8976 Wellington Road
Manassas, VA 20109

May 30, 2017

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

Re: Report of Interim Measures and Indoor Air Quality Testing – B330D
Former IBM East Fishkill Facility
Hopewell Junction, New York
EPA ID No. NYD000707901, NYSDEC Site No. 314054

Dear Ms. LaClair:

The enclosed report presents the results of indoor air quality (IAQ) testing that was conducted following the completion of interim measures to address vapor intrusion in Building 330D of the Former IBM East Fishkill Facility in Hopewell Junction, New York, which is currently owned by Global Foundries (GF). IAQ testing was conducted in accordance with IBM's Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Work Plan dated June 15, 2009.

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

Sincerely yours,

Dean W. Chartrand
Program Manager
Corporate Environmental Affairs

Encl: Report of Interim Measures and Indoor Air Quality Testing – B330D

| | | | |
|---|---|---|---|
| Cc: | Dave Shea | Sanborn Head | (via email/cover letter only) |
| | Gary Marone | Global Foundries | (via email/cover letter only) |
| | Scarlett McLaughlin | NYSDOH | (via email and hard copy) |

SANBORN HEAD ENGINEERING

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# REPORT OF INTERIM MEASURES AND INDOOR AIR QUALITY TESTING

## BUILDING 330D

*Former IBM East Fishkill Facility*
*Hopewell Junction, New York*

*Prepared for IBM Corporation*
*File No. 2999.07*
*May 2017*

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*20 Foundry Street*
*Concord, NH 03301*

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

May 30, 2017
File No. 2999.07

Re: Report of Interim Measures and Indoor Air Quality Testing – B330D
Former IBM East Fishkill Facility
Hopewell Junction, New York
EPA ID No. NYD000707901, NYSDEC Ste No. 314054

Dear Mr. Chartrand:

The enclosed report presents the results of indoor air quality (IAQ) testing conducted following the implementation of interim measures to address vapor intrusion in Building 330D at the former IBM East Fishkill facility. Please contact us if you have any questions.

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

David Shea

David Shea, P.E.
*President*

JHS/DS: ds

Encl. Report of Interim Measures and Indoor Air Quality Testing – B330D

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# REPORT OF INTERIM MEASURES AND INDOOR AIR QUALITY TESTING BUILDING 330D

Former IBM East Fishkill Facility
Hopewell Junction, New York

*Prepared for*
**IBM Corporation**

*Prepared by*
**Sanborn, Head Engineering, P.C.**

File 2999.07
May 2017

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## 1.0 INTRODUCTION

This report presents the results of indoor air quality (IAQ) testing conducted in March 2017 in Building 330D (B330D) at the former IBM East Fishkill Facility (the site), currently owned by Global Foundries (GF). IAQ testing was conducted after the startup of two subslab depressurization (SSD) systems intended as interim measures to address volatile organic compound (VOC) presence beneath certain areas of the building. A site location plan is provided as Figure 1, and the location of B330D on the site is shown on Figure 2. The work described herein was conducted on behalf of IBM by Sanborn, Head Engineering, P.C. (SHPC) in general accordance with IBM's Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Work Plan dated June 15, 2009 (RFI Work Plan), which was approved by the New York State Department of Environmental Conservation and Department of Health (the Agencies).

IBM sold its former East Fishkill facility to GF in July 2015, and IBM maintains responsibility for execution of the RFI Work Plan. IBM is working cooperatively with GF to maintain the heating, ventilating, and air conditioning (HVAC) operating conditions in routinely occupied portions of the buildings that were the focus of the RFI Work Plan.

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

## 2.0 BACKGROUND AND PURPOSE OF WORK

B330D was designated for source investigation in the RFI Work Plan based on anomalous levels of tetrachloroethene (PCE) detected in first floor indoor air samples collected in 2007 centered on the former MLC 80K manufacturing area (referred to as the 80K area) located in the northern end of the building. In 2008, IBM initiated source investigation and mitigation measures in the former 80K area. The results of the 80K area source investigation were provided to the Agencies in a December 2008 report[1]. IBM subsequently installed an SSD system in the 80K area as a means to reduce PCE levels in indoor air and remove VOC source mass. Results of the SSD system performance assessment and subsequent confirmatory IAQ sampling were presented in a December 2011 report[2], and the 80K area SSD system has been operating continuously since 2010. In a March 13, 2013 letter to IBM, the Agencies concurred with IBM that no further assessment was required for B330D under building conditions existing at that time.

In recent years, decommissioning of certain manufacturing areas in B330D has been conducted and much of the first floor has been vacated, although certain areas remain routinely occupied. In August 2015, GF requested to either turn off air handling units (AHUs), or reduce the outside air (OA) flow rate, in certain HVAC zones.

---

1 *Report of Findings, Building 330D VOC Source Investigation and Mitigation, IBM East Fishkill Facility, Hopewell Junction, New York*, Sanborn, Head Engineering, P.C., December 24, 2008.

2 *Performance Monitoring and Confirmatory Sampling Results, Building 330D, VOC Source Assessment, Hopewell Junction, NY, IBM East Fishkill Facility*, Sanborn, Head Engineering, P.C., December 2011.

In December 2015, IAQ screening and sampling was conducted to assess the concentrations of certain VOCs under the HVAC system operating conditions requested by GF. The results of the December 2015 testing were provided to the Agencies by IBM in a report dated March 2016[3]. Following the HVAC adjustments, the results of the December 2015 testing in certain areas of the building indicated a slight increase in PCE levels as compared to the results of historical indoor air sampling. These results suggested the possible presence of additional areas of subslab VOC presence that may have contributed to the observed increases in PCE concentrations in indoor air. These findings prompted IBM to perform additional subslab vapor assessment activities throughout B330D beyond the original 80K investigation area.

From January through December 2016, IBM performed subslab vapor assessment activities, including installation and sampling of subslab vapor monitoring ports, and installation and pilot testing of subslab vapor extraction ports and suction pits.

In February 2017, based on the findings of the subslab vapor assessment activities, two SSD systems were installed and put into operation on an interim basis in the western and southeastern portions of B330D, both of which are located in HVAC zone AC-5B2/6B1. In March 2017, IAQ screening and sampling in select HVAC zones was conducted to assess the influence of the interim SSD systems on IAQ. The purpose of this report is to describe the two SSD systems and present the results of IAQ sampling conducted after startup of the systems.

## 3.0 INTERIM SUBSLAB DEPRESSURIZATION SYSTEMS

### 3.1 Subslab Vapor Conditions

Subslab vapor ports designated SS4001 through SS4059 were installed and sampled throughout B330D between January and July 2016. To assess the potential presence of subslab preferential pathways located in the northeast corner of the building, additional subslab vapor ports designated SS4060 through SS4066 were installed, and subslab vapor ports SS4062, SS4063, and SS4066 were sampled in December 2016. All subslab vapor samples were collected over a period of approximately 1 hour using 1-L SUMMA® canisters.

[3] *Report of HVAC Adjustment and Indoor Air Quality Testing – Building 330D, Former IBM East Fishkill Facility, Hopewell Junction, New York*, Sanborn, Head Engineering, P.C., March 2016.

Subslab vapor port locations and concentration isopleths for PCE in subslab vapor are shown on Figure 3. Concentration isopleths shown in the 80K area (hatched on the figures) are based on samples collected in August 2008 prior to the start-up of the 80K area SSD system[4]. The isopleths outside of the hatched area are based on the 2016 sampling results. The 2016 results indicate that elevated concentrations of PCE are present in subslab vapor beneath the western portion (up to 1,600,000 µg/m$^3$) and southeastern portion (up to 26,000,000 µg/m$^3$) of the building. Concentrations decrease significantly to the east beneath the B330D Annex.

## 3.2 Subslab Depressurization Systems Description

In consideration of the subslab PCE sampling results, IBM elected to install two SSD systems as interim measures to target the highest concentrations of PCE in subslab vapor. The two systems were installed in the western and southeastern portions of the building, as shown on Figure 4. The extraction ports and suction pit connected to the two systems were selected based on information collected during pilot testing conducted in June through December 2016.

The SSD system located in the western portion of the building (SSD System #2) began withdrawing subslab vapor from five extraction ports (EP4003, EP4004, EP4006, EP4018, and EP4019) on February 15, 2017. The system in the southeastern portion of the building (SSD System #1) began withdrawing subslab vapor from suction pit SP4003 on February 21, 2017. The suction pit had been previously constructed by removing an approximately 4 ft x 4 ft area of the floor slab and excavating the underlying soil to approximately 10 inches below the bottom of the slab. The open pit was lined with a non-woven geotextile fabric and then backfilled with ¾-inch crushed stone. A 2-inch diameter, slotted PVC pipe was installed horizontally through the center of the pit, extended through a conveyance trench via a solid pipe, and turned upward 90 degrees and extended through the slab near a wall. Additional crushed stone and geotextile was added to the pit and the concrete slab was replaced. The potential advantage of suction pits is that they provide a larger surface area below the slab for vapor extraction, providing a larger area of influence than a typical extraction port under certain subslab soil conditions.

Each interim SSD system has a regenerative-type blower mounted on a portable cart, shown in Exhibit 1 and Exhibit 2 below, which is connected to the extraction ports or suction pit. Vapor is withdrawn from the ports or pit and pulled through a moisture knockout drum and two vapor-phase granular activated carbon (GAC) vessels. The treated vapor is vented to the building exterior via active exhaust vents located near each system.

[4] Subslab vapor samples representative of current conditions in the 80K area have not been collected since the SSD system is running on a full-time basis, and a substantial shut-down period would be required to achieve stable conditions prior to sampling.

**Exhibit 1 – SSD System #1 Setup**


**Exhibit 2 – SSD System #2 Setup**

### 3.3 SSD System Performance

The applied vacuums and flow rates for the two SSD systems are shown on Figure 4. Subslab differential pressure measurements throughout the building were collected on February 22, 2017 after the SSD systems had been running for approximately one day (SSD System #1) and one week (SSD System #2). The 80K area SSD system was also operating while the differential pressure measurements were collected. The inferred extent of subslab pressure response is depicted by the differential pressure isopleth of -0.004 inches of water column (in. wc) relative to indoor air pressure; this value, or lower pressure (greater vacuum), is an indication that vapor extraction has influence, and is expected to be

sufficient to capture subslab soil vapor. The inferred combined extent of subslab depressurization is shown on Figure 4.

The differential pressure data indicate substantial depressurization of the area delineated by the >500,000 µg/m$^3$ PCE isopleth encompassing the portions of the building that are believed to be the primary sources of indoor air VOC presence.

# 4.0 B330D INDOOR AIR QUALITY TESTING

The following sections provide a summary of the IAQ screening and sampling results in B330D before and after the start-up of the two interim SSD systems.

## 4.1 Scope of B330D Assessment

### *4.1.2 Summary of B330D IAQ Screening and Sampling*

IAQ screening was conducted in B330D on March 16, 2017 using a portable gas chromatograph/mass spectrometer (GC/MS) to assess the influence of the SSD systems on IAQ. The screening was conducted approximately one month after start-up of the two SSD systems, generally at locations that had been screened in December 2015 after HVAC adjustments had been conducted and prior to startup of the SSD systems. Following screening, indoor air samples were collected in occupied areas of B330D on March 17, 2017 to confirm the screening results. Indoor air samples were collected as 8-hour time-weighted-average samples into SUMMA® canisters in accordance with the procedures described in the RFI Work Plan. The samples were submitted to Eurofins/Air Toxics of Folsom, California for analysis of the 22 project-specific analytes using USEPA Method TO-15, which was modified as specified in the RFI Work Plan to achieve lower reporting limits via selective ion monitoring (SIM) for trichloroethene (TCE), vinyl chloride, and carbon tetrachloride.

Indoor air screening and sampling was conducted under the current HVAC settings, which are described in Table 1. A field duplicate sample, ambient outdoor air sample, and nitrogen blank were also collected for quality assurance/quality control (QA/QC) purposes. A photographic log of sampling locations is provided as Appendix B, and a summary of field sampling information is provided in Table 2.

## 4.2 B330D IAQ Results

The following discussion of IAQ results represents conditions within B330D following start-up of the two interim SSD systems, including a comparison to pre-start-up conditions.

### *4.2.1 B330D Portable GC/MS Screening Results*

PCE and TCE screening results from the original screening event performed in December 2015, and from the March 2017 event following start-up of the interim SSD systems, are provided in Table 3 and depicted on Figure 5. TCE was not detected at any of the indoor air screening locations during either screening event.

In March 2017, PCE was detected at screening concentrations that ranged from less than the reporting limit (about 0.68 µg/m$^3$) up to a maximum of 10 µg/m$^3$. PCE concentrations were generally lowest in occupied areas located in the south and southeast areas of the building, and increased toward the unoccupied north and west portions of the building. In general, the PCE screening results were less than those observed during the December 2015 screening round, before the interim SSD systems were in operation.

The PCE concentration in an indoor air screening sample collected near the suction pit for SSD System #1 decreased from 39 to 5.7 µg/m$^3$ after start-up of the system. A similar decrease was observed in screening samples collected from the adjacent building areas.

PCE concentrations also decreased after system start-up in the western area of the building in the vicinity of SSD System #2.

### *4.2.2 B330D Confirmatory Sample Results*

Confirmatory indoor air samples for laboratory analysis were collected at seven locations within occupied areas following start-up of the two SSD systems. The samples were collected at a subset of the locations that had been sampled in December 2015. Indoor air confirmatory sampling results, including the December 2015 results, are provided in Table 4, and the PCE and TCE results are depicted on Figure 6.

In March 2017, PCE was detected above laboratory reporting limits at five of the seven sampling locations at concentrations ranging from 1.4 to 3.5 µg/m$^3$. TCE was detected at only one location above laboratory reporting limits at a concentration of 0.48 µg/m$^3$.

For comparison, Figure 6 also shows the historical results for indoor air samples that were collected prior to HVAC adjustments made by Global Foundries in December 2015. The December 2015 sampling results indicated a slight increase in PCE concentrations at some locations; however, PCE concentrations in March 2017 were lower than both of the previous sampling rounds. The sample results indicate that the interim SSD systems have reduced vapor entry into the building, resulting in generally decreased PCE concentrations in indoor air in the areas sampled.

Low levels of ten other analytes were detected in indoor air in March 2017, including: acetone (6.1 to 22 µg/m$^3$); benzene (0.51 to 0.62 µg/m$^3$); carbon tetrachloride (0.44 to 0.57 µg/m$^3$); dichlorodifluoromethane (CFC12; [2.5 to 2.7 µg/m$^3$]); ethylbenzene (0.95 to 1.9 µg/m$^3$); methylene chloride (1.4 to 3.5 µg/m$^3$); toluene (0.6 to 5.7 µg/m$^3$); trichlorofluoromethane (CFC11; [1.4 to 4.2 µg/m$^3$]); xylene (o-); (1.2 µg/m$^3$); and xylene (m,p); (1.1 to 4.9 µg/m$^3$). With the exception of ethylbenzene, which was detected at a low concentration at two locations, each of the compounds was detected at similar concentrations in either the ambient outside air sample or the nitrogen field blank. These results indicate that the concentrations detected at interior locations are likely attributable to the presence of these analytes in ambient outdoor air, are laboratory contaminants, or were introduced during transport or storage of the canisters (i.e., m,p-xylene and toluene in the nitrogen field blank).

The analytical laboratory report for the indoor air samples is provided in Appendix D.

## 5.0 QUALITY ASSURANCE/QUALITY CONTROL

The analytical data for the B330D confirmatory samples were provided to New Environmental Horizons, Inc. (NEH) of Arlington, MA and Skillman, NJ who conducted an in-depth data usability review. The data validation report is provided in Appendix D. The review found that all results were considered usable for project objectives/decisions, with the following qualifications that do not affect the conclusions of this work:

- The nitrogen blank, or equipment blank, resulted in estimated (J) or estimated non-detect (UJ) results with a possible low bias (L) for all analyzed VOCs due to disagreement between the field final and laboratory receipt canister vacuums.

- The nitrogen blank sample reported detected values for acetone, methylene chloride, toluene, and m,p-xylene. A comparison between the blank result and the primary samples led to estimation of 20 total results reported with a possible high bias (EB H) or estimated indeterminate bias (JEB I).

- Precision was acceptable for all VOCs in the Field Duplicate pair of IA0419 and FD4002 except for acetone and toluene. The results for acetone and toluene in samples IA0419 and FD4002 were estimated with indeterminate bias due to field duplicate imprecision. This is an indication of acceptable precision and representativeness of the samples for the project-specific VOCs, except acetone and toluene.

- All reporting limits (RLs) were at a level below the project-required RL (as shown in Table B.1 of the QAPP) except for carbon tetrachloride in samples IA BB-39, IA BG-45, IA BH-40, and IA4017. This does not introduce significant uncertainty into the results since carbon tetrachloride was detected in the samples with an elevated RL.

## 6.0 CONCLUSIONS AND NEXT STEPS

The 80K and two interim SSD systems have been an effective means of reducing vapor intrusion, and therefore have reduced PCE concentrations in indoor air. IBM intends to continue operation and maintenance of the SSD systems in their current configuration as an interim means of reducing vapor intrusion until a permanent SSD system can be installed. In addition, IBM understands GF will maintain the HVAC operating conditions listed in Table 1 until occupancy or other changes are proposed that warrant consideration of new adjustments and IAQ testing.

Consistent with the requirements in the RFI Work Plan, IBM understands that GF will communicate the results of the 8-hr, time weighted average SUMMA® samples in B330D to building occupants within 45 days of IBM's receipt of validated data.

# TABLES

**Table 1**
**Current AHU Settings**
**Building 330D First Floor**
**Former IBM East Fishkill Facility**
**Hopewell Junction, New York**

| AC Unit | Area Use | Current HVAC Settings | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Current Occupancy | Operating Schedule | OA Flow Rate | RA Flow Rate | Total Supply Air Flow Rate | OA Economizer | OA Damper Position |
| AC-5B2/6B1 | Labs/Unoccupied Lab | Occ | 24/7 | 26,370 | 0 | 26,370 | No | 100% open |
| AC-6A2 | Offices | 30 | 24/7 | 360 | 7,040 | 7,400 | No | 0% open |
| AC-8-2 | Labs and Offices | 27 | 24/7 | 14,975 | 18,905 | 33,880 | Yes | 85% open (min) |
| AC-12 | Offices/Unoccupied Labs | 0 | Off | | | | | |
| AC-13 | Offices/Unoccupied Labs | 32 | 24/7 | 11,871 | 15,595 | 27,466 | No | 75% open |
| AC-15 | Labs and Offices | 11 | 24/7 | 10,368 | 15,328 | 25,696 | Yes | 30% open (min) |
| AC-25 | Executive Offices/Lobbies | Occ | 6am-630pm 7days | 34,397 | 3,823 | 38,220 | Yes | 30% open (min) |
| AC-60 | Cleaning Personnel/ Unoccupied Area | 0 | Off | | | | | |
| AC-61 | Off | 0 | Off | | | | | |
| AC-71 | Tool Shop | 0 | 5 AM - 5 PM On | 8,211 | 3,125 | 11,336 | Yes | 20% open (min) |
| AC-72,82 | Unoccupied Lab/Refeed Corridor | 0 | Off | | | | | |
| AC-79 | Unoccupied Lab | 0 | 24/7 | 7,585 | 0 | 7,585 | No | 100% open |
| AC-83 | Lab and Unoccupied Lab | 2 | 6AM - 4:30 PM On | 18,165 | 7,435 | 25,600 | No | 40% open |

Notes
1. The information in this table was provided to IBM and Sanborn, Head Engineering, PC (SHPC) by Global Foundries (GF). Flow rates are based on reports prepared by GF's contractor, US Test.
2. With the exception of AC-83, the flow rates and OA damper positions are based on a US Test Report dated 11/18/2015.
3. The flow rates and OA damper position for the AC-83 HVAC settings are based on an email from GF dated 11/20/2015.
4. Flow rates are provided in cubic feet per minute (cfm).
5. "Occ" = occupied; specific number of occupants not provided by GF.
6. Operating schedule and economizer information/minimum OA damper positions were updated based on a call with GF on 12/7/2015 and an email from GF dated 12/15/2015.

