Main Plant Site, dated April 26, 2012.

Legend

- Approximate location of property line
- Inferred extent of VOCs in overburden groundwater
- Area of no saturated overburden
- **001** Indicates building number
- Indicates the location of Building 001
- Unlabeled features include tanks, storage sheds, and other structures and features not intended for routine occupancy

175' 87.5' 0 175' 350' Feet

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Figure 3

Building 001 Layout and HVAC Zones

Report of Findings
Building B001 VOC Source Assessment

IBM Poughkeepsie Facility
Poughkeepsie, New York

Drawn By:	C. LaVack
Designed By:	J. Sanborn
Reviewed By:	D. Shea
Project No:	3463.00
Date:	April 2014

Figure Narrative

This figure shows the first floor layout of Building 001. Refer to the legend for additional information.

Legend

- Storm sewer
- Roof drain
- Industrial waste sewer lines
- Sanitary sewer lines
- Monitoring well or recovery well (T-008S)
- Column and designations (e.g. D-21)
- Raised floor
- Rack
- AC-21 AHU — Mechanical room for indicated air handling unit (AHU)
- AC-21 — Approximate limits of HVAC Zone

20 10 0 20 40
Feet

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Figure 4

Summary of TCE Screening in Indoor Air (Portable GC/MS Results)

Report of Findings
Building 001 VOC Source Assessment

IBM Poughkeepsie Facility
Poughkeepsie, New York

Drawn By:	C. LaVack
Designed By:	S. Warner
Reviewed By:	D. Shea
Project No:	3463.00
Date:	April 2014

Figure Narrative

This figure shows the results of indoor air screening for TCE in August 2013 through November 2013 using a portable gas chromatograph/mass spectrometer (GC/MS). The results should be considered screening level only. The results for TCE are shown in units of micrograms per cubic meter ($\mu g/m^3$). Refer to Table 1 for all indoor air screening results.

The portable GC/MS samples were generally collected over a time interval of 1 minute.

Legend

Refer to Figure 3 for additional legend items

- Indoor Screening Location
- IA2024 / 1,200 / 910 — Sample name; Aug/Sept 2013 TCE result ($\mu g/m^3$); Oct./Nov. 2013 TCE result ($\mu g/m^3$)
- NS — Not Screened
- /160 (S) — Indicates the TCE results of a SUMMA canister grab sample collected at the same location.

20 10 0 20 40
Feet

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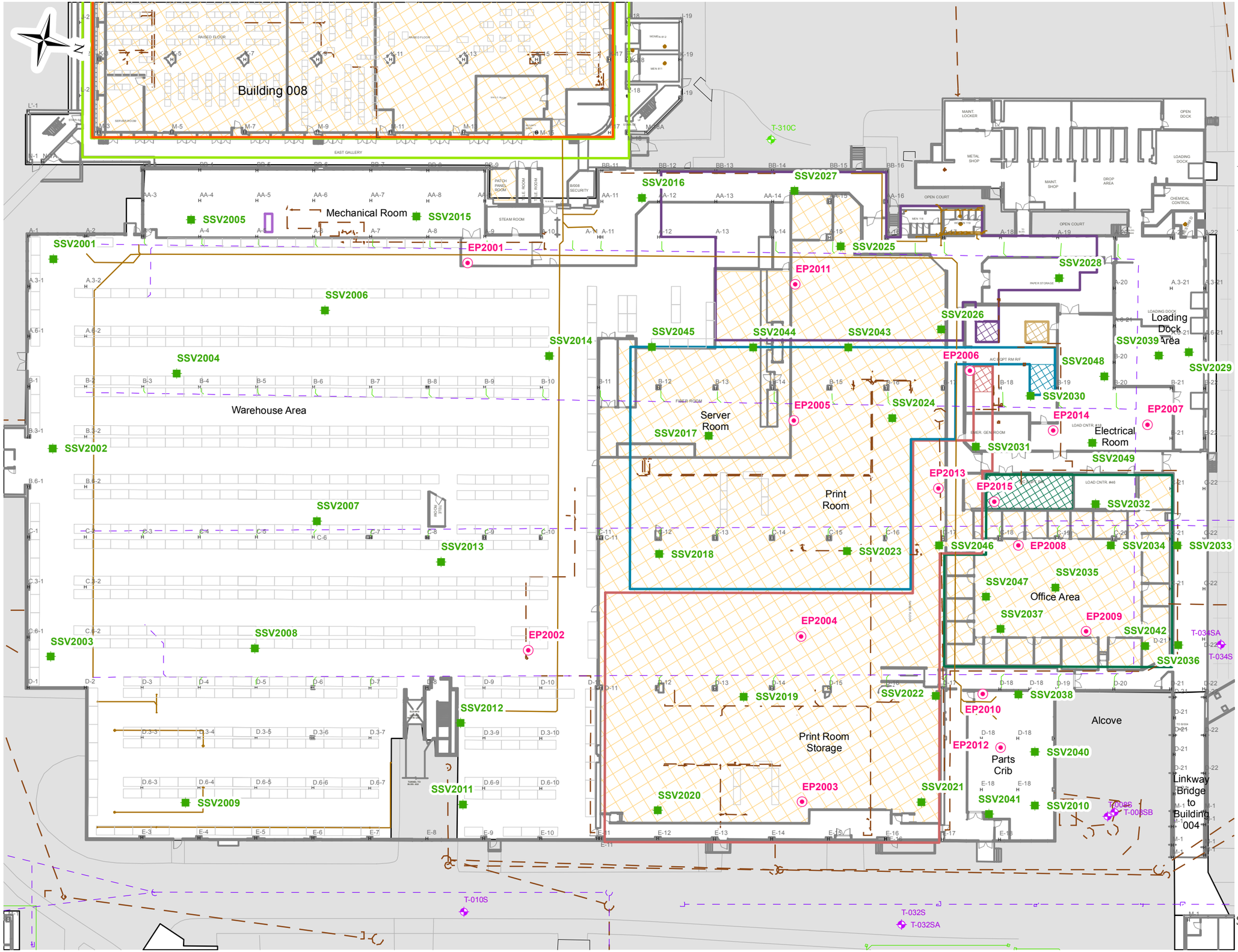


Figure 5

Exploration Location Plan

Report of Findings
Building 001 VOC Source Assessment

IBM Poughkeepsie Facility
Poughkeepsie, New York

Drawn By:	C. LaVack
Designed By:	S. Warner
Reviewed By:	D. Shea
Project No:	3463.00
Date:	April 2014

Figure Narrative

This figure shows the location and designation of subslab vapor monitoring ports and extraction ports in Building 001. The ports were installed by Sanborn Head personnel in December 2013 through February 2014. Refer to the legend for additional information.

Legend

Refer to Figure 3 for additional legend items

- SSV2001 Subslab vapor monitoring location
- EP2001 Subslab soil vapor extraction port

20 10 0 20 40
Feet

SANBORN HEAD ENGINEERING

Figure 6

Summary of TCE Concentrations in Subslab Vapor

Report of Findings
Building 001 VOC Source Assessment

IBM Poughkeepsie Facility
Poughkeepsie, New York

Drawn By:	C. LaVack
Designed By:	S. Warner
Reviewed By:	D. Shea
Project No:	3463.00
Date:	April 2014

Figure Narrative

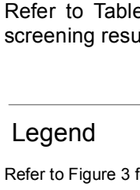
This figure shows the results of subslab vapor screening conducted in January and March 2014. Screening was conducted using a HAPSITE portable GC/MS. The results for TCE are shown in units of micrograms per cubic meter (µg/m3) with linearly inferred concentration gradients below the slab. Refer to Table 2 for all subslab vapor screening results.

Legend

Refer to Figure 3 for additional legend items

Subslab Locations

- SSV2001 81 — Subslab vapor monitoring location TCE value (µg/m^3)
- EP2001 1,000 — Vapor extraction port TCE value (µg/m^3)
- /43,000 (S) — Indicates the TCE concentration in a SUMMA canister grab sample collected at the same location.
- NS = Not screened in January 2014
- January 2014 TCE concentration in subslab vapor (µg/m^3)
- *March 2014 TCE concentration in subslab vapor (µg/m^3)*



20 10 0 20 40
Feet

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Figure 7

Summary of Subslab Differential Pressure Monitoring

Report of Findings
Building 001 VOC Source Assessment

IBM Poughkeepsie Facility
Poughkeepsie, New York

Drawn By:	C. LaVack
Designed By:	S. Warner
Reviewed By:	D. Shea
Project No:	3463.00
Date:	April 2014

Figure Narrative

This figure shows the results of differential pressure monitoring conducted concurrent with indoor air work in January 2014 at the subslab monitoring locations shown. Differential pressure monitoring was conducted using a digital manometer capable of measuring pressures from 0.000 to 1.0 inches of water.

Legend

Refer to Figure 3 for additional legend items

Differential Pressures

- Subslab Pressure = Building Pressure
- Subslab Pressure > Building Pressure

Subslab Locations

- 0.008 — Subslab vapor monitoring location Differential pressure (in. water)
- EP2001 — Vapor extraction port Differential pressure (in. water)

NM = Not measured

Differential pressure values are relative to building air pressure. A positive valueindicates subslab pressure is greater than building pressure. A negative value indicates subslab pressure is less than building pressure.

January 2014 TCE concentration in subslab vapor (µg/m^3)

- <100
- 100-1,000
- 1,000-10,000
- 10,000-100,000
- 100,000-1,000,000
- >1,000,000

20 10 0 20 40
Feet

SANBORN HEAD ENGINEERING

Figure 8

Subslab Pressure Response to Vapor Extraction Testing

Report of Findings
Building 001 VOC Source Assessment

IBM Poughkeepsie Facility
Poughkeepsie, New York

Drawn By:	C. LaVack
Designed By:	S. Warner
Reviewed By:	D. Shea
Project No:	3463.00
Date:	April 2014

Figure Narrative

This figure shows the combined footprint of of subslab pressure response from 15 separate vapor extraction tests, and the measurements recorded at the extraction port for each of these tests. The subslab pressure response footprint represents the combined outer limit of the 0.004 inches of water column differential pressure measurement of each of the tests. Individual vapor extraction test results are presented in Appendix Figures C-1 to C-15 of this report.

Legend

EP2001 — Vapor Extraction Port

SSV2001 — Subslab Vapor Port

EP2001	Extraction Port
in. wc	Vacuum (extraction port)
scfm	Flow Rate (std. cu. ft. per min.)
F	Temperature
% RH	Relative Humidity
ppmv	PID Concentration

Footprint of subslab pressure response to vapor extraction (overlap of 15 separate tests)

January 2014 TCE in Subslab Vapor ($\mu g/m^3$)

- <100
- 100-1,000
- 1,000-10,000
- 10,000-100,000
- 100,000-1,000,000
- >1,000,000

20 10 0 20 40
Feet

SANBORN HEAD ENGINEERING

Figure 9

Subslab SVE System Layout

Report of Findings
Building 001 VOC Source Assessment

IBM Poughkeepsie Facility
Poughkeepsie, New York

Drawn By: E. Wright
Designed By: S. Soos / D. Shea
Reviewed By: D. Shea
Project No: 3463.00
Date: April 2014

Figure Narrative

This figure shows the planned layout of the subslab SVE ports, overhead vapor conveyance pipe, and blower and vapor treatment equipment to be installed as part of VOC source remediation in Building 001. The conveyance pipe route shown is approximate and may be changed based on field conditions.

Legend

- EP2006 ● Subslab extraction port location
- 4" ⟶ Spencer tubing conveyance pipe with nominal size and flow arrow
- 2" ⟶ Vacuum conveyance pipe under raised floor with nominal size and flow arrow
- Raised floor

N

20' 10' 0 20' 40' Feet

SANBORN HEAD ENGINEERING

File:\\conserv-1\data\share\DATA\CONDATA\3400s\3463.00\Graphics Files\CAD\B001 Rpt of Findings\B001_SVE-PIPING Figs.dwg Plot Date: 3-25-14

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 IBM Poughkeepsie facility in accordance with generally accepted hydrogeologic and engineering practices. No warranty, expressed or implied, is made. The contents of this report should not be relied on by any other party without the express written consent of SHPC.

5. In preparing this report, SHPC has endeavored to conform to generally accepted practices of other consultants undertaking similar studies at the same time and in the same geographical area. SHPC has attempted to observe a degree of care and skill generally exercised by the technical community under similar circumstances and conditions.

APPENDIX B

SUMMARY OF FIELD METHODS AND QA/QC

APPENDIX B
SUMMARY OF FIELD METHODS AND QA/QC

B.1 INTRODUCTION

This appendix describes the field methods, and data quality assurance/quality control (QA/QC) evaluations and results, associated with Building 001 VOC source assessment work at IBM's Poughkeepsie facility. Field procedures and data QA/QC measures were conducted in general accordance with the standard operating procedures (SOPs) provided in IBM's VOC Source Assessment RFI Work Plan (RFI Work Plan).

Tabular summaries of the data described below are provided in Tables 1 through 3 of the main report. A subset of the Site-specific analyte list presented in the RFI Work Plan was used to serve as indicators during field screening of potential VOC vapor entry, including 1,1-dichloroethane (1,1-DCA), 1,1-dichloroethene (1,1-DCE), cis-1,2-dichloroethene (c-1,2-DCE), trans-1,2-dichloroethene (t-1,2-DCE), tetrachloroethene (PCE), and trichloroethene (TCE).

B.2 INDOOR AIR AND TARGETED AIR SCREENING

B.2.1 Field Methods

Initial indoor air and targeted air screening in B001 was conducted using an Inficon HAPSITE Smart field portable gas chromatograph/mass spectrometer (GC/MS). The portable GC/MS was used as an air-screening instrument for six of the Site-specific list of VOCs[1]. In addition, at two locations subject to portable GC/MS screening, a grab sample of indoor air was collected into a SUMMA® canister for laboratory analysis by USEPA Method TO-15. Indoor air and targeted air screening was conducted from August to November 2013.

The portable GC/MS was calibrated to manufacturer-prepared standards ranging from 0.1 to 50 parts per billion by volume (ppbv) for the target analytes, and the samples were screened in selective ion monitoring (SIM) mode. The lower calibration range of 0.1 ppbv was considered the method reporting limit for the portable GC/MS samples, as shown on Table 1 (after converting to micrograms per cubic meter [$\mu g/m^3$]). The instrument reports values based on the quality of fit of chromatograph peaks and ion pairs, both within and outside of the calibration range.

Portable GC/MS sample collection and analysis takes approximately 6 minutes. The line is purged for 1 minute to remove remnants of previous samples, and then the concentrator tube is filled for 1 minute. The mass collected in the concentrator is then pumped through the GC/MS for analysis. Total analysis time is approximately 4 minutes and is based on the elution time of the analytes. Prior to portable GC/MS screening, the indoor air and targeted air locations were screened at most locations with a photoionization detector (PID). Where

[1] The portable GC/MS was not calibrated for the Site-specific compounds chloroethane or vinyl chloride; therefore, chloroethane and vinyl chloride were not reported.

PID readings were relatively greater, the portable GC/MS screening was conducted by "diluting" the sample by reducing the concentrator fill time from the normal 1 minute down to either 30 or 15 seconds. A 30-second concentrator fill time is equivalent to a 50% dilution and a 15-second concentrator fill time is equivalent to a 75% dilution. Once the analysis is complete, the concentration results provided by the portable GC/MS are multiplied by either 2 or 4, respectively, to get the indoor air/targeted air concentrations.

During indoor air screening, grab SUMMA canister samples were collected at two locations and submitted to Alpha for analysis of the Site-specific VOCs using USEPA Method TO-15 in SIM mode. These data are provided in Table 1 and discussed below.

B.2.2 QA/QC Evaluation

The objective of portable GC/MS field screening was to obtain general, order-of-magnitude understanding of VOC concentrations to inform and adjust the focus of the field activities in real time. The portable GC/MS data is not intended to support final decisions. Nevertheless, the following QA/QC measures were taken to support evaluation of the field screening data.

Outside air blanks were collected through a carbon filter and into the portable GC/MS from an outside location at the beginning of each day. In the event that the blank analysis results indicated that one of the analytes (particularly TCE) had been detected, a "cleaning" method would be run on the portable GC/MS. This method runs a blank sample at high temperature to facilitate the removal of chemical traces from previous sampling rounds. The outside air blank was then repeated. This process was generally repeated until satisfactorily low concentrations in the outside air blank analysis had been achieved. Where outside air blank sample results were not reported as "non-detect", indoor air results similar to (and therefore not discernible from) those recorded for blanks were assumed to be associated with the portable GC/MS operating environment and/or residual VOC presence in the portable GC/MS column and were therefore considered to be less than the reporting limit of the instrument.

As noted above, two grab indoor air samples were collected into 1-liter pre-evacuated SUMMA canisters at indoor air screening locations IA2001 and IA2024 immediately after portable GC/MS screening was conducted. The purpose of these grab SUMMA samples was to obtain an understanding of the general comparability of the portable GC/MS screening results with the results of samples subject to laboratory analysis. Exhibit B.1 summarizes the relative percent difference (RPD) between the portable GC/MS and SUMMA canister results.

Sample	IA2001/H	IA2001/G	RPD	IA2024/H	IA2024/G	RPD
Date	9/13/2013			10/29/2014		
Units	µg/m³	µg/m³	%	µg/m³	µg/m³	%
1,1-DCA	< 0.40	< 0.23	-	< 2.0	0.62	-
1,1-DCE	3.3	< 0.23	-	< 2.0	< 0.20	-
c-1,2-DCE	1.2	0.25	130	3.4	3	13
t-1,2-DCE	< 0.40	< 0.23	-	< 2.0	< 0.20	-
PCE	< 0.66	< 0.39	-	8.1	7.1	13
TCE	380	160	81	590	450	27

Notes:

1. "/H" = HAPSITE Portable GC/MS sample
   "/S" or "/G "= 1-liter Summa canister grab sample

2. % RPD is the relative percent difference, calculated by the formula:

$$| Result1 - Result2 | / ((Result1 + Result2) / 2) * 100$$

3. "-" indicates the RPD can not be calculated because one or both of the results are non-detect.

Exhibit B.1 – Summary of RPDs for Indoor Air Portable GC/MS Screening and SUMMA Samples

Although the portable GC/MS and SUMMA data do not represent true field duplicate samples because the sample time intervals and volumes are different for each method, the portable GC/MS and SUMMA TCE results indicate order-of-magnitude agreement.

B.3 SUBSLAB VAPOR SCREENING

B.3.1 Field Methods

The initial group of 39 subslab vapor (SSV) monitoring ports and 12 extraction ports were installed in B001 between December 9, 2013 and January 1, 2014. The SSV monitoring ports were installed in accordance with Figure A.4.1 of the RFI Work Plan. The extraction ports were modified from the details provided in A.5.1 of the RFI Work Plan due to design revisions for improved air flow; the revised details are attached as Figure B.3.1.

To demonstrate the soundness of subslab port construction, integrity testing was conducted on a portion of the monitoring and extraction ports in accordance with the procedures described in the Subslab Vapor Sample Port Installation, Integrity Testing, and Sampling SOP included in Appendix A.4 of the RFI Work Plan. Further information on integrity testing is provided in Section B.3.2.

Subslab vapor screening was conducted during several field events from January through March 2014, as indicated on Table 2. Prior to collecting a sample, SSV monitoring ports and extraction ports were screened with a PID by attaching the sample probe directly to polyethylene tubing connected to the monitoring port. Samples were then collected by extracting 25 to 250 mL of subslab vapor with a syringe and transferring it to a Tedlar bag. Based on PID screening results, samples were diluted as needed by injecting a known

quantity of laboratory-grade nitrogen into the bag. Sample bags were then attached to the portable GC/MS probe and analyzed using either a low concentration analysis method (calibrated to the range 0.1 to 40 ppbv) or a high concentration analysis method (calibrated to the range of 1 to 50 ppmv). Subslab differential pressure measurements were collected from each SSV monitoring point and extraction port prior to sampling.

During subslab vapor screening, grab 1-liter SUMMA canister samples were collected from three SSV monitoring ports and one extraction port and submitted to Alpha for analysis of the Site-specific VOCs using USEPA Method TO-15 in SIM mode. These data are provided in Table 2 and discussed below.

B.3.2 QA/QC Evaluation

Integrity testing was conducted at four SSV monitoring ports and two extraction ports following the procedures outlined in Appendix A.4 of the RFI Work Plan. The results of the integrity tests indicated that the seal of the ports was adequate, and since all ports are constructed identically, all ports are expected to be sound. Integrity testing results are provided in Table B.3.1.

QA/QC measures in support of the evaluation of subslab screening with the portable GC/MS generally followed the same protocol as indoor air screening with the instrument. An outdoor air blank was collected through a carbon filter at the beginning of each day, and if the results of the blank analysis indicated that one of the analytes (particularly TCE) had been detected, a high-temperature "cleaning" method was run to facilitate the removal of chemical traces from previous screening runs. Where outside air blank sample results were not reported as "non-detect", subslab vapor results similar to (and therefore not discernible from) those recorded for blanks were assumed to be associated with the portable GC/MS operating environment and/or residual VOC presence in the portable GC/MS column, and were therefore considered to be less than the reporting limit of the instrument. In addition, subslab screening results were marked with the qualification "JL" when the instrument was saturated by high VOC presence during analysis, indicating the results were estimated and expected to be biased low.

As noted above, four SUMMA canister samples were collected during subslab vapor screening for data comparison purposes. Exhibit B.2 summarizes the RPD between the portable GC/MS and SUMMA canister results.

Sample	EP2005/H	EP2005/S	RPD	SSV2010/H	SSV2010/S	RPD	SSV2016/H	SSV2016/S	RPD	SSV2022/H	SSV2022/S	RPD
Date	1/16/2014			1/16/2014			1/22/2014			3/12/2014		
Units	µg/m³	µg/m³	%	µg/m³	µg/m³	%	µg/m³	µg/m³	%	µg/m³	µg/m³	%
1,1-DCA	< 4,000	< 21	-	< 12,000	360	-	< 3.1	< 1.9	-	< 0.81	0.33	-
1,1-DCE	< 4,000	< 20	-	< 12,000	< 270	-	< 0.40	< 1.9	-	13	< 0.20	-
c-1,2-DCE	< 4,000	660	-	< 12,000	5,200	-	1.2 JL	2.9	83	< 0.79	1.9	-
t-1,2-DCE	< 4,000	< 20	-	< 12,000	< 270	-	1.2 JL	< 1.9	-	< 0.79	0.22	-
PCE	< 6,800	180	-	< 12,000	7,700	-	< 0.68	14	-	22	15	38
TCE	45,000	43,000	5.0	460,000	580,000	23	230 JL	4,800	180	860	430	67

Notes:

1. "/H" = HAPSITE Portable GC/MS sample
   "/S" or "/G "= 1-liter Summa canister grab sample

2. % RPD is the relative percent difference, calculated by the formula:

$$| Result1 - Result2 | / ((Result1 + Result2) / 2) * 100$$

3. "-" indicates the RPD can not be calculated because one or both of the results are non-detect.