**Table 2**
**Summary of Confirmatory Indoor Air Sample Information**
**Building 330D**
**Former IBM East Fishkill Facility**
**Hopewell Junction, NY**

| Sample Location | Building Floor | Sample Matrix | Canister Number | Sample Height (ft above floor) | Start Time (hours) | Start Pressure (mm Hg) | Stop Time (hours) | Stop Pressure (mm Hg) | Temperature (°F) | Location Description | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Collection Date: March 17, 2017** | | | | | | | | | | | |
| IA AY-43 | Ground | Indoor Air | 3104 | 3 | 6:39 | -30 | 14:34 | -7 | 70 | Bond and Assembly Lab 2 | |
| IA BB-39 | Ground | Indoor Air | 60897 | 4 | 6:44 | -30 | 14:38 | -7 | 70 | Lab | |
| IA BG-38 | Ground | Indoor Air | 1852 | 3.5 | 6:46 | -30 | 14:40 | -6.5 | 70 | Lab | |
| IA BG-45 | Ground | Indoor Air | 60753 | 3 | 6:58 | -30 | 14:43 | -7 | 70 | Lab | |
| IA BH-40 | Ground | Indoor Air | 2306 | 3.5 | 6:42 | -30 | 14:36 | -7 | 70 | Hallway table | |
| IA4017 | Ground | Indoor Air | 400 | 4 | 6:33 | -27 | 14:31 | -7 | 70 | Break room | |
| IA4019 | Ground | Indoor Air | 386 | 3.5 | 6:36 | -26 | 14:58 | -5 | 70 | Conference room | |
| IA4019 DUP | Ground | Indoor Air | 61258 | 3.5 | 6:36 | -30 | 14:58 | -5 | 70 | Conference room | Field Duplicate Sample |
| Ambient Air | Exterior | Ambient Air | 661 | 6 | 6:23 | -28.5 | 14:25 | -5 | 30 | Outside near AC-83 Intake | Ambient Air Blank |
| Nitrogen Blank | Exterior | Nitrogen | 427 | 6 | 6:23 | -30 | 14:25 | -13 | 30 | Outside near AC-83 Intake | Field/Equipment Blank |

Notes:

1. Samples were collected by Sanborn, Head Engineering, PC on March 17, 2017.

2. Samples were collected into 6-liter, stainless steel, pre-evacuated SUMMA® canisters using 8-hour metering regulators. Each canister and regulator was laboratory-certified clean (100% certification). The samples were submitted to Eurofins/Air Toxics of Folsom, California for analysis of the 22 project-specific analytes using modified USEPA Method TO-15 and Method TO-15 in selective ion monitoring (SIM) mode.

**Table 3**
**Summary of Portable GC/MS Indoor Air Screening Results**
**Building 330D**
**Former IBM East Fishkill Facility**
**Hopewell Junction, New York**

| Location | Date | HVAC Zone | µg/m³ | |
|---|---|---|---|---|
| | | | PCE | TCE |
| IA AP-30 | 12/16/15 | AC-60 | 9.4 | <0.54 |
| IA AR-28 | 12/16/15 | AC-60 | 9.7 | <0.54 |
| IA AY-35 | 12/16/15 | AC-13 | 1.6 | <0.54 |
| | 03/16/17 | | 1.7 | <0.54 |
| IA AY-43 | 12/16/15 | AC-8-2 | 20 | <0.54 |
| | 03/16/17 | | 1.5 | <0.54 |
| IA BA-28 | 12/16/15 | AC-12 | 12 | <0.54 |
| | 03/16/17 | | 9.6 | <0.54 |
| IA BA-39 | 12/16/15 | AC-5B2 | 39 | <0.54 |
| | 03/16/17 | | 5.7 | <0.54 |
| IA BA-44 | 12/16/15 | AC-8-2 | 13 | <0.54 |
| | 03/16/17 | | 2.2 | <0.54 |
| IA BB-24 | 12/16/15 | AC-72/82 | 10 | <0.54 |
| | 03/16/17 | | 6.2 | <0.54 |
| IA BB-37 | 12/16/15 | AC-79 | 3.0 | <0.54 |
| | 03/16/17 | | 2.7 | <0.54 |
| IA BB-39 | 12/16/15 | AC-83 | 13 | <0.54 |
| | 03/16/17 | | 2.3 | <0.54 |
| IA BC-32 | 12/16/15 | AC-71 | 6.7 | <0.54 |
| | 03/16/17 | | 2.7 | <0.54 |
| IA BD-25 | 12/16/15 | AC-72/82 | 17 | <0.54 |
| | 03/16/17 | | 9 | <0.54 |
| IA BE-28 | 12/16/15 | AC-6B1 | 13 | <0.54 |
| IA BF-24 | 12/16/15 | AC-72/82 | 17 | <0.54 |
| | 03/16/17 | | 7.4 | <0.54 |
| IA BG-38 | 12/16/15 | AC-5B2 | 7.6 | <0.54 |
| | 03/16/17 | | 2.5 | <0.54 |
| IA BG-45 | 12/16/15 | AC-15 | 2.9 | <0.54 |
| | 03/16/17 | | <0.68 | <0.54 |
| IA BH-40 | 12/16/15 | AC-6A2 | 6.4 | <0.54 |
| | 03/16/17 | | 0.81 | <0.54 |
| IA4001 | 12/16/15 | See Note 3 | 3.9 | <0.54 |
| IA4002 | 12/16/15 | AC-60 | 8.3 | <0.54 |
| IA4003 | 12/16/15 | AC-61 | 11 | <0.54 |
| IA4004 | 12/16/15 | AC-25 | 9.1 | <0.54 |
| | 03/16/17 | | 6.2 | <0.54 |
| IA4005 | 12/16/15 | AC-6B1 | 20 | <0.54 |
| | 03/16/17 | | 8.1 | <0.54 |
| IA4006 | 12/16/15 | AC-13 | 9.1 | <0.54 |
| | 03/16/17 | | 2.5 | <0.54 |
| IA4007 | 12/16/15 | AC-6B1 | 22 | <0.54 |
| | 03/16/17 | | 3.2 | <0.54 |
| IA4008 | 12/16/15 | AC-79 | 13 | <0.54 |
| | 03/16/17 | | 5.3 | <0.54 |
| IA4009 | 12/16/15 | AC-13 | 4.3 | <0.54 |
| | 03/16/17 | | 0.82 | <0.54 |
| IA4010 | 12/16/15 | AC-5B2 | 2.5 | <0.54 |
| | 03/16/17 | | 0.92 | <0.54 |
| IA4011 | 12/16/15 | AC-8-2 | 4.8 | <0.54 |
| | 03/16/17 | | 0.8 | <0.54 |
| IA4012 | 12/16/15 | AC-15 | 2.4 | <0.54 |
| | 03/16/17 | | <0.68 | <0.54 |
| IA4013 | 03/16/17 | AC-6B1 | 9.4 | <0.54 |
| IA4014 | 12/16/15 | AC-25 | 3.4 | <0.54 |
| IA4015 | 12/16/15 | AC-72/82 | 11 | <0.54 |
| | 03/16/17 | | 8.1 | <0.54 |
| IA4016 | 12/16/15 | AC-71 | 12 | <0.54 |
| | 03/16/17 | | 2.7 | <0.54 |
| IA4017 | 12/16/15 | AC-13 | 9.8 | <0.54 |
| | 03/16/17 | | 5.9 | <0.54 |
| IA4018 | 12/16/15 | AC-8-2 | 8.2 | <0.54 |
| | 03/16/17 | | 1.1 | <0.54 |
| IA4019 | 12/16/15 | AC-13 | 7.2 | <0.54 |
| | 03/16/17 | | 1.7 | <0.54 |
| IA4030 | 03/16/17 | See Note 3 | 9.7 | <0.54 |
| IA4031 | 03/16/17 | AC-72/82 | 7 | <0.54 |
| IA4032 | 03/16/17 | See Note 3 | 10 | <0.54 |
| IA4033 | 03/16/17 | See Note 3 | 8 | <0.54 |

Notes:

1. This table summarizes data recorded during field screening of grab indoor air screening samples using a HAPSITE Smart ® portable gas chromatograph/mass spectrometer (GC/MS), manufactured by Inficon. The instrument was calibrated to vendor prepared standards ranging from 0.1 part per billion on a volumetric basis (ppbv) to 50 ppbv, for tetrachloroethene (PCE) and trichloroethene (TCE). The field samples were collected 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/m³) by Sanborn, Head Engineering, PC (SHPC) assuming standard temperature (25 °C) and pressure (1 atmosphere) for the conversion. Results were rounded to two significant figures.

2. < - The analyte was not detected above the indicated reporting limit.

3. Screening location not within an HVAC zone.

**Table 4**
**Summary of 8-Hour Confirmatory Sampling Results**
**Building 330D**
**Former IBM East Fishkill Facility**
**Hopewell Junction, NY**

| Analyte | Concentrations in µg/m$^3$ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | AA | | | | | | Nitrogen Blank | | | | | | IA AY-43 | | | | | | IA BB-39 | | | | | | IA BG-38 | | | | | | IA BG-45 | | | | | |
| | 12/17/2015 | | | 3/17/2017 | | | 12/17/2015 | | | 3/17/2017 | | | 12/17/2015 | | | 3/17/2017 | | | 12/17/2015 | | | 3/17/2017 | | | 12/17/2015 | | | 3/17/2017 | | | 12/17/2015 | | | 3/17/2017 | | |
| | Result | Qualifier | Bias | Result | Qualifier | Bias | Result | Qualifier | Bias | Result | Qualifier | Bias | Result | Qualifier | Bias | Result | Qualifier | Bias | Result | Qualifier | Bias | Result | Qualifier | Bias | Result | Qualifier | Bias | Result | Qualifier | Bias | Result | Qualifier | Bias | Result | Qualifier | Bias |
| Acetone | 30 | | | 13 | EB | H | 27 | | | 10 | J | L | 13 | | | 9.1 | EB | H | 7.2 | | | 12 | EB | H | 7.5 | | | 9.2 | EB | H | 18 | | | 12 | EB | H |
| Benzene | 0.58 | | | 0.54 | | | 0.52 | U | | 0.62 | UJ | L | 0.53 | U | | 0.57 | | | 0.52 | U | | 0.54 | U | | 0.54 | U | | 0.51 | | | 0.59 | | | 0.53 | U | |
| Carbon tetrachloride | 0.53 | | | 0.57 | | | 0.52 | | | 0.24 | UJ | L | 0.46 | | | 0.52 | | | 0.46 | | | 0.56 | | | 0.46 | | | 0.52 | | | 0.48 | | | 0.53 | | |
| Chlorobenzene (Monochlorobenzene) | 0.84 | U | | 0.67 | U | | 0.74 | U | | 0.89 | UJ | L | 0.76 | U | | 0.75 | U | | 0.74 | U | | 0.77 | U | | 0.78 | U | | 0.72 | U | | 0.74 | U | | 0.76 | U | |
| Dichlorobenzene (1,2-) | 1.1 | U | | 0.87 | U | | 0.97 | U | | 1.2 | UJ | L | 1 | U | | 0.98 | U | | 0.97 | U | | 1.0 | U | | 1 | U | | 0.94 | U | | 0.97 | U | | 1.0 | U | |
| Dichlorobenzene (1,3-) | 1.1 | U | | 0.87 | U | | 0.97 | U | | 1.2 | UJ | L | 1 | U | | 0.98 | U | | 0.97 | U | | 1.0 | U | | 1 | U | | 0.94 | U | | 0.97 | U | | 1.0 | U | |
| Dichlorobenzene (1,4-) | 1.1 | U | | 0.87 | U | | 0.97 | U | | 1.2 | UJ | L | 1 | U | | 0.98 | U | | 0.97 | U | | 1.0 | U | | 1 | U | | 0.94 | U | | 0.97 | U | | 1.0 | U | |
| Dichlorodifluoromethane (CFC12) | 2.9 | | | 2.6 | | | 2.7 | | | 0.95 | UJ | L | 2.4 | | | 2.6 | | | 2.4 | | | 2.6 | | | 2.3 | | | 2.7 | | | 2.5 | | | 2.7 | | |
| Dichloroethene (1,1-) | 0.72 | U | | 0.57 | U | | 0.64 | U | | 0.76 | UJ | L | 0.66 | U | | 0.65 | U | | 0.64 | U | | 0.67 | U | | 0.67 | U | | 0.62 | U | | 0.64 | U | | 0.66 | U | |
| Dichloroethene (cis-1,2-) | 0.72 | U | | 0.57 | U | | 0.64 | U | | 0.76 | UJ | L | 0.66 | U | | 0.65 | U | | 0.64 | U | | 0.67 | U | | 0.67 | U | | 0.62 | U | | 0.64 | U | | 0.66 | U | |
| Ethane, 1,1,2-trichloro-1,2,2-trifluoro-(CFC113) | 1.4 | U | | 1.1 | U | | 1.2 | U | | 1.5 | UJ | L | 1.3 | U | | 1.2 | U | | 1.2 | U | | 1.3 | U | | 1.3 | U | | 1.2 | U | | 1.2 | U | | 1.3 | U | |
| Ethylbenzene | 0.79 | U | | 0.63 | U | | 0.7 | U | | 0.84 | UJ | L | 0.72 | U | | 0.95 | | | 0.7 | U | | 0.73 | U | | 0.73 | U | | 0.68 | U | | 0.7 | U | | 1.9 | | |
| Methylene Chloride (Dichloromethane) | 1.3 | | | 1.0 | U | | 1.1 | | | 3.5 | J | L | 1.2 | U | | 1.1 | U | | 1.5 | | | 1.2 | | | 1.2 | U | | 1.4 | EB | H | 1.1 | U | | 1.2 | U | |
| Tetrachloroethene (PCE) | 1.2 | U | | 0.98 | U | | 1.1 | U | | 1.3 | UJ | L | 19 | | | 1.4 | | | 7.9 | | | 1.4 | | | 11 | | | 2.2 | | | 4.2 | | | 1.1 | U | |
| Toluene | 0.67 | J | I | 0.55 | U | | 0.64 | | | 3.8 | J | L | 0.62 | J | I | 0.76 | EB | H | 0.61 | U | | 0.63 | U | | 0.64 | U | | 2.2 | EB | H | 3.3 | | | 0.62 | U | |
| Trichlorobenzene (1,2,4-) | 6.8 | U | | 5.4 | U | | 6 | U | | 7.2 | UJ | L | 6.2 | U | | 6.0 | U | | 6 | U | | 6.2 | U | | 6.3 | U | | 5.8 | U | | 6 | U | | 6.2 | U | |
| Trichloroethane (1,1,1-) | 0.99 | U | | 0.79 | U | | 0.88 | U | | 1.0 | UJ | L | 0.9 | U | | 0.89 | U | | 0.88 | U | | 0.92 | U | | 0.92 | U | | 0.85 | U | | 0.88 | U | | 0.9 | U | |
| Trichloroethene (TCE) | 0.2 | U | | 0.16 | U | | 0.17 | U | | 0.21 | UJ | L | 0.22 | | | 0.48 | | | 0.17 | U | | 0.18 | U | | 0.3 | | | 0.17 | U | | 0.17 | U | | 0.18 | U | |
| Trichlorofluoromethane | 1.4 | | | 1.7 | | | 1.5 | | | 1.1 | UJ | L | 2.2 | | | 2.4 | | | 1.3 | | | 1.8 | | | 1.5 | | | 1.7 | | | 1.7 | | | 1.8 | | |
| Vinyl chloride | 0.046 | U | | 0.037 | U | | 0.041 | U | | 0.049 | UJ | L | 0.042 | U | | 0.042 | U | | 0.041 | U | | 0.043 | U | | 0.043 | U | | 0.04 | U | | 0.041 | U | | 0.042 | U | |
| Xylene (o-) | 0.79 | U | | 0.63 | U | | 0.7 | U | | 0.84 | UJ | L | 0.72 | U | | 0.71 | U | | 0.7 | U | | 0.73 | U | | 0.73 | U | | 0.68 | U | | 0.7 | U | | 1.2 | | |
| Xylene-m,p (Sum of Isomers) | 0.79 | U | | 0.63 | U | | 0.7 | U | | 1.2 | J | L | 0.72 | U | | 2.0 | EB | H | 0.7 | U | | 0.73 | U | | 0.73 | U | | 0.68 | U | | 0.89 | | | 4.9 | EB | H |

| Analyte | Concentrations in µg/m$^3$ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | IA BH-40 | | | | | | IA4014 | | | IA4016 | | | IA4017 | | | | | | IA4019 | | | | | | IA4019 Duplicate | | | | | |
| | 12/17/2015 | | | 3/17/2017 | | | 12/17/2015 | | | 12/17/2015 | | | 12/17/2015 | | | 3/17/2017 | | | 12/17/2015 | | | 3/17/2017 | | | 12/17/2015 | | | 3/17/2017 | | |
| | Result | Qualifier | Bias | Result | Qualifier | Bias | Result | Qualifier | Bias | Result | Qualifier | Bias | Result | Qualifier | Bias | Result | Qualifier | Bias | Result | Qualifier | Bias | Result | Qualifier | Bias | Result | Qualifier | Bias | Result | Qualifier | Bias |
| Acetone | 9.2 | | | 7.8 | EB | H | 9.6 | | | 17 | | | 39 | | | 6.1 | EB | H | 6.2 | | | 22 | JEB | I | 6.1 | | | 6.8 | JEB | I |
| Benzene | 0.55 | U | | 0.60 | | | 0.51 | U | | 0.53 | U | | 0.67 | | | 0.53 | U | | 0.52 | U | | 0.60 | | | 0.51 | U | | 0.52 | | |
| Carbon tetrachloride | 0.37 | | | 0.44 | | | 0.49 | | | 0.48 | | | 0.48 | | | 0.48 | | | 0.48 | | | 0.55 | | | 0.45 | | | 0.55 | | |
| Chlorobenzene (Monochlorobenzene) | 0.79 | U | | 0.76 | U | | 0.74 | U | | 0.76 | U | | 0.72 | U | | 0.76 | U | | 0.74 | U | | 0.63 | U | | 0.74 | U | | 0.73 | U | |
| Dichlorobenzene (1,2-) | 1 | U | | 0.99 | U | | 0.97 | U | | 1 | U | | 0.94 | U | | 0.99 | U | | 0.97 | U | | 0.82 | U | | 0.96 | U | | 0.95 | U | |
| Dichlorobenzene (1,3-) | 1 | U | | 0.99 | U | | 0.97 | U | | 1 | U | | 0.94 | U | | 0.99 | U | | 0.97 | U | | 0.82 | U | | 0.96 | U | | 0.95 | U | |
| Dichlorobenzene (1,4-) | 1 | U | | 0.99 | U | | 0.97 | U | | 1 | U | | 0.94 | U | | 0.99 | U | | 0.97 | U | | 0.82 | U | | 0.96 | U | | 0.95 | U | |
| Dichlorodifluoromethane (CFC12) | 2.4 | | | 2.7 | | | 2.4 | | | 2.4 | | | 2.4 | | | 2.6 | | | 2.8 | | | 2.6 | | | 2.4 | | | 2.5 | | |
| Dichloroethene (1,1-) | 0.68 | U | | 0.65 | U | | 0.64 | U | | 0.66 | U | | 0.62 | U | | 0.65 | U | | 0.64 | U | | 0.54 | U | | 0.63 | U | | 0.63 | U | |
| Dichloroethene (cis-1,2-) | 0.68 | U | | 0.65 | U | | 0.64 | U | | 0.66 | U | | 0.62 | U | | 0.65 | U | | 0.64 | U | | 0.54 | U | | 0.63 | U | | 0.63 | U | |
| Ethane, 1,1,2-trichloro-1,2,2-trifluoro-(CFC113) | 1.3 | U | | 1.3 | U | | 1.2 | U | | 1.3 | U | | 1.2 | U | | 1.3 | U | | 1.2 | U | | 1.0 | U | | 1.2 | U | | 1.2 | U | |
| Ethylbenzene | 0.74 | U | | 0.72 | U | | 0.7 | U | | 0.72 | U | | 0.68 | U | | 0.72 | U | | 0.7 | U | | 0.59 | U | | 0.69 | U | | 0.69 | U | |
| Methylene Chloride (Dichloromethane) | 5.4 | | | 1.1 | U | | 1.1 | U | | 1.2 | U | | 2.2 | | | 1.1 | U | | 1.1 | U | | 2.7 | EB | H | 1.1 | U | | 1.1 | U | |
| Tetrachloroethene (PCE) | 3.5 | | | 1.1 | U | | 4.4 | | | 13 | | | 13 | | | 3.5 | | | 11 | | | 1.6 | | | 9.9 | | | 1.8 | | |
| Toluene | 0.64 | U | | 0.60 | JEB | I | 0.61 | U | | 0.62 | U | | 5.6 | | | 0.62 | U | | 0.61 | U | | 5.7 | JEB | I | 0.6 | U | | 0.74 | JEB | I |
| Trichlorobenzene (1,2,4-) | 6.3 | U | | 6.1 | U | | 6 | U | | 6.2 | U | | 5.8 | U | | 6.1 | U | | 6 | U | | 5.0 | U | | 5.9 | U | | 5.9 | U | |
| Trichloroethane (1,1,1-) | 0.93 | U | | 0.9 | U | | 0.88 | U | | 0.9 | U | | 0.86 | U | | 0.90 | U | | 0.88 | U | | 0.74 | U | | 0.87 | U | | 0.86 | U | |
| Trichloroethene (TCE) | 0.33 | | | 0.18 | U | | 0.17 | U | | 0.18 | | | 0.19 | | | 0.18 | U | | 0.17 | UJ | I | 0.15 | U | | 1.3 | | | 0.17 | U | |
| Trichlorofluoromethane | 1.5 | | | 1.7 | | | 2.4 | | | 2.7 | | | 2.3 | | | 4.2 | | | 1.4 | | | 1.4 | | | 1.4 | | | 1.5 | | |
| Vinyl chloride | 0.044 | U | | 0.042 | U | | 0.041 | U | | 0.042 | U | | 0.04 | U | | 0.042 | U | | 0.041 | U | | 0.035 | U | | 0.041 | U | | 0.04 | U | |
| Xylene (o-) | 0.74 | U | | 0.72 | U | | 0.7 | U | | 0.72 | U | | 0.66 | J | I | 0.72 | U | | 0.7 | U | | 0.59 | U | | 0.69 | U | | 0.69 | U | |
| Xylene-m,p (Sum of Isomers) | 0.74 | U | | 0.72 | U | | 0.7 | U | | 0.72 | U | | 2.1 | | | 0.72 | U | | 0.7 | U | | 1.1 | EB | H | 0.69 | U | | 0.69 | U | |

Notes:

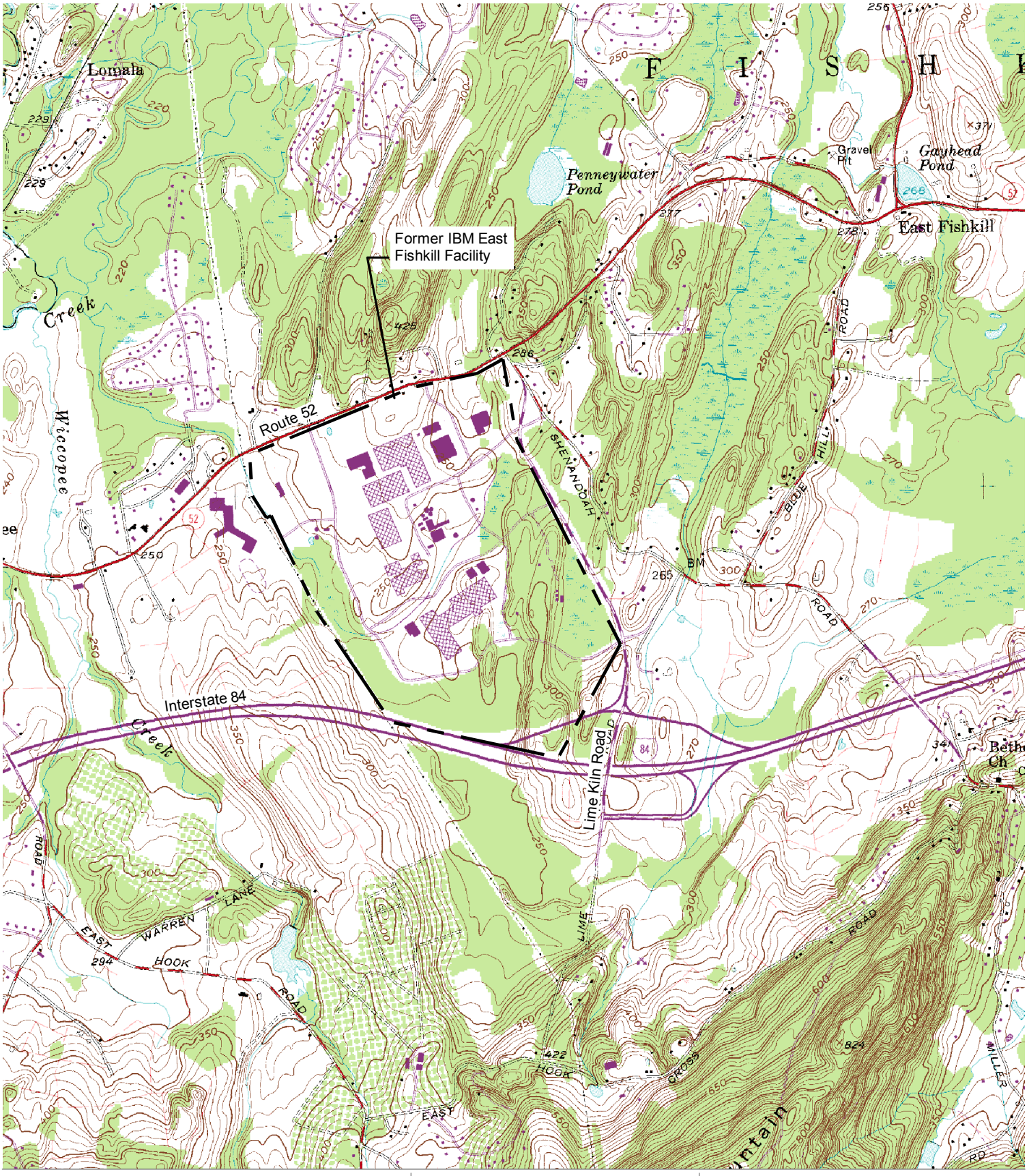
1. Samples were collected by Sanborn, Head Engineering, PC (SHPC) on the dates indicated over an approximately 8-hour sampling period. The samples were analyzed by Eurofins Air Toxics, Inc. (EATI) of Folsom, California for the project-specific list of volatile organic compounds (VOCs) by United States Environmental Protection Agency (USEPA) Method TO-15 in the full scan and selective ion monitoring (SIM) modes.

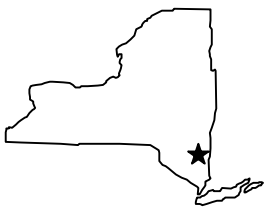
2. An data usability review (DUR) was performed on the data by New Environmental Horizons, Inc. (NEH) . All results were considered acceptable, with the understanding of the potential uncertainty (bias) in the qualified results. In some cases, NEH assigned the following qualifiers and biases to the data. Refer to the DUR report for further details.
"U" indicates the analyte is non-detect at or above the indicated sample specific practical quantification limit (PQL).
"J" indicates the result is an estimated value.
"EB" indicates the analyte was detected in the equipment or field blank.
"UJ" indicates the non-detect is estimated at the indicated PQL.
"H" indicates a high bias.
"I" indicates an indeterminate bias.
"L" indicates field final and lab receipt vacuums disagree. Indicates low bias.

3. The "AA" designation indicates that the sample consists of ambient air collected from outside the building. In 2015, the ambient air and nitrogen blank samples were collected from beneath the outside air intake to air handling unit AC-83. Based on the nitrogen blank results, we believe that a leak was present in the connections between the nitrogen canister and the Summa® canister into which the nitrogen was being transferred. The data from the nitrogen blank were not used in the data usability assessment due to the uncertainty of the results.

4. Results were rounded to two significant figures.

# FIGURES



N
W E
S

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

Drawn By: E. Wright
Designed By: J. Corsello
Reviewed By: J. Sanborn / D. Shea
Project No: 2999.07
Date: May 2017

1,000' 0 2,000' Feet

SANBORN HEAD ENGINEERING

Figure 1

# Site Location Plan

Former IBM East Fishkill Facility
Hopewell Junction, New York


Figure 2

# B330D Location Plan

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By: E. Wright
Designed By: J. Corsello
Reviewed By: J. Sanborn / D. Shea
Project No: 2999.07
Date: May 2017

## Figure Narrative

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

## Legend

— - - - — Property Line

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

B320B Indicates building number

Indicates the location of B330D

N
W E
S

200' 100' 0 200' 400' Feet

SANBORN HEAD ENGINEERING

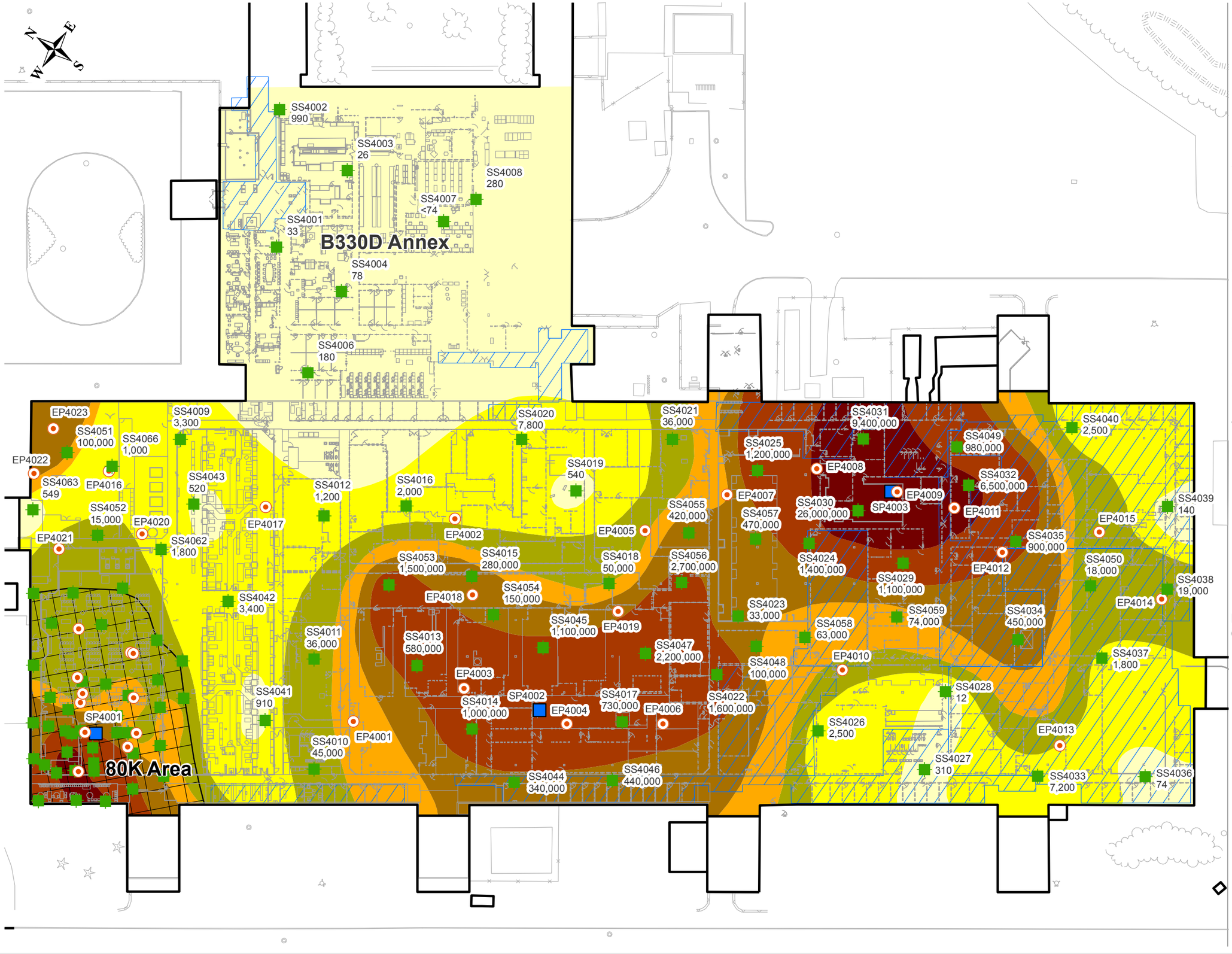



Figure 3

# Concentration Isopleths for Tetrachloroethene in Subslab Vapor

Building 330D

Former IBM East Fishkill Facility
Hopewell Junction, New York

| | |
|---|---|
| Drawn By: | C. LaVack |
| Designed By: | J. Corsello |
| Reviewed By: | J. Sanborn / D. Shea |
| Project No: | 2999.07 |
| Date: | May 2017 |

## Figure Narrative

This figure shows the tetrachlorethene (PCE) concentration isopleths for subslab vapor in micrograms per cubic meter ($\mu g/m^3$). Subslab vapor samples collected from within the 80K area (hatched on this figure) were collected in August 2008 prior to the start-up of the 80K area subslab depressurization system (SSDS). Subslab vapor samples outside of the 80K area were collected in February through December 2016 using 1-L Summa canisters with 1-hour flow controllers. The colored shading represents inferred PCE concentrations below the slab based on the results of the samples collected at the monitoring ports. Other interpretations are possible.

## Legend

- Subslab Vapor Monitoring Point
- Subslab Vapor Extraction Port
- Subslab Vapor Suction Pit
- 19,000 — PCE Results ($\mu g/m^3$) in Subslab Vapor
- Routinely Occupied Area

### PCE Concentrations in Subslab Vapor ($\mu g/m^3$)

- <1,000
- 1,000 - 10,000
- 10,000 - 50,000
- 50,000 - 100,000
- 100,000 - 500,000
- 500,000 - 5,000,000
- >5,000,000

Isopleths depicting PCE concentrations in subslab vapor in this area are based on data collected in August 2008 prior to installation of the 80K SSDS.

30 15 0 30 60 Feet

SANBORN HEAD ENGINEERING

Figure 4

# Subslab Pressure Response to Vapor Extraction

Building 330D

Former IBM East Fishkill Facility
Hopewell Junction, New York

| | |
|---|---|
| Drawn By: | C. LaVack |
| Designed By: | J. Corsello |
| Reviewed By: | J. Sanborn / D. Shea |
| Project No: | 2999.07 |
| Date: | May 2017 |

## Figure Narrative

This figure shows the footprint of the combined subslab pressure response from the temporary subslab depressurization (SSD) systems extracting vapor from SP4003 (temporary SSD system #1), EP4003, EP4004, EP4006, EP4018, and EP4019 (temporary SSD system #2), and the 80K SSD system extracting vapor from SP4001. The subslab pressure response footprint represents the outer limit of the -0.004 inches of water column differential pressure measured on February 22, 2017.

The subslab pressure response footprint represents inferred apparent vacuum conditions. Actual vacuum conditions are likely more complex than shown. Other interpretations are possible.

## Legend

Refer to figure 3 for additional legend items.

- Subslab Vapor Monitoring Point
- Subslab Vapor Extraction Port
- Subslab Vapor Suction Pit
- -0.004 — Differential pressure contour (inches of water column). Dashed where inferred.
- **SP4003** — Extraction Port/Suction Pit
- in. wc — Applied Vacuum (extraction port/ suction pit) inches of water column
- scfm — Flow Rate (std. cu. ft. per min.)
- µg/m³ — PCE Concentration (µg/m³)
- -0.005 — Observed pressure differential between the subslab and room (in. wc) with three systems running. Negative values indicate subslab pressure is less than indoor air pressure.

SSD System #2
EP4003, 4004, 4006, 4018, 4019

Applied Vacuum:
4003 = 22 in. wc.
4004 = 20 in. wc.
4006 = 20 in. wc.
4018 = 10 in. wc.
4019 = 14 in. wc.

Flow Rate:
4003 = 77 scfm
4004 = 58 scfm
4006 = 39 scfm
4018 = 5.6 scfm
4019 = 37 scfm

Combined PCE: 146,000 µg/m³

SSD System #1
SP4003
Applied Vacuum: 60 in wc
Flow Rate: 110 scfm
PCE: 8,340,000 µg/m³

80K Area SSD System
SP4001
Applied Vacuum: 54 in wc
Flow Rate: 76 scfm
PCE: 2,110,000 µg/m³

B330D Annex

80K Area

Feet
30 15 0 30 60

SANBORN HEAD ENGINEERING

Figure 5

# Summary of Portable GC/MS Screening Results

Building 330D

Former IBM East Fishkill Facility

Hopewell Junction, New York

| | |
|---|---|
| Drawn By: | C. LaVack |
| Designed By: | J. Corsello |
| Reviewed By: | J. Sanborn / D. Shea |
| Project No: | 2999.07 |
| Date: | May 2017 |

## Figure Narrative

This figure shows tetrachloroethene (PCE) and trichloroethene (TCE) screening results for indoor air conducted using a portable gas chromatograph/mass spectrometer (GC/MS) in December 2015 (pre-startup of SSD systems #1 and #2) and March 2017 (post-startup of SSD systems #1 and #2). Results are shown in micrograms per cubic meter (µg/m$^3$). Refer to Table 1 of this report for further details on the HVAC operating conditions in B330D.