Exhibit B.2 – Summary of RPDs for Portable GC/MS Screening and SSV SUMMA Samples

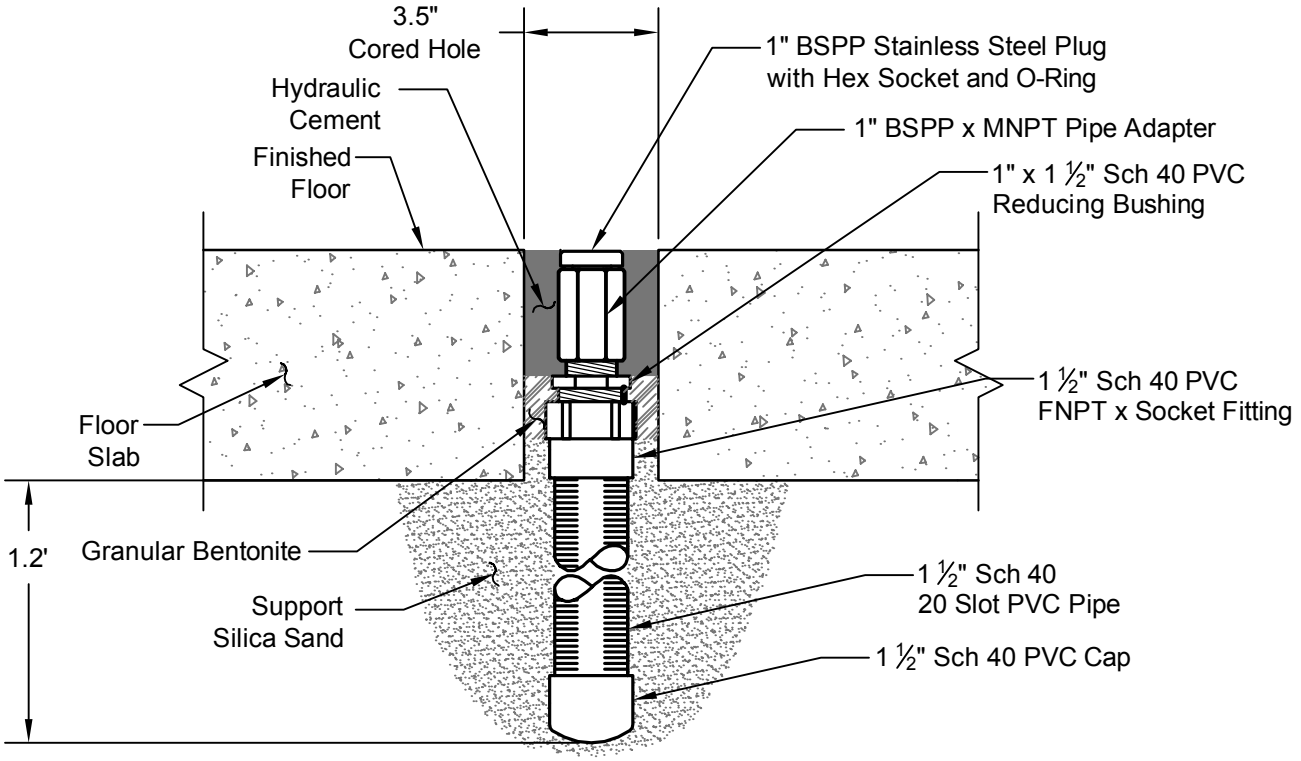
Although the portable GC/MS and SUMMA data do not represent true field duplicate samples because the sample time intervals and volumes are different for each method, the portable GC/MS and SUMMA TCE results compare very well for the samples at EP2005 and SSV2010, where RPDs were 5% for EP2005 and 23% for SSV2010. Data with an RPD of less than or equal to 30% are considered to be equivalent. At SSV2016, the RPD of 180% reflects that the portable GC/MS result may have been biased low due to instrument saturation while running the low-concentrations method. In addition, the portable GC/MS and SUMMA samples at this location were not collected at the same time. In aggregate, however, the portable GC/MS data quality is considered appropriate to support the objectives of subslab VOC source assessment and remediation design support.

TABLE B.3.1
SÕbslab Vapor Port Integrity Testing Summary
Report of Findings - Building 001 VOC Source Assessment
IBM Poughkeepsie Facility
Poughkeepsie, New York

Location	SSV2035	SSV2028	SSV2020	EP2005	EP2012	SSV2007
Sanborn Head Field Representative	M. Stein	M. Stein	M. Stein	M. Stein	M. Stein	M. Stein
Vacuum (H2O)	0.03	0.1	0.03	0.04	0.02	0.03
Pressure Differential	0.009	0.000	0.010	0.009	0.018	0.006
Start Time	12:07	12:59	13:20	13:40	15:15	15:32
Stop Time	12:10:15	13:02	13:23	13:43	15:17:45	15:34:30
Time to fill 0.5 liter bag (min:sec)	3:15	3:00	3:00	3:00	2:45	2:30
Approx. Flow Rate (L/min)	0.15	0.17	0.17	0.17	0.18	0.2
Helium Tracer gas applied?	Yes	Yes	Yes	Yes	Yes	Yes
Helium Concentration (ppmv)	ND	ND	ND	ND	ND	ND
O2 (%)	20.1	19.9	20.4	18.3	19.7	20.2
CH4 (%)	0.0	0.0	0.0	0.0	0.0	0.0
CO2 (%)	0.5	0.5	0.5	1.2	0.9	0.4
PID (ppbv)	234	3,498	4,974	44.5	4,118	1,095
Date	1/9/2014	1/9/2014	1/9/2014	1/9/2014	1/9/2014	1/9/2014
Screen Interval Depth (ft bgs)	0.55	0.79	0.83	0.84 - 1.84	0.4 - 1.4	2.4
Ambient Air Temp. (°F)	67	74	71	71	72	67

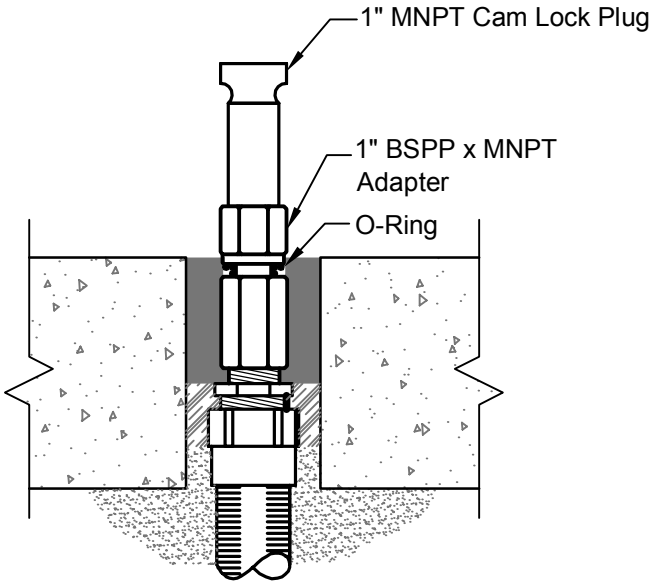
Notes:
1. Meters used:
PID: MiniRAE 3000 or ppbRAE
O2/CH4/CO2 Meter: Landtec GEM 2000
Helium Meter: Dielectric MGD-2002
Other: Dwyer Series 475 Mark III Digital Manometer

2. "ND" indicates not detected.
"ppmv" indicates parts per million by volume.
"ppbv" indicates parts per billion by volume.



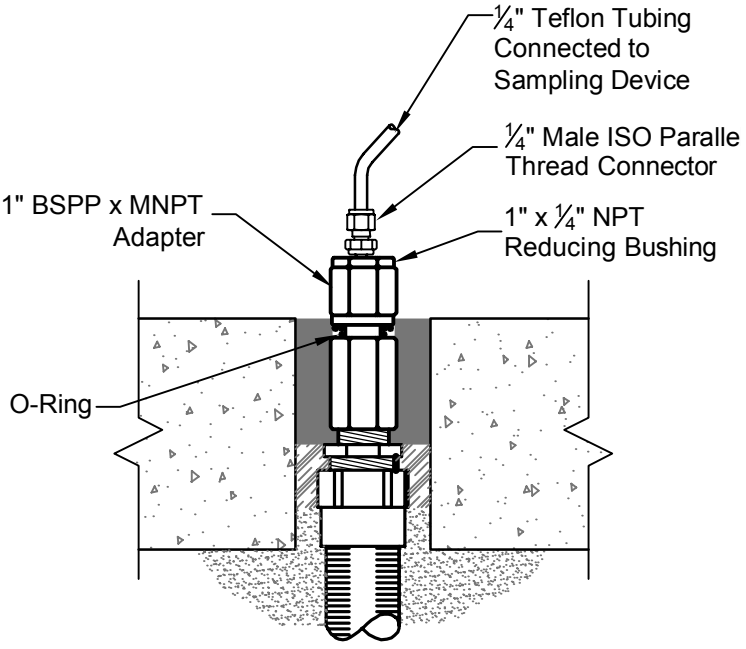
1 Subslab Vapor Extraction Test Port

Not To Scale



2 Vapor Extraction Testing Configuration

Not To Scale



3 Subslab Vapor Sampling Configuration

Not To Scale

Drawn By: D. Dombrowsky
Designed By: S. Soos
Reviewed By: D. Shea
Project No: 3463.00
Date: April 2014

Scale As Noted

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Figure B.3.1

Subslab Vapor Extraction Port

Report of Findings
Building 001 VOC Source Assessment

IBM Poughkeepsie Facility
Poughkeepsie, New York

APPENDIX C

SUPPLEMENTAL FIGURES
SUBSLAB PRESSURE RESPONSE TO
VAPOR EXTRACTION TESTING

Figure C-1

Subslab Pressure Response to Vapor Extraction Testing

Report of Findings
Building 001 VOC Source Assessment

IBM Poughkeepsie Facility

Poughkeepsie, New York

Drawn By:	C. LaVack
Designed By:	S. Warner
Reviewed By:	D. Shea
Project No:	3463.00
Date:	April 2014

Figure Narrative

This figure shows the individual vapor extraction test data and observed subslab pressure response. Subslab pressure was monitored using a digital manometer referenced to the indoor air pressure. Negative values indicate subslab pressure is less than indoor air pressure.

Legend

EP2001 — Extraction Port

SSV2001 — Subslab Vapor Port

-0.004 — Differential Pressure Contour (in wc)

EP2001	
in. wc	Vacuum (extraction port)
scfm	Flow Rate (std. cu. ft. per min.)
F	Temperature
% RH	Relative Humidity
ppmv	PID Concentration

-0.005 — Observed equilibrium pressure differential between the subslab and room during subslab vapor extraction test (in. wc).

20 10 0 20 40
Feet

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Figure C-2

Subslab Pressure Response to Vapor Extraction Testing

Report of Findings
Building 001 VOC Source Assessment

IBM Poughkeepsie Facility

Poughkeepsie, New York

Drawn By:	C. LaVack
Designed By:	S. Warner
Reviewed By:	D. Shea
Project No:	3463.00
Date:	April 2014

Figure Narrative

This figure shows the individual vapor extraction test data and observed subslab pressure response. Subslab pressure was monitored using a digital manometer referenced to the indoor air pressure. Negative values indicate subslab pressure is less than indoor air pressure.

Legend

EP2001 — Extraction Port

SSV2001 — Subslab Vapor Port

-0.004 — Differential Pressure Contour (in wc)

EP2001
in. wc
scfm
F
% RH
ppmv

Extraction Port
Vacuum (extraction port)
Flow Rate (std. cu. ft. per min.)
Temperature
Relative Humidity
PID Concentration

-0.005 — Observed equilibrium pressure differential between the subslab and room during subslab vapor extraction test (in. wc).

20 10 0 20 40
Feet

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Figure C-3

Subslab Pressure Response to Vapor Extraction Testing

Report of Findings
Building 001 VOC Source Assessment

IBM Poughkeepsie Facility

Poughkeepsie, New York

Drawn By:	C. LaVack
Designed By:	S. Warner
Reviewed By:	D. Shea
Project No:	3463.00
Date:	April 2014

Figure Narrative

This figure shows the individual vapor extraction test data and observed subslab pressure response. Subslab pressure was monitored using a digital manometer referenced to the indoor air pressure. Negative values indicate subslab pressure is less than indoor air pressure.

Legend

EP2001 — Extraction Port

SSV2001 — Subslab Vapor Port

-0.004 — Differential Pressure Contour (in wc)

EP2001
in. wc
scfm
F
% RH
ppmv

Extraction Port
Vacuum (extraction port)
Flow Rate (std. cu. ft. per min.)
Temperature
Relative Humidity
PID Concentration

-0.005 — Observed equilibrium pressure differential between the subslab and room during subslab vapor extraction test (in. wc).

20 10 0 20 40
Feet

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Figure C-4

Subslab Pressure Response to Vapor Extraction Testing

Report of Findings
Building 001 VOC Source Assessment

IBM Poughkeepsie Facility

Poughkeepsie, New York

Drawn By:	C. LaVack
Designed By:	S. Warner
Reviewed By:	D. Shea
Project No:	3463.00
Date:	April 2014

Figure Narrative

This figure shows the individual vapor extraction test data and observed subslab pressure response. Subslab pressure was monitored using a digital manometer referenced to the indoor air pressure. Negative values indicate subslab pressure is less than indoor air pressure.

Legend

EP2001 — Extraction Port

SSV2001 — Subslab Vapor Port

-0.004 — Differential Pressure Contour (in wc)

EP2001
in. wc
scfm
F
% RH
ppmv

Extraction Port
Vacuum (extraction port)
Flow Rate (std. cu. ft. per min.)
Temperature
Relative Humidity
PID Concentration

-0.005 — Observed equilibrium pressure differential between the subslab and room during subslab vapor extraction test (in. wc).

EP2004
-57 in. wc
48 scfm
70 F
47% RH
11 ppmv

20 10 0 20 40
Feet

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Figure C-5

Subslab Pressure Response to Vapor Extraction Testing

Report of Findings
Building 001 VOC Source Assessment

IBM Poughkeepsie Facility

Poughkeepsie, New York

Drawn By:	C. LaVack
Designed By:	S. Warner
Reviewed By:	D. Shea
Project No:	3463.00
Date:	April 2014

Figure Narrative

This figure shows the individual vapor extraction test data and observed subslab pressure response. Subslab pressure was monitored using a digital manometer referenced to the indoor air pressure. Negative values indicate subslab pressure is less than indoor air pressure.

Legend

EP2001 — Extraction Port

SSV2001 — Subslab Vapor Port

-0.004 — Differential Pressure Contour (in wc)

EP2001	
in. wc	Vacuum (extraction port)
scfm	Flow Rate (std. cu. ft. per min.)
F	Temperature
% RH	Relative Humidity
ppmv	PID Concentration

-0.005 — Observed equilibrium pressure differential between the subslab and room during subslab vapor extraction test (in. wc).

20 10 0 20 40

Feet

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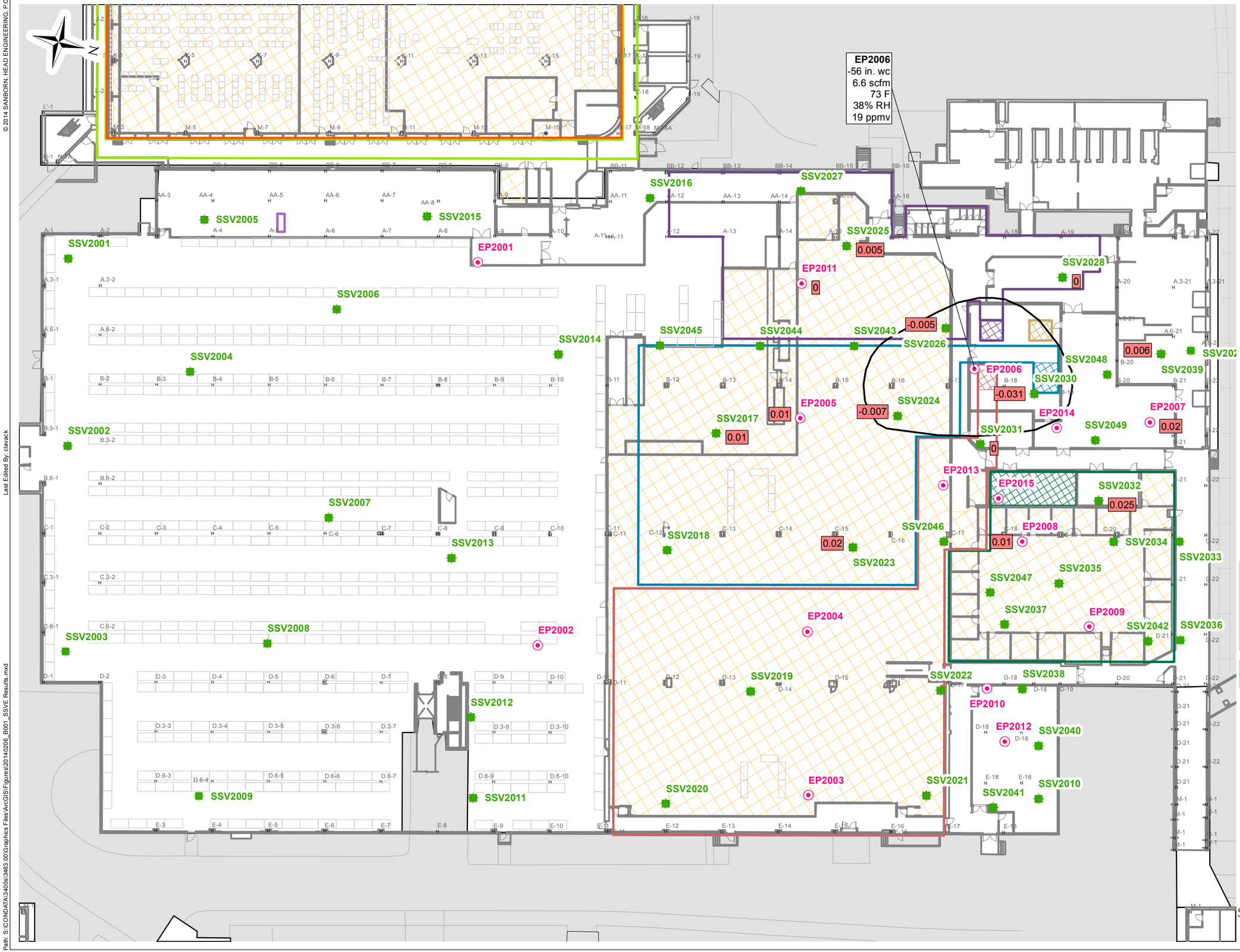

Figure C-6

Subslab Pressure Response to Vapor Extraction Testing

Report of Findings
Building 001 VOC Source Assessment

IBM Poughkeepsie Facility

Poughkeepsie, New York

Drawn By:	C. LaVack
Designed By:	S. Warner
Reviewed By:	D. Shea
Project No:	3463.00
Date:	April 2014

Figure Narrative

This figure shows the individual vapor extraction test data and observed subslab pressure response. Subslab pressure was monitored using a digital manometer referenced to the indoor air pressure. Negative values indicate subslab pressure is less than indoor air pressure.

Legend

EP2001 — Extraction Port

SSV2001 — Subslab Vapor Port

-0.004 — Differential Pressure Contour (in wc)

EP2001	
in. wc	Vacuum (extraction port)
scfm	Flow Rate (std. cu. ft. per min.)
F	Temperature
% RH	Relative Humidity
ppmv	PID Concentration

-0.005 — Observed equilibrium pressure differential between the subslab and room during subslab vapor extraction test (in. wc).

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Figure C-7

Subslab Pressure Response to Vapor Extraction Testing

Report of Findings
Building 001 VOC Source Assessment

IBM Poughkeepsie Facility

Poughkeepsie, New York

Drawn By:	C. LaVack
Designed By:	S. Warner
Reviewed By:	D. Shea
Project No:	3463.00
Date:	April 2014

Figure Narrative

This figure shows the individual vapor extraction test data and observed subslab pressure response. Subslab pressure was monitored using a digital manometer referenced to the indoor air pressure. Negative values indicate subslab pressure is less than indoor air pressure.

Legend

EP2001 — Extraction Port

SSV2001 — Subslab Vapor Port

-0.004 — Differential Pressure Contour (in wc)

EP2001
in. wc
scfm
F
% RH
ppmv

Extraction Port
Vacuum (extraction port)
Flow Rate (std. cu. ft. per min.)
Temperature
Relative Humidity
PID Concentration

-0.005 — Observed equilibrium pressure differential between the subslab and room during subslab vapor extraction test (in. wc).