## Legend

- Indoor Air Location
- AC-83 — HVAC Zone and Designation
- HVAC Zones Off During Screening
- Control Point Name
  IA4009
  4.3 / <0.54
  0.82 / <0.54
  PCE result / TCE Result (µg/m$^3$)
  (December 16th, 2015)
  (March 16th, 2017)
- NS — Not Sampled
- Routinely Occupied Area

Feet

30 15 0 30 60

SANBORN HEAD ENGINEERING

B330D Annex

80K Area

IA4014 3.4 / <0.54 NS
IA4002 8.3 / <0.54 NS
IA4001 3.9 / <0.54 NS
IA AP-30 9.4 / <0.54 NS
IA AR-28 9.7 / <0.54 NS
IA4033 NS 8.0 / <0.54
IA4031 NS 7.0 / <0.54
IA4015 11 / <0.54 8.1 / <0.54
IA4003 11 / <0.54 NS
IA4017 9.8 / <0.54 5.9 / <0.54
IA4004 9.1 / <0.54 6.2 / <0.54
IA AY-35 1.6 / <0.54 1.7 / <0.54
IA4019 7.2 / <0.54 1.7 / <0.54
IA4009 4.3 / <0.54 0.82 / <0.54
IA AY-43 20 / <0.54 1.5 / <0.54
IA4032 NS 10 / <0.54
IA4030 NS 9.7 / <0.54
IA4016 12 / <0.54 2.7 / <0.54
IA4006 9.1 / <0.54 2.5 / <0.54
IA4008 13 / <0.54 5.3 / <0.54
IA BA-39 39 / <0.54 5.7 / <0.54
IA BA-44 13 / <0.54 2.2 / <0.54
IA BA-28 12 / <0.54 9.6 / <0.54
IA4007 22 / <0.54 3.2 / <0.54
IA BB-37 3.0 / <0.54 2.7 / <0.54
IA BB-39 13 / <0.54 2.3 / <0.54
IA4018 8.2 / <0.54 1.1 / <0.54
IA4012 2.4 / <0.54 <0.68 / <0.54
IA BB-24 10 / <0.54 6.2 / <0.54
IA BD-25 17 / <0.54 9.0 / <0.54
IA BC-32 6.7 / <0.54 2.7 / <0.54
IA4011 4.8 / <0.54 0.8 / <0.54
IA4010 2.5 / <0.54 0.92 / <0.54
IA BE-28 13 / <0.54 NS
IA4013 NS 9.4 / <0.54
IA BF-24 17 / <0.54 7.4 / <0.54
IA4005 20 / <0.54 8.1 / <0.54
IA BG-38 7.6 / <0.54 2.5 / <0.54
IA BH-40 6.4 / <0.54 0.81 / <0.54
IA BG-45 2.9 / <0.54 <0.68 / <0.54

AC-61 AC-25 AC-60 AC-12 AC-13 AC-71 AC-79 AC-72/82 AC-5B2/6B1 AC-83 AC-8-2 AC-15 AC-6A2

Last Edited By: clavack

Path: \\conserv1\shdata\2900s\2999.00\Graphics Files\GIS\Figures\B330D\HVAC\B330D_Summary_SUMMA_Results.mxd

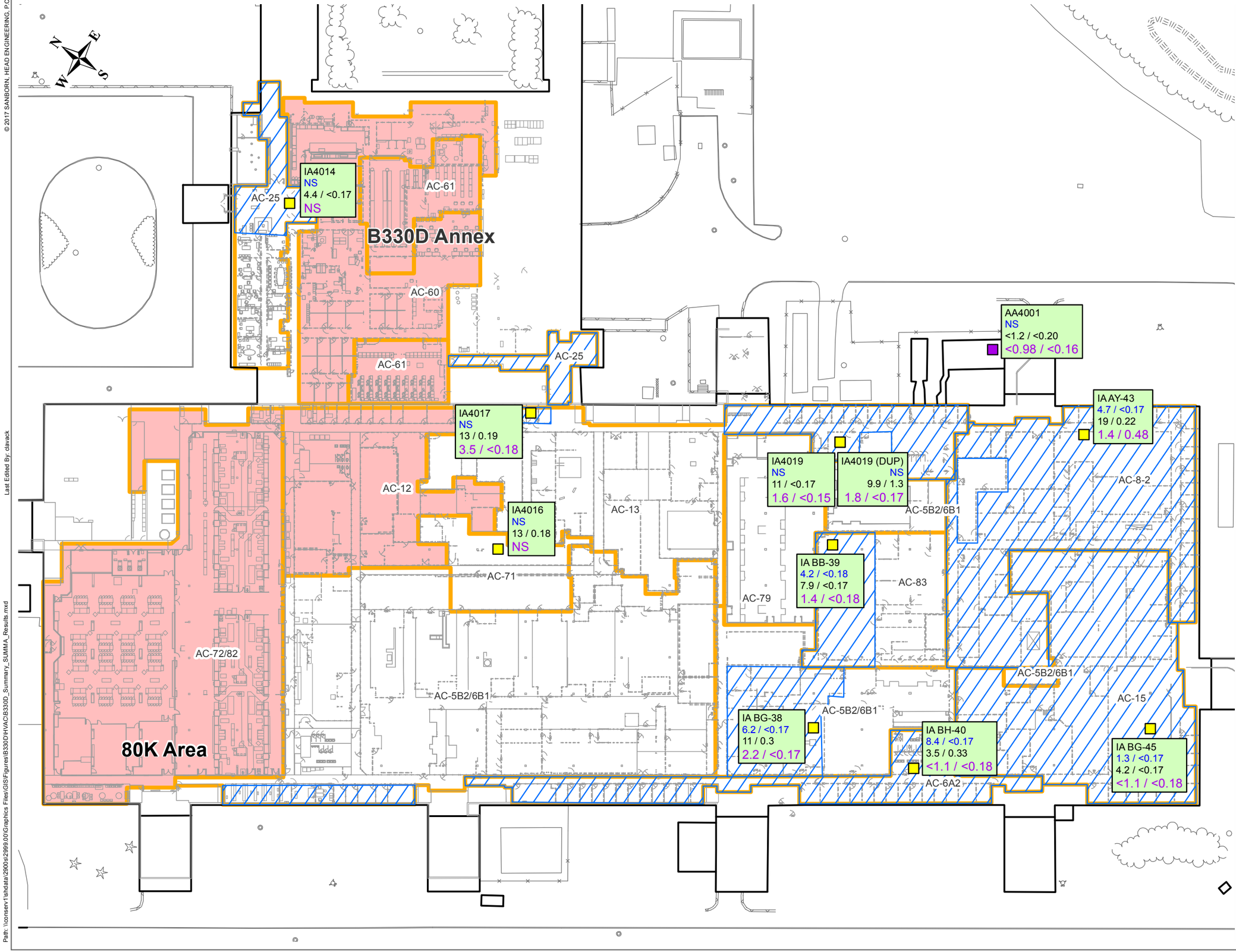



Figure 6

# Summary of 8-Hour Confirmatory Sampling Results (PCE and TCE)

Building 330D

Former IBM East Fishkill Facility

Hopewell Junction, New York

| | |
|---|---|
| Drawn By: | C. LaVack |
| Designed By: | J. Corsello |
| Reviewed By: | J. Sanborn / D. Shea |
| Project No: | 2999.07 |
| Date: | May 2017 |

## Figure Narrative

This figure shows tetrachloroethene (PCE) and trichloroethene (TCE) results for indoor air sampling of occupied portions of the first floor of B330D in December 2015 (pre-startup of SSD systems #1 and #2) and March 2017 (post-startup of SSD systems #1 and #2). The results of the last historical sampling event are also shown for comparison at each location where subsequent samples were collected. "NS" indicates that the location has not been sampled previously. All samples were collected as 8-hour time-weighted-average samples using 6-L SUMMA canisters. Results are shown in micrograms per cubic meter ($\mu g/m^3$). Refer to Table 1 of this report for further details on the HVAC operating conditions in B330D.

## Legend

- Indoor Air Location
- Ambient Air Location
- AC-83 — HVAC Zone and Designation
- IA AY-43 / 4.7 / <0.17 / 19 / 0.22 / 1.4 / 0.48 — Control Point Name; PCE/TCE (Historical Confirmatory Sample-Date Varies); PCE/TCE (December 17, 2015 Confirmatory Sample); PCE/TCE (March 17, 2017 Confirmatory Sample)
- NS — Not Sampled
- HVAC Zones Off During Testing
- Routinely Occupied Area

30 15 0 30 60 Feet

SANBORN HEAD ENGINEERING

# APPENDIX A

# LIMITATIONS

# APPENDIX A
# SHPC LIMITATIONS

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

2. 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.

3. This report has been prepared for the exclusive use of the IBM Corporation for specific application to the former IBM East Fishkill facility in accordance with generally accepted hydrogeologic and engineering practices. No warranty, expressed or implied, is made. The contents of this report should not be relied on by any other party without the express written consent of SHPC.

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

# APPENDIX B

# PHOTOGRAPH LOG

# B330D HVAC Shutdown Testing
# 8-HR Summa Sampling
# Photograph Log

**Photo 1: Samples AA4002 and FB4002, outside air intake for AC-83.**

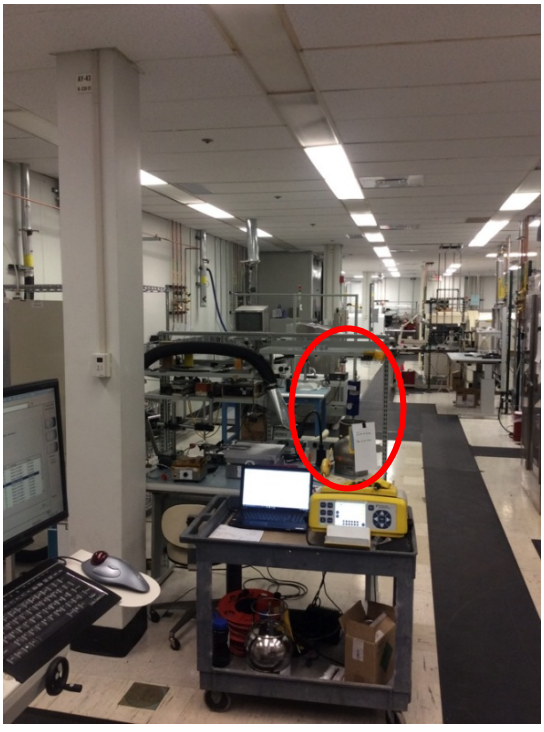


**Photo 2: Sample IA AY-43**


**Photo 3: Sample IA BB-39**

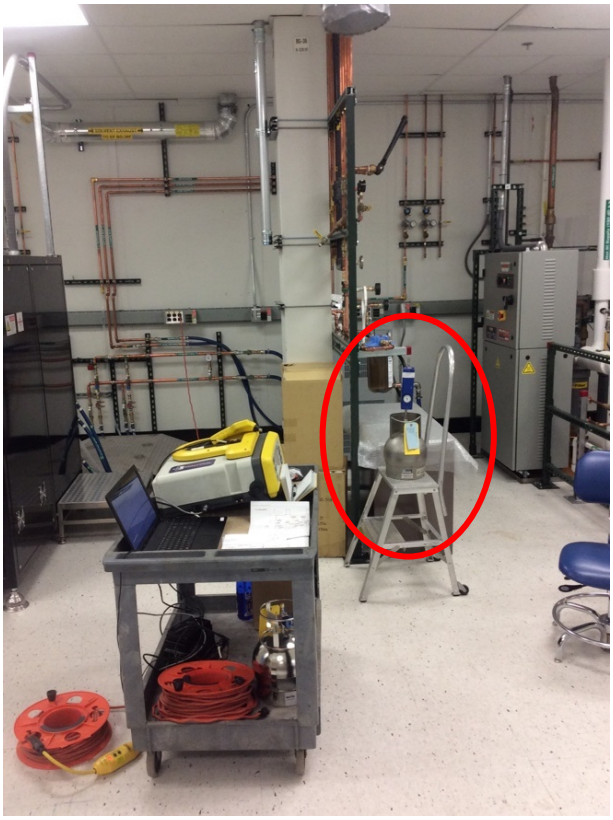


**Photo 4: Sample IA BG-38**

**Photo 5: Sample IA BG-45**

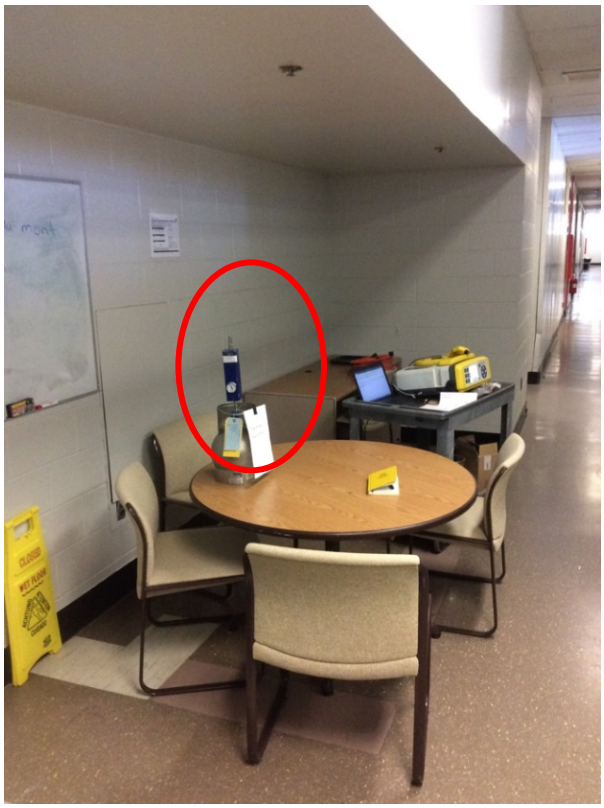


**Photo 6: Sample IA BH-40, tables in hallway**

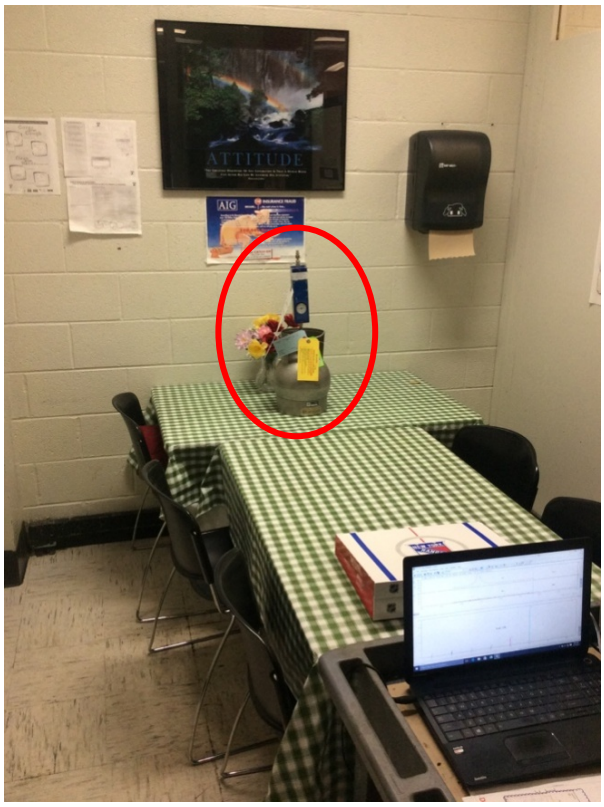



**Photo 7: Sample IA 4017, breakroom**

**Photo 8: Sample IA4019 and IA4019 (FD4002) duplicate, center of conference room**

# APPENDIX C

# ANALYTICAL LABORATORY REPORT

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4/13/2017
Ms. Erica Bosse
Sanborn, Head & Associates
24 Wade Road

Latham NY

Project Name:
Project #: 2999.07
Workorder #: 1703515R1

Dear Ms. Erica Bosse

The following report includes the data for the above referenced project for sample(s) received on 3/28/2017 at Air Toxics Ltd.

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

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

Regards,

Ausha Scott

Project Manager

eurofins | Air Toxics

# WORK ORDER #: 1703515R1

Work Order Summary

| | | | |
|---|---|---|---|
| **CLIENT:** | Ms. Erica Bosse<br>Sanborn, Head & Associates<br>24 Wade Road<br>Latham, NY | **BILL TO:** | Accounts Payable<br>Sanborn, Head & Associates<br>20 Foundry Street<br>Concord, NH 03301 |
| **PHONE:** | 518-207-0769 | **P.O. #** | |
| **FAX:** | | **PROJECT #** | 2999.07 |
| **DATE RECEIVED:** | 03/28/2017 | **CONTACT:** | Ausha Scott |
| **DATE COMPLETED:** | 04/09/2017 | | |
| **DATE REISSUED:** | 04/13/2017 | | |

| FRACTION # | NAME | TEST | RECEIPT VAC./PRES. | FINAL PRESSURE |
|---|---|---|---|---|
| 01A | AA4002 | Modified TO-15 | 2.6 "Hg | 4.7 psi |
| 01B | AA4002 | Modified TO-15 | 2.6 "Hg | 4.7 psi |
| 02A | FB4002 | Modified TO-15 | 9.2 "Hg | 5 psi |
| 02B | FB4002 | Modified TO-15 | 9.2 "Hg | 5 psi |
| 03A | FD4002 | Modified TO-15 | 4.7 "Hg | 4.9 psi |
| 03B | FD4002 | Modified TO-15 | 4.7 "Hg | 4.9 psi |
| 04A | IA AY-43 | Modified TO-15 | 5.5 "Hg | 4.9 psi |
| 04B | IA AY-43 | Modified TO-15 | 5.5 "Hg | 4.9 psi |
| 05A | IA BB-39 | Modified TO-15 | 6.1 "Hg | 5 psi |
| 05B | IA BB-39 | Modified TO-15 | 6.1 "Hg | 5 psi |
| 06A | IA BG-38 | Modified TO-15 | 4.3 "Hg | 4.9 psi |
| 06B | IA BG-38 | Modified TO-15 | 4.3 "Hg | 4.9 psi |
| 07A | IA BG-45 | Modified TO-15 | 5.7 "Hg | 5 psi |
| 07B | IA BG-45 | Modified TO-15 | 5.7 "Hg | 5 psi |
| 08A | IA BH-40 | Modified TO-15 | 5.5 "Hg | 5.1 psi |
| 08B | IA BH-40 | Modified TO-15 | 5.5 "Hg | 5.1 psi |
| 09A | IA 4017 | Modified TO-15 | 5.9 "Hg | 4.8 psi |
| 09B | IA 4017 | Modified TO-15 | 5.9 "Hg | 4.8 psi |
| 10A | IA 4019 | Modified TO-15 | 1 "Hg | 4.6 psi |
| 10B | IA 4019 | Modified TO-15 | 1 "Hg | 4.6 psi |
| 11A | IA BG-38G | Modified TO-15 | 0.8 "Hg | 5.1 psi |
| 11B | IA BG-38G | Modified TO-15 | 0.8 "Hg | 5.1 psi |
| 12A | Lab Blank | Modified TO-15 | NA | NA |

Continued on next page

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# WORK ORDER #: 1703515R1

Work Order Summary

| | | | |
|---|---|---|---|
| **CLIENT:** | Ms. Erica Bosse<br>Sanborn, Head & Associates<br>24 Wade Road<br>Latham, NY | **BILL TO:** | Accounts Payable<br>Sanborn, Head & Associates<br>20 Foundry Street<br>Concord, NH 03301 |
| **PHONE:** | 518-207-0769 | **P.O. #** | |
| **FAX:** | | **PROJECT #** | 2999.07 |
| **DATE RECEIVED:** | 03/28/2017 | **CONTACT:** | Ausha Scott |
| **DATE COMPLETED:** | 04/09/2017 | | |
| **DATE REISSUED:** | 04/13/2017 | | |

| FRACTION # | NAME | TEST | RECEIPT VAC./PRES. | FINAL PRESSURE |
|---|---|---|---|---|
| 12B | Lab Blank | Modified TO-15 | NA | NA |
| 13A | CCV | Modified TO-15 | NA | NA |
| 13B | CCV | Modified TO-15 | NA | NA |
| 14A | LCS | Modified TO-15 | NA | NA |
| 14AA | LCSD | Modified TO-15 | NA | NA |
| 14B | LCS | Modified TO-15 | NA | NA |
| 14BB | LCSD | Modified TO-15 | NA | NA |

CERTIFIED BY: Heidi Hayes DATE: 04/13/17

Technical Director

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



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

**LABORATORY NARRATIVE**
**Modified TO-15 Full Scan/SIM**
**Sanborn, Head & Associates**
**Workorder# 1703515R1**

Eleven 6 Liter Summa Canister (SIM Certified) samples were received on March 28, 2017. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the Full Scan and SIM acquisition modes. The method involves concentrating up to 1.0 liters of air. The concentrated aliquot is then flash vaporized and swept through a water management system to remove water vapor. Following dehumidification, the sample passes directly into the GC/MS for analysis.