20 10 0 20 40
Feet

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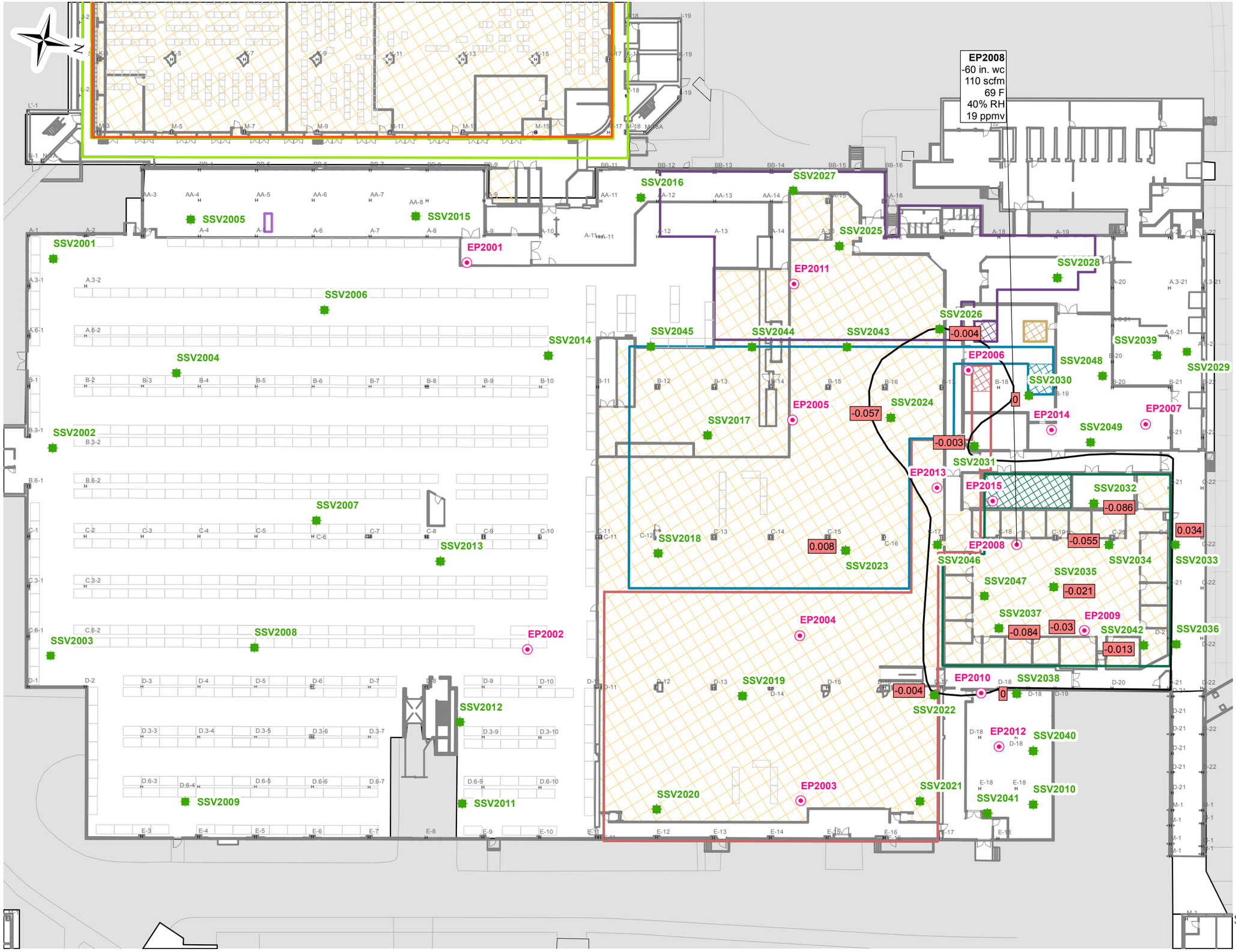

Figure C-8

Subslab Pressure Response to Vapor Extraction Testing

Report of Findings
Building 001 VOC Source Assessment

IBM Poughkeepsie Facility

Poughkeepsie, New York

Drawn By:	C. LaVack
Designed By:	S. Warner
Reviewed By:	D. Shea
Project No:	3463.00
Date:	April 2014

Figure Narrative

This figure shows the individual vapor extraction test data and observed subslab pressure response. Subslab pressure was monitored using a digital manometer referenced to the indoor air pressure. Negative values indicate subslab pressure is less than indoor air pressure.

Legend

EP2001 — Extraction Port

SSV2001 — Subslab Vapor Port

-0.004 — Differential Pressure Contour (in wc)

EP2001	
in. wc	Extraction Port
scfm	Vacuum (extraction port)
F	Flow Rate (std. cu. ft. per min.)
% RH	Temperature
ppmv	Relative Humidity
	PID Concentration

-0.005 — Observed equilibrium pressure differential between the subslab and room during subslab vapor extraction test (in. wc).

20 10 0 20 40
Feet

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Figure C-9

Subslab Pressure Response to Vapor Extraction Testing

Report of Findings
Building 001 VOC Source Assessment

IBM Poughkeepsie Facility

Poughkeepsie, New York

Drawn By:	C. LaVack
Designed By:	S. Warner
Reviewed By:	D. Shea
Project No:	3463.00
Date:	April 2014

Figure Narrative

This figure shows the individual vapor extraction test data and observed subslab pressure response. Subslab pressure was monitored using a digital manometer referenced to the indoor air pressure. Negative values indicate subslab pressure is less than indoor air pressure.

Legend

EP2001 — Extraction Port

SSV2001 — Subslab Vapor Port

-0.004 — Differential Pressure Contour (in wc)

EP2001
in. wc
scfm
F
% RH
ppmv

Extraction Port
Vacuum (extraction port)
Flow Rate (std. cu. ft. per min.)
Temperature
Relative Humidity
PID Concentration

-0.005 — Observed equilibrium pressure differential between the subslab and room during subslab vapor extraction test (in. wc).

20 10 0 20 40
Feet

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Figure C-10

Subslab Pressure Response to Vapor Extraction Testing

Report of Findings
Building 001 VOC Source Assessment

IBM Poughkeepsie Facility

Poughkeepsie, New York

Drawn By:	C. LaVack
Designed By:	S. Warner
Reviewed By:	D. Shea
Project No:	3463.00
Date:	April 2014

Figure Narrative

This figure shows the individual vapor extraction test data and observed subslab pressure response. Subslab pressure was monitored using a digital manometer referenced to the indoor air pressure. Negative values indicate subslab pressure is less than indoor air pressure.

Legend

EP2001 — Extraction Port

SSV2001 — Subslab Vapor Port

-0.004 — Differential Pressure Contour (in wc)

EP2001
in. wc
scfm
F
% RH
ppmv

Extraction Port
Vacuum (extraction port)
Flow Rate (std. cu. ft. per min.)
Temperature
Relative Humidity
PID Concentration

-0.005 — Observed equilibrium pressure differential between the subslab and room during subslab vapor extraction test (in. wc).

20 10 0 20 40
Feet

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EP2010
-38 in. wc
110 scfm
67 F
31% RH
12 ppmv

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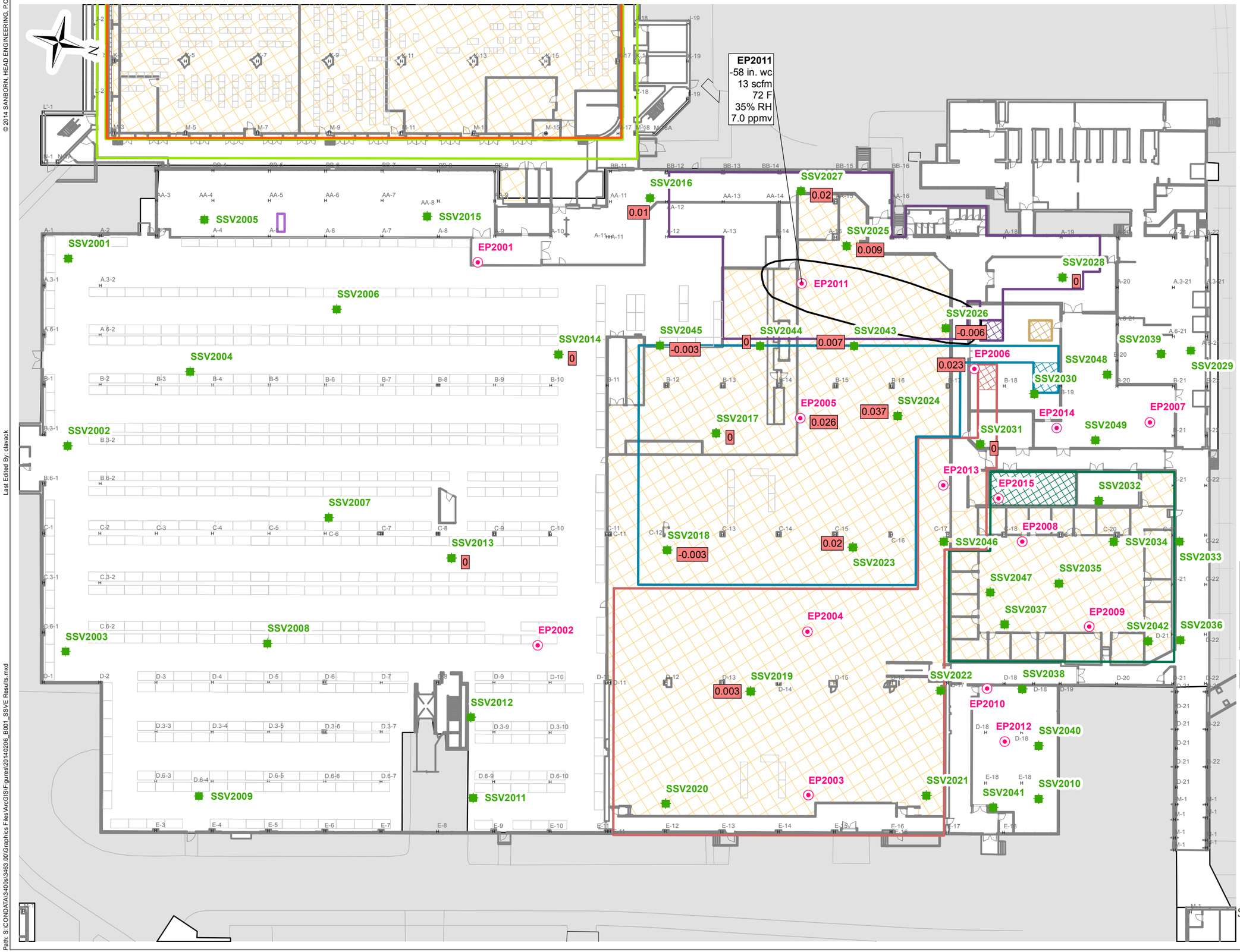

Figure C-11

Subslab Pressure Response to Vapor Extraction Testing

Report of Findings
Building 001 VOC Source Assessment

IBM Poughkeepsie Facility

Poughkeepsie, New York

Drawn By:	C. LaVack
Designed By:	S. Warner
Reviewed By:	D. Shea
Project No:	3463.00
Date:	April 2014

Figure Narrative

This figure shows the individual vapor extraction test data and observed subslab pressure response. Subslab pressure was monitored using a digital manometer referenced to the indoor air pressure. Negative values indicate subslab pressure is less than indoor air pressure.

Legend

EP2001 — Extraction Port

SSV2001 — Subslab Vapor Port

-0.004 — Differential Pressure Contour (in wc)

EP2001	Extraction Port
in. wc	Vacuum (extraction port)
scfm	Flow Rate (std. cu. ft. per min.)
F	Temperature
% RH	Relative Humidity
ppmv	PID Concentration

-0.005 — Observed equilibrium pressure differential between the subslab and room during subslab vapor extraction test (in. wc).

20 10 0 20 40

Feet

SANBORN HEAD ENGINEERING

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Figure C-12

Subslab Pressure Response to Vapor Extraction Testing

Report of Findings
Building 001 VOC Source Assessment

IBM Poughkeepsie Facility

Poughkeepsie, New York

Drawn By:	C. LaVack
Designed By:	S. Warner
Reviewed By:	D. Shea
Project No:	3463.00
Date:	April 2014

Figure Narrative

This figure shows the individual vapor extraction test data and observed subslab pressure response. Subslab pressure was monitored using a digital manometer referenced to the indoor air pressure. Negative values indicate subslab pressure is less than indoor air pressure.

Legend

EP2001 — Extraction Port

SSV2001 — Subslab Vapor Port

-0.004 — Differential Pressure Contour (in wc)

EP2001
in. wc
scfm
F
% RH
ppmv

Extraction Port
Vacuum (extraction port)
Flow Rate (std. cu. ft. per min.)
Temperature
Relative Humidity
PID Concentration

-0.005 — Observed equilibrium pressure differential between the subslab and room during subslab vapor extraction test (in. wc).

EP2012
-39 in. wc
97 scfm
74 F
28% RH
18 ppmv

20 10 0 20 40
Feet

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Figure C-13

Subslab Pressure Response to Vapor Extraction Testing

Report of Findings
Building 001 VOC Source Assessment

IBM Poughkeepsie Facility

Poughkeepsie, New York

Drawn By:	C. LaVack
Designed By:	S. Warner
Reviewed By:	D. Shea
Project No:	3463.00
Date:	April 2014

Figure Narrative

This figure shows the individual vapor extraction test data and observed subslab pressure response. Subslab pressure was monitored using a digital manometer referenced to the indoor air pressure. Negative values indicate subslab pressure is less than indoor air pressure.

Legend

EP2001 — Extraction Port

SSV2001 — Subslab Vapor Port

-0.004 — Differential Pressure Contour (in wc)

EP2001
in. wc
scfm
F
% RH
ppmv

Extraction Port
Vacuum (extraction port)
Flow Rate (std. cu. ft. per min.)
Temperature
Relative Humidity
PID Concentration

-0.005 — Observed equilibrium pressure differential between the subslab and room during subslab vapor extraction test (in. wc).

20 10 0 20 40
Feet

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Last Edited By: clavack

Path: S:\CONDATA\3400s\3463.00\Graphics Files\ArcGIS\Figures\20140206_B001_SSVE Results.mxd

Figure C-14

Subslab Pressure Response to Vapor Extraction Testing

Report of Findings
Building 001 VOC Source Assessment

IBM Poughkeepsie Facility

Poughkeepsie, New York

Drawn By:	C. LaVack
Designed By:	S. Warner
Reviewed By:	D. Shea
Project No:	3463.00
Date:	April 2014

Figure Narrative

This figure shows the individual vapor extraction test data and observed subslab pressure response. Subslab pressure was monitored using a digital manometer referenced to the indoor air pressure. Negative values indicate subslab pressure is less than indoor air pressure.

Legend

EP2001 — Extraction Port

SSV2001 — Subslab Vapor Port

-0.004 — Differential Pressure Contour (in wc)

EP2001	Extraction Port
in. wc	Vacuum (extraction port)
scfm	Flow Rate (std. cu. ft. per min.)
F	Temperature
% RH	Relative Humidity
ppmv	PID Concentration

-0.005 — Observed equilibrium pressure differential between the subslab and room during subslab vapor extraction test (in. wc).

20 10 0 20 40

Feet

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Figure C-15

Subslab Pressure Response to Vapor Extraction Testing

Report of Findings
Building 001 VOC Source Assessment

IBM Poughkeepsie Facility

Poughkeepsie, New York

Drawn By:	C. LaVack
Designed By:	S. Warner
Reviewed By:	D. Shea
Project No:	3463.00
Date:	April 2014

Figure Narrative

This figure shows the individual vapor extraction test data and observed subslab pressure response. Subslab pressure was monitored using a digital manometer referenced to the indoor air pressure. Negative values indicate subslab pressure is less than indoor air pressure.

Legend

EP2001 — Extraction Port

SSV2001 — Subslab Vapor Port

-0.004 — Differential Pressure Contour (in wc)

EP2001	Extraction Port
in. wc	Vacuum (extraction port)
scfm	Flow Rate (std. cu. ft. per min.)
F	Temperature
% RH	Relative Humidity
ppmv	PID Concentration

-0.005 — Observed equilibrium pressure differential between the subslab and room during subslab vapor extraction test (in. wc).

20 10 0 20 40
Feet

SANBORN HEAD ENGINEERING

Last Edited By: clavack

Path: S:\CONDATA\3400s\3463.00\Graphics Files\ArcGIS\Figures\20140206_B001_SSVE Results.mxd

APPENDIX D

LABORATORY ANALYTICAL REPORTS

(LOCATED ON ENCLOSED CD)

INDOOR AIR GRAB SAMPLING

ANALYTICAL REPORT

Lab Number:	L1318300
Client:	Sanborn, Head & Associates, Inc. 20 Foundry Street Concord, NH 03301
ATTN:	Jennifer Sanborn
Phone:	(603) 415-6137
Project Name:	IBM-POK
Project Number:	3463.00
Report Date:	09/23/13

Certifications & Approvals: NY (11627), CT (PH-0141), NH (2206), NJ NELAP (MA015), RI (LAO00299), PA (68-02089), LA NELAP (03090), FL (E87814), TX (T104704419), WA (C954), DOD (L2217.01), USDA (Permit #P330-11-00109), US Army Corps of Engineers.

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: IBM-POK
Project Number: 3463.00

Lab Number: L1318300
Report Date: 09/23/13

Sample from a different building removed from lab report.

Alpha Sample ID	Client ID	Sample Location	Collection Date/Time
L1318300-01	IA7001/G	POUGHKEEPSIE, NY	09/13/13 11:20
L1318300-02	IA2001/G	POUGHKEEPSIE, NY	09/13/13 13:58
L1318300-03	UNUSED CAN 844	POUGHKEEPSIE, NY	

Project Name: IBM-POK
Project Number: 3463.00

Lab Number: L1318300
Report Date: 09/23/13

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. Performance criteria for CAM and RCP methods allow for some LCS compound failures to occur and still be within method compliance. In these instances, the specific failures are not narrated but are noted in the associated QC table. This information is also incorporated in the Data Usability format for our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: IBM-POK **Lab Number:** L1318300
Project Number: 3463.00 **Report Date:** 09/23/13

Case Narrative (continued)

Volatile Organics in Air

Canisters were released from the laboratory on September 13, 2013. The canister certification results are provided as an addendum.

Samples L1318300-01 and -02 : Prior to sample analysis, the canisters were pressurized with UHP Nitrogen due to canister size. The pressurization resulted in a dilution of the samples. The reporting limits have been elevated accordingly.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Christopher J. Anderson

Title: Technical Director/Representative Date: 09/23/13

AIR

Project Name: IBM-POK
Project Number: 3463.00

Lab Number: L1318300
Report Date: 09/23/13

SAMPLE RESULTS

Lab ID: L1318300-02 D
Client ID: IA2001/G
Sample Location: POUGHKEEPSIE, NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15-SIM
Analytical Date: 09/20/13 17:41
Analyst: RY

Date Collected: 09/13/13 13:58
Date Received: 09/17/13
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.058	--	ND	0.147	--		2.874
Chloroethane	ND	0.058	--	ND	0.152	--		2.874
1,1-Dichloroethene	ND	0.058	--	ND	0.228	--		2.874
trans-1,2-Dichloroethene	ND	0.058	--	ND	0.228	--		2.874
1,1-Dichloroethane	ND	0.058	--	ND	0.233	--		2.874
cis-1,2-Dichloroethene	0.063	0.058	--	0.251	0.228	--		2.874
Trichloroethene	30.2	0.058	--	162	0.309	--		2.874
Tetrachloroethene	ND	0.058	--	ND	0.390	--		2.874

Project Name: IBM-POK
Project Number: 3463.00

Lab Number: L1318300
Report Date: 09/23/13

SAMPLE RESULTS

Lab ID: L1318300-02 D
Client ID: IA2001/G
Sample Location: POUGHKEEPSIE, NY

Date Collected: 09/13/13 13:58
Date Received: 09/17/13
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Bromofluorobenzene	108		70-130
Toluene-d8	109		70-130

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	96		60-140
bromochloromethane	96		60-140
chlorobenzene-d5	96		60-140

Project Name: IBM-POK
Project Number: 3463.00
Lab Number: L1318300
Report Date: 09/23/13

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15-SIM
Analytical Date: 09/20/13 15:26

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab for sample(s): 01-02 Batch: WG637853-5								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
Chloroethane	ND	0.020	--	ND	0.053	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Project Name: IBM-POK
Project Number: 3463.00

Lab Number: L1318300
Report Date: 09/23/13

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15-SIM
Analytical Date: 09/20/13 15:26

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab for sample(s): 01-02 Batch: WG637853-5								

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Bromofluorobenzene	103		70-130
Toluene-d8	105		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: IBM-POK

Project Number: 3463.00

Lab Number: L1318300

Report Date: 09/23/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-02 Batch: WG637853-3 WG637853-4								
Vinyl chloride	99		99		70-130	0		20
Chloroethane	98		100		70-130	2		20
1,1-Dichloroethene	99		99		70-130	0		20
trans-1,2-Dichloroethene	89		86		70-130	3		20
1,1-Dichloroethane	99		100		70-130	1		20
cis-1,2-Dichloroethene	106		106		70-130	0		20
Trichloroethene	100		99		70-130	1		20
Tetrachloroethene	115		115		70-130	0		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	91		90		70-130
Toluene-d8	105		105		70-130
Bromofluorobenzene	107		105		70-130

Lab Duplicate Analysis
Batch Quality Control

Project Name: IBM-POK
Project Number: 3463.00

Lab Number: L1318300
Report Date: 09/23/13

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG637853-6 QC Sample: L1318300-01 Client ID: IA7001/G						
Vinyl chloride	ND	ND	ppbV	NC		20
Chloroethane	ND	ND	ppbV	NC		20
1,1-Dichloroethene	ND	ND	ppbV	NC		20
trans-1,2-Dichloroethene	ND	ND	ppbV	NC		20
1,1-Dichloroethane	ND	ND	ppbV	NC		20
cis-1,2-Dichloroethene	ND	ND	ppbV	NC		20
Trichloroethene	0.586	0.571	ppbV	3		20
Tetrachloroethene	0.138	0.135	ppbV	2		20

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		96		70-130
Toluene-d8	109		109		70-130
Bromofluorobenzene	110		108		70-130

Project Name: IBM-POK

Project Number: 3463.00

Lab Number: L1318300

Report Date: 09/23/13

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Date Prepared	Bottle Order	Cleaning Batch ID	Can Leak Check	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Controler Leak Chk	Flow Out mL/min	Flow In mL/min	% RPD
L1318300-01	IA7001/G	1505	1.0L Can	09/13/13	93045	L1317854-04	Pass	-29.3	-4.4	-	-	-	-
L1318300-02	IA2001/G	681	1.0L Can	09/13/13	93045	L1317854-01	Pass	-29.3	-9.5	-	-	-	-
L1318300-03	UNUSED CAN 844	844	1.0L Can	09/13/13	93045	L1317854-03	Pass	-29.3	-3.5	-	-	-	-

Project Name:

Lab Number: L1317854

Project Number: Not Specified

Report Date: 09/23/13

Air Canister Certification Results

Lab ID:	L1317854-01	Date Collected:	09/11/13 17:42
Client ID:	CAN 681 FC 1	Date Received:	09/11/13
Sample Location:		Field Prep:	Not Specified
Matrix:	Air		
Anaytical Method:	48,TO-15-SIM		
Analytical Date:	09/11/13 18:10		
Analyst:	RY		

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	109		60-140
bromochloromethane	109		60-140
chlorobenzene-d5	105		60-140

Project Name:

Lab Number: L1317854

Project Number: Not Specified

Report Date: 09/23/13

Air Canister Certification Results

Lab ID:	L1317854-03	Date Collected:	09/11/13 17:42
Client ID:	CAN 844 FC 3	Date Received:	09/11/13
Sample Location:		Field Prep:	Not Specified
Matrix:	Air		
Anaytical Method:	48,TO-15-SIM		
Analytical Date:	09/11/13 19:11		
Analyst:	RY		

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	125		60-140
bromochloromethane	109		60-140
chlorobenzene-d5	101		60-140

Project Name:

Lab Number: L1317854

Project Number: Not Specified

Report Date: 09/23/13

Air Canister Certification Results

Lab ID:	L1317854-04	Date Collected:	09/11/13 17:42
Client ID:	CAN 1505 FC 4	Date Received:	09/11/13
Sample Location:		Field Prep:	Not Specified
Matrix:	Air		
Anaytical Method:	48,TO-15-SIM		
Analytical Date:	09/11/13 19:41		
Analyst:	RY		

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	125		60-140
bromochloromethane	108		60-140
chlorobenzene-d5	100		60-140

Project Name: IBM-POK
Project Number: 3463.00

Lab Number: L1318300
Report Date: 09/23/13

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Reagent H2O Preserved Vials Frozen on: NA

Cooler Information **Custody Seal**
Cooler
N/A Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1318300-01A	Canister - 1 Liter	N/A	N/A		Y	Absent	NYSDEC-TO15-SIM(30)
L1318300-02A	Canister - 1 Liter	N/A	N/A		Y	Absent	NYSDEC-TO15-SIM(30)
L1318300-03A	Canister - 1 Liter	N/A	N/A		Y	Absent	CLEAN-FEE()

*Values in parentheses indicate holding time in days

Project Name:	IBM-POK	**Lab Number:**	L1318300
Project Number:	3463.00	**Report Date:**	09/23/13

GLOSSARY

Acronyms

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NI - Not Ignitable.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

A - Spectra identified as "Aldol Condensation Product".