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

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

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

**Receiving Notes**

The Chain of Custody (COC) information for samples AA4002 and FB4002 did not match the entries on the sample tags with regard to sample identification. Therefore the information on the COC was used to process and report the samples.

There was a significant difference (greater than 5.0" Hg) between the measured canister receipt vacuum and that which was reported on the Chain of Custody (COC) for sample FB4002. A leak test indicated that the valve was functioning properly.

The work order was reissued on April 13, 2017 to correct identification of sample IA AY-43 due to laboratory transcription error.

**Analytical Notes**

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

**Definition of Data Qualifying Flags**

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

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

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit.

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

N - The identification is based on presumptive evidence.

CN - See case narrative explanation

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

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

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

**Client Sample ID: AA4002**

**Lab ID#: 1703515R1-01A**

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 11 | 0.14 | 0.30 | 0.81 | 1.7 |
| Acetone | 0.72 | 5.5 | 1.7 | 13 |
| Benzene | 0.14 | 0.17 | 0.46 | 0.54 |

**Client Sample ID: AA4002**

**Lab ID#: 1703515R1-01B**

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 12 | 0.14 | 0.53 | 0.72 | 2.6 |
| Carbon Tetrachloride | 0.029 | 0.091 | 0.18 | 0.57 |

**Client Sample ID: FB4002**

**Lab ID#: 1703515R1-02A**

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Acetone | 0.96 | 4.3 | 2.3 | 10 |
| Methylene Chloride | 0.39 | 1.0 | 1.3 | 3.5 |
| Toluene | 0.19 | 1.0 | 0.73 | 3.8 |
| m,p-Xylene | 0.19 | 0.27 | 0.84 | 1.2 |

**Client Sample ID: FB4002**

**Lab ID#: 1703515R1-02B**

No Detections Were Found.

**Client Sample ID: FD4002**

**Lab ID#: 1703515R1-03A**

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 11 | 0.16 | 0.26 | 0.89 | 1.5 |
| Acetone | 0.79 | 2.9 | 1.9 | 6.8 |
| Benzene | 0.16 | 0.16 | 0.50 | 0.52 |
| Toluene | 0.16 | 0.20 | 0.60 | 0.74 |

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

**Client Sample ID: FD4002**

**Lab ID#: 1703515R1-03A**

| | | | | |
|---|---|---|---|---|
| Tetrachloroethene | 0.16 | 0.26 | 1.1 | 1.8 |

**Client Sample ID: FD4002**

**Lab ID#: 1703515R1-03B**

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 12 | 0.16 | 0.51 | 0.78 | 2.5 |
| Carbon Tetrachloride | 0.032 | 0.088 | 0.20 | 0.55 |

**Client Sample ID: IA AY-43**

**Lab ID#: 1703515R1-04A**

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 11 | 0.16 | 0.42 | 0.92 | 2.4 |
| Acetone | 0.82 | 3.8 | 1.9 | 9.1 |
| Benzene | 0.16 | 0.18 | 0.52 | 0.57 |
| Toluene | 0.16 | 0.20 | 0.61 | 0.76 |
| Tetrachloroethene | 0.16 | 0.20 | 1.1 | 1.4 |
| Ethyl Benzene | 0.16 | 0.22 | 0.71 | 0.95 |
| m,p-Xylene | 0.16 | 0.47 | 0.71 | 2.0 |

**Client Sample ID: IA AY-43**

**Lab ID#: 1703515R1-04B**

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 12 | 0.16 | 0.53 | 0.81 | 2.6 |
| Carbon Tetrachloride | 0.033 | 0.083 | 0.20 | 0.52 |
| Trichloroethene | 0.033 | 0.089 | 0.18 | 0.48 |

**Client Sample ID: IA BB-39**

**Lab ID#: 1703515R1-05A**

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 11 | 0.17 | 0.32 | 0.94 | 1.8 |

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

**Client Sample ID: IA BB-39**

**Lab ID#: 1703515R1-05A**

| | | | | |
|---|---|---|---|---|
| Acetone | 0.84 | 5.0 | 2.0 | 12 |
| Tetrachloroethene | 0.17 | 0.20 | 1.1 | 1.4 |

**Client Sample ID: IA BB-39**

**Lab ID#: 1703515R1-05B**

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 12 | 0.17 | 0.53 | 0.83 | 2.6 |
| Carbon Tetrachloride | 0.034 | 0.089 | 0.21 | 0.56 |

**Client Sample ID: IA BG-38**

**Lab ID#: 1703515R1-06A**

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 11 | 0.16 | 0.30 | 0.88 | 1.7 |
| Acetone | 0.78 | 3.9 | 1.8 | 9.2 |
| Methylene Chloride | 0.31 | 0.41 | 1.1 | 1.4 |
| Benzene | 0.16 | 0.16 | 0.50 | 0.51 |
| Toluene | 0.16 | 0.58 | 0.59 | 2.2 |
| Tetrachloroethene | 0.16 | 0.33 | 1.0 | 2.2 |

**Client Sample ID: IA BG-38**

**Lab ID#: 1703515R1-06B**

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 12 | 0.16 | 0.54 | 0.77 | 2.7 |
| Carbon Tetrachloride | 0.031 | 0.083 | 0.20 | 0.52 |

**Client Sample ID: IA BG-45**

**Lab ID#: 1703515R1-07A**

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 11 | 0.17 | 0.32 | 0.93 | 1.8 |
| Acetone | 0.83 | 5.3 | 2.0 | 12 |

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

**Client Sample ID: IA BG-45**

**Lab ID#: 1703515R1-07A**

| | | | | |
|---|---|---|---|---|
| Ethyl Benzene | 0.17 | 0.44 | 0.72 | 1.9 |
| m,p-Xylene | 0.17 | 1.1 | 0.72 | 4.9 |
| o-Xylene | 0.17 | 0.26 | 0.72 | 1.2 |

**Client Sample ID: IA BG-45**

**Lab ID#: 1703515R1-07B**

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 12 | 0.17 | 0.55 | 0.82 | 2.7 |
| Carbon Tetrachloride | 0.033 | 0.084 | 0.21 | 0.53 |

**Client Sample ID: IA BH-40**

**Lab ID#: 1703515R1-08A**

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 11 | 0.16 | 0.31 | 0.93 | 1.7 |
| Acetone | 0.82 | 3.3 | 2.0 | 7.8 |
| Benzene | 0.16 | 0.19 | 0.53 | 0.60 |
| Toluene | 0.16 | 0.16 J | 0.62 | 0.60 J |

**Client Sample ID: IA BH-40**

**Lab ID#: 1703515R1-08B**

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 12 | 0.16 | 0.54 | 0.82 | 2.7 |
| Carbon Tetrachloride | 0.033 | 0.069 | 0.21 | 0.44 |

**Client Sample ID: IA 4017**

**Lab ID#: 1703515R1-09A**

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 11 | 0.16 | 0.74 | 0.93 | 4.2 |
| Acetone | 0.82 | 2.6 | 2.0 | 6.1 |
| Tetrachloroethene | 0.16 | 0.51 | 1.1 | 3.5 |

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

**Client Sample ID: IA 4017**

**Lab ID#: 1703515R1-09B**

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 12 | 0.16 | 0.54 | 0.82 | 2.6 |
| Carbon Tetrachloride | 0.033 | 0.077 | 0.21 | 0.48 |

**Client Sample ID: IA 4019**

**Lab ID#: 1703515R1-10A**

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 11 | 0.14 | 0.26 | 0.76 | 1.4 |
| Acetone | 0.68 | 9.2 | 1.6 | 22 |
| Methylene Chloride | 0.27 | 0.78 | 0.94 | 2.7 |
| Benzene | 0.14 | 0.19 | 0.43 | 0.60 |
| Toluene | 0.14 | 1.5 | 0.51 | 5.7 |
| Tetrachloroethene | 0.14 | 0.24 | 0.92 | 1.6 |
| m,p-Xylene | 0.14 | 0.25 | 0.59 | 1.1 |

**Client Sample ID: IA 4019**

**Lab ID#: 1703515R1-10B**

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 12 | 0.14 | 0.53 | 0.67 | 2.6 |
| Carbon Tetrachloride | 0.027 | 0.088 | 0.17 | 0.55 |

**Client Sample ID: IA BG-38G**

**Lab ID#: 1703515R1-11A**

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 11 | 0.14 | 0.28 | 0.78 | 1.6 |
| Acetone | 0.69 | 13 | 1.6 | 31 |
| Benzene | 0.14 | 0.17 | 0.44 | 0.55 |
| Toluene | 0.14 | 0.24 | 0.52 | 0.92 |
| Tetrachloroethene | 0.14 | 0.27 | 0.94 | 1.8 |

eurofins | Air Toxics

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

**Client Sample ID: IA BG-38G**

**Lab ID#: 1703515R1-11B**

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 12 | 0.14 | 0.54 | 0.68 | 2.7 |
| Carbon Tetrachloride | 0.028 | 0.094 | 0.17 | 0.59 |

eurofins | Air Toxics

**Client Sample ID: AA4002**

**Lab ID#: 1703515R1-01A**

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

| | | | |
|---|---|---|---|
| **File Name:** | **20040407** | **Date of Collection: 3/17/17 2:25:00 PM** | |
| **Dil. Factor:** | **1.45** | **Date of Analysis: 4/4/17 11:40 AM** | |

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 11 | 0.14 | 0.30 | 0.81 | 1.7 |
| Freon 113 | 0.14 | Not Detected | 1.1 | Not Detected |
| 1,1-Dichloroethene | 0.14 | Not Detected | 0.57 | Not Detected |
| Acetone | 0.72 | 5.5 | 1.7 | 13 |
| Methylene Chloride | 0.29 | Not Detected | 1.0 | Not Detected |
| cis-1,2-Dichloroethene | 0.14 | Not Detected | 0.57 | Not Detected |
| 1,1,1-Trichloroethane | 0.14 | Not Detected | 0.79 | Not Detected |
| Benzene | 0.14 | 0.17 | 0.46 | 0.54 |
| Toluene | 0.14 | Not Detected | 0.55 | Not Detected |
| Tetrachloroethene | 0.14 | Not Detected | 0.98 | Not Detected |
| Chlorobenzene | 0.14 | Not Detected | 0.67 | Not Detected |
| Ethyl Benzene | 0.14 | Not Detected | 0.63 | Not Detected |
| m,p-Xylene | 0.14 | Not Detected | 0.63 | Not Detected |
| o-Xylene | 0.14 | Not Detected | 0.63 | Not Detected |
| 1,3-Dichlorobenzene | 0.14 | Not Detected | 0.87 | Not Detected |
| 1,4-Dichlorobenzene | 0.14 | Not Detected | 0.87 | Not Detected |
| 1,2-Dichlorobenzene | 0.14 | Not Detected | 0.87 | Not Detected |
| 1,2,4-Trichlorobenzene | 0.72 | Not Detected | 5.4 | Not Detected |

**Container Type: 6 Liter Summa Canister (SIM Certified)**

| Surrogates | %Recovery | Method Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 | 112 | 70-130 |
| Toluene-d8 | 97 | 70-130 |
| 4-Bromofluorobenzene | 96 | 70-130 |

eurofins | Air Toxics

**Client Sample ID: AA4002**

**Lab ID#: 1703515R1-01B**

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

| | | | |
|---|---|---|---|
| **File Name:** | **20040407sim** | **Date of Collection: 3/17/17 2:25:00 PM** | |
| **Dil. Factor:** | **1.45** | **Date of Analysis: 4/4/17 11:40 AM** | |

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 12 | 0.14 | 0.53 | 0.72 | 2.6 |
| Vinyl Chloride | 0.014 | Not Detected | 0.037 | Not Detected |
| Carbon Tetrachloride | 0.029 | 0.091 | 0.18 | 0.57 |
| Trichloroethene | 0.029 | Not Detected | 0.16 | Not Detected |

**Container Type: 6 Liter Summa Canister (SIM Certified)**

| Surrogates | %Recovery | Method Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 | 114 | 70-130 |
| Toluene-d8 | 102 | 70-130 |
| 4-Bromofluorobenzene | 92 | 70-130 |

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**Client Sample ID: FB4002**

**Lab ID#: 1703515R1-02A**

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

| | | | |
|---|---|---|---|
| **File Name:** | **20040408** | **Date of Collection:** | **3/17/17 2:25:00 PM** |
| **Dil. Factor:** | **1.93** | **Date of Analysis:** | **4/4/17 12:19 PM** |

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 11 | 0.19 | Not Detected | 1.1 | Not Detected |
| Freon 113 | 0.19 | Not Detected | 1.5 | Not Detected |
| 1,1-Dichloroethene | 0.19 | Not Detected | 0.76 | Not Detected |
| Acetone | 0.96 | 4.3 | 2.3 | 10 |
| Methylene Chloride | 0.39 | 1.0 | 1.3 | 3.5 |
| cis-1,2-Dichloroethene | 0.19 | Not Detected | 0.76 | Not Detected |
| 1,1,1-Trichloroethane | 0.19 | Not Detected | 1.0 | Not Detected |
| Benzene | 0.19 | Not Detected | 0.62 | Not Detected |
| Toluene | 0.19 | 1.0 | 0.73 | 3.8 |
| Tetrachloroethene | 0.19 | Not Detected | 1.3 | Not Detected |
| Chlorobenzene | 0.19 | Not Detected | 0.89 | Not Detected |
| Ethyl Benzene | 0.19 | Not Detected | 0.84 | Not Detected |
| m,p-Xylene | 0.19 | 0.27 | 0.84 | 1.2 |
| o-Xylene | 0.19 | Not Detected | 0.84 | Not Detected |
| 1,3-Dichlorobenzene | 0.19 | Not Detected | 1.2 | Not Detected |
| 1,4-Dichlorobenzene | 0.19 | Not Detected | 1.2 | Not Detected |
| 1,2-Dichlorobenzene | 0.19 | Not Detected | 1.2 | Not Detected |
| 1,2,4-Trichlorobenzene | 0.96 | Not Detected | 7.2 | Not Detected |

**Container Type: 6 Liter Summa Canister (SIM Certified)**

| Surrogates | %Recovery | Method Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 | 109 | 70-130 |
| Toluene-d8 | 101 | 70-130 |
| 4-Bromofluorobenzene | 94 | 70-130 |

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**Client Sample ID: FB4002**

**Lab ID#: 1703515R1-02B**

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

| | | | |
|---|---|---|---|
| **File Name:** | **20040408sim** | **Date of Collection:** | **3/17/17 2:25:00 PM** |
| **Dil. Factor:** | **1.93** | **Date of Analysis:** | **4/4/17 12:19 PM** |

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 12 | 0.19 | Not Detected | 0.95 | Not Detected |
| Vinyl Chloride | 0.019 | Not Detected | 0.049 | Not Detected |
| Carbon Tetrachloride | 0.039 | Not Detected | 0.24 | Not Detected |
| Trichloroethene | 0.039 | Not Detected | 0.21 | Not Detected |

**Container Type: 6 Liter Summa Canister (SIM Certified)**

| Surrogates | %Recovery | Method Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 | 113 | 70-130 |
| Toluene-d8 | 102 | 70-130 |
| 4-Bromofluorobenzene | 95 | 70-130 |

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**Client Sample ID: FD4002**

**Lab ID#: 1703515R1-03A**

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

| | | | |
|---|---|---|---|
| **File Name:** | **20040409** | **Date of Collection: 3/17/17 2:58:00 PM** | |
| **Dil. Factor:** | **1.58** | **Date of Analysis: 4/4/17 12:57 PM** | |

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 11 | 0.16 | 0.26 | 0.89 | 1.5 |
| Freon 113 | 0.16 | Not Detected | 1.2 | Not Detected |
| 1,1-Dichloroethene | 0.16 | Not Detected | 0.63 | Not Detected |
| Acetone | 0.79 | 2.9 | 1.9 | 6.8 |
| Methylene Chloride | 0.32 | Not Detected | 1.1 | Not Detected |
| cis-1,2-Dichloroethene | 0.16 | Not Detected | 0.63 | Not Detected |
| 1,1,1-Trichloroethane | 0.16 | Not Detected | 0.86 | Not Detected |
| Benzene | 0.16 | 0.16 | 0.50 | 0.52 |
| Toluene | 0.16 | 0.20 | 0.60 | 0.74 |
| Tetrachloroethene | 0.16 | 0.26 | 1.1 | 1.8 |
| Chlorobenzene | 0.16 | Not Detected | 0.73 | Not Detected |
| Ethyl Benzene | 0.16 | Not Detected | 0.69 | Not Detected |
| m,p-Xylene | 0.16 | Not Detected | 0.69 | Not Detected |
| o-Xylene | 0.16 | Not Detected | 0.69 | Not Detected |
| 1,3-Dichlorobenzene | 0.16 | Not Detected | 0.95 | Not Detected |
| 1,4-Dichlorobenzene | 0.16 | Not Detected | 0.95 | Not Detected |
| 1,2-Dichlorobenzene | 0.16 | Not Detected | 0.95 | Not Detected |
| 1,2,4-Trichlorobenzene | 0.79 | Not Detected | 5.9 | Not Detected |

**Container Type: 6 Liter Summa Canister (SIM Certified)**

| Surrogates | %Recovery | Method Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 | 111 | 70-130 |
| Toluene-d8 | 100 | 70-130 |
| 4-Bromofluorobenzene | 95 | 70-130 |

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**Client Sample ID: FD4002**

**Lab ID#: 1703515R1-03B**

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

| | | | |
|---|---|---|---|
| **File Name:** | **20040409sim** | **Date of Collection: 3/17/17 2:58:00 PM** | |
| **Dil. Factor:** | **1.58** | **Date of Analysis: 4/4/17 12:57 PM** | |

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 12 | 0.16 | 0.51 | 0.78 | 2.5 |
| Vinyl Chloride | 0.016 | Not Detected | 0.040 | Not Detected |
| Carbon Tetrachloride | 0.032 | 0.088 | 0.20 | 0.55 |
| Trichloroethene | 0.032 | Not Detected | 0.17 | Not Detected |

**Container Type: 6 Liter Summa Canister (SIM Certified)**

| Surrogates | %Recovery | Method Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 | 115 | 70-130 |
| Toluene-d8 | 102 | 70-130 |
| 4-Bromofluorobenzene | 94 | 70-130 |

eurofins | Air Toxics

**Client Sample ID: IA AY-43**

**Lab ID#: 1703515R1-04A**

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

| | | | |
|---|---|---|---|
| **File Name:** | **20040410** | **Date of Collection: 3/17/17 2:34:00 PM** | |
| **Dil. Factor:** | **1.63** | **Date of Analysis: 4/4/17 01:49 PM** | |