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit.

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

Report Format: Data Usability Report

Project Name:	IBM-POK	**Lab Number:**	L1318300
Project Number:	3463.00	**Report Date:**	09/23/13

Data Qualifiers

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report

Project Name:	IBM-POK	**Lab Number:**	L1318300
Project Number:	3463.00	**Report Date:**	09/23/13

REFERENCES

48 Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air. Second Edition. EPA/625/R-96/010b, January 1999.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certificate/Approval Program Summary

Last revised August 3, 2012 – Mansfield Facility

The following list includes only those analytes/methods for which certification/approval is currently held.
For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

Connecticut Department of Public Health Certificate/Lab ID: PH-0141.

Wastewater/Non-Potable Water (Inorganic Parameters: pH, Turbidity, Conductivity, Alkalinity, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Titanium, Vanadium, Zinc, Total Residue (Solids), Total Suspended Solids (non-filterable). Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Acid Extractables, Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, PAHs, Haloethers, Chlorinated Hydrocarbons, Volatile Organics.)

Solid Waste/Soil (Inorganic Parameters: pH, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Titanium, Vanadium, Zinc, Total Organic Carbon, Corrosivity, TCLP 1311, SPLP 1312. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Volatile Organics, Acid Extractables, Benzidines, Phthalates, Nitrosamines, Nitroaromatics & Cyclic Ketones, PAHs, Haloethers, Chlorinated Hydrocarbons.)

Florida Department of Health Certificate/Lab ID: E87814. ***NELAP Accredited.***

Non-Potable Water (Inorganic Parameters: SM2320B, SM2540D, SM2540G.)

Solid & Chemical Materials (Inorganic Parameters: 6020, 7470, 7471, 9045. Organic Parameters: EPA 8260, 8270, 8082, 8081.)

Air & Emissions (EPA TO-15.)

Louisiana Department of Environmental Quality Certificate/Lab ID: 03090. ***NELAP Accredited.***

Non-Potable Water (Inorganic Parameters: EPA 180.1, 245.7, 1631E, 3020A, 6020A, 7470A, 9040, 9050A, SM2320B, 2540D, 2540G, 4500H-B, Organic Parameters: EPA 3510C, 3580A, 3630C, 3640A, 3660B, 3665A, 5030B, 8015D, 3570, 8081B, 8082A, 8260B, 8270C, 8270D.)

Solid & Chemical Materials (Inorganic Parameters: EPA 1311, 3050B, 3051A, 3060A, 6020A, 7196A, 7470A, 7471B, 7474, 9040B, 9045C, 9060. Organic Parameters: EPA 3540C, 3570, 3580A, 3630C, 3640A, 3660, 3665A, 5035, 8015D, 8081B, 8082A, 8260B, 8270C, 8270D.)

Biological Tissue (Inorganic Parameters: EPA 6020A. Organic Parameters: EPA 3570, 3510C, 3610B, 3630C, 3640A, 8270C, 8270D.)

Air & Emissions (EPA TO-15.)

New Hampshire Department of Environmental Services Certificate/Lab ID: 2206. ***NELAP Accredited.***

Non-Potable Water (Inorganic Parameters: EPA 180.1, 1631E, 6020A, 7470A, 9040B, 9050A, SM2540D, 2540G, 4500H+B, 2320B, 3020A, . Organic Parameters: EPA 3510C, 3630C, 3640A, 3660B, 8081B, 8082A, 8270C, 8270D, 8015D.)

Solid & Chemical Materials (Inorganic Parameters: SW-846 1311, 3050B, 3051A, 6020A, 7471B, 9040B, 9045C. Organic Parameters: SW-846 3540C, 3580A, 3630C, 3640A, 3660B, 3665A, 8270C, 8015D, 8082A, 8081B.)

New Jersey Department of Environmental Protection Certificate/Lab ID: MA015. ***NELAP Accredited.***

Non-Potable Water (Inorganic Parameters: SW-846 1312, 3020A, SM2320B, SM2540D, 2540G, 4500H-B, EPA 180.1, 1631E, SW-846 7470A, 9040C, 6020A, 9050A. Organic Parameters: SW-846 3510C, 3580A, 3630C, 3640A, 3660B, 3665A, 8015D, 8081B, 8082A, 8270C, 8270D)

Solid & Chemical Materials (Inorganic Parameters: SW-846 1311, 1312, 3050B, 3051A, 6020A, 7471B, 7474, 9040B, 9040C, 9045C, 9045D, 9060. Organic Parameters: SW-846 3540C, 3570, 3580A, 3630C, 3640A, 3660B, 3665A, 8081B, 8082A, 8270C, 8270D, 8015D.)

Atmospheric Organic Parameters (EPA 3C, TO-15, TO-10A, TO-13A-SIM.)

Biological Tissue (Inorganic Parameters: SW-846 6020A. Organic Parameters: SW-846 8270C, 8270D, 3510C, 3570, 3610C, 3630C, 3640A)

New York Department of Health Certificate/Lab ID: 11627. ***NELAP Accredited.***

Non-Potable Water (Inorganic Parameters: SM2320B, SM2540D, 6020A, 1631E, 7470A, 9050A, EPA 180.1, 3020A. Organic Parameters: EPA 8270C, 8270D, 8081B, 8082A, 3510C.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 6020A, 7471B, 7474, 9040C, 9045D. Organic Parameters: EPA 8270C, 8270D, 8081B, 8082A, 1311, 3050B, 3580A, 3570, 3051A.)

Air & Emissions (EPA TO-15, TO-10A.)

Pennsylvania Certificate/Lab ID: 68-02089 ***NELAP Accredited***

Non-Potable Water (Inorganic Parameters: 1312, 1631E, 180.1, 3020A, 6020A, 7470A, 9040B, 9050A, 2320B, 2540D, 2540G, SM4500H+-B. Organic Parameters: 3510C, 3580A, 3630C, 3640A, 3660B, 3665A, 8015D, 8081B, 8082A, 8270C, 8270D .)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1311, 3051A, 6020A, 7471B, 7474 9040B, 9045C, 9060. Organic Parameters: EPA3050B, 3540C, 3570, 3580A, 3630C, 3640A, 3660B, 3665A, 8270C, 8270D, 8081B, 8015D, 8082A.)

Rhode Island Department of Health Certificate/Lab ID: LAO00299. ***NELAP Accredited via NJ-DEP.***

Refer to NJ-DEP Certificate for Non-Potable Water.

Texas Commission of Environmental Quality Certificate/Lab ID: T104704419-08-TX. ***NELAP Accredited.***

Solid & Chemical Materials (Inorganic Parameters: EPA 6020, 7470, 7471, 1311, 9040, 9045, 9060. Organic Parameters: EPA 8015, 8270, 8081, 8082.)

Air (Organic Parameters: EPA TO-15)

Virginia Division of Consolidated Laboratory Services Certificate/Lab ID:460194. ***NELAP Accredited.***

Non-Potable Water (Inorganic Parameters:EPA 3020A, 6020A, 245.7, 9040B. Organic Parameters: EPA 3510C, 3640A, 3660B, 3665A, 8270C, 8270D, 8082A, 8081B, 8015D.)

Solid & Chemical Materials (Inorganic Parameters: EPA 6020A,7470A,7471B,9040B,9045C,3050B,3051, 9060. Organic Parameters: EPA 3540C, 3580A, 3630C, 3640A, 3660B, 3665A, 3570, 8270C, 8270D, 8081B, 8082A, 8015D.)

Washington State Department of Ecology Certificate/Lab ID: C954. *Non-Potable Water* (Inorganic Parameters: SM2540D, 180.1, 1631E.)

Solid & Chemical Materials (Inorganic Parameters: EPA 6020, 7470, 7471, 7474, 9045C, 9050A, 9060. Organic Parameters: EPA 8081, 8082, 8015, 8270.)

U.S. Army Corps of Engineers

Department of Defense, L-A-B Certificate/Lab ID: L2217.01.

Non-Potable Water (Inorganic Parameters: EPA 6020A, SM4500H-B. Organic Parameters: 3020A, 3510C, 8270C, 8270D, 8270C-ALK-PAH, 8270D-ALK-PAH, 8082A, 8081B, 8015D-SHC, 8015D.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1311, 3050B, 6020A, 7471A, 9045C, 9060, SM 2540G, ASTM D422-63. Organic Parameters: EPA 3580A, 3570, 3540C, 8270C, 8270D, 8270C-ALK-PAH, 8270D-ALK-PAH 8082A, 8081B, 8015D-SHC, 8015D.

Air & Emissions (EPA TO-15.)

Analytes Not Accredited by NELAP

Certification is not available by NELAP for the following analytes: **8270C:** Biphenyl. **TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 2-Methylnaphthalene, 1-Methylnaphthalene.

AIR ANALYSIS

PAGE 1 OF 1

CHAIN OF CUSTODY

320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab:

ALPHA Job #: L1318300

Client Information

Client: Sanborn Head + Assoc
Address: 20 Foundry St
Concord NH 03301
Phone: 603-229-1900
Fax: —
Email: jsanborn@sanbornhead.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: IBM-POK
Project Location: NY
Project #: 3463.00
Project Manager: Jenn Sanborn
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH *(only confirmed if pre-approved!)*

Date Due: Time:

Report Information - Data Deliverables

☐ FAX
☒ ADEx
Criteria Checker:
(Default based on Regulatory Criteria Indicated)
Other Formats:
☐ EMAIL (standard pdf report)
☐ Additional Deliverables:
Report to: (if different than Project Manager)

Billing Information

☒ Same as Client info PO #: 3463.00

Regulatory Requirements/Report Limits

State/Fed	Program	Criteria

Other Project Specific Requirements/Comments:

* Site-specific analyte list

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	ID Can	ID - Flow Controller	TO-14A by TO-15	TO-15	TO-15 SIM *	APH	FIXED GASES	TO-13A	TO-4 / TO-10	Sample Comments (i.e. PID)
L1318300-1	IA7001\G	9-13-13	1120	Grab	18	2.5	AA	HDE	1L	1505	4			X					
-2	IA2001\G	9-13-13	1358	↓	20	3	AA	HDE	1L	681	1			X					

ANALYSIS

*SAMPLE MATRIX CODES
AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

Container Type: CS

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Relinquished By:	Date/Time	Received By:	Date/Time:
Regus FedEx	9/16/13 1010	FEDEX	
	9/17/13 0936		9/17/13

ANALYTICAL REPORT

Lab Number:	L1321975
Client:	Sanborn, Head & Associates, Inc. 20 Foundry Street Concord, NH 03301
ATTN:	Jennifer Sanborn
Phone:	(603) 415-6137
Project Name:	IBM-POK
Project Number:	3463.00
Report Date:	11/05/13

Certifications & Approvals: NY (11627), CT (PH-0141), NH (2206), NJ NELAP (MA015), RI (LAO00299), PA (68-02089), LA NELAP (03090), FL (E87814), TX (T104704419), WA (C954), DOD (L2217.01), USDA (Permit #P330-11-00109), US Army Corps of Engineers.

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: IBM-POK
Project Number: 3463.00

Lab Number: L1321975
Report Date: 11/05/13

Samples from different buildings removed from lab report.

Alpha Sample ID	Client ID	Sample Location	Collection Date/Time
L1321975-01	IA1025\G	NY	10/22/13 16:23
L1321975-02	IA5031\G	NY	10/23/13 13:59
L1321975-03	IA6009\G	NY	10/24/13 14:54
L1321975-04	IA4018\G	NY	10/25/13 10:47
L1321975-05	IA2024\G	NY	10/29/13 14:24
L1321975-06	UNUSED CAN 458	NY	

Project Name: IBM-POK
Project Number: 3463.00

Lab Number: L1321975
Report Date: 11/05/13

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. Performance criteria for CAM and RCP methods allow for some LCS compound failures to occur and still be within method compliance. In these instances, the specific failures are not narrated but are noted in the associated QC table. This information is also incorporated in the Data Usability format for our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name:	IBM-POK	**Lab Number:**	L1321975
Project Number:	3463.00	**Report Date:**	11/05/13

Case Narrative (continued)

Volatile Organics in Air

Canisters were released from the laboratory on October 22, 2013. The canister certification results are provided as an addendum.

Sample L1321975-05 and WG649314-6 Duplicate have elevated detection limits due to the dilution required by the elevated concentrations of target compounds in the samples.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Christopher J. Anderson

Title: Technical Director/Representative Date: 11/05/13

AIR

Project Name: IBM-POK
Project Number: 3463.00

Lab Number: L1321975
Report Date: 11/05/13

SAMPLE RESULTS

Lab ID: L1321975-05 D
Client ID: IA2024\G
Sample Location: NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15-SIM
Analytical Date: 11/04/13 18:58
Analyst: MB

Date Collected: 10/29/13 14:24
Date Received: 10/30/13
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.050	--	ND	0.128	--		2.5
Chloroethane	ND	0.050	--	ND	0.132	--		2.5
1,1-Dichloroethene	ND	0.050	--	ND	0.198	--		2.5
trans-1,2-Dichloroethene	ND	0.050	--	ND	0.198	--		2.5
1,1-Dichloroethane	0.152	0.050	--	0.615	0.202	--		2.5
cis-1,2-Dichloroethene	0.760	0.050	--	3.01	0.198	--		2.5
Trichloroethene	84.3	0.050	--	453	0.269	--		2.5
Tetrachloroethene	1.04	0.050	--	7.05	0.339	--		2.5

Project Name: IBM-POK
Project Number: 3463.00

Lab Number: L1321975
Report Date: 11/05/13

SAMPLE RESULTS

Lab ID: L1321975-05 D
Client ID: IA2024\G
Sample Location: NY

Date Collected: 10/29/13 14:24
Date Received: 10/30/13
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Bromofluorobenzene	87		70-130
Toluene-d8	89		70-130

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	92		60-140
bromochloromethane	92		60-140
chlorobenzene-d5	92		60-140

Project Name: IBM-POK
Project Number: 3463.00
Lab Number: L1321975
Report Date: 11/05/13

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15-SIM
Analytical Date: 11/04/13 13:40

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab for sample(s): 01-05 Batch: WG649314-5								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
Chloroethane	ND	0.020	--	ND	0.053	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Project Name: IBM-POK
Project Number: 3463.00
Lab Number: L1321975
Report Date: 11/05/13

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15-SIM
Analytical Date: 11/04/13 13:40

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab for sample(s): 01-05 Batch: WG649314-5								

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Bromofluorobenzene	86		70-130
Toluene-d8	91		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: IBM-POK

Project Number: 3463.00

Lab Number: L1321975

Report Date: 11/05/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-05 Batch: WG649314-3 WG649314-4								
Vinyl chloride	124		128		70-130	3		20
Chloroethane	115		118		70-130	3		20
1,1-Dichloroethene	113		118		70-130	4		20
trans-1,2-Dichloroethene	95		96		70-130	1		20
1,1-Dichloroethane	102		103		70-130	1		20
cis-1,2-Dichloroethene	114		115		70-130	1		20
Trichloroethene	119		117		70-130	2		20
Tetrachloroethene	108		108		70-130	0		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	112		112		70-130
Toluene-d8	92		92		70-130
Bromofluorobenzene	94		94		70-130

Lab Duplicate Analysis
Batch Quality Control

Project Name: IBM-POK
Project Number: 3463.00

Lab Number: L1321975
Report Date: 11/05/13

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-05 QC Batch ID: WG649314-6 QC Sample: L1321975-05 Client ID: IA2024\G						
Vinyl chloride	ND	ND	ppbV	NC		20
Chloroethane	ND	ND	ppbV	NC		20
1,1-Dichloroethene	ND	ND	ppbV	NC		20
trans-1,2-Dichloroethene	ND	ND	ppbV	NC		20
1,1-Dichloroethane	0.152	0.152	ppbV	0		20
cis-1,2-Dichloroethene	0.760	0.718	ppbV	6		20
Trichloroethene	84.3	85.6	ppbV	2		20
Tetrachloroethene	1.04	1.06	ppbV	2		20

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		108		70-130
Toluene-d8	89		87		70-130
Bromofluorobenzene	87		87		70-130

Project Name: IBM-POK

Project Number: 3463.00

Lab Number: L1321975

Report Date: 11/05/13

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Date Prepared	Bottle Order	Cleaning Batch ID	Can Leak Check	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Controler Leak Chk	Flow Out mL/min	Flow In mL/min	% RPD
L1321975-01	IA1025\G	1740	2.7L Can	10/22/13	94539	L1321059-02	Pass	-29.7	-5.5	-	-	-	-
L1321975-02	IA5031\G	323	2.7L Can	10/22/13	94539	L1321059-01	Pass	-29.8	-7.3	-	-	-	-
L1321975-03	IA6009\G	135	2.7L Can	10/22/13	94539	L1321059-06	Pass	-29.8	-4.3	-	-	-	-
L1321975-04	IA4018\G	149B	2.7L Can	10/22/13	94539	L1321059-07	Pass	-29.7	-5.2	-	-	-	-
L1321975-05	IA2024\G	419	2.7L Can	10/22/13	94539	L1321059-05	Pass	-29.8	-4.2	-	-	-	-
L1321975-06	UNUSED CAN 458	458	2.7L Can	10/22/13	94539	L1321059-03	Pass	-29.7	-29.4	-	-	-	-

Project Name:

Lab Number: L1321059

Project Number: Not Specified

Report Date: 11/05/13

Air Canister Certification Results

Lab ID:	L1321059-01	Date Collected:	10/18/13 17:50
Client ID:	CAN 323 FC A	Date Received:	10/18/13
Sample Location:		Field Prep:	Not Specified
Matrix:	Air		
Anaytical Method:	48,TO-15-SIM		
Analytical Date:	10/18/13 18:17		
Analyst:	MB		

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
Chloroethane	ND	0.020	--	ND	0.053	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	97		60-140
bromochloromethane	100		60-140
chlorobenzene-d5	99		60-140

Project Name:

Lab Number: L1321059

Project Number: Not Specified

Report Date: 11/05/13

Air Canister Certification Results

Lab ID:	L1321059-02	Date Collected:	10/18/13 17:50
Client ID:	CAN 1740 FC B	Date Received:	10/18/13
Sample Location:		Field Prep:	Not Specified
Matrix:	Air		
Anaytical Method:	48,TO-15-SIM		
Analytical Date:	10/18/13 18:49		
Analyst:	MB		

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
Chloroethane	ND	0.020	--	ND	0.053	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	93		60-140
bromochloromethane	93		60-140
chlorobenzene-d5	96		60-140

Project Name:

Lab Number: L1321059

Project Number: Not Specified

Report Date: 11/05/13

Air Canister Certification Results

Lab ID:	L1321059-03	Date Collected:	10/18/13 17:50
Client ID:	CAN 458 FC C	Date Received:	10/18/13
Sample Location:		Field Prep:	Not Specified
Matrix:	Air		
Anaytical Method:	48,TO-15-SIM		
Analytical Date:	10/18/13 19:21		
Analyst:	MB		

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
Chloroethane	ND	0.020	--	ND	0.053	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	93		60-140
bromochloromethane	92		60-140
chlorobenzene-d5	96		60-140

Project Name:

Lab Number: L1321059

Project Number: Not Specified

Report Date: 11/05/13

Air Canister Certification Results

Lab ID:	L1321059-05	Date Collected:	10/18/13 17:50
Client ID:	CAN 419 FC E	Date Received:	10/18/13
Sample Location:		Field Prep:	Not Specified
Matrix:	Air		
Anaytical Method:	48,TO-15-SIM		
Analytical Date:	10/18/13 20:25		
Analyst:	MB		

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
Chloroethane	ND	0.020	--	ND	0.053	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	92		60-140
bromochloromethane	92		60-140
chlorobenzene-d5	94		60-140

Project Name:

Lab Number: L1321059

Project Number: Not Specified

Report Date: 11/05/13

Air Canister Certification Results

Lab ID:	L1321059-06	Date Collected:	10/18/13 17:50
Client ID:	CAN 135 FC F	Date Received:	10/18/13
Sample Location:		Field Prep:	Not Specified
Matrix:	Air		
Anaytical Method:	48,TO-15-SIM		
Analytical Date:	10/18/13 20:57		
Analyst:	MB		

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
Chloroethane	ND	0.020	--	ND	0.053	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	92		60-140
bromochloromethane	92		60-140
chlorobenzene-d5	94		60-140

Project Name:

Lab Number: L1321059

Project Number: Not Specified

Report Date: 11/05/13

Air Canister Certification Results

Lab ID:	L1321059-07	Date Collected:	10/18/13 17:50
Client ID:	CAN 149B FC G	Date Received:	10/18/13
Sample Location:		Field Prep:	Not Specified
Matrix:	Air		
Anaytical Method:	48,TO-15-SIM		
Analytical Date:	10/18/13 21:29		
Analyst:	MB		

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
Chloroethane	ND	0.020	--	ND	0.053	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	92		60-140
bromochloromethane	92		60-140
chlorobenzene-d5	93		60-140

Project Name: IBM-POK
Project Number: 3463.00

Lab Number: L1321975
Report Date: 11/05/13

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Reagent H2O Preserved Vials Frozen on: NA

Cooler Information **Custody Seal**
Cooler
N/A Present/Intact

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1321975-01A	Canister - 2.7 Liter	N/A	N/A		Y	Present/Intact	NYSDEC-TO15-SIM(30)
L1321975-02A	Canister - 2.7 Liter	N/A	N/A		Y	Present/Intact	NYSDEC-TO15-SIM(30)
L1321975-03A	Canister - 2.7 Liter	N/A	N/A		Y	Present/Intact	NYSDEC-TO15-SIM(30)
L1321975-04A	Canister - 2.7 Liter	N/A	N/A		Y	Present/Intact	NYSDEC-TO15-SIM(30)
L1321975-05A	Canister - 2.7 Liter	N/A	N/A		Y	Present/Intact	NYSDEC-TO15-SIM(30)
L1321975-06A	Canister - 2.7 Liter	N/A	N/A		Y	Present/Intact	CLEAN-FEE()

*Values in parentheses indicate holding time in days

Project Name:	IBM-POK	**Lab Number:**	L1321975
Project Number:	3463.00	**Report Date:**	11/05/13

GLOSSARY

Acronyms

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NI - Not Ignitable.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

A - Spectra identified as "Aldol Condensation Product".

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit.

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

Report Format: Data Usability Report

Project Name:	IBM-POK	**Lab Number:**	L1321975
Project Number:	3463.00	**Report Date:**	11/05/13

Data Qualifiers

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report

REFERENCES

48 Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air. Second Edition. EPA/625/R-96/010b, January 1999.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certificate/Approval Program Summary

Last revised October 1, 2013 – Mansfield Facility

The following list includes only those analytes/methods for which certification/approval is currently held.
For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

Connecticut Department of Public Health Certificate/Lab ID: PH-0141.

Wastewater/Non-Potable Water (Inorganic Parameters: pH, Turbidity, Conductivity, Alkalinity, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Titanium, Vanadium, Zinc, Total Residue (Solids), Total Suspended Solids (non-filterable). Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Acid Extractables, Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, PAHs, Haloethers, Chlorinated Hydrocarbons, Volatile Organics.)

Solid Waste/Soil (Inorganic Parameters: pH, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Titanium, Vanadium, Zinc, Total Organic Carbon, Corrosivity, TCLP 1311, SPLP 1312. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Volatile Organics, Acid Extractables, Benzidines, Phthalates, Nitrosamines, Nitroaromatics & Cyclic Ketones, PAHs, Haloethers, Chlorinated Hydrocarbons.)

Florida Department of Health Certificate/Lab ID: E87814. ***NELAP Accredited.***

Non-Potable Water (Inorganic Parameters: SM2320B, SM2540D, SM2540G.)

Solid & Chemical Materials (Inorganic Parameters: 6020, 7470, 7471, 9045. Organic Parameters: EPA 8260, 8270, 8082, 8081.)

Air & Emissions (EPA TO-15.)

Louisiana Department of Environmental Quality Certificate/Lab ID: 03090. ***NELAP Accredited.***

Non-Potable Water (Inorganic Parameters: EPA 180.1, 245.7, 1631E, 3020A, 6020A, 7470A, 9040, 9050A, SM2320B, 2540D, 2540G, 4500H-B, Organic Parameters: EPA 3510C, 3580A, 3630C, 3640A, 3660B, 3665A, 5030B, 8015D, 3570, 8081B, 8082A, 8260B, 8270C, 8270D.)

Solid & Chemical Materials (Inorganic Parameters: EPA 1311, 3050B, 3051A, 3060A, 6020A, 7196A, 7470A, 7471B, 7474, 9040B, 9045C, 9060. Organic Parameters: EPA 3540C, 3570, 3580A, 3630C, 3640A, 3660, 3665A, 5035, 8015D, 8081B, 8082A, 8260B, 8270C, 8270D.)

Biological Tissue (Inorganic Parameters: EPA 6020A. Organic Parameters: EPA 3570, 3510C, 3610B, 3630C, 3640A, 8270C, 8270D.)

Air & Emissions (EPA TO-15.)

New Hampshire Department of Environmental Services Certificate/Lab ID: 2206. ***NELAP Accredited.***

Non-Potable Water (Inorganic Parameters: EPA 180.1, 1631E, 6020A, 7470A, 9040B, 9050A, SM2540D, 2540G, 4500H+B, 2320B, 3020A, . Organic Parameters: EPA 3510C, 3630C, 3640A, 3660B, 8081B, 8082A, 8270C, 8270D, 8015D.)

Solid & Chemical Materials (Inorganic Parameters: SW-846 1311, 3050B, 3051A, 6020A, 7471B, 9040B, 9045C. Organic Parameters: SW-846 3540C, 3580A, 3630C, 3640A, 3660B, 3665A, 8270C, 8015D, 8082A, 8081B.)

New Jersey Department of Environmental Protection Certificate/Lab ID: MA015. ***NELAP Accredited.***

Non-Potable Water (Inorganic Parameters: SW-846 1312, 3020A, SM2320B, SM2540D, 2540G, 4500H-B, EPA 180.1, 1631E, SW-846 7470A, 9040C, 6020A, 9050A. Organic Parameters: SW-846 3510C, 3580A, 3630C, 3640A, 3660B, 3665A, 8015D, 8081B, 8082A, 8270C, 8270D)

Solid & Chemical Materials (Inorganic Parameters: SW-846 1311, 1312, 3050B, 3051A, 6020A, 7471B, 7474, 9040B, 9040C, 9045C, 9045D, 9060, 9060A. Organic Parameters: SW-846 3540C, 3570, 3580A, 3630C, 3640A, 3660B, 3665A, 8081B, 8082A, 8270C, 8270D, 8015D.)

Atmospheric Organic Parameters (EPA 3C, TO-15, TO-10A, TO-13A-SIM.)

Biological Tissue (Inorganic Parameters: SW-846 6020A. Organic Parameters: SW-846 8270C, 8270D, 3510C, 3570, 3610C, 3630C, 3640A)

New York Department of Health Certificate/Lab ID: 11627. ***NELAP Accredited.***

Non-Potable Water (Inorganic Parameters: SM2320B, SM2540D, 6020A, 1631E, 7470A, 9050A, EPA 180.1, 3020A. Organic Parameters: EPA 8270C, 8270D, 8081B, 8082A, 3510C.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 6020A, 7471B, 7474, 9040C, 9045D, 9060A. Organic Parameters: EPA 8270C, 8270D, 8081B, 8082A, 1311, 3050B, 3580A, 3570, 3051A.)

Air & Emissions (EPA TO-15, TO-10A.)

Pennsylvania Certificate/Lab ID: 68-02089 ***NELAP Accredited***

Non-Potable Water (Inorganic Parameters: 1312, 1631E, 180.1, 3020A, 6020A, 7470A, 9040B, 9050A, 2320B, 2540D, 2540G, SM4500H+-B. Organic Parameters: 3510C, 3580A, 3630C, 3640A, 3660B, 3665A, 8015D, 8081B, 8082A, 8270C, 8270D .)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1311, 3051A, 6020A, 7471B, 7474 9040B, 9045C, 9060. Organic Parameters: EPA3050B, 3540C, 3570, 3580A, 3630C, 3640A, 3660B, 3665A, 8270C, 8270D, 8081B, 8015D, 8082A.)

Rhode Island Department of Health Certificate/Lab ID: LAO00299. ***NELAP Accredited via NJ-DEP.***

Refer to NJ-DEP Certificate for Non-Potable Water.

Texas Commission of Environmental Quality Certificate/Lab ID: T104704419-08-TX. ***NELAP Accredited.***

Solid & Chemical Materials (Inorganic Parameters: EPA 6020, 7470, 7471, 1311, 9040, 9045, 9060. Organic Parameters: EPA 8015, 8270, 8081, 8082.)

Air (Organic Parameters: EPA TO-15)

Virginia Division of Consolidated Laboratory Services Certificate/Lab ID:460194. ***NELAP Accredited.***

Non-Potable Water (Inorganic Parameters:EPA 3020A, 6020A, 245.7, 9040B. Organic Parameters: EPA 3510C, 3640A, 3660B, 3665A, 8270C, 8270D, 8082A, 8081B, 8015D.)

Solid & Chemical Materials (Inorganic Parameters: EPA 6020A,7470A,7471B,9040B,9045C,3050B,3051, 9060. Organic Parameters: EPA 3540C, 3580A, 3630C, 3640A, 3660B, 3665A, 3570, 8270C, 8270D, 8081B, 8082A, 8015D.)

Washington State Department of Ecology Certificate/Lab ID: C954. *Non-Potable Water* (Inorganic Parameters: SM2540D, 180.1, 1631E.)

Solid & Chemical Materials (Inorganic Parameters: EPA 6020, 7470, 7471, 7474, 9045C, 9050A, 9060. Organic Parameters: EPA 8081, 8082, 8015, 8270.)

U.S. Army Corps of Engineers

Department of Defense, L-A-B Certificate/Lab ID: L2217.01.

Non-Potable Water (Inorganic Parameters: EPA 6020A, SM4500H-B. Organic Parameters: 3020A, 3510C, 8270C, 8270D, 8270C-ALK-PAH, 8270D-ALK-PAH, 8082A, 8081B, 8015D-SHC, 8015D.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1311, 3050B, 6020A, 7471A, 9045C, 9060, SM 2540G, ASTM D422-63. Organic Parameters: EPA 3580A, 3570, 3540C, 8270C, 8270D, 8270C-ALK-PAH, 8270D-ALK-PAH 8082A, 8081B, 8015D-SHC, 8015D.

Air & Emissions (EPA TO-15.)

Analytes Not Accredited by NELAP

Certification is not available by NELAP for the following analytes: **8270C:** Biphenyl. **TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 2-Methylnaphthalene, 1-Methylnaphthalene.

AIR ANALYSIS

PAGE 1 OF 1

CHAIN OF CUSTODY

320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab:

ALPHA Job #: L1321975

Client Information

Client: Sanborn, Head + Assoc.
Address: 20 Foundry St.
Concord, NH 03301
Phone: ~~FF~~ 603-229-1900
Fax: ___
Email: jsanborn@sanbornhead.com
☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: IBM-POK
Project Location: NY
Project #: 3463.00
Project Manager: Jenn Sanborn
ALPHA Quote #:

Turn-Around Time

☑ Standard ☐ RUSH *(only confirmed if pre-approved!)*
Date Due: Time:

Report Information - Data Deliverables

☐ FAX
☑ ADEx
Criteria Checker: ___
(Default based on Regulatory Criteria Indicated)
Other Formats: ___
☑ EMAIL (standard pdf report)
☐ Additional Deliverables: ___
Report to: *(if different than Project Manager)* ___

Billing Information

☑ Same as Client info PO #: 3463.00

Regulatory Requirements/Report Limits

State/Fed	Program	Criteria

Other Project Specific Requirements/Comments:

* Site-specific analyte list. Call Jenn Sanborn with questions

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	I D Can	I D - Flow Controller	TO-14A by TO-15	TO-15	TO-15 SIM *	APH	FIXED GASES	TO-13A	TO-4 / TO-10	Sample Comments (i.e. PID)
21975-01	IA1025\G	10/22/13	16:23	Grab	-29.5	-5	SV	REW	2.7	1740	B			X					
-02	IA5031\G	10/23/13	13:59	Grab	-29.5	-7	SV	REW	2.7	323	A			X					
-03	IA6009\G	10/24/13	14:54	Grab	-29.5	-5.5	SV	REW	2.7	135	F			X					
-04	IA4018\G	10/25/13	10:47	Grab	-29.5	-5.5	SV	REW	2.7	149B	G			X					
-05	IA2024\G	10/29/13	14:24	Grab	-30	-4.5	SV	REW	2.7	419	E			X					

ANALYSIS

*SAMPLE MATRIX CODES
AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

Container Type: CS

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Relinquished By:	Date/Time	Received By:	Date/Time:
Reggie Mahaley	10/30/13 0800	Reggie Mahaley	10/30/13 8:00
Reggie Mahaley	10-30-13 17:30		10-30-13 17:30
	10-30-13 08:30		10/31/13 08:30
	10/31/13 0500	Mansfield Lab	10/31/13 0500

SUBSLAB VAPOR SAMPLING

ANALYTICAL REPORT

Lab Number:	L1402051
Client:	Sanborn, Head & Associates, Inc. 20 Foundry Street Concord, NH 03301
ATTN:	Jennifer Sanborn
Phone:	(603) 415-6137
Project Name:	IBM-POK V001 SSV
Project Number:	3463.00
Report Date:	01/29/14

Certifications & Approvals: NY (11627), CT (PH-0141), NH (2206), NJ NELAP (MA015), RI (LAO00299), PA (68-02089), LA NELAP (03090), FL (E87814), TX (T104704419), WA (C954), DOD (L2217.01), USDA (Permit #P330-11-00109), US Army Corps of Engineers.

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: IBM-POK V001 SSV
Project Number: 3463.00

Lab Number: L1402051
Report Date: 01/29/14

Alpha Sample ID	Client ID	Sample Location	Collection Date/Time
L1402051-01	EP2005/S	POUGHKEEPSIE, NY	01/16/14 14:29
L1402051-02	SSV2010/S	POUGHKEEPSIE, NY	01/16/14 16:53
L1402051-03	SSV2016/S	POUGHKEEPSIE, NY	01/22/14 13:05

Project Name: IBM-POK V001 SSV
Project Number: 3463.00

Lab Number: L1402051
Report Date: 01/29/14

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. Performance criteria for CAM and RCP methods allow for some LCS compound failures to occur and still be within method compliance. In these instances, the specific failures are not narrated but are noted in the associated QC table. This information is also incorporated in the Data Usability format for our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name:	IBM-POK V001 SSV	**Lab Number:**	L1402051
Project Number:	3463.00	**Report Date:**	01/29/14

Case Narrative (continued)

Volatile Organics in Air

Canisters were released from the laboratory on January 15, 2014. The canister certification results are provided as an addendum.

Samples L1402051-01 through -03: Prior to sample analysis, the canisters were pressurized with UHP Nitrogen due to canister size. The pressurization resulted in a dilution of the samples. The reporting limits have been elevated accordingly.

Samples L1402051-01 through -03 and WG667030-6 Duplicate have elevated detection limits due to the dilution required by the elevated concentrations of target compounds in the samples.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Christopher J. Anderson

Title: Technical Director/Representative Date: 01/29/14

AIR

Project Name: IBM-POK V001 SSV
Project Number: 3463.00
Lab Number: L1402051
Report Date: 01/29/14

SAMPLE RESULTS

Lab ID: L1402051-01 D
Client ID: EP2005/S
Sample Location: POUGHKEEPSIE, NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15-SIM
Analytical Date: 01/27/14 17:38
Analyst: MB

Date Collected: 01/16/14 14:29
Date Received: 01/23/14
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	5.09	--	ND	13.0	--		254.4
Chloroethane	ND	5.09	--	ND	13.4	--		254.4
1,1-Dichloroethene	ND	5.09	--	ND	20.2	--		254.4
trans-1,2-Dichloroethene	ND	5.09	--	ND	20.2	--		254.4
1,1-Dichloroethane	ND	5.09	--	ND	20.6	--		254.4
cis-1,2-Dichloroethene	167	5.09	--	662	20.2	--		254.4
Trichloroethene	7970	5.09	--	42800	27.4	--		254.4
Tetrachloroethene	26.2	5.09	--	178	34.5	--		254.4

Project Name: IBM-POK V001 SSV
Project Number: 3463.00
Lab Number: L1402051
Report Date: 01/29/14

SAMPLE RESULTS

Lab ID: L1402051-01 D
Client ID: EP2005/S
Sample Location: POUGHKEEPSIE, NY
Date Collected: 01/16/14 14:29
Date Received: 01/23/14
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**

Volatile Organics in Air by SIM - Mansfield Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	124		70-130
Bromofluorobenzene	85		70-130
Toluene-d8	88		70-130

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	104		60-140
bromochloromethane	120		60-140
chlorobenzene-d5	102		60-140

Project Name: IBM-POK V001 SSV
Project Number: 3463.00
Lab Number: L1402051
Report Date: 01/29/14

SAMPLE RESULTS

Lab ID: L1402051-02 D
Client ID: SSV2010/S
Sample Location: POUGHKEEPSIE, NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15-SIM
Analytical Date: 01/27/14 17:08
Analyst: MB

Date Collected: 01/16/14 16:53
Date Received: 01/23/14
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	67.8	--	ND	173	--		3392
Chloroethane	ND	67.8	--	ND	179	--		3392
1,1-Dichloroethene	ND	67.8	--	ND	269	--		3392
trans-1,2-Dichloroethene	ND	67.8	--	ND	269	--		3392
1,1-Dichloroethane	88.2	67.8	--	357	274	--		3392
cis-1,2-Dichloroethene	1300	67.8	--	5150	269	--		3392
Trichloroethene	108000	67.8	--	580000	364	--		3392
Tetrachloroethene	1140	67.8	--	7730	460	--		3392

Project Name: IBM-POK V001 SSV
Project Number: 3463.00
Lab Number: L1402051
Report Date: 01/29/14

SAMPLE RESULTS

Lab ID: L1402051-02 D
Client ID: SSV2010/S
Sample Location: POUGHKEEPSIE, NY
Date Collected: 01/16/14 16:53
Date Received: 01/23/14
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	119		70-130
Bromofluorobenzene	82		70-130
Toluene-d8	83		70-130

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	96		60-140
bromochloromethane	112		60-140
chlorobenzene-d5	96		60-140

Project Name: IBM-POK V001 SSV
Project Number: 3463.00
Lab Number: L1402051
Report Date: 01/29/14

SAMPLE RESULTS

Lab ID: L1402051-03 D
Client ID: SSV2016/S
Sample Location: POUGHKEEPSIE, NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15-SIM
Analytical Date: 01/27/14 15:14
Analyst: MB

Date Collected: 01/22/14 13:05
Date Received: 01/23/14
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.471	--	ND	1.20	--		23.57
Chloroethane	ND	0.471	--	ND	1.24	--		23.57
1,1-Dichloroethene	ND	0.471	--	ND	1.87	--		23.57
trans-1,2-Dichloroethene	ND	0.471	--	ND	1.87	--		23.57
1,1-Dichloroethane	ND	0.471	--	ND	1.91	--		23.57
cis-1,2-Dichloroethene	0.731	0.471	--	2.90	1.87	--		23.57
Trichloroethene	888	0.471	--	4770	2.53	--		23.57
Tetrachloroethene	2.03	0.471	--	13.8	3.19	--		23.57

Project Name: IBM-POK V001 SSV
Project Number: 3463.00
Lab Number: L1402051
Report Date: 01/29/14

SAMPLE RESULTS

Lab ID: L1402051-03 D
Client ID: SSV2016/S
Sample Location: POUGHKEEPSIE, NY
Date Collected: 01/22/14 13:05
Date Received: 01/23/14
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								

Surrogate	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,2-Dichloroethane-d4	116		70-130
Bromofluorobenzene	79		70-130
Toluene-d8	81		70-130

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	101		60-140
bromochloromethane	108		60-140
chlorobenzene-d5	100		60-140

Project Name: IBM-POK V001 SSV
Project Number: 3463.00
Lab Number: L1402051
Report Date: 01/29/14

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15-SIM
Analytical Date: 01/27/14 13:57

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab for sample(s): 01-03 Batch: WG667030-5								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
Chloroethane	ND	0.020	--	ND	0.053	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Project Name: IBM-POK V001 SSV
Project Number: 3463.00
Lab Number: L1402051
Report Date: 01/29/14

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15-SIM
Analytical Date: 01/27/14 13:57

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab for sample(s): 01-03 Batch: WG667030-5								

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	122		70-130
Bromofluorobenzene	82		70-130
Toluene-d8	85		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: IBM-POK V001 SSV

Project Number: 3463.00

Lab Number: L1402051

Report Date: 01/29/14

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-03 Batch: WG667030-3 WG667030-4								
Vinyl chloride	100		102		70-130	2		20
Chloroethane	101		100		70-130	1		20
1,1-Dichloroethene	112		109		70-130	3		20
trans-1,2-Dichloroethene	99		96		70-130	3		20
1,1-Dichloroethane	108		106		70-130	2		20
cis-1,2-Dichloroethene	121		119		70-130	2		20
Trichloroethene	101		100		70-130	1		20
Tetrachloroethene	85		84		70-130	1		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	119		116		70-130
Toluene-d8	84		85		70-130
Bromofluorobenzene	87		87		70-130

Lab Duplicate Analysis
Batch Quality Control

Project Name: IBM-POK V001 SSV
Project Number: 3463.00

Lab Number: L1402051
Report Date: 01/29/14

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG667030-6 QC Sample: L1402051-03 Client ID: SSV2016/S						
Vinyl chloride	ND	ND	ppbV	NC		20
Chloroethane	ND	ND	ppbV	NC		20
1,1-Dichloroethene	ND	ND	ppbV	NC		20
trans-1,2-Dichloroethene	ND	ND	ppbV	NC		20
1,1-Dichloroethane	ND	ND	ppbV	NC		20
cis-1,2-Dichloroethene	0.731	0.731	ppbV	0		20
Trichloroethene	888	959	ppbV	8		20
Tetrachloroethene	2.03	2.17	ppbV	7		20

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	116		123		70-130
Toluene-d8	81		84		70-130
Bromofluorobenzene	79		82		70-130