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 11 | 0.16 | 0.42 | 0.92 | 2.4 |
| Freon 113 | 0.16 | Not Detected | 1.2 | Not Detected |
| 1,1-Dichloroethene | 0.16 | Not Detected | 0.65 | Not Detected |
| Acetone | 0.82 | 3.8 | 1.9 | 9.1 |
| Methylene Chloride | 0.33 | Not Detected | 1.1 | Not Detected |
| cis-1,2-Dichloroethene | 0.16 | Not Detected | 0.65 | Not Detected |
| 1,1,1-Trichloroethane | 0.16 | Not Detected | 0.89 | Not Detected |
| Benzene | 0.16 | 0.18 | 0.52 | 0.57 |
| Toluene | 0.16 | 0.20 | 0.61 | 0.76 |
| Tetrachloroethene | 0.16 | 0.20 | 1.1 | 1.4 |
| Chlorobenzene | 0.16 | Not Detected | 0.75 | Not Detected |
| Ethyl Benzene | 0.16 | 0.22 | 0.71 | 0.95 |
| m,p-Xylene | 0.16 | 0.47 | 0.71 | 2.0 |
| o-Xylene | 0.16 | Not Detected | 0.71 | Not Detected |
| 1,3-Dichlorobenzene | 0.16 | Not Detected | 0.98 | Not Detected |
| 1,4-Dichlorobenzene | 0.16 | Not Detected | 0.98 | Not Detected |
| 1,2-Dichlorobenzene | 0.16 | Not Detected | 0.98 | Not Detected |
| 1,2,4-Trichlorobenzene | 0.82 | Not Detected | 6.0 | Not Detected |

**Container Type: 6 Liter Summa Canister (SIM Certified)**

| Surrogates | %Recovery | Method Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 | 116 | 70-130 |
| Toluene-d8 | 100 | 70-130 |
| 4-Bromofluorobenzene | 92 | 70-130 |

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**Client Sample ID: IA AY-43**

**Lab ID#: 1703515R1-04B**

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

| | | | |
|---|---|---|---|
| **File Name:** | **20040410sim** | **Date of Collection: 3/17/17 2:34:00 PM** | |
| **Dil. Factor:** | **1.63** | **Date of Analysis: 4/4/17 01:49 PM** | |

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 12 | 0.16 | 0.53 | 0.81 | 2.6 |
| Vinyl Chloride | 0.016 | Not Detected | 0.042 | Not Detected |
| Carbon Tetrachloride | 0.033 | 0.083 | 0.20 | 0.52 |
| Trichloroethene | 0.033 | 0.089 | 0.18 | 0.48 |

**Container Type: 6 Liter Summa Canister (SIM Certified)**

| Surrogates | %Recovery | Method Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 | 116 | 70-130 |
| Toluene-d8 | 102 | 70-130 |
| 4-Bromofluorobenzene | 92 | 70-130 |

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**Client Sample ID: IA BB-39**

**Lab ID#: 1703515R1-05A**

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

| | | | |
|---|---|---|---|
| **File Name:** | **20040411** | **Date of Collection:** | **3/17/17 2:38:00 PM** |
| **Dil. Factor:** | **1.68** | **Date of Analysis:** | **4/4/17 02:27 PM** |

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 11 | 0.17 | 0.32 | 0.94 | 1.8 |
| Freon 113 | 0.17 | Not Detected | 1.3 | Not Detected |
| 1,1-Dichloroethene | 0.17 | Not Detected | 0.67 | Not Detected |
| Acetone | 0.84 | 5.0 | 2.0 | 12 |
| Methylene Chloride | 0.34 | Not Detected | 1.2 | Not Detected |
| cis-1,2-Dichloroethene | 0.17 | Not Detected | 0.67 | Not Detected |
| 1,1,1-Trichloroethane | 0.17 | Not Detected | 0.92 | Not Detected |
| Benzene | 0.17 | Not Detected | 0.54 | Not Detected |
| Toluene | 0.17 | Not Detected | 0.63 | Not Detected |
| Tetrachloroethene | 0.17 | 0.20 | 1.1 | 1.4 |
| Chlorobenzene | 0.17 | Not Detected | 0.77 | Not Detected |
| Ethyl Benzene | 0.17 | Not Detected | 0.73 | Not Detected |
| m,p-Xylene | 0.17 | Not Detected | 0.73 | Not Detected |
| o-Xylene | 0.17 | Not Detected | 0.73 | Not Detected |
| 1,3-Dichlorobenzene | 0.17 | Not Detected | 1.0 | Not Detected |
| 1,4-Dichlorobenzene | 0.17 | Not Detected | 1.0 | Not Detected |
| 1,2-Dichlorobenzene | 0.17 | Not Detected | 1.0 | Not Detected |
| 1,2,4-Trichlorobenzene | 0.84 | Not Detected | 6.2 | Not Detected |

**Container Type: 6 Liter Summa Canister (SIM Certified)**

| Surrogates | %Recovery | Method Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 | 119 | 70-130 |
| Toluene-d8 | 100 | 70-130 |
| 4-Bromofluorobenzene | 92 | 70-130 |

eurofins | Air Toxics

**Client Sample ID: IA BB-39**

**Lab ID#: 1703515R1-05B**

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

| | | | |
|---|---|---|---|
| **File Name:** | **20040411sim** | **Date of Collection: 3/17/17 2:38:00 PM** | |
| **Dil. Factor:** | **1.68** | **Date of Analysis: 4/4/17 02:27 PM** | |

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 12 | 0.17 | 0.53 | 0.83 | 2.6 |
| Vinyl Chloride | 0.017 | Not Detected | 0.043 | Not Detected |
| Carbon Tetrachloride | 0.034 | 0.089 | 0.21 | 0.56 |
| Trichloroethene | 0.034 | Not Detected | 0.18 | Not Detected |

**Container Type: 6 Liter Summa Canister (SIM Certified)**

| Surrogates | %Recovery | Method Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 | 116 | 70-130 |
| Toluene-d8 | 102 | 70-130 |
| 4-Bromofluorobenzene | 91 | 70-130 |

eurofins | Air Toxics

**Client Sample ID: IA BG-38**

**Lab ID#: 1703515R1-06A**

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

| | | | |
|---|---|---|---|
| **File Name:** | **20040412** | **Date of Collection:** | **3/17/17 2:40:00 PM** |
| **Dil. Factor:** | **1.56** | **Date of Analysis:** | **4/4/17 03:06 PM** |

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 11 | 0.16 | 0.30 | 0.88 | 1.7 |
| Freon 113 | 0.16 | Not Detected | 1.2 | Not Detected |
| 1,1-Dichloroethene | 0.16 | Not Detected | 0.62 | Not Detected |
| Acetone | 0.78 | 3.9 | 1.8 | 9.2 |
| Methylene Chloride | 0.31 | 0.41 | 1.1 | 1.4 |
| cis-1,2-Dichloroethene | 0.16 | Not Detected | 0.62 | Not Detected |
| 1,1,1-Trichloroethane | 0.16 | Not Detected | 0.85 | Not Detected |
| Benzene | 0.16 | 0.16 | 0.50 | 0.51 |
| Toluene | 0.16 | 0.58 | 0.59 | 2.2 |
| Tetrachloroethene | 0.16 | 0.33 | 1.0 | 2.2 |
| Chlorobenzene | 0.16 | Not Detected | 0.72 | Not Detected |
| Ethyl Benzene | 0.16 | Not Detected | 0.68 | Not Detected |
| m,p-Xylene | 0.16 | Not Detected | 0.68 | Not Detected |
| o-Xylene | 0.16 | Not Detected | 0.68 | Not Detected |
| 1,3-Dichlorobenzene | 0.16 | Not Detected | 0.94 | Not Detected |
| 1,4-Dichlorobenzene | 0.16 | Not Detected | 0.94 | Not Detected |
| 1,2-Dichlorobenzene | 0.16 | Not Detected | 0.94 | Not Detected |
| 1,2,4-Trichlorobenzene | 0.78 | Not Detected | 5.8 | Not Detected |

**Container Type: 6 Liter Summa Canister (SIM Certified)**

| Surrogates | %Recovery | Method Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 | 112 | 70-130 |
| Toluene-d8 | 99 | 70-130 |
| 4-Bromofluorobenzene | 93 | 70-130 |

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**Client Sample ID: IA BG-38**

**Lab ID#: 1703515R1-06B**

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

| | | | |
|---|---|---|---|
| **File Name:** | **20040412sim** | **Date of Collection: 3/17/17 2:40:00 PM** | |
| **Dil. Factor:** | **1.56** | **Date of Analysis: 4/4/17 03:06 PM** | |

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 12 | 0.16 | 0.54 | 0.77 | 2.7 |
| Vinyl Chloride | 0.016 | Not Detected | 0.040 | Not Detected |
| Carbon Tetrachloride | 0.031 | 0.083 | 0.20 | 0.52 |
| Trichloroethene | 0.031 | Not Detected | 0.17 | Not Detected |

**Container Type: 6 Liter Summa Canister (SIM Certified)**

| Surrogates | %Recovery | Method Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 | 117 | 70-130 |
| Toluene-d8 | 102 | 70-130 |
| 4-Bromofluorobenzene | 92 | 70-130 |

eurofins | Air Toxics

**Client Sample ID: IA BG-45**

**Lab ID#: 1703515R1-07A**

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

| | | | |
|---|---|---|---|
| **File Name:** | **20040413** | **Date of Collection:** | **3/17/17 2:43:00 PM** |
| **Dil. Factor:** | **1.66** | **Date of Analysis:** | **4/4/17 03:45 PM** |

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 11 | 0.17 | 0.32 | 0.93 | 1.8 |
| Freon 113 | 0.17 | Not Detected | 1.3 | Not Detected |
| 1,1-Dichloroethene | 0.17 | Not Detected | 0.66 | Not Detected |
| Acetone | 0.83 | 5.3 | 2.0 | 12 |
| Methylene Chloride | 0.33 | Not Detected | 1.2 | Not Detected |
| cis-1,2-Dichloroethene | 0.17 | Not Detected | 0.66 | Not Detected |
| 1,1,1-Trichloroethane | 0.17 | Not Detected | 0.90 | Not Detected |
| Benzene | 0.17 | Not Detected | 0.53 | Not Detected |
| Toluene | 0.17 | Not Detected | 0.62 | Not Detected |
| Tetrachloroethene | 0.17 | Not Detected | 1.1 | Not Detected |
| Chlorobenzene | 0.17 | Not Detected | 0.76 | Not Detected |
| Ethyl Benzene | 0.17 | 0.44 | 0.72 | 1.9 |
| m,p-Xylene | 0.17 | 1.1 | 0.72 | 4.9 |
| o-Xylene | 0.17 | 0.26 | 0.72 | 1.2 |
| 1,3-Dichlorobenzene | 0.17 | Not Detected | 1.0 | Not Detected |
| 1,4-Dichlorobenzene | 0.17 | Not Detected | 1.0 | Not Detected |
| 1,2-Dichlorobenzene | 0.17 | Not Detected | 1.0 | Not Detected |
| 1,2,4-Trichlorobenzene | 0.83 | Not Detected | 6.2 | Not Detected |

**Container Type: 6 Liter Summa Canister (SIM Certified)**

| Surrogates | %Recovery | Method Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 | 112 | 70-130 |
| Toluene-d8 | 101 | 70-130 |
| 4-Bromofluorobenzene | 96 | 70-130 |

eurofins | Air Toxics

**Client Sample ID: IA BG-45**

**Lab ID#: 1703515R1-07B**

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

| | | | |
|---|---|---|---|
| **File Name:** | **20040413sim** | **Date of Collection:** | **3/17/17 2:43:00 PM** |
| **Dil. Factor:** | **1.66** | **Date of Analysis:** | **4/4/17 03:45 PM** |

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 12 | 0.17 | 0.55 | 0.82 | 2.7 |
| Vinyl Chloride | 0.017 | Not Detected | 0.042 | Not Detected |
| Carbon Tetrachloride | 0.033 | 0.084 | 0.21 | 0.53 |
| Trichloroethene | 0.033 | Not Detected | 0.18 | Not Detected |

**Container Type: 6 Liter Summa Canister (SIM Certified)**

| Surrogates | %Recovery | Method Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 | 119 | 70-130 |
| Toluene-d8 | 102 | 70-130 |
| 4-Bromofluorobenzene | 93 | 70-130 |

eurofins | Air Toxics

**Client Sample ID: IA BH-40**

**Lab ID#: 1703515R1-08A**

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

| | | | |
|---|---|---|---|
| **File Name:** | **20040414** | **Date of Collection:** | **3/17/17 2:36:00 PM** |
| **Dil. Factor:** | **1.65** | **Date of Analysis:** | **4/4/17 04:24 PM** |

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 11 | 0.16 | 0.31 | 0.93 | 1.7 |
| Freon 113 | 0.16 | Not Detected | 1.3 | Not Detected |
| 1,1-Dichloroethene | 0.16 | Not Detected | 0.65 | Not Detected |
| Acetone | 0.82 | 3.3 | 2.0 | 7.8 |
| Methylene Chloride | 0.33 | Not Detected | 1.1 | Not Detected |
| cis-1,2-Dichloroethene | 0.16 | Not Detected | 0.65 | Not Detected |
| 1,1,1-Trichloroethane | 0.16 | Not Detected | 0.90 | Not Detected |
| Benzene | 0.16 | 0.19 | 0.53 | 0.60 |
| Toluene | 0.16 | 0.16 J | 0.62 | 0.60 J |
| Tetrachloroethene | 0.16 | Not Detected | 1.1 | Not Detected |
| Chlorobenzene | 0.16 | Not Detected | 0.76 | Not Detected |
| Ethyl Benzene | 0.16 | Not Detected | 0.72 | Not Detected |
| m,p-Xylene | 0.16 | Not Detected | 0.72 | Not Detected |
| o-Xylene | 0.16 | Not Detected | 0.72 | Not Detected |
| 1,3-Dichlorobenzene | 0.16 | Not Detected | 0.99 | Not Detected |
| 1,4-Dichlorobenzene | 0.16 | Not Detected | 0.99 | Not Detected |
| 1,2-Dichlorobenzene | 0.16 | Not Detected | 0.99 | Not Detected |
| 1,2,4-Trichlorobenzene | 0.82 | Not Detected | 6.1 | Not Detected |

J = Estimated value.

**Container Type: 6 Liter Summa Canister (SIM Certified)**

| Surrogates | %Recovery | Method Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 | 115 | 70-130 |
| Toluene-d8 | 101 | 70-130 |
| 4-Bromofluorobenzene | 91 | 70-130 |

eurofins | Air Toxics

**Client Sample ID: IA BH-40**

**Lab ID#: 1703515R1-08B**

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

| | | | |
|---|---|---|---|
| **File Name:** | **20040414sim** | **Date of Collection:** | **3/17/17 2:36:00 PM** |
| **Dil. Factor:** | **1.65** | **Date of Analysis:** | **4/4/17 04:24 PM** |

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 12 | 0.16 | 0.54 | 0.82 | 2.7 |
| Vinyl Chloride | 0.016 | Not Detected | 0.042 | Not Detected |
| Carbon Tetrachloride | 0.033 | 0.069 | 0.21 | 0.44 |
| Trichloroethene | 0.033 | Not Detected | 0.18 | Not Detected |

**Container Type: 6 Liter Summa Canister (SIM Certified)**

| Surrogates | %Recovery | Method Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 | 118 | 70-130 |
| Toluene-d8 | 102 | 70-130 |
| 4-Bromofluorobenzene | 92 | 70-130 |

eurofins | Air Toxics

**Client Sample ID: IA 4017**

**Lab ID#: 1703515R1-09A**

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

| | | | |
|---|---|---|---|
| **File Name:** | **20040415** | **Date of Collection: 3/17/17 2:31:00 PM** | |
| **Dil. Factor:** | **1.65** | **Date of Analysis: 4/4/17 05:05 PM** | |

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 11 | 0.16 | 0.74 | 0.93 | 4.2 |
| Freon 113 | 0.16 | Not Detected | 1.3 | Not Detected |
| 1,1-Dichloroethene | 0.16 | Not Detected | 0.65 | Not Detected |
| Acetone | 0.82 | 2.6 | 2.0 | 6.1 |
| Methylene Chloride | 0.33 | Not Detected | 1.1 | Not Detected |
| cis-1,2-Dichloroethene | 0.16 | Not Detected | 0.65 | Not Detected |
| 1,1,1-Trichloroethane | 0.16 | Not Detected | 0.90 | Not Detected |
| Benzene | 0.16 | Not Detected | 0.53 | Not Detected |
| Toluene | 0.16 | Not Detected | 0.62 | Not Detected |
| Tetrachloroethene | 0.16 | 0.51 | 1.1 | 3.5 |
| Chlorobenzene | 0.16 | Not Detected | 0.76 | Not Detected |
| Ethyl Benzene | 0.16 | Not Detected | 0.72 | Not Detected |
| m,p-Xylene | 0.16 | Not Detected | 0.72 | Not Detected |
| o-Xylene | 0.16 | Not Detected | 0.72 | Not Detected |
| 1,3-Dichlorobenzene | 0.16 | Not Detected | 0.99 | Not Detected |
| 1,4-Dichlorobenzene | 0.16 | Not Detected | 0.99 | Not Detected |
| 1,2-Dichlorobenzene | 0.16 | Not Detected | 0.99 | Not Detected |
| 1,2,4-Trichlorobenzene | 0.82 | Not Detected | 6.1 | Not Detected |

**Container Type: 6 Liter Summa Canister (SIM Certified)**

| Surrogates | %Recovery | Method Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 | 115 | 70-130 |
| Toluene-d8 | 99 | 70-130 |
| 4-Bromofluorobenzene | 91 | 70-130 |

eurofins | Air Toxics

**Client Sample ID: IA 4017**

**Lab ID#: 1703515R1-09B**

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

| | | | |
|---|---|---|---|
| **File Name:** | **20040415sim** | **Date of Collection: 3/17/17 2:31:00 PM** | |
| **Dil. Factor:** | **1.65** | **Date of Analysis: 4/4/17 05:05 PM** | |

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 12 | 0.16 | 0.54 | 0.82 | 2.6 |
| Vinyl Chloride | 0.016 | Not Detected | 0.042 | Not Detected |
| Carbon Tetrachloride | 0.033 | 0.077 | 0.21 | 0.48 |
| Trichloroethene | 0.033 | Not Detected | 0.18 | Not Detected |

**Container Type: 6 Liter Summa Canister (SIM Certified)**

| Surrogates | %Recovery | Method Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 | 119 | 70-130 |
| Toluene-d8 | 104 | 70-130 |
| 4-Bromofluorobenzene | 93 | 70-130 |

eurofins | Air Toxics

**Client Sample ID: IA 4019**

**Lab ID#: 1703515R1-10A**

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

| | | | |
|---|---|---|---|
| **File Name:** | **20040416** | **Date of Collection: 3/17/17 2:58:00 PM** | |
| **Dil. Factor:** | **1.36** | **Date of Analysis: 4/4/17 05:44 PM** | |

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 11 | 0.14 | 0.26 | 0.76 | 1.4 |
| Freon 113 | 0.14 | Not Detected | 1.0 | Not Detected |
| 1,1-Dichloroethene | 0.14 | Not Detected | 0.54 | Not Detected |
| Acetone | 0.68 | 9.2 | 1.6 | 22 |
| Methylene Chloride | 0.27 | 0.78 | 0.94 | 2.7 |
| cis-1,2-Dichloroethene | 0.14 | Not Detected | 0.54 | Not Detected |
| 1,1,1-Trichloroethane | 0.14 | Not Detected | 0.74 | Not Detected |
| Benzene | 0.14 | 0.19 | 0.43 | 0.60 |
| Toluene | 0.14 | 1.5 | 0.51 | 5.7 |
| Tetrachloroethene | 0.14 | 0.24 | 0.92 | 1.6 |
| Chlorobenzene | 0.14 | Not Detected | 0.63 | Not Detected |
| Ethyl Benzene | 0.14 | Not Detected | 0.59 | Not Detected |
| m,p-Xylene | 0.14 | 0.25 | 0.59 | 1.1 |
| o-Xylene | 0.14 | Not Detected | 0.59 | Not Detected |
| 1,3-Dichlorobenzene | 0.14 | Not Detected | 0.82 | Not Detected |
| 1,4-Dichlorobenzene | 0.14 | Not Detected | 0.82 | Not Detected |
| 1,2-Dichlorobenzene | 0.14 | Not Detected | 0.82 | Not Detected |
| 1,2,4-Trichlorobenzene | 0.68 | Not Detected | 5.0 | Not Detected |