Project Name: IBM-POK V001 SSV

Lab Number: L1402051

Project Number: 3463.00

Report Date: 01/29/14

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Date Prepared	Bottle Order	Cleaning Batch ID	Can Leak Check	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Controler Leak Chk	Flow Out mL/min	Flow In mL/min	% RPD
L1402051-01	EP2005/S	0167	#90 SV	01/15/14	97613		-	-	-	Pass	162	169	4
L1402051-01	EP2005/S	829	1.0L Can	01/15/14	97613	L1401246-01	Pass	-29.2	-5.1	-	-	-	-
L1402051-02	SSV2010/S	0230	#90 SV	01/15/14	97613		-	-	-	Pass	157	162	3
L1402051-02	SSV2010/S	730	1.0L Can	01/15/14	97613	L1401246-03	Pass	-29.2	-4.8	-	-	-	-
L1402051-03	SSV2016/S	0353	#90 SV	01/15/14	97613		-	-	-	Pass	162	172	6
L1402051-03	SSV2016/S	751	1.0L Can	01/15/14	97613	L1401246-02	Pass	-29.2	-2.9	-	-	-	-

Project Name:

Lab Number: L1401246

Project Number: Not Specified

Report Date: 01/29/14

Air Canister Certification Results

Lab ID:	L1401246-01	Date Collected:	01/13/14 16:26
Client ID:	CAN 829 FC 167	Date Received:	01/13/14
Sample Location:		Field Prep:	Not Specified
Matrix:	Air		
Anaytical Method:	48,TO-15-SIM		
Analytical Date:	01/13/14 17:41		
Analyst:	MB		

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
Chloroethane	ND	0.020	--	ND	0.053	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	88		60-140
bromochloromethane	105		60-140
chlorobenzene-d5	101		60-140

Project Name:

Lab Number: L1401246

Project Number: Not Specified

Report Date: 01/29/14

Air Canister Certification Results

Lab ID:	L1401246-02	Date Collected:	01/13/14 16:26
Client ID:	CAN 751 FC 353	Date Received:	01/13/14
Sample Location:		Field Prep:	Not Specified
Matrix:	Air		
Anaytical Method:	48,TO-15-SIM		
Analytical Date:	01/13/14 18:12		
Analyst:	MB		

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
Chloroethane	ND	0.020	--	ND	0.053	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	90		60-140
bromochloromethane	113		60-140
chlorobenzene-d5	105		60-140

Project Name:

Lab Number: L1401246

Project Number: Not Specified

Report Date: 01/29/14

Air Canister Certification Results

Lab ID:	L1401246-03	Date Collected:	01/13/14 16:26
Client ID:	CAN 730 FC 230	Date Received:	01/13/14
Sample Location:		Field Prep:	Not Specified
Matrix:	Air		
Anaytical Method:	48,TO-15-SIM		
Analytical Date:	01/13/14 18:42		
Analyst:	MB		

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
Chloroethane	ND	0.020	--	ND	0.053	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	97		60-140
bromochloromethane	108		60-140
chlorobenzene-d5	97		60-140

Project Name: IBM-POK V001 SSV
Project Number: 3463.00

Lab Number: L1402051
Report Date: 01/29/14

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Reagent H2O Preserved Vials Frozen on: NA

Cooler Information **Custody Seal**
Cooler
N/A Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1402051-01A	Canister - 1 Liter	N/A	N/A		Y	Absent	NYSDEC-TO15-SIM(30)
L1402051-02A	Canister - 1 Liter	N/A	N/A		Y	Absent	NYSDEC-TO15-SIM(30)
L1402051-03A	Canister - 1 Liter	N/A	N/A		Y	Absent	NYSDEC-TO15-SIM(30)

*Values in parentheses indicate holding time in days

Project Name:	IBM-POK V001 SSV	**Lab Number:**	L1402051
Project Number:	3463.00	**Report Date:**	01/29/14

GLOSSARY

Acronyms

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NI - Not Ignitable.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

A - Spectra identified as "Aldol Condensation Product".

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit.

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

Report Format: Data Usability Report

Project Name:	IBM-POK V001 SSV	**Lab Number:**	L1402051
Project Number:	3463.00	**Report Date:**	01/29/14

Data Qualifiers

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report

Project Name:	IBM-POK V001 SSV	**Lab Number:**	L1402051
Project Number:	3463.00	**Report Date:**	01/29/14

REFERENCES

48 Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air. Second Edition. EPA/625/R-96/010b, January 1999.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

Last revised December 11, 2013

The following analytes are not included in our NELAP Scope of Accreditation:

Westborough Facility
EPA 524.2: Acetone, 2-Butanone (Methyl ethyl ketone (MEK)), Tert-butyl alcohol, 2-Hexanone, Tetrahydrofuran, 1,3,5-Trichlorobenzene, 4-Methyl-2-pentanone (MIBK), Carbon disulfide, Diethyl ether.
EPA 8260C: 1,2,4,5-Tetramethylbenzene, 4-Ethyltoluene, Iodomethane (methyl iodide), Methyl methacrylate, Azobenzene.
EPA 8330A/B: PETN, Picric Acid, Nitroglycerine, 2,6-DANT, 2,4-DANT.
EPA 8270D: 1-Methylnaphthalene, Dimethylnaphthalene,1,4-Diphenylhydrazine.
EPA 625: 4-Chloroaniline, 4-Methylphenol.
SM4500: Soil: Total Phosphorus, TKN, NO2, NO3.
EPA 9071: Total Petroleum Hydrocarbons, Oil & Grease.

Mansfield Facility
EPA 8270D: Biphenyl.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

The following analytes are included in our Massachusetts DEP Scope of Accreditation, Westborough Facility:

Drinking Water
EPA 200.8: Sb,As,Ba,Be,Cd,Cr,Cu,Pb,Ni,Se,Tl; **EPA 200.7**: Ba,Be,Ca,Cd,Cr,Cu,Na; **EPA 245.1:** Mercury;
EPA 300.0: Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, Enterolert-QT.**

Non-Potable Water
EPA 200.8: Al,Sb,As,Be,Cd,Cr,Cu,Pb,Mn,Ni,Se,Ag,Tl,Zn;
EPA 200.7: Al,Sb,As,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Mo,Ni,K,Se,Ag,Na,Sr,Ti,Tl,V,Zn;
EPA 245.1, SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2340B, SM2320B, SM4500CL-E, SM4500F-BC, SM426C, SM4500NH3-BH, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500NH3-BC-NES, EPA 351.1, SM4500P-E, SM4500P-B, E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, SM14 510AC, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9222D-MF**.

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

AIR ANALYSIS

PAGE 1 OF 1

CHAIN OF CUSTODY

320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 1/23/14

ALPHA Job #: L1402051

Client Information

Client: Sanborn Head + Assoc
Address: 20 Foundry St. Concord NH 03301
Phone: 603-229-1900
Fax: —
Email: jsanborn@sanbornhead.com
☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: IBM-POK B001 SSV
Project Location: Poughkeepsie, NY
Project #: 3463.00/205
Project Manager: J. Sanborn
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due: 1/29/14 Time:

Report Information - Data Deliverables

☐ FAX
☒ ADEx
Criteria Checker: _____
(Default based on Regulatory Criteria Indicated)
Other Formats: _____
☐ EMAIL (standard pdf report)
☐ Additional Deliverables: _____
Report to: (if different than Project Manager) _____

Billing Information

☒ Same as Client info PO #: 3463.00

Regulatory Requirements/Report Limits

State/Fed	Program	Criteria

Other Project Specific Requirements/Comments:

* Site-specific analyte list

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	ID Can	ID - Flow Controller	TO-14A by TO-15	TO-15	TO-15 SIM *	APH	FIXED GASES	TO-13A	TO-4 / TO-10	Sample Comments (i.e. PID)
02051.01	EP2005/S	1/16/14	14:25	14:29	-29.6	-5	SV	REW	1L	829	167			X					
.02	SSV 2010/S	1/16/14	16:48	16:53	-29.8	-5	SV	REW	1L	730	230			X					High concentrations expected
.03	SSV 2016/S	1/22/14	13:00	13:05	-29.05	-3.39	SV	MTS	1L	751	353			X					

ANALYSIS

*SAMPLE MATRIX CODES

AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

Container Type: CS

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Relinquished By:	Date/Time	Received By:	Date/Time:
	1/23/14 1055		1/23/14 1055
	1/23/14 1215		1/23-14 1801
	1/23-14 23:50		1/23/14 23:50
	1/24/14 03:00	Mansfield Lab	1/24/14 03:00

Form No: 101-02 (19-Jun-09)

ANALYTICAL REPORT

Lab Number:	L1405566
Client:	Envirotest Laboratories Inc. 20 Foundry Street Concord, NH 03301
ATTN:	Jennifer Sanborn
Phone:	(603) 415-6137
Project Name:	B/003 VAPOR EXTRACTION
Project Number:	3463.01
Report Date:	03/21/14

Certifications & Approvals: NY (11627), CT (PH-0141), NH (2206), NJ NELAP (MA015), RI (LAO00299), PA (68-02089), LA NELAP (03090), FL (E87814), TX (T104704419), WA (C954), DOD (L2217.01), USDA (Permit #P330-11-00109), US Army Corps of Engineers.

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: B/003 VAPOR EXTRACTION
Project Number: 3463.01

Lab Number: L1405566
Report Date: 03/21/14

Alpha Sample ID	Client ID	Sample Location	Collection Date/Time
L1405566-01	SV2022/S	POUGHKEEPSIE, NY	03/12/14 14:17

Project Name: B/003 VAPOR EXTRACTION **Lab Number:** L1405566
Project Number: 3463.01 **Report Date:** 03/21/14

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. Performance criteria for CAM and RCP methods allow for some LCS compound failures to occur and still be within method compliance. In these instances, the specific failures are not narrated but are noted in the associated QC table. This information is also incorporated in the Data Usability format for our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name:	B/003 VAPOR EXTRACTION	**Lab Number:**	L1405566
Project Number:	3463.01	**Report Date:**	03/21/14

Case Narrative (continued)

Volatile Organics in Air

Canisters were released from the laboratory on February 25, 2014. The canister certification results are provided as an addendum.

Sample L1405566-01: Prior to sample analysis, the canister was pressurized with UHP Nitrogen due to canister size. The pressurization resulted in a dilution of the sample. The reporting limits have been elevated accordingly.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Christopher J. Anderson

Title: Technical Director/Representative Date: 03/21/14

AIR

Project Name: B/003 VAPOR EXTRACTION
Project Number: 3463.01
Lab Number: L1405566
Report Date: 03/21/14

SAMPLE RESULTS

Lab ID: L1405566-01 D
Client ID: SV2022/S
Sample Location: POUGHKEEPSIE, NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15-SIM
Analytical Date: 03/21/14 02:12
Analyst: RY

Date Collected: 03/12/14 14:17
Date Received: 03/12/14
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.050	--	ND	0.128	--		2.504
Chloroethane	ND	0.050	--	ND	0.132	--		2.504
1,1-Dichloroethene	ND	0.050	--	ND	0.199	--		2.504
trans-1,2-Dichloroethene	0.055	0.050	--	0.218	0.199	--		2.504
1,1-Dichloroethane	0.083	0.050	--	0.334	0.203	--		2.504
cis-1,2-Dichloroethene	0.488	0.050	--	1.93	0.199	--		2.504
Trichloroethene	80.0	0.050	--	430	0.269	--		2.504
Tetrachloroethene	2.19	0.050	--	14.9	0.340	--		2.504

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	98		60-140
bromochloromethane	114		60-140
chlorobenzene-d5	99		60-140

Project Name: B/003 VAPOR EXTRACTION
Project Number: 3463.01
Lab Number: L1405566
Report Date: 03/21/14

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15-SIM
Analytical Date: 03/20/14 13:45

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab for sample(s): 01 Batch: WG676797-4								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
Chloroethane	ND	0.020	--	ND	0.053	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Lab Control Sample Analysis

Batch Quality Control

Project Name: B/003 VAPOR EXTRACTION

Project Number: 3463.01

Lab Number: L1405566

Report Date: 03/21/14

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01 Batch: WG676797-3								
Propylene	127		-		70-130	-		25
Dichlorodifluoromethane	107		-		70-130	-		25
Chloromethane	111		-		70-130	-		25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	119		-		70-130	-		25
Vinyl chloride	117		-		70-130	-		25
1,3-Butadiene	129		-		70-130	-		25
Bromomethane	119		-		70-130	-		25
Chloroethane	115		-		70-130	-		25
Ethyl Alcohol	115		-		70-130	-		25
Vinyl bromide	123		-		70-130	-		25
Acetone	116		-		70-130	-		25
Trichlorofluoromethane	119		-		70-130	-		25
iso-Propyl Alcohol	130		-		70-130	-		25
Acrylonitrile	108		-		70-130	-		25
1,1-Dichloroethene	114		-		70-130	-		25
Methylene chloride	107		-		70-130	-		25
3-Chloropropene	117		-		70-130	-		25
Carbon disulfide	111		-		70-130	-		25
1,1,2-Trichloro-1,2,2-Trifluoroethane	115		-		70-130	-		25
Halothane	108		-		70-130	-		25
trans-1,2-Dichloroethene	106		-		70-130	-		25

Lab Control Sample Analysis

Batch Quality Control

Project Name: B/003 VAPOR EXTRACTION

Project Number: 3463.01

Lab Number: L1405566

Report Date: 03/21/14

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01 Batch: WG676797-3								
1,1-Dichloroethane	110		-		70-130	-		25
Methyl tert butyl ether	115		-		70-130	-		25
Vinyl acetate	**138**	Q	-		70-130	-		25
2-Butanone	100		-		70-130	-		25
cis-1,2-Dichloroethene	114		-		70-130	-		25
Ethyl Acetate	112		-		70-130	-		25
Chloroform	100		-		70-130	-		25
Tetrahydrofuran	125		-		70-130	-		25
1,2-Dichloroethane	118		-		70-130	-		25
n-Hexane	78		-		70-130	-		25
1,1,1-Trichloroethane	97		-		70-130	-		25
Benzene	95		-		70-130	-		25
Carbon tetrachloride	98		-		70-130	-		25
Cyclohexane	97		-		70-130	-		25
1,2-Dichloropropane	98		-		70-130	-		25
Bromodichloromethane	98		-		70-130	-		25
1,4-Dioxane	101		-		70-130	-		25
Trichloroethene	100		-		70-130	-		25
2,2,4-Trimethylpentane	98		-		70-130	-		25
cis-1,3-Dichloropropene	108		-		70-130	-		25
4-Methyl-2-pentanone	108		-		70-130	-		25

Lab Control Sample Analysis

Batch Quality Control

Project Name: B/003 VAPOR EXTRACTION

Project Number: 3463.01

Lab Number: L1405566

Report Date: 03/21/14

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01 Batch: WG676797-3								
trans-1,3-Dichloropropene	96		-		70-130	-		25
1,1,2-Trichloroethane	101		-		70-130	-		25
Toluene	104		-		70-130	-		25
2-Hexanone	117		-		70-130	-		25
Dibromochloromethane	103		-		70-130	-		25
1,2-Dibromoethane	109		-		70-130	-		25
Tetrachloroethene	106		-		70-130	-		25
1,1,1,2-Tetrachloroethane	101		-		70-130	-		25
Chlorobenzene	106		-		70-130	-		25
Ethylbenzene	107		-		70-130	-		25
p/m-Xylene	108		-		70-130	-		25
Bromoform	99		-		70-130	-		25
Styrene	117		-		70-130	-		25
1,1,2,2-Tetrachloroethane	106		-		70-130	-		25
o-Xylene	107		-		70-130	-		25
Isopropylbenzene	105		-		70-130	-		25
4-Ethyltoluene	102		-		70-130	-		25
1,3,5-Trimethylbenzene	108		-		70-130	-		25
1,2,4-Trimethylbenzene	111		-		70-130	-		25
Benzyl chloride	102		-		70-130	-		25
1,3-Dichlorobenzene	113		-		70-130	-		25

Lab Control Sample Analysis

Batch Quality Control

Project Name: B/003 VAPOR EXTRACTION

Project Number: 3463.01

Lab Number: L1405566

Report Date: 03/21/14

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01 Batch: WG676797-3								
1,4-Dichlorobenzene	109		-		70-130	-		25
sec-Butylbenzene	105		-		70-130	-		25
p-Isopropyltoluene	100		-		70-130	-		25
1,2-Dichlorobenzene	111		-		70-130	-		25
n-Butylbenzene	112		-		70-130	-		25
1,2,4-Trichlorobenzene	127		-		70-130	-		25
Naphthalene	121		-		70-130	-		25
1,2,3-Trichlorobenzene	122		-		70-130	-		25
Hexachlorobutadiene	117		-		70-130	-		25

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	96				70-130
Toluene-d8	104				70-130
Bromofluorobenzene	104				70-130

Lab Duplicate Analysis
Batch Quality Control

Project Name: B/003 VAPOR EXTRACTION
Project Number: 3463.01

Lab Number: L1405566
Report Date: 03/21/14

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG676797-5 QC Sample: L1405338-01 Client ID: DUP Sample						
Dichlorodifluoromethane	0.501	0.637	ppbV	24		25
Chloromethane	0.595	0.619	ppbV	4		25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	ND	ppbV	NC		25
Vinyl chloride	ND	ND	ppbV	NC		25
1,3-Butadiene	0.130	0.131	ppbV	1		25
Bromomethane	ND	ND	ppbV	NC		25
Chloroethane	0.031	0.034	ppbV	9		25
Ethyl Alcohol	1200E	1240E	ppbV	3		25
Vinyl bromide	ND	ND	ppbV	NC		25
Acetone	9.38	9.62	ppbV	3		25
Trichlorofluoromethane	3.49	3.62	ppbV	4		25
iso-Propyl Alcohol	50.3E	51.7E	ppbV	3		25
1,1-Dichloroethene	ND	ND	ppbV	NC		25
Methylene chloride	24.1	24.9	ppbV	3		25
3-Chloropropene	ND	ND	ppbV	NC		25
Carbon disulfide	ND	ND	ppbV	NC		25
1,1,2-Trichloro-1,2,2-Trifluoroethane	0.063	0.066	ppbV	5		25
trans-1,2-Dichloroethene	0.274	0.317	ppbV	15		25
1,1-Dichloroethane	ND	ND	ppbV	NC		25

Lab Duplicate Analysis
Batch Quality Control

Project Name: B/003 VAPOR EXTRACTION
Project Number: 3463.01

Lab Number: L1405566
Report Date: 03/21/14

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG676797-5 QC Sample: L1405338-01 Client ID: DUP Sample					
Methyl tert butyl ether	ND	ND	ppbV	NC	25
2-Butanone	5.28	5.36	ppbV	2	25
cis-1,2-Dichloroethene	0.060	0.062	ppbV	3	25
Ethyl Acetate	4.38	4.52	ppbV	3	25
Chloroform	0.100	0.104	ppbV	4	25
Tetrahydrofuran	ND	ND	ppbV	NC	25
1,2-Dichloroethane	ND	ND	ppbV	NC	25
n-Hexane	0.335	0.307	ppbV	9	25
1,1,1-Trichloroethane	ND	ND	ppbV	NC	25
Benzene	0.392	0.356	ppbV	10	25
Carbon tetrachloride	0.076	0.071	ppbV	7	25
Cyclohexane	ND	ND	ppbV	NC	25
1,2-Dichloropropane	ND	ND	ppbV	NC	25
Bromodichloromethane	ND	ND	ppbV	NC	25
1,4-Dioxane	ND	ND	ppbV	NC	25
Trichloroethene	0.322	0.298	ppbV	8	25
2,2,4-Trimethylpentane	ND	ND	ppbV	NC	25
Heptane	0.575	0.526	ppbV	9	25
cis-1,3-Dichloropropene	ND	ND	ppbV	NC	25

Lab Duplicate Analysis
Batch Quality Control

Project Name: B/003 VAPOR EXTRACTION
Project Number: 3463.01

Lab Number: L1405566
Report Date: 03/21/14

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG676797-5 QC Sample: L1405338-01 Client ID: DUP Sample					
4-Methyl-2-pentanone	ND	ND	ppbV	NC	25
trans-1,3-Dichloropropene	ND	ND	ppbV	NC	25
1,1,2-Trichloroethane	ND	ND	ppbV	NC	25
Toluene	1.81	1.76	ppbV	3	25
2-Hexanone	ND	ND	ppbV	NC	25
Dibromochloromethane	ND	ND	ppbV	NC	25
1,2-Dibromoethane	ND	ND	ppbV	NC	25
Tetrachloroethene	0.056	0.054	ppbV	4	25
Chlorobenzene	ND	ND	ppbV	NC	25
Ethylbenzene	0.318	0.311	ppbV	2	25
p/m-Xylene	1.20	1.18	ppbV	2	25
Bromoform	ND	ND	ppbV	NC	25
Styrene	0.081	0.081	ppbV	0	25
1,1,2,2-Tetrachloroethane	ND	ND	ppbV	NC	25
o-Xylene	0.493	0.478	ppbV	3	25
4-Ethyltoluene	0.051	0.049	ppbV	4	25
1,3,5-Trimethylbenzene	0.060	0.060	ppbV	0	25
1,2,4-Trimethylbenzene	0.192	0.187	ppbV	3	25
Benzyl chloride	ND	ND	ppbV	NC	25

Lab Duplicate Analysis
Batch Quality Control

Project Name: B/003 VAPOR EXTRACTION
Project Number: 3463.01

Lab Number: L1405566
Report Date: 03/21/14

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG676797-5 QC Sample: L1405338-01 Client ID: DUP Sample					
1,3-Dichlorobenzene	ND	ND	ppbV	NC	25
1,4-Dichlorobenzene	ND	ND	ppbV	NC	25
1,2-Dichlorobenzene	ND	ND	ppbV	NC	25
1,2,4-Trichlorobenzene	ND	ND	ppbV	NC	25
Hexachlorobutadiene	ND	ND	ppbV	NC	25
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG676797-5 QC Sample: L1405338-01 Client ID: DUP Sample					
Ethyl Alcohol	1340	1370	ppbV	13	25
iso-Propyl Alcohol	45.6	47.1	ppbV	7	25

Project Name: B/003 VAPOR EXTRACTION

Lab Number: L1405566

Project Number: 3463.01

Report Date: 03/21/14

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Date Prepared	Bottle Order	Cleaning Batch ID	Can Leak Check	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Controler Leak Chk	Flow Out mL/min	Flow In mL/min	% RPD
L1405566-01	SV2022/S	0524	SV200	02/25/14	98953		-	-	-	Pass	214	220	3
L1405566-01	SV2022/S	778	1.0L Can	02/25/14	98953	L1403274-01	Pass	-28.9	-3.9	-	-	-	-

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1403274
Report Date: 03/21/14

Air Canister Certification Results

Lab ID: L1403274-01
Client ID: CAN 778 SHELF 8
Sample Location:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 02/12/14 16:13
Analyst: MB

Date Collected: 02/11/14 17:04
Date Received: 02/12/14
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethanol	ND	2.50	--	ND	4.71	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
Isopropanol	ND	0.500	--	ND	1.23	--		1
Acrylonitrile	ND	0.200	--	ND	0.434	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Tertiary butyl Alcohol	ND	0.500	--	ND	1.52	--		1

Project Name: BATCH CANISTER CERTIFICATION **Lab Number:** L1403274

Project Number: CANISTER QC BAT **Report Date:** 03/21/14

Air Canister Certification Results

Lab ID: L1403274-01 Date Collected: 02/11/14 17:04

Client ID: CAN 778 SHELF 8 Date Received: 02/12/14

Sample Location: Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Methylene chloride	ND	1.00	--	ND	3.47	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
Freon-113	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	0.200	--	ND	0.704	--		1
2-Butanone	ND	0.200	--	ND	0.590	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.200	--	ND	0.590	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Diisopropyl ether	ND	0.200	--	ND	0.836	--		1
tert-Butyl Ethyl Ether	ND	0.200	--	ND	0.836	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
tert-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1403274
Report Date: 03/21/14

Air Canister Certification Results

Lab ID: L1403274-01
Client ID: CAN 778 SHELF 8
Sample Location:
Date Collected: 02/11/14 17:04
Date Received: 02/12/14
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.200	--	ND	0.820	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1
Nonane	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1403274
Report Date: 03/21/14

Air Canister Certification Results

Lab ID: L1403274-01
Client ID: CAN 778 SHELF 8
Sample Location:
Date Collected: 02/11/14 17:04
Date Received: 02/12/14
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
2-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
4-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1

	Results	**Qualifier**	**Units**	**RDL**	**Dilution Factor**
Tentatively Identified Compounds					

No Tentatively Identified Compounds

Project Name: BATCH CANISTER CERTIFICATION **Lab Number:** L1403274

Project Number: CANISTER QC BAT **Report Date:** 03/21/14

Air Canister Certification Results

Lab ID: L1403274-01 Date Collected: 02/11/14 17:04

Client ID: CAN 778 SHELF 8 Date Received: 02/12/14

Sample Location: Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-Difluorobenzene	79		60-140
Bromochloromethane	84		60-140
chlorobenzene-d5	82		60-140

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1403274
Report Date: 03/21/14

Air Canister Certification Results

Lab ID: L1403274-01
Client ID: CAN 778 SHELF 8
Sample Location:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 02/12/14 16:13
Analyst: MB

Date Collected: 02/11/14 17:04
Date Received: 02/12/14
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Dichlorodifluoromethane	ND	0.050	--	ND	0.247	--		1
Chloromethane	ND	0.500	--	ND	1.03	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.020	--	ND	0.053	--		1
Acetone	ND	2.00	--	ND	4.75	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	1.00	--	ND	3.47	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
Halothane	ND	0.050	--	ND	0.404	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.020	--	ND	0.072	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1403274
Report Date: 03/21/14

Air Canister Certification Results

Lab ID: L1403274-01
Client ID: CAN 778 SHELF 8
Sample Location:
Date Collected: 02/11/14 17:04
Date Received: 02/12/14
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.050	--	ND	0.188	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.020	--	ND	0.092	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.500	--	ND	2.46	--		1
4-Ethyltoluene	ND	0.020	--	ND	0.098	--		1
1,3,5-Trimethybenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
sec-Butylbenzene	ND	0.500	--	ND	2.74	--		1
p-Isopropyltoluene	ND	0.500	--	ND	2.74	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1403274
Report Date: 03/21/14

Air Canister Certification Results

Lab ID: L1403274-01
Client ID: CAN 778 SHELF 8
Sample Location:
Date Collected: 02/11/14 17:04
Date Received: 02/12/14
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
n-Butylbenzene	ND	0.500	--	ND	2.74	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	80		60-140
bromochloromethane	85		60-140
chlorobenzene-d5	83		60-140

Project Name: B/003 VAPOR EXTRACTION
Project Number: 3463.01

Lab Number: L1405566
Report Date: 03/21/14

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Reagent H2O Preserved Vials Frozen on: NA

Cooler Information **Custody Seal**
Cooler
N/A Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1405566-01A	Canister - 1 Liter	N/A	N/A		Y	Absent	TO15-SIM(30)

*Values in parentheses indicate holding time in days

Project Name:	B/003 VAPOR EXTRACTION	**Lab Number:**	L1405566
Project Number:	3463.01	**Report Date:**	03/21/14

GLOSSARY

Acronyms

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NI - Not Ignitable.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

A - Spectra identified as "Aldol Condensation Product".

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit.

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

Report Format: Data Usability Report

Project Name:	B/003 VAPOR EXTRACTION	**Lab Number:**	L1405566
Project Number:	3463.01	**Report Date:**	03/21/14

Data Qualifiers

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report

REFERENCES

48 Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air. Second Edition. EPA/625/R-96/010b, January 1999.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

Last revised December 11, 2013

The following analytes are not included in our NELAP Scope of Accreditation:

Westborough Facility
EPA 524.2: Acetone, 2-Butanone (Methyl ethyl ketone (MEK)), Tert-butyl alcohol, 2-Hexanone, Tetrahydrofuran, 1,3,5-Trichlorobenzene, 4-Methyl-2-pentanone (MIBK), Carbon disulfide, Diethyl ether.
EPA 8260C: 1,2,4,5-Tetramethylbenzene, 4-Ethyltoluene, Iodomethane (methyl iodide), Methyl methacrylate, Azobenzene.
EPA 8330A/B: PETN, Picric Acid, Nitroglycerine, 2,6-DANT, 2,4-DANT.
EPA 8270D: 1-Methylnaphthalene, Dimethylnaphthalene,1,4-Diphenylhydrazine.
EPA 625: 4-Chloroaniline, 4-Methylphenol.
SM4500: Soil: Total Phosphorus, TKN, NO2, NO3.
EPA 9071: Total Petroleum Hydrocarbons, Oil & Grease.

Mansfield Facility
EPA 8270D: Biphenyl.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

The following analytes are included in our Massachusetts DEP Scope of Accreditation, Westborough Facility:

Drinking Water
EPA 200.8: Sb,As,Ba,Be,Cd,Cr,Cu,Pb,Ni,Se,Tl; **EPA 200.7**: Ba,Be,Ca,Cd,Cr,Cu,Na; **EPA 245.1:** Mercury;
EPA 300.0: Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, Enterolert-QT.**

Non-Potable Water
EPA 200.8: Al,Sb,As,Be,Cd,Cr,Cu,Pb,Mn,Ni,Se,Ag,Tl,Zn;
EPA 200.7: Al,Sb,As,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Mo,Ni,K,Se,Ag,Na,Sr,Ti,Tl,V,Zn;
EPA 245.1, SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2340B, SM2320B, SM4500CL-E, SM4500F-BC, SM426C, SM4500NH3-BH, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500NH3-BC-NES, EPA 351.1, SM4500P-E, SM4500P-B, E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, SM14 510AC, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9222D-MF**.

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

L1405566

AIR ANALYSIS

PAGE 2 OF 2

CHAIN OF CUSTODY

320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 3/13/14

ALPHA Job #: ~~L1405229~~

Client Information

Client: Sanborn Head + Assoc
Address: 20 Foundry St.
Concord NH 03301
Phone: 603-229-1900
Fax:
Email: jsanborn@sanbornhead.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: IBM-POK
Project Location: Poughkeepsie NY
Project #: 3463.00
Project Manager: Jenn Sanborn
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due: Time:

Report Information - Data Deliverables

☐ FAX
☒ ADEx
Criteria Checker:
(Default based on Regulatory Criteria Indicated)
Other Formats:
☐ EMAIL (standard pdf report)
☐ Additional Deliverables:
Report to: (if different than Project Manager)

Billing Information

☒ Same as Client info PO #: 3463.00

Regulatory Requirements/Report Limits

State/Fed	Program	Criteria

Other Project Specific Requirements/Comments:

* Site-specific analyte list (B003)

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	I D Can	I D - Flow Controller	TO-14A by TO-15	TO-15	TO-15 SIM *	APH	FIXED GASES	TO-13A	TO-4 / TO-10	Sample Comments (i.e. PID)
-09	IA7003/S	3/11/14	11:52	18:14	-29.51	-3.62	AA	HDE	2.7	236	374			X					
-10	FD7003/S	3/11/14	11:52	18:14	-29.53	-9.77	"	"	"	105	491			"					
-11	AA7001/S	3/11/14	12:05	20:34	-29.36	-9.92	"	"	"	336	445			"					
-01-12	SSV2022/G	3/12/14	14:12	14:17	-28.62	-3.83	SV	REW	1L	778	524			X					

ANALYSIS

*SAMPLE MATRIX CODES
AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

Container Type: 1L

Relinquished By:	Date/Time	Received By:	Date/Time:
Rep	3/12/14 1438	Steve Brunini	3/12/14 14:38
Steve Brunini	3-12-14 1823	Tom Tobin	3-12-14 1823
Tom Tobin	3-12-14		3-13-14 0900

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 101-02 (19-Jun-09)

PILOT TEST SAMPLING

ANALYTICAL REPORT

Lab Number:	L1403575
Client:	Sanborn, Head & Associates, Inc. 20 Foundry Street Concord, NH 03301
ATTN:	Seth Soos
Phone:	(603) 229-1900
Project Name:	IBM-POK
Project Number:	3463.00.206
Report Date:	02/21/14

Certifications & Approvals: NY (11627), CT (PH-0141), NH (2206), NJ NELAP (MA015), RI (LAO00299), PA (68-02089), LA NELAP (03090), FL (E87814), TX (T104704419), WA (C954), DOD (L2217.01), USDA (Permit #P330-11-00109), US Army Corps of Engineers.

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: IBM-POK
Project Number: 3463.00.206

Lab Number: L1403575
Report Date: 02/21/14

Alpha Sample ID	Client ID	Sample Location	Collection Date/Time
L1403575-01	EP2012/G	NY	02/03/14 14:20
L1403575-02	EP2010/G	NY	02/03/14 15:40
L1403575-03	EP2003/G	NY	02/03/14 19:20
L1403575-04	EP2004/G	NY	02/03/14 20:50
L1403575-05	EP2002/G	NY	02/04/14 10:20
L1403575-06	EP2008/G	NY	02/04/14 12:20
L1403575-07	EP2009/G	NY	02/04/14 13:40
L1403575-08	EP2007/G	NY	02/04/14 15:00
L1403575-09	EP2006/G	NY	02/04/14 16:05
L1403575-10	EP2011/G	NY	02/12/14 20:56
L1403575-11	EP2013/G	NY	02/12/14 21:55

Project Name: IBM-POK
Project Number: 3463.00.206

Lab Number: L1403575
Report Date: 02/21/14

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. Performance criteria for CAM and RCP methods allow for some LCS compound failures to occur and still be within method compliance. In these instances, the specific failures are not narrated but are noted in the associated QC table. This information is also incorporated in the Data Usability format for our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: IBM-POK
Project Number: 3463.00.206
Lab Number: L1403575
Report Date: 02/21/14

Case Narrative (continued)

Volatile Organics in Air

Canisters were released from the laboratory on February 3, 2014. The canister certification results are provided as an addendum.

Samples L1403575-01 through -11: Prior to sample analysis, the canisters were pressurized with UHP Nitrogen due to canister size. The pressurization resulted in a dilution of the samples. The reporting limits have been elevated accordingly.

Samples L1403575-01 through -11 have elevated detection limits due to the dilution required by the elevated concentrations of target compounds in the samples.

Samples L1403575-05 and -07 were diluted and re-analyzed to quantify the samples within the calibration range. The results should be considered estimated, and are qualified with an E flag, for any compound that exceeded the calibration range in the initial analysis. The re-analysis was performed only for the compound that exceeded the calibration range.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Christopher J. Anderson

Title: Technical Director/Representative Date: 02/21/14

AIR

Project Name: IBM-POK
Project Number: 3463.00.206

Lab Number: L1403575
Report Date: 02/21/14

SAMPLE RESULTS

Lab ID: L1403575-01 D
Client ID: EP2012/G
Sample Location: NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15-SIM
Analytical Date: 02/19/14 23:11
Analyst: RY

Date Collected: 02/03/14 14:20
Date Received: 02/17/14
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	2.84	--	ND	7.26	--		142.2
Chloroethane	ND	2.84	--	ND	7.49	--		142.2
1,1-Dichloroethene	ND	2.84	--	ND	11.3	--		142.2
trans-1,2-Dichloroethene	ND	2.84	--	ND	11.3	--		142.2
1,1-Dichloroethane	5.69	2.84	--	23.0	11.5	--		142.2
cis-1,2-Dichloroethene	65.0	2.84	--	258	11.3	--		142.2
Trichloroethene	5110	2.84	--	27500	15.3	--		142.2
Tetrachloroethene	135	2.84	--	915	19.3	--		142.2

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	89		60-140
bromochloromethane	93		60-140
chlorobenzene-d5	94		60-140

Project Name: IBM-POK
Project Number: 3463.00.206

Lab Number: L1403575
Report Date: 02/21/14

SAMPLE RESULTS

Lab ID: L1403575-02 D
Client ID: EP2010/G
Sample Location: NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15-SIM
Analytical Date: 02/19/14 19:28
Analyst: RY

Date Collected: 02/03/14 15:40
Date Received: 02/17/14
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.172	--	ND	0.440	--		8.626
Chloroethane	ND	0.172	--	ND	0.454	--		8.626
1,1-Dichloroethene	ND	0.172	--	ND	0.682	--		8.626
trans-1,2-Dichloroethene	ND	0.172	--	ND	0.682	--		8.626
1,1-Dichloroethane	ND	0.172	--	ND	0.696	--		8.626
cis-1,2-Dichloroethene	0.595	0.172	--	2.36	0.682	--		8.626
Trichloroethene	244	0.172	--	1310	0.924	--		8.626
Tetrachloroethene	1.81	0.172	--	12.3	1.17	--		8.626

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	96		60-140
bromochloromethane	99		60-140
chlorobenzene-d5	99		60-140

Project Name: IBM-POK
Project Number: 3463.00.206

Lab Number: L1403575
Report Date: 02/21/14

SAMPLE RESULTS

Lab ID: L1403575-03 D
Client ID: EP2003/G
Sample Location: NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15-SIM
Analytical Date: 02/19/14 20:32
Analyst: RY

Date Collected: 02/03/14 19:20
Date Received: 02/17/14
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.162	--	ND	0.414	--		8.076
Chloroethane	ND	0.162	--	ND	0.427	--		8.076
1,1-Dichloroethene	ND	0.162	--	ND	0.642	--		8.076
trans-1,2-Dichloroethene	ND	0.162	--	ND	0.642	--		8.076
1,1-Dichloroethane	0.178	0.162	--	0.720	0.656	--		8.076
cis-1,2-Dichloroethene	0.743	0.162	--	2.95	0.642	--		8.076
Trichloroethene	264	0.162	--	1420	0.871	--		8.076
Tetrachloroethene	5.94	0.162	--	40.3	1.10	--		8.076

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	92		60-140
bromochloromethane	95		60-140
chlorobenzene-d5	96		60-140

Project Name: IBM-POK
Project Number: 3463.00.206
Lab Number: L1403575
Report Date: 02/21/14

SAMPLE RESULTS

Lab ID: L1403575-04 D
Client ID: EP2004/G
Sample Location: NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15-SIM
Analytical Date: 02/19/14 21:04
Analyst: RY

Date Collected: 02/03/14 20:50
Date Received: 02/17/14
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.533	--	ND	1.36	--		26.67
Chloroethane	ND	0.533	--	ND	1.41	--		26.67
1,1-Dichloroethene	0.613	0.533	--	2.43	2.11	--		26.67
trans-1,2-Dichloroethene	0.880	0.533	--	3.49	2.11	--		26.67
1,1-Dichloroethane	1.55	0.533	--	6.27	2.16	--		26.67
cis-1,2-Dichloroethene	5.33	0.533	--	21.1	2.11	--		26.67
Trichloroethene	1010	0.533	--	5430	2.86	--		26.67
Tetrachloroethene	22.2	0.533	--	151	3.61	--		26.67

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	88		60-140
bromochloromethane	92		60-140
chlorobenzene-d5	92		60-140

Project Name: IBM-POK
Project Number: 3463.00.206

Lab Number: L1403575
Report Date: 02/21/14

SAMPLE RESULTS

Lab ID: L1403575-05 D
Client ID: EP2002/G
Sample Location: NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15-SIM
Analytical Date: 02/19/14 21:36
Analyst: RY

Date Collected: 02/04/14 10:20
Date Received: 02/17/14
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.508	--	ND	1.30	--		25.38
Chloroethane	ND	0.508	--	ND	1.34	--		25.38
1,1-Dichloroethene	ND	0.508	--	ND	2.01	--		25.38
trans-1,2-Dichloroethene	ND	0.508	--	ND	2.01	--		25.38
1,1-Dichloroethane	ND	0.508	--	ND	2.06	--		25.38
cis-1,2-Dichloroethene	17.6	0.508	--	69.8	2.01	--		25.38
Trichloroethene	1360	0.508	--	7310	2.73	--	E	25.38
Tetrachloroethene	10.8	0.508	--	73.2	3.44	--		25.38

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	86		60-140
bromochloromethane	89		60-140
chlorobenzene-d5	90		60-140

Project Name: IBM-POK
Project Number: 3463.00.206

Lab Number: L1403575
Report Date: 02/21/14

SAMPLE RESULTS

Lab ID: L1403575-05 D2
Client ID: EP2002/G
Sample Location: NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15-SIM
Analytical Date: 02/20/14 09:19
Analyst: RY

Date Collected: 02/04/14 10:20
Date Received: 02/17/14
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Trichloroethene	1120	1.02	--	6020	5.48	--		50.87

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	92		60-140
bromochloromethane	86		60-140
chlorobenzene-d5	93		60-140

Project Name: IBM-POK
Project Number: 3463.00.206

Lab Number: L1403575
Report Date: 02/21/14

SAMPLE RESULTS

Lab ID: L1403575-06 D
Client ID: EP2008/G
Sample Location: NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15-SIM
Analytical Date: 02/19/14 23:43
Analyst: RY

Date Collected: 02/04/14 12:20
Date Received: 02/17/14
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	4.94	--	ND	12.6	--		247.2
Chloroethane	ND	4.94	--	ND	13.0	--		247.2
1,1-Dichloroethene	ND	4.94	--	ND	19.6	--		247.2
trans-1,2-Dichloroethene	ND	4.94	--	ND	19.6	--		247.2
1,1-Dichloroethane	ND	4.94	--	ND	20.0	--		247.2
cis-1,2-Dichloroethene	12.4	4.94	--	49.2	19.6	--		247.2
Trichloroethene	7600	4.94	--	40800	26.5	--		247.2
Tetrachloroethene	5.44	4.94	--	36.9	33.5	--		247.2

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	88		60-140
bromochloromethane	93		60-140
chlorobenzene-d5	92		60-140

Project Name: IBM-POK
Project Number: 3463.00.206

Lab Number: L1403575
Report Date: 02/21/14

SAMPLE RESULTS

Lab ID: L1403575-07 D
Client ID: EP2009/G
Sample Location: NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15-SIM
Analytical Date: 02/20/14 00:15
Analyst: RY

Date Collected: 02/04/14 13:40
Date Received: 02/17/14
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	23.6	--	ND	60.3	--		1181
Chloroethane	ND	23.6	--	ND	62.3	--		1181
1,1-Dichloroethene	ND	23.6	--	ND	93.6	--		1181
trans-1,2-Dichloroethene	ND	23.6	--	ND	93.6	--		1181
1,1-Dichloroethane	ND	23.6	--	ND	95.5	--		1181
cis-1,2-Dichloroethene	61.4	23.6	--	243	93.6	--		1181
Trichloroethene	82200	23.6	--	442000	127	--	E	1181
Tetrachloroethene	27.2	23.6	--	184	160	--		1181

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	89		60-140
bromochloromethane	93		60-140
chlorobenzene-d5	93		60-140

Project Name: IBM-POK
Project Number: 3463.00.206

Lab Number: L1403575
Report Date: 02/21/14

SAMPLE RESULTS

Lab ID: L1403575-07 D2
Client ID: EP2009/G
Sample Location: NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15-SIM
Analytical Date: 02/20/14 09:51
Analyst: RY

Date Collected: 02/04/14 13:40
Date Received: 02/17/14
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Trichloroethene	82700	47.3	--	444000	254	--		2363

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	87		60-140
bromochloromethane	92		60-140
chlorobenzene-d5	92		60-140

Project Name: IBM-POK
Project Number: 3463.00.206

Lab Number: L1403575
Report Date: 02/21/14

SAMPLE RESULTS

Lab ID: L1403575-08 D
Client ID: EP2007/G
Sample Location: NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15-SIM
Analytical Date: 02/19/14 22:08
Analyst: RY

Date Collected: 02/04/14 15:00
Date Received: 02/17/14
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.261	--	ND	0.667	--		13.03
Chloroethane	ND	0.261	--	ND	0.689	--		13.03
1,1-Dichloroethene	ND	0.261	--	ND	1.03	--		13.03
trans-1,2-Dichloroethene	ND	0.261	--	ND	1.03	--		13.03
1,1-Dichloroethane	ND	0.261	--	ND	1.06	--		13.03
cis-1,2-Dichloroethene	0.378	0.261	--	1.50	1.03	--		13.03
Trichloroethene	550	0.261	--	2960	1.40	--		13.03
Tetrachloroethene	2.71	0.261	--	18.4	1.77	--		13.03

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	90		60-140
bromochloromethane	95		60-140
chlorobenzene-d5	93		60-140

Project Name: IBM-POK
Project Number: 3463.00.206

Lab Number: L1403575
Report Date: 02/21/14

SAMPLE RESULTS

Lab ID: L1403575-09 D
Client ID: EP2006/G
Sample Location: NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15-SIM
Analytical Date: 02/20/14 00:47
Analyst: RY