**Container Type: 6 Liter Summa Canister (SIM Certified)**

| Surrogates | %Recovery | Method Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 | 113 | 70-130 |
| Toluene-d8 | 98 | 70-130 |
| 4-Bromofluorobenzene | 93 | 70-130 |

eurofins | Air Toxics

**Client Sample ID: IA 4019**

**Lab ID#: 1703515R1-10B**

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

| | | | |
|---|---|---|---|
| **File Name:** | **20040416sim** | **Date of Collection: 3/17/17 2:58:00 PM** | |
| **Dil. Factor:** | **1.36** | **Date of Analysis: 4/4/17 05:44 PM** | |

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 12 | 0.14 | 0.53 | 0.67 | 2.6 |
| Vinyl Chloride | 0.014 | Not Detected | 0.035 | Not Detected |
| Carbon Tetrachloride | 0.027 | 0.088 | 0.17 | 0.55 |
| Trichloroethene | 0.027 | Not Detected | 0.15 | Not Detected |

**Container Type: 6 Liter Summa Canister (SIM Certified)**

| Surrogates | %Recovery | Method Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 | 118 | 70-130 |
| Toluene-d8 | 102 | 70-130 |
| 4-Bromofluorobenzene | 92 | 70-130 |

eurofins | Air Toxics

**Client Sample ID: IA BG-38G**

**Lab ID#: 1703515R1-11A**

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

| | | | |
|---|---|---|---|
| **File Name:** | **20040417** | **Date of Collection:** | **3/17/17 10:20:00 AM** |
| **Dil. Factor:** | **1.38** | **Date of Analysis:** | **4/4/17 06:23 PM** |

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 11 | 0.14 | 0.28 | 0.78 | 1.6 |
| Freon 113 | 0.14 | Not Detected | 1.0 | Not Detected |
| 1,1-Dichloroethene | 0.14 | Not Detected | 0.55 | Not Detected |
| Acetone | 0.69 | 13 | 1.6 | 31 |
| Methylene Chloride | 0.28 | Not Detected | 0.96 | Not Detected |
| cis-1,2-Dichloroethene | 0.14 | Not Detected | 0.55 | Not Detected |
| 1,1,1-Trichloroethane | 0.14 | Not Detected | 0.75 | Not Detected |
| Benzene | 0.14 | 0.17 | 0.44 | 0.55 |
| Toluene | 0.14 | 0.24 | 0.52 | 0.92 |
| Tetrachloroethene | 0.14 | 0.27 | 0.94 | 1.8 |
| Chlorobenzene | 0.14 | Not Detected | 0.64 | Not Detected |
| Ethyl Benzene | 0.14 | Not Detected | 0.60 | Not Detected |
| m,p-Xylene | 0.14 | Not Detected | 0.60 | Not Detected |
| o-Xylene | 0.14 | Not Detected | 0.60 | Not Detected |
| 1,3-Dichlorobenzene | 0.14 | Not Detected | 0.83 | Not Detected |
| 1,4-Dichlorobenzene | 0.14 | Not Detected | 0.83 | Not Detected |
| 1,2-Dichlorobenzene | 0.14 | Not Detected | 0.83 | Not Detected |
| 1,2,4-Trichlorobenzene | 0.69 | Not Detected | 5.1 | Not Detected |

**Container Type: 6 Liter Summa Canister (SIM Certified)**

| Surrogates | %Recovery | Method Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 | 114 | 70-130 |
| Toluene-d8 | 100 | 70-130 |
| 4-Bromofluorobenzene | 92 | 70-130 |

eurofins | Air Toxics

**Client Sample ID: IA BG-38G**

**Lab ID#: 1703515R1-11B**

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

| | | | |
|---|---|---|---|
| **File Name:** | **20040417sim** | **Date of Collection:** | **3/17/17 10:20:00 AM** |
| **Dil. Factor:** | **1.38** | **Date of Analysis:** | **4/4/17 06:23 PM** |

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 12 | 0.14 | 0.54 | 0.68 | 2.7 |
| Vinyl Chloride | 0.014 | Not Detected | 0.035 | Not Detected |
| Carbon Tetrachloride | 0.028 | 0.094 | 0.17 | 0.59 |
| Trichloroethene | 0.028 | Not Detected | 0.15 | Not Detected |

**Container Type: 6 Liter Summa Canister (SIM Certified)**

| Surrogates | %Recovery | Method Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 | 118 | 70-130 |
| Toluene-d8 | 102 | 70-130 |
| 4-Bromofluorobenzene | 92 | 70-130 |

eurofins | Air Toxics

**Client Sample ID: Lab Blank**

**Lab ID#: 1703515R1-12A**

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

| | | | |
|---|---|---|---|
| **File Name:** | **20040406** | **Date of Collection: NA** | |
| **Dil. Factor:** | **1.00** | **Date of Analysis: 4/4/17 10:50 AM** | |

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 11 | 0.10 | Not Detected | 0.56 | Not Detected |
| Freon 113 | 0.10 | Not Detected | 0.77 | Not Detected |
| 1,1-Dichloroethene | 0.10 | Not Detected | 0.40 | Not Detected |
| Acetone | 0.50 | Not Detected | 1.2 | Not Detected |
| Methylene Chloride | 0.20 | Not Detected | 0.69 | Not Detected |
| cis-1,2-Dichloroethene | 0.10 | Not Detected | 0.40 | Not Detected |
| 1,1,1-Trichloroethane | 0.10 | Not Detected | 0.54 | Not Detected |
| Benzene | 0.10 | Not Detected | 0.32 | Not Detected |
| Toluene | 0.10 | Not Detected | 0.38 | Not Detected |
| Tetrachloroethene | 0.10 | Not Detected | 0.68 | Not Detected |
| Chlorobenzene | 0.10 | Not Detected | 0.46 | Not Detected |
| Ethyl Benzene | 0.10 | Not Detected | 0.43 | Not Detected |
| m,p-Xylene | 0.10 | Not Detected | 0.43 | Not Detected |
| o-Xylene | 0.10 | Not Detected | 0.43 | Not Detected |
| 1,3-Dichlorobenzene | 0.10 | Not Detected | 0.60 | Not Detected |
| 1,4-Dichlorobenzene | 0.10 | Not Detected | 0.60 | Not Detected |
| 1,2-Dichlorobenzene | 0.10 | Not Detected | 0.60 | Not Detected |
| 1,2,4-Trichlorobenzene | 0.50 | Not Detected | 3.7 | Not Detected |

**Container Type: NA - Not Applicable**

| Surrogates | %Recovery | Method Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 | 112 | 70-130 |
| Toluene-d8 | 100 | 70-130 |
| 4-Bromofluorobenzene | 92 | 70-130 |

eurofins | Air Toxics

**Client Sample ID: Lab Blank**

**Lab ID#: 1703515R1-12B**

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

| | | | |
|---|---|---|---|
| **File Name:** | **20040406sim** | **Date of Collection: NA** | |
| **Dil. Factor:** | **1.00** | **Date of Analysis: 4/4/17 10:50 AM** | |

| Compound | Rpt. Limit (ppbv) | Amount (ppbv) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|
| Freon 12 | 0.10 | Not Detected | 0.49 | Not Detected |
| Vinyl Chloride | 0.010 | Not Detected | 0.026 | Not Detected |
| Carbon Tetrachloride | 0.020 | Not Detected | 0.12 | Not Detected |
| Trichloroethene | 0.020 | Not Detected | 0.11 | Not Detected |

**Container Type: NA - Not Applicable**

| Surrogates | %Recovery | Method Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 | 116 | 70-130 |
| Toluene-d8 | 102 | 70-130 |
| 4-Bromofluorobenzene | 90 | 70-130 |

eurofins | Air Toxics

**Client Sample ID: CCV**

**Lab ID#: 1703515R1-13A**

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

| | | | |
|---|---|---|---|
| **File Name:** | **20040402** | **Date of Collection: NA** | |
| **Dil. Factor:** | **1.00** | **Date of Analysis: 4/4/17 07:47 AM** | |

| Compound | %Recovery |
|---|---|
| Freon 11 | 110 |
| Freon 113 | 94 |
| 1,1-Dichloroethene | 100 |
| Acetone | 106 |
| Methylene Chloride | 104 |
| cis-1,2-Dichloroethene | 102 |
| 1,1,1-Trichloroethane | 100 |
| Benzene | 104 |
| Toluene | 103 |
| Tetrachloroethene | 94 |
| Chlorobenzene | 96 |
| Ethyl Benzene | 92 |
| m,p-Xylene | 92 |
| o-Xylene | 90 |
| 1,3-Dichlorobenzene | 78 |
| 1,4-Dichlorobenzene | 74 |
| 1,2-Dichlorobenzene | 77 |
| 1,2,4-Trichlorobenzene | 77 |

**Container Type: NA - Not Applicable**

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

eurofins | Air Toxics

**Client Sample ID: CCV**

**Lab ID#: 1703515R1-13B**

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

| | | | |
|---|---|---|---|
| **File Name:** | **20040402sim** | **Date of Collection: NA** | |
| **Dil. Factor:** | **1.00** | **Date of Analysis: 4/4/17 07:47 AM** | |

| Compound | %Recovery |
|---|---|
| Freon 12 | 108 |
| Vinyl Chloride | 107 |
| Carbon Tetrachloride | 120 |
| Trichloroethene | 97 |

**Container Type: NA - Not Applicable**

| Surrogates | %Recovery | Method Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 | 107 | 70-130 |
| Toluene-d8 | 104 | 70-130 |
| 4-Bromofluorobenzene | 100 | 70-130 |

eurofins | Air Toxics

**Client Sample ID: LCS**

**Lab ID#: 1703515R1-14A**

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

| | | | |
|---|---|---|---|
| **File Name:** | **20040403** | **Date of Collection: NA** | |
| **Dil. Factor:** | **1.00** | **Date of Analysis: 4/4/17 08:38 AM** | |

| Compound | %Recovery | Method Limits |
|---|---|---|
| Freon 11 | 107 | 70-130 |
| Freon 113 | 93 | 70-130 |
| 1,1-Dichloroethene | 98 | 70-130 |
| Acetone | 105 | 70-130 |
| Methylene Chloride | 102 | 70-130 |
| cis-1,2-Dichloroethene | 93 | 70-130 |
| 1,1,1-Trichloroethane | 99 | 70-130 |
| Benzene | 106 | 70-130 |
| Toluene | 104 | 70-130 |
| Tetrachloroethene | 94 | 70-130 |
| Chlorobenzene | 101 | 70-130 |
| Ethyl Benzene | 98 | 70-130 |
| m,p-Xylene | 100 | 70-130 |
| o-Xylene | 99 | 70-130 |
| 1,3-Dichlorobenzene | 93 | 70-130 |
| 1,4-Dichlorobenzene | 89 | 70-130 |
| 1,2-Dichlorobenzene | 92 | 70-130 |
| 1,2,4-Trichlorobenzene | 94 | 70-130 |

**Container Type: NA - Not Applicable**

| Surrogates | %Recovery | Method Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 | 104 | 70-130 |
| Toluene-d8 | 102 | 70-130 |
| 4-Bromofluorobenzene | 98 | 70-130 |

eurofins | Air Toxics

**Client Sample ID: LCSD**

**Lab ID#: 1703515R1-14AA**

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

| | | | |
|---|---|---|---|
| **File Name:** | **20040404** | **Date of Collection: NA** | |
| **Dil. Factor:** | **1.00** | **Date of Analysis: 4/4/17 09:23 AM** | |

| Compound | %Recovery | Method Limits |
|---|---|---|
| Freon 11 | 108 | 70-130 |
| Freon 113 | 92 | 70-130 |
| 1,1-Dichloroethene | 95 | 70-130 |
| Acetone | 106 | 70-130 |
| Methylene Chloride | 100 | 70-130 |
| cis-1,2-Dichloroethene | 92 | 70-130 |
| 1,1,1-Trichloroethane | 99 | 70-130 |
| Benzene | 103 | 70-130 |
| Toluene | 102 | 70-130 |
| Tetrachloroethene | 95 | 70-130 |
| Chlorobenzene | 102 | 70-130 |
| Ethyl Benzene | 99 | 70-130 |
| m,p-Xylene | 103 | 70-130 |
| o-Xylene | 100 | 70-130 |
| 1,3-Dichlorobenzene | 94 | 70-130 |
| 1,4-Dichlorobenzene | 91 | 70-130 |
| 1,2-Dichlorobenzene | 92 | 70-130 |
| 1,2,4-Trichlorobenzene | 96 | 70-130 |

**Container Type: NA - Not Applicable**

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

eurofins | Air Toxics

**Client Sample ID: LCS**

**Lab ID#: 1703515R1-14B**

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

| | | | |
|---|---|---|---|
| **File Name:** | **20040403sim** | **Date of Collection: NA** | |
| **Dil. Factor:** | **1.00** | **Date of Analysis: 4/4/17 08:38 AM** | |

| Compound | %Recovery | Method Limits |
|---|---|---|
| Freon 12 | 106 | 70-130 |
| Vinyl Chloride | 106 | 70-130 |
| Carbon Tetrachloride | 71 | 60-140 |
| Trichloroethene | 95 | 70-130 |

**Container Type: NA - Not Applicable**

| Surrogates | %Recovery | Method Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 | 105 | 70-130 |
| Toluene-d8 | 104 | 70-130 |
| 4-Bromofluorobenzene | 98 | 70-130 |

eurofins | Air Toxics

**Client Sample ID: LCSD**

**Lab ID#: 1703515R1-14BB**

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

| | | | |
|---|---|---|---|
| **File Name:** | **20040404sim** | **Date of Collection: NA** | |
| **Dil. Factor:** | **1.00** | **Date of Analysis: 4/4/17 09:23 AM** | |

| Compound | %Recovery | Method Limits |
|---|---|---|
| Freon 12 | 106 | 70-130 |
| Vinyl Chloride | 105 | 70-130 |
| Carbon Tetrachloride | 72 | 60-140 |
| Trichloroethene | 95 | 70-130 |

**Container Type: NA - Not Applicable**

| Surrogates | %Recovery | Method Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 | 105 | 70-130 |
| Toluene-d8 | 104 | 70-130 |
| 4-Bromofluorobenzene | 99 | 70-130 |

ANALYTICAL REPORT

| | |
|---|---|
| Lab Number: | L1705802 |
| Client: | Sanborn, Head & Associates, Inc.<br>20 Foundry Street<br>Concord, NH 03301 |
| ATTN: | Seth Soos |
| Phone: | (603) 229-1900 |
| Project Name: | B3300 TEMP SYSTEMS |
| Project Number: | 2999.07 |
| Report Date: | 03/02/17 |



Certifications & Approvals: MA (M-MA030), NH NELAP (2062), NJ NELAP (MA015), CT (PH-0141), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-13-00067), USFWS (Permit #LE2069641).

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

**Project Name:** B3300 TEMP SYSTEMS
**Project Number:** 2999.07

**Lab Number:** L1705802
**Report Date:** 03/02/17

| Alpha Sample ID | Client ID | Matrix | Sample Location | Collection Date/Time | Receive Date |
|---|---|---|---|---|---|
| L1705802-01 | BALLROOM | SOIL_VAPOR | HOPEWELL JUNCTION, NY | 02/15/17 17:50 | 02/24/17 |
| L1705802-02 | SP4003 | SOIL_VAPOR | HOPEWELL JUNCTION, NY | 02/21/17 16:15 | 02/24/17 |
| L1705802-03 | UNUSED CANISTER 185 | SOIL_VAPOR | HOPEWELL JUNCTION, NY | | 02/24/17 |

**Project Name:** B3300 TEMP SYSTEMS
**Project Number:** 2999.07

**Lab Number:** L1705802
**Report Date:** 03/02/17

## 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 NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. 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. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. 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. All specific QC 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. 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:** | B3300 TEMP SYSTEMS | **Lab Number:** | L1705802 |
| **Project Number:** | 2999.07 | **Report Date:** | 03/02/17 |

**Case Narrative (continued)**

Volatile Organics in Air

Canisters were released from the laboratory on February 13, 2017. The canister certification results are provided as an addendum.

Sample L1705802-01 and -02: The samples were diluted and re-analyzed to quantify the results 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.

Sample L1705802-01 and -02: The samples 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: 03/02/17

# AIR

***Project Name:*** B3300 TEMP SYSTEMS
***Project Number:*** 2999.07
***Lab Number:*** L1705802
***Report Date:*** 03/02/17

## *SAMPLE RESULTS*

Lab ID: L1705802-01 D
Client ID: BALLROOM
Sample Location: HOPEWELL JUNCTION, NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 03/02/17 01:52
Analyst: MB

Date Collected: 02/15/17 17:50
Date Received: 02/24/17
Field Prep: Not Specified

| | ppbV | | | ug/m3 | | | | |
|---|---|---|---|---|---|---|---|---|
| **Parameter** | **Results** | **RL** | **MDL** | **Results** | **RL** | **MDL** | **Qualifier** | **Dilution Factor** |
| Volatile Organics in Air - Mansfield Lab | | | | | | | | |
| Vinyl chloride | ND | 23.6 | -- | ND | 60.3 | -- | | 117.9 |
| trans-1,2-Dichloroethene | ND | 23.6 | -- | ND | 93.6 | -- | | 117.9 |
| cis-1,2-Dichloroethene | 50.2 | 23.6 | -- | 199 | 93.6 | -- | | 117.9 |
| Trichloroethene | 140 | 23.6 | -- | 752 | 127 | -- | | 117.9 |
| Tetrachloroethene | 18600 | 23.6 | -- | 126000 | 160 | -- | E | 117.9 |

| **Internal Standard** | **% Recovery** | **Qualifier** | **Acceptance Criteria** |
|---|---|---|---|
| 1,4-Difluorobenzene | 83 | | 60-140 |
| Bromochloromethane | 84 | | 60-140 |
| chlorobenzene-d5 | 85 | | 60-140 |

***Project Name:*** B3300 TEMP SYSTEMS
***Project Number:*** 2999.07
***Lab Number:*** L1705802
***Report Date:*** 03/02/17

## *SAMPLE RESULTS*

Lab ID: L1705802-01 D2
Client ID: BALLROOM
Sample Location: HOPEWELL JUNCTION, NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 03/02/17 07:26
Analyst: MB

Date Collected: 02/15/17 17:50
Date Received: 02/24/17
Field Prep: Not Specified

| | ppbV | | | ug/m3 | | | | |
|---|---|---|---|---|---|---|---|---|
| **Parameter** | **Results** | **RL** | **MDL** | **Results** | **RL** | **MDL** | **Qualifier** | **Dilution Factor** |
| Volatile Organics in Air - Mansfield Lab | | | | | | | | |
| Tetrachloroethene | 21500 | 70.4 | -- | 146000 | 477 | -- | | 352.1 |

| **Internal Standard** | **% Recovery** | **Qualifier** | **Acceptance Criteria** |
|---|---|---|---|
| 1,4-Difluorobenzene | 83 | | 60-140 |
| Bromochloromethane | 84 | | 60-140 |
| chlorobenzene-d5 | 81 | | 60-140 |

***Project Name:*** B3300 TEMP SYSTEMS
***Project Number:*** 2999.07
***Lab Number:*** L1705802
***Report Date:*** 03/02/17