Date Collected: 02/04/14 16:05
Date Received: 02/17/14
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	1.50	--	ND	3.83	--		75.25
Chloroethane	ND	1.50	--	ND	3.96	--		75.25
1,1-Dichloroethene	ND	1.50	--	ND	5.95	--		75.25
trans-1,2-Dichloroethene	ND	1.50	--	ND	5.95	--		75.25
1,1-Dichloroethane	ND	1.50	--	ND	6.07	--		75.25
cis-1,2-Dichloroethene	3.46	1.50	--	13.7	5.95	--		75.25
Trichloroethene	1820	1.50	--	9780	8.06	--		75.25
Tetrachloroethene	6.92	1.50	--	46.9	10.2	--		75.25

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	87		60-140
bromochloromethane	91		60-140
chlorobenzene-d5	93		60-140

Project Name: IBM-POK
Project Number: 3463.00.206

Lab Number: L1403575
Report Date: 02/21/14

SAMPLE RESULTS

Lab ID: L1403575-10 D
Client ID: EP2011/G
Sample Location: NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15-SIM
Analytical Date: 02/20/14 01:19
Analyst: RY

Date Collected: 02/12/14 20:56
Date Received: 02/17/14
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	1.42	--	ND	3.63	--		71.1
Chloroethane	ND	1.42	--	ND	3.75	--		71.1
1,1-Dichloroethene	ND	1.42	--	ND	5.63	--		71.1
trans-1,2-Dichloroethene	ND	1.42	--	ND	5.63	--		71.1
1,1-Dichloroethane	ND	1.42	--	ND	5.75	--		71.1
cis-1,2-Dichloroethene	4.83	1.42	--	19.2	5.63	--		71.1
Trichloroethene	1850	1.42	--	9940	7.63	--		71.1
Tetrachloroethene	5.62	1.42	--	38.1	9.63	--		71.1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	86		60-140
bromochloromethane	90		60-140
chlorobenzene-d5	90		60-140

Project Name: IBM-POK
Project Number: 3463.00.206

Lab Number: L1403575
Report Date: 02/21/14

SAMPLE RESULTS

Lab ID: L1403575-11 D
Client ID: EP2013/G
Sample Location: NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15-SIM
Analytical Date: 02/19/14 22:39
Analyst: RY

Date Collected: 02/12/14 21:55
Date Received: 02/17/14
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.252	--	ND	0.644	--		12.61
Chloroethane	ND	0.252	--	ND	0.665	--		12.61
1,1-Dichloroethene	ND	0.252	--	ND	0.999	--		12.61
trans-1,2-Dichloroethene	ND	0.252	--	ND	0.999	--		12.61
1,1-Dichloroethane	ND	0.252	--	ND	1.02	--		12.61
cis-1,2-Dichloroethene	1.03	0.252	--	4.08	0.999	--		12.61
Trichloroethene	449	0.252	--	2410	1.35	--		12.61
Tetrachloroethene	1.87	0.252	--	12.7	1.71	--		12.61

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	90		60-140
bromochloromethane	94		60-140
chlorobenzene-d5	95		60-140

Project Name: IBM-POK
Project Number: 3463.00.206

Lab Number: L1403575
Report Date: 02/21/14

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15-SIM
Analytical Date: 02/19/14 15:59

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab for sample(s): 01-11 Batch: WG671245-4								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
Chloroethane	ND	0.020	--	ND	0.053	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Lab Control Sample Analysis

Batch Quality Control

Project Name: IBM-POK

Project Number: 3463.00.206

Lab Number: L1403575

Report Date: 02/21/14

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-11 Batch: WG671245-3								
Dichlorodifluoromethane	94		-		70-130	-		25
Chloromethane	90		-		70-130	-		25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	99		-		70-130	-		25
Vinyl chloride	87		-		70-130	-		25
1,3-Butadiene	87		-		70-130	-		25
Bromomethane	92		-		70-130	-		25
Chloroethane	83		-		70-130	-		25
Acetone	112		-		70-130	-		25
Trichlorofluoromethane	113		-		70-130	-		25
Acrylonitrile	84		-		70-130	-		25
1,1-Dichloroethene	87		-		70-130	-		25
Methylene chloride	101		-		70-130	-		25
1,1,2-Trichloro-1,2,2-Trifluoroethane	100		-		70-130	-		25
Halothane	101		-		70-130	-		25
trans-1,2-Dichloroethene	81		-		70-130	-		25
1,1-Dichloroethane	94		-		70-130	-		25
Methyl tert butyl ether	84		-		70-130	-		25
2-Butanone	82		-		70-130	-		25
cis-1,2-Dichloroethene	102		-		70-130	-		25
Chloroform	104		-		70-130	-		25
1,2-Dichloroethane	100		-		70-130	-		25

Lab Control Sample Analysis

Batch Quality Control

Project Name: IBM-POK

Project Number: 3463.00.206

Lab Number: L1403575

Report Date: 02/21/14

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-11 Batch: WG671245-3								
1,1,1-Trichloroethane	117		-		70-130	-		25
Benzene	79		-		70-130	-		25
Carbon tetrachloride	127		-		70-130	-		25
1,2-Dichloropropane	100		-		70-130	-		25
Bromodichloromethane	110		-		70-130	-		25
1,4-Dioxane	87		-		70-130	-		25
Trichloroethene	87		-		70-130	-		25
cis-1,3-Dichloropropene	100		-		70-130	-		25
4-Methyl-2-pentanone	97		-		70-130	-		25
trans-1,3-Dichloropropene	90		-		70-130	-		25
1,1,2-Trichloroethane	121		-		70-130	-		25
Toluene	88		-		70-130	-		25
Dibromochloromethane	105		-		70-130	-		25
1,2-Dibromoethane	104		-		70-130	-		25
Tetrachloroethene	99		-		70-130	-		25
1,1,1,2-Tetrachloroethane	102		-		70-130	-		25
Chlorobenzene	97		-		70-130	-		25
Ethylbenzene	93		-		70-130	-		25
p/m-Xylene	97		-		70-130	-		25
Bromoform	106		-		70-130	-		25
Styrene	95		-		70-130	-		25

Lab Control Sample Analysis

Batch Quality Control

Project Name: IBM-POK

Project Number: 3463.00.206

Lab Number: L1403575

Report Date: 02/21/14

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-11 Batch: WG671245-3								
1,1,2,2-Tetrachloroethane	112		-		70-130	-		25
o-Xylene	98		-		70-130	-		25
Isopropylbenzene	93		-		70-130	-		25
4-Ethyltoluene	88		-		70-130	-		25
1,3,5-Trimethylbenzene	102		-		70-130	-		25
1,2,4-Trimethylbenzene	104		-		70-130	-		25
1,3-Dichlorobenzene	107		-		70-130	-		25
1,4-Dichlorobenzene	105		-		70-130	-		25
sec-Butylbenzene	92		-		70-130	-		25
p-Isopropyltoluene	89		-		70-130	-		25
1,2-Dichlorobenzene	107		-		70-130	-		25
n-Butylbenzene	96		-		70-130	-		25
1,2,4-Trichlorobenzene	112		-		70-130	-		25
Naphthalene	99		-		70-130	-		25
1,2,3-Trichlorobenzene	102		-		70-130	-		25
Hexachlorobutadiene	113		-		70-130	-		25

Lab Duplicate Analysis
Batch Quality Control

Project Name: IBM-POK
Project Number: 3463.00.206

Lab Number: L1403575
Report Date: 02/21/14

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-11 QC Batch ID: WG671245-5 QC Sample: L1403575-02 Client ID: EP2010/G						
Vinyl chloride	ND	ND	ppbV	NC		25
Chloroethane	ND	ND	ppbV	NC		25
1,1-Dichloroethene	ND	ND	ppbV	NC		25
trans-1,2-Dichloroethene	ND	ND	ppbV	NC		25
1,1-Dichloroethane	ND	ND	ppbV	NC		25
cis-1,2-Dichloroethene	0.595	0.552	ppbV	7		25
Trichloroethene	244	236	ppbV	3		25
Tetrachloroethene	1.81	1.76	ppbV	3		25

Project Name: IBM-POK

Project Number: 3463.00.206

Lab Number: L1403575

Report Date: 02/21/14

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Date Prepared	Bottle Order	Cleaning Batch ID	Can Leak Check	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Controler Leak Chk	Flow Out mL/min	Flow In mL/min	% RPD
L1403575-01	EP2012/G	679	1.0L Can	02/03/14	98135	L1402221-02	Pass	-29.5	-8.2	-	-	-	-
L1403575-02	EP2010/G	573	1.0L Can	02/03/14	98135	L1402221-02	Pass	-29.5	-5.5	-	-	-	-
L1403575-03	EP2003/G	733	1.0L Can	02/03/14	98135	L1402221-02	Pass	-29.5	-3.8	-	-	-	-
L1403575-04	EP2004/G	722	1.0L Can	02/03/14	98135	L1402221-02	Pass	-29.8	-6.5	-	-	-	-
L1403575-05	EP2002/G	670	1.0L Can	02/03/14	98135	L1402221-02	Pass	-29.6	-5.0	-	-	-	-
L1403575-06	EP2008/G	1498	1.0L Can	02/03/14	98135	L1402221-02	Pass	-29.5	-4.8	-	-	-	-
L1403575-07	EP2009/G	846	1.0L Can	02/03/14	98135	L1402221-02	Pass	-29.5	-2.9	-	-	-	-
L1403575-08	EP2007/G	715	1.0L Can	02/03/14	98135	L1402221-02	Pass	-29.5	-5.6	-	-	-	-
L1403575-09	EP2006/G	827	1.0L Can	02/03/14	98135	L1402221-02	Pass	-29.6	-8.2	-	-	-	-
L1403575-10	EP2011/G	799	1.0L Can	02/03/14	98135	L1402221-02	Pass	-29.8	-5.2	-	-	-	-
L1403575-11	EP2013/G	563	1.0L Can	02/03/14	98135	L1402221-02	Pass	-29.4	-6.0	-	-	-	-

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1402221
Report Date: 02/21/14

Air Canister Certification Results

Lab ID: L1402221-02
Client ID: CAN 776 SHELF 17
Sample Location:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 01/29/14 18:17
Analyst: RY

Date Collected: 01/27/14 19:45
Date Received: 01/28/14
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethanol	ND	2.50	--	ND	4.71	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
Isopropanol	ND	0.500	--	ND	1.23	--		1
Acrylonitrile	ND	0.200	--	ND	0.434	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Tertiary butyl Alcohol	ND	0.500	--	ND	1.52	--		1

Project Name: BATCH CANISTER CERTIFICATION **Lab Number:** L1402221

Project Number: CANISTER QC BAT **Report Date:** 02/21/14

Air Canister Certification Results

Lab ID: L1402221-02 Date Collected: 01/27/14 19:45

Client ID: CAN 776 SHELF 17 Date Received: 01/28/14

Sample Location: Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Methylene chloride	ND	1.00	--	ND	3.47	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
Freon-113	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	0.200	--	ND	0.704	--		1
2-Butanone	ND	0.200	--	ND	0.590	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.200	--	ND	0.590	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Diisopropyl ether	ND	0.200	--	ND	0.836	--		1
tert-Butyl Ethyl Ether	ND	0.200	--	ND	0.836	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
tert-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1

Project Name: BATCH CANISTER CERTIFICATION **Lab Number:** L1402221

Project Number: CANISTER QC BAT **Report Date:** 02/21/14

Air Canister Certification Results

Lab ID: L1402221-02 Date Collected: 01/27/14 19:45

Client ID: CAN 776 SHELF 17 Date Received: 01/28/14

Sample Location: Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.200	--	ND	0.820	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1
Nonane	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1

Project Name: BATCH CANISTER CERTIFICATION **Lab Number:** L1402221

Project Number: CANISTER QC BAT **Report Date:** 02/21/14

Air Canister Certification Results

Lab ID: L1402221-02 Date Collected: 01/27/14 19:45

Client ID: CAN 776 SHELF 17 Date Received: 01/28/14

Sample Location: Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
2-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
4-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1

	Results	**Qualifier**	**Units**	**RDL**	**Dilution Factor**
Tentatively Identified Compounds					
Cyclotrisiloxane, Hexamethyl-	1.0	NJ	ppbV		1

Project Name: BATCH CANISTER CERTIFICATION **Lab Number:** L1402221

Project Number: CANISTER QC BAT **Report Date:** 02/21/14

Air Canister Certification Results

Lab ID: L1402221-02 Date Collected: 01/27/14 19:45

Client ID: CAN 776 SHELF 17 Date Received: 01/28/14

Sample Location: Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	89		60-140
Bromochloromethane	76		60-140
chlorobenzene-d5	91		60-140

Project Name: BATCH CANISTER CERTIFICATION **Lab Number:** L1402221

Project Number: CANISTER QC BAT **Report Date:** 02/21/14

Air Canister Certification Results

Lab ID: L1402221-02
Client ID: CAN 776 SHELF 17
Sample Location:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 01/29/14 18:17
Analyst: RY

Date Collected: 01/27/14 19:45
Date Received: 01/28/14
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Dichlorodifluoromethane	ND	0.050	--	ND	0.247	--		1
Chloromethane	ND	0.500	--	ND	1.03	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.020	--	ND	0.053	--		1
Acetone	ND	2.00	--	ND	4.75	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	1.00	--	ND	3.47	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
Halothane	ND	0.050	--	ND	0.404	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.020	--	ND	0.072	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1402221
Report Date: 02/21/14

Air Canister Certification Results

Lab ID: L1402221-02
Client ID: CAN 776 SHELF 17
Sample Location:
Date Collected: 01/27/14 19:45
Date Received: 01/28/14
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.050	--	ND	0.188	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.020	--	ND	0.092	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.500	--	ND	2.46	--		1
4-Ethyltoluene	ND	0.020	--	ND	0.098	--		1
1,3,5-Trimethybenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
sec-Butylbenzene	ND	0.500	--	ND	2.74	--		1
p-Isopropyltoluene	ND	0.500	--	ND	2.74	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1

Project Name: BATCH CANISTER CERTIFICATION **Lab Number:** L1402221

Project Number: CANISTER QC BAT **Report Date:** 02/21/14

Air Canister Certification Results

Lab ID: L1402221-02 Date Collected: 01/27/14 19:45

Client ID: CAN 776 SHELF 17 Date Received: 01/28/14

Sample Location: Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
n-Butylbenzene	ND	0.500	--	ND	2.74	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	89		60-140
bromochloromethane	76		60-140
chlorobenzene-d5	92		60-140

Project Name: IBM-POK
Project Number: 3463.00.206

Lab Number: L1403575
Report Date: 02/21/14

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Reagent H2O Preserved Vials Frozen on: NA

Cooler Information **Custody Seal**
Cooler
N/A Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1403575-01A	Canister - 1 Liter	N/A	N/A		Y	Absent	TO15-SIM(30)
L1403575-02A	Canister - 1 Liter	N/A	N/A		Y	Absent	TO15-SIM(30)
L1403575-03A	Canister - 1 Liter	N/A	N/A		Y	Absent	TO15-SIM(30)
L1403575-04A	Canister - 1 Liter	N/A	N/A		Y	Absent	TO15-SIM(30)
L1403575-05A	Canister - 1 Liter	N/A	N/A		Y	Absent	TO15-SIM(30)
L1403575-06A	Canister - 1 Liter	N/A	N/A		Y	Absent	TO15-SIM(30)
L1403575-07A	Canister - 1 Liter	N/A	N/A		Y	Absent	TO15-SIM(30)
L1403575-08A	Canister - 1 Liter	N/A	N/A		Y	Absent	TO15-SIM(30)
L1403575-09A	Canister - 1 Liter	N/A	N/A		Y	Absent	TO15-SIM(30)
L1403575-10A	Canister - 1 Liter	N/A	N/A		Y	Absent	TO15-SIM(30)
L1403575-11A	Canister - 1 Liter	N/A	N/A		Y	Absent	TO15-SIM(30)

*Values in parentheses indicate holding time in days

Project Name:	IBM-POK	**Lab Number:**	L1403575
Project Number:	3463.00.206	**Report Date:**	02/21/14

GLOSSARY

Acronyms

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NI - Not Ignitable.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

A - Spectra identified as "Aldol Condensation Product".

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit.

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

Report Format: Data Usability Report

Project Name:	IBM-POK	**Lab Number:**	L1403575
Project Number:	3463.00.206	**Report Date:**	02/21/14

Data Qualifiers

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report

Project Name: IBM-POK
Project Number: 3463.00.206
Lab Number: L1403575
Report Date: 02/21/14

REFERENCES

48 Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air. Second Edition. EPA/625/R-96/010b, January 1999.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

Last revised December 11, 2013

The following analytes are not included in our NELAP Scope of Accreditation:

Westborough Facility
EPA 524.2: Acetone, 2-Butanone (Methyl ethyl ketone (MEK)), Tert-butyl alcohol, 2-Hexanone, Tetrahydrofuran, 1,3,5-Trichlorobenzene, 4-Methyl-2-pentanone (MIBK), Carbon disulfide, Diethyl ether.
EPA 8260C: 1,2,4,5-Tetramethylbenzene, 4-Ethyltoluene, Iodomethane (methyl iodide), Methyl methacrylate, Azobenzene.
EPA 8330A/B: PETN, Picric Acid, Nitroglycerine, 2,6-DANT, 2,4-DANT.
EPA 8270D: 1-Methylnaphthalene, Dimethylnaphthalene,1,4-Diphenylhydrazine.
EPA 625: 4-Chloroaniline, 4-Methylphenol.
SM4500: Soil: Total Phosphorus, TKN, NO2, NO3.
EPA 9071: Total Petroleum Hydrocarbons, Oil & Grease.

Mansfield Facility
EPA 8270D: Biphenyl.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

The following analytes are included in our Massachusetts DEP Scope of Accreditation, Westborough Facility:

Drinking Water
EPA 200.8: Sb,As,Ba,Be,Cd,Cr,Cu,Pb,Ni,Se,Tl; **EPA 200.7**: Ba,Be,Ca,Cd,Cr,Cu,Na; **EPA 245.1:** Mercury;
EPA 300.0: Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, Enterolert-QT.**

Non-Potable Water
EPA 200.8: Al,Sb,As,Be,Cd,Cr,Cu,Pb,Mn,Ni,Se,Ag,Tl,Zn;
EPA 200.7: Al,Sb,As,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Mo,Ni,K,Se,Ag,Na,Sr,Ti,Tl,V,Zn;
EPA 245.1, SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2340B, SM2320B, SM4500CL-E, SM4500F-BC, SM426C, SM4500NH3-BH, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500NH3-BC-NES, EPA 351.1, SM4500P-E, SM4500P-B, E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, SM14 510AC, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9222D-MF**.

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

AIR ANALYSIS

PAGE 1 OF 2

ALPHA ANALYTICAL

CHAIN OF CUSTODY

320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 2-17-14

ALPHA Job #: L1403575

Client Information

Client: Sanborn Head & Assoc.
Address: 20 Foundry St
Concord, NH 03301
Phone: 603-229-1900
Fax: —
Email: SSOOS@sanbornhead.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: IBM-POK
Project Location: NY
Project #: 3463.00.206
Project Manager: Seth Soos
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due: Time:

Report Information - Data Deliverables

☐ FAX
☒ ADEx
Criteria Checker:
(Default based on Regulatory Criteria Indicated)
Other Formats:
☒ EMAIL (standard pdf report)
☐ Additional Deliverables:
Report to: (if different than Project Manager)

Billing Information

☒ Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed	Program	Criteria

Other Project Specific Requirements/Comments:

* Site-specific analyte list (B003)

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	ID Can	ID - Flow Controller	TO-14A by TO-15	TO-15	TO-15 SIM	APH	FIXED GASES	TO-13A	TO-4 / TO-10	Sample Comments (i.e. PID)
3575-01	EP2012/G	2/3/14	14:20	Grab	-29	-8.5	SV	REW	1L	679	NA			X					
-02	EP2010/G	2/3/14	15:40		-29.5	-6	SV	REW		573	NA			X					
-03	EP2003/G	2/3/14	19:20		-30	-4.5				733				X					
-04	EP2004/G	2/3/14	20:50		-30	-7				722				X					
-05	EP2002/G	2/4/14	10:20		-29	-6				670				X					
-06	EP2008/G	2/4/14	12:20		-30	-5.5				1498				X					
-07	EP2009/G	2/4/14	13:40		-30	-3.5				846				X					
-08	EP2007/G	2/4/14	15:00		-29.5	-6				715				X					
-09	EP2006/G	2/4/14	16:05		-30	-8.5				827				X					
-10	EP2011/G	2/12/14	20:56		-30	-5.5				799				X					
											Container Type			CS					

*SAMPLE MATRIX CODES

AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

Relinquished By:	Date/Time	Received By:	Date/Time:
	2/17/14 13:05		2-17-14 13:05
	2-17-14 15:45		2-17-14 1545

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

AIR ANALYSIS

PAGE 2 OF 2

CHAIN OF CUSTODY

320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 2-17-14

ALPHA Job #: L1403575

Client Information

Client: Sanborn Head & Assoc.
Address: 20 Foundry St
Concord, NH 03301
Phone: 603-415-1900
Fax: ——
Email: SSOOS@Sanbornhead.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: IBM-POK
Project Location: NY
Project #: 3463.00.206
Project Manager: Seth Soos
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH *(only confirmed if pre-approved!)*

Date Due: Time:

Report Information - Data Deliverables

☐ FAX
☒ ADEx
Criteria Checker: ——
(Default based on Regulatory Criteria Indicated)
Other Formats: ——
☐ EMAIL (standard pdf report)
☐ Additional Deliverables: ——
Report to: (if different than Project Manager) ——

Billing Information

☒ Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed	Program	Criteria

Other Project Specific Requirements/Comments:

* Site-specific analyte list (B003)

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	I D Can	I D - Flow Controller	ANALYSIS: TO-14A by TO-15	TO-15	TO-15 SIM * APH	FIXED GASES	TO-13A	TO-4 / TO-10	Sample Comments (i.e. PID)
3575 -11	EP2013/G	2/12/14	21:55	Grab	-28.5	-6.5	SV	REW	1L	563	NA			X				

*SAMPLE MATRIX CODES

AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

Container Type: CS

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONSTITUTIONS.

Relinquished By:	Date/Time	Received By:	Date/Time:
[signature]	2/17/14 13:05	[signature]	2-17-14 13:05
[signature]	2-17-14 16:15	[signature]	2-17-14 1545