## *SAMPLE RESULTS*

Lab ID: L1705802-02 D
Client ID: SP4003
Sample Location: HOPEWELL JUNCTION, NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 03/02/17 02:22
Analyst: MB

Date Collected: 02/21/17 16:15
Date Received: 02/24/17
Field Prep: Not Specified

| | ppbV | | | ug/m3 | | | | |
|---|---|---|---|---|---|---|---|---|
| **Parameter** | **Results** | **RL** | **MDL** | **Results** | **RL** | **MDL** | **Qualifier** | **Dilution Factor** |
| Volatile Organics in Air - Mansfield Lab | | | | | | | | |
| Vinyl chloride | ND | 1250 | -- | ND | 3200 | -- | | 6250 |
| trans-1,2-Dichloroethene | ND | 1250 | -- | ND | 4960 | -- | | 6250 |
| cis-1,2-Dichloroethene | 26500 | 1250 | -- | 105000 | 4960 | -- | | 6250 |
| Trichloroethene | 9990 | 1250 | -- | 53700 | 6720 | -- | | 6250 |
| Tetrachloroethene | 1130000 | 1250 | -- | 7660000 | 8480 | -- | E | 6250 |

| **Internal Standard** | **% Recovery** | **Qualifier** | **Acceptance Criteria** |
|---|---|---|---|
| 1,4-Difluorobenzene | 80 | | 60-140 |
| Bromochloromethane | 83 | | 60-140 |
| chlorobenzene-d5 | 82 | | 60-140 |

***Project Name:*** B3300 TEMP SYSTEMS
***Project Number:*** 2999.07
***Lab Number:*** L1705802
***Report Date:*** 03/02/17

## *SAMPLE RESULTS*

Lab ID: L1705802-02 D2
Client ID: SP4003
Sample Location: HOPEWELL JUNCTION, NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 03/02/17 06:55
Analyst: MB

Date Collected: 02/21/17 16:15
Date Received: 02/24/17
Field Prep: Not Specified

| | ppbV | | | ug/m3 | | | | |
|---|---|---|---|---|---|---|---|---|
| **Parameter** | **Results** | **RL** | **MDL** | **Results** | **RL** | **MDL** | **Qualifier** | **Dilution Factor** |
| Volatile Organics in Air - Mansfield Lab | | | | | | | | |
| Tetrachloroethene | 1230000 | 2500 | -- | 8340000 | 17000 | -- | | 12500 |

| **Internal Standard** | **% Recovery** | **Qualifier** | **Acceptance Criteria** |
|---|---|---|---|
| 1,4-Difluorobenzene | 69 | | 60-140 |
| Bromochloromethane | 70 | | 60-140 |
| chlorobenzene-d5 | 72 | | 60-140 |

**Project Name:** B3300 TEMP SYSTEMS
**Project Number:** 2999.07
**Lab Number:** L1705802
**Report Date:** 03/02/17

# Method Blank Analysis
## Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 03/01/17 14:53

| 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 for sample(s): 01-02 Batch: WG982024-4 | | | | | | | | |
| Vinyl chloride | ND | 0.200 | -- | ND | 0.511 | -- | | 1 |
| trans-1,2-Dichloroethene | ND | 0.200 | -- | ND | 0.793 | -- | | 1 |
| cis-1,2-Dichloroethene | ND | 0.200 | -- | ND | 0.793 | -- | | 1 |
| Trichloroethene | ND | 0.200 | -- | ND | 1.07 | -- | | 1 |
| Tetrachloroethene | ND | 0.200 | -- | ND | 1.36 | -- | | 1 |

# Lab Control Sample Analysis

## Batch Quality Control

**Project Name:** B3300 TEMP SYSTEMS

**Project Number:** 2999.07

**Lab Number:** L1705802

**Report Date:** 03/02/17

| Parameter | LCS %Recovery | Qual | LCSD %Recovery | Qual | %Recovery Limits | RPD | Qual | RPD Limits |
|---|---|---|---|---|---|---|---|---|
| Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-02 Batch: WG982024-3 | | | | | | | | |
| Chlorodifluoromethane | 82 | | - | | 70-130 | - | | |
| Propylene | 96 | | - | | 70-130 | - | | |
| Propane | 79 | | - | | 70-130 | - | | |
| Dichlorodifluoromethane | 88 | | - | | 70-130 | - | | |
| Chloromethane | 87 | | - | | 70-130 | - | | |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | 96 | | - | | 70-130 | - | | |
| Methanol | 73 | | - | | 70-130 | - | | |
| Vinyl chloride | 93 | | - | | 70-130 | - | | |
| 1,3-Butadiene | 88 | | - | | 70-130 | - | | |
| Butane | 81 | | - | | 70-130 | - | | |
| Bromomethane | 93 | | - | | 70-130 | - | | |
| Chloroethane | 91 | | - | | 70-130 | - | | |
| Ethyl Alcohol | 76 | | - | | 70-130 | - | | |
| Dichlorofluoromethane | 83 | | - | | 70-130 | - | | |
| Vinyl bromide | 98 | | - | | 70-130 | - | | |
| Acrolein | 81 | | - | | 70-130 | - | | |
| Acetone | 94 | | - | | 70-130 | - | | |
| Acetonitrile | 95 | | - | | 70-130 | - | | |
| Trichlorofluoromethane | 95 | | - | | 70-130 | - | | |
| iso-Propyl Alcohol | 78 | | - | | 70-130 | - | | |
| Acrylonitrile | 92 | | - | | 70-130 | - | | |

# Lab Control Sample Analysis

## Batch Quality Control

**Project Name:** B3300 TEMP SYSTEMS

**Project Number:** 2999.07

**Lab Number:** L1705802

**Report Date:** 03/02/17

| Parameter | LCS %Recovery | Qual | LCSD %Recovery | Qual | %Recovery Limits | RPD | Qual | RPD Limits |
|---|---|---|---|---|---|---|---|---|
| Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-02 Batch: WG982024-3 | | | | | | | | |
| Pentane | 81 | | - | | 70-130 | - | | |
| Ethyl ether | 79 | | - | | 70-130 | - | | |
| 1,1-Dichloroethene | 91 | | - | | 70-130 | - | | |
| tert-Butyl Alcohol | 75 | | - | | 70-130 | - | | |
| Methylene chloride | 91 | | - | | 70-130 | - | | |
| 3-Chloropropene | 93 | | - | | 70-130 | - | | |
| Carbon disulfide | 90 | | - | | 70-130 | - | | |
| 1,1,2-Trichloro-1,2,2-Trifluoroethane | 97 | | - | | 70-130 | - | | |
| trans-1,2-Dichloroethene | 89 | | - | | 70-130 | - | | |
| 1,1-Dichloroethane | 92 | | - | | 70-130 | - | | |
| Methyl tert butyl ether | 91 | | - | | 70-130 | - | | |
| Vinyl acetate | 97 | | - | | 70-130 | - | | |
| 2-Butanone | 85 | | - | | 70-130 | - | | |
| cis-1,2-Dichloroethene | 95 | | - | | 70-130 | - | | |
| Ethyl Acetate | 97 | | - | | 70-130 | - | | |
| Chloroform | 96 | | - | | 70-130 | - | | |
| Tetrahydrofuran | 85 | | - | | 70-130 | - | | |
| 2,2-Dichloropropane | 86 | | - | | 70-130 | - | | |
| 1,2-Dichloroethane | 91 | | - | | 70-130 | - | | |
| n-Hexane | 86 | | - | | 70-130 | - | | |
| Isopropyl Ether | 85 | | - | | 70-130 | - | | |

# Lab Control Sample Analysis

## Batch Quality Control

**Project Name:** B3300 TEMP SYSTEMS

**Project Number:** 2999.07

**Lab Number:** L1705802

**Report Date:** 03/02/17

| Parameter | LCS %Recovery | Qual | LCSD %Recovery | Qual | %Recovery Limits | RPD | Qual | RPD Limits |
|---|---|---|---|---|---|---|---|---|
| Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-02 Batch: WG982024-3 | | | | | | | | |
| Ethyl-Tert-Butyl-Ether | 79 | | - | | 70-130 | - | | |
| 1,1,1-Trichloroethane | 91 | | - | | 70-130 | - | | |
| 1,1-Dichloropropene | 87 | | - | | 70-130 | - | | |
| Benzene | 88 | | - | | 70-130 | - | | |
| Carbon tetrachloride | 93 | | - | | 70-130 | - | | |
| Cyclohexane | 86 | | - | | 70-130 | - | | |
| Tertiary-Amyl Methyl Ether | 80 | | - | | 70-130 | - | | |
| Dibromomethane | 85 | | - | | 70-130 | - | | |
| 1,2-Dichloropropane | 90 | | - | | 70-130 | - | | |
| Bromodichloromethane | 91 | | - | | 70-130 | - | | |
| 1,4-Dioxane | 88 | | - | | 70-130 | - | | |
| Trichloroethene | 102 | | - | | 70-130 | - | | |
| 2,2,4-Trimethylpentane | 88 | | - | | 70-130 | - | | |
| Methyl Methacrylate | 92 | | - | | 70-130 | - | | |
| Heptane | 82 | | - | | 70-130 | - | | |
| cis-1,3-Dichloropropene | 94 | | - | | 70-130 | - | | |
| 4-Methyl-2-pentanone | 85 | | - | | 70-130 | - | | |
| trans-1,3-Dichloropropene | 81 | | - | | 70-130 | - | | |
| 1,1,2-Trichloroethane | 95 | | - | | 70-130 | - | | |
| Toluene | 96 | | - | | 70-130 | - | | |
| 1,3-Dichloropropane | 89 | | - | | 70-130 | - | | |

# Lab Control Sample Analysis

## Batch Quality Control

**Project Name:** B3300 TEMP SYSTEMS

**Project Number:** 2999.07

**Lab Number:** L1705802

**Report Date:** 03/02/17

| Parameter | LCS %Recovery | Qual | LCSD %Recovery | Qual | %Recovery Limits | RPD | Qual | RPD Limits |
|---|---|---|---|---|---|---|---|---|
| Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-02 Batch: WG982024-3 | | | | | | | | |
| 2-Hexanone | 88 | | - | | 70-130 | - | | |
| Dibromochloromethane | 102 | | - | | 70-130 | - | | |
| 1,2-Dibromoethane | 100 | | - | | 70-130 | - | | |
| Butyl Acetate | 82 | | - | | 70-130 | - | | |
| Octane | 91 | | - | | 70-130 | - | | |
| Tetrachloroethene | 103 | | - | | 70-130 | - | | |
| 1,1,1,2-Tetrachloroethane | 94 | | - | | 70-130 | - | | |
| Chlorobenzene | 100 | | - | | 70-130 | - | | |
| Ethylbenzene | 97 | | - | | 70-130 | - | | |
| p/m-Xylene | 98 | | - | | 70-130 | - | | |
| Bromoform | 102 | | - | | 70-130 | - | | |
| Styrene | 99 | | - | | 70-130 | - | | |
| 1,1,2,2-Tetrachloroethane | 92 | | - | | 70-130 | - | | |
| o-Xylene | 99 | | - | | 70-130 | - | | |
| 1,2,3-Trichloropropane | 87 | | - | | 70-130 | - | | |
| Nonane (C9) | 85 | | - | | 70-130 | - | | |
| Isopropylbenzene | 97 | | - | | 70-130 | - | | |
| Bromobenzene | 90 | | - | | 70-130 | - | | |
| o-Chlorotoluene | 95 | | - | | 70-130 | - | | |
| n-Propylbenzene | 95 | | - | | 70-130 | - | | |
| p-Chlorotoluene | 91 | | - | | 70-130 | - | | |

# Lab Control Sample Analysis

## Batch Quality Control

**Project Name:** B3300 TEMP SYSTEMS

**Project Number:** 2999.07

**Lab Number:** L1705802

**Report Date:** 03/02/17

| Parameter | LCS %Recovery | Qual | LCSD %Recovery | Qual | %Recovery Limits | RPD | Qual | RPD Limits |
|---|---|---|---|---|---|---|---|---|
| Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-02 Batch: WG982024-3 | | | | | | | | |
| 4-Ethyltoluene | 94 | | - | | 70-130 | - | | |
| 1,3,5-Trimethylbenzene | 98 | | - | | 70-130 | - | | |
| tert-Butylbenzene | 96 | | - | | 70-130 | - | | |
| 1,2,4-Trimethylbenzene | 102 | | - | | 70-130 | - | | |
| Decane (C10) | 89 | | - | | 70-130 | - | | |
| Benzyl chloride | 100 | | - | | 70-130 | - | | |
| 1,3-Dichlorobenzene | 104 | | - | | 70-130 | - | | |
| 1,4-Dichlorobenzene | 104 | | - | | 70-130 | - | | |
| sec-Butylbenzene | 95 | | - | | 70-130 | - | | |
| p-Isopropyltoluene | 91 | | - | | 70-130 | - | | |
| 1,2-Dichlorobenzene | 105 | | - | | 70-130 | - | | |
| n-Butylbenzene | 96 | | - | | 70-130 | - | | |
| 1,2-Dibromo-3-chloropropane | 89 | | - | | 70-130 | - | | |
| Undecane | 90 | | - | | 70-130 | - | | |
| Dodecane (C12) | 103 | | - | | 70-130 | - | | |
| 1,2,4-Trichlorobenzene | 111 | | - | | 70-130 | - | | |
| Naphthalene | 102 | | - | | 70-130 | - | | |
| 1,2,3-Trichlorobenzene | 106 | | - | | 70-130 | - | | |
| Hexachlorobutadiene | 106 | | - | | 70-130 | - | | |

# Lab Duplicate Analysis
## Batch Quality Control

**Project Name:** B3300 TEMP SYSTEMS
**Project Number:** 2999.07

**Lab Number:** L1705802
**Report Date:** 03/02/17

| Parameter | Native Sample | Duplicate Sample | Units | RPD | Qual | RPD Limits |
|---|---|---|---|---|---|---|
| Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG982024-5 QC Sample: L1705765-01 Client ID: DUP Sample | | | | | | |
| Dichlorodifluoromethane | ND | ND | ppbV | NC | | 25 |
| Chloromethane | ND | ND | ppbV | NC | | 25 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | ND | ppbV | NC | | 25 |
| Vinyl chloride | ND | ND | ppbV | NC | | 25 |
| 1,3-Butadiene | ND | ND | ppbV | NC | | 25 |
| Bromomethane | ND | ND | ppbV | NC | | 25 |
| Chloroethane | ND | ND | ppbV | NC | | 25 |
| Ethyl Alcohol | ND | ND | ppbV | NC | | 25 |
| Vinyl bromide | ND | ND | ppbV | NC | | 25 |
| Acetone | 306 | 291 | ppbV | 5 | | 25 |
| Trichlorofluoromethane | 2.70 | 2.56 | ppbV | 5 | | 25 |
| iso-Propyl Alcohol | ND | ND | ppbV | NC | | 25 |
| 1,1-Dichloroethene | ND | ND | ppbV | NC | | 25 |
| tert-Butyl Alcohol | ND | ND | ppbV | NC | | 25 |
| Methylene chloride | ND | ND | ppbV | NC | | 25 |
| 3-Chloropropene | ND | ND | ppbV | NC | | 25 |
| Carbon disulfide | ND | ND | ppbV | NC | | 25 |
| 1,1,2-Trichloro-1,2,2-Trifluoroethane | ND | ND | ppbV | NC | | 25 |
| trans-1,2-Dichloroethene | ND | ND | ppbV | NC | | 25 |

# Lab Duplicate Analysis
## Batch Quality Control

**Project Name:** B3300 TEMP SYSTEMS
**Project Number:** 2999.07

**Lab Number:** L1705802
**Report Date:** 03/02/17

| Parameter | Native Sample | Duplicate Sample | Units | RPD | Qual | RPD Limits |
|---|---|---|---|---|---|---|
| Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG982024-5 QC Sample: L1705765-01 Client ID: DUP Sample | | | | | | |
| 1,1-Dichloroethane | ND | ND | ppbV | NC | | 25 |
| Methyl tert butyl ether | ND | ND | ppbV | NC | | 25 |
| 2-Butanone | 4.80 | 4.55 | ppbV | 5 | | 25 |
| cis-1,2-Dichloroethene | ND | ND | ppbV | NC | | 25 |
| Ethyl Acetate | ND | ND | ppbV | NC | | 25 |
| Chloroform | ND | ND | ppbV | NC | | 25 |
| Tetrahydrofuran | ND | ND | ppbV | NC | | 25 |
| 1,2-Dichloroethane | ND | ND | ppbV | NC | | 25 |
| n-Hexane | 1.92 | 1.82 | ppbV | 5 | | 25 |
| 1,1,1-Trichloroethane | ND | ND | ppbV | NC | | 25 |
| Benzene | 1.26 | 1.24 | ppbV | 2 | | 25 |
| Carbon tetrachloride | ND | ND | ppbV | NC | | 25 |
| Cyclohexane | 7.84 | 8.18 | ppbV | 4 | | 25 |
| 1,2-Dichloropropane | ND | ND | ppbV | NC | | 25 |
| Bromodichloromethane | ND | ND | ppbV | NC | | 25 |
| 1,4-Dioxane | ND | ND | ppbV | NC | | 25 |
| Trichloroethene | ND | ND | ppbV | NC | | 25 |
| 2,2,4-Trimethylpentane | ND | ND | ppbV | NC | | 25 |
| Heptane | 3.78 | 3.60 | ppbV | 5 | | 25 |

# Lab Duplicate Analysis
## Batch Quality Control

**Project Name:** B3300 TEMP SYSTEMS
**Project Number:** 2999.07

**Lab Number:** L1705802
**Report Date:** 03/02/17

| Parameter | Native Sample | Duplicate Sample | Units | RPD | Qual | RPD Limits |
|---|---|---|---|---|---|---|
| Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG982024-5 QC Sample: L1705765-01 Client ID: DUP Sample | | | | | | |
| cis-1,3-Dichloropropene | ND | ND | ppbV | NC | | 25 |
| 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 | 19.8 | 20.3 | ppbV | 2 | | 25 |
| 2-Hexanone | ND | ND | ppbV | NC | | 25 |
| Dibromochloromethane | ND | ND | ppbV | NC | | 25 |
| 1,2-Dibromoethane | ND | ND | ppbV | NC | | 25 |
| Tetrachloroethene | 24.6 | 24.9 | ppbV | 1 | | 25 |
| Chlorobenzene | ND | ND | ppbV | NC | | 25 |
| Ethylbenzene | 5.64 | 5.88 | ppbV | 4 | | 25 |
| p/m-Xylene | 23.2 | 23.8 | ppbV | 3 | | 25 |
| Bromoform | ND | ND | ppbV | NC | | 25 |
| Styrene | ND | ND | ppbV | NC | | 25 |
| 1,1,2,2-Tetrachloroethane | ND | ND | ppbV | NC | | 25 |
| o-Xylene | 7.92 | 8.21 | ppbV | 4 | | 25 |
| 4-Ethyltoluene | 2.06 | 2.05 | ppbV | 0 | | 25 |
| 1,3,5-Trimethylbenzene | 1.73 | 1.87 | ppbV | 8 | | 25 |
| 1,2,4-Trimethylbenzene | 5.78 | 6.02 | ppbV | 4 | | 25 |

# Lab Duplicate Analysis
## Batch Quality Control

**Project Name:** B3300 TEMP SYSTEMS
**Project Number:** 2999.07

**Lab Number:** L1705802
**Report Date:** 03/02/17

| Parameter | Native Sample | Duplicate Sample | Units | RPD | Qual | RPD Limits |
|---|---|---|---|---|---|---|
| Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG982024-5 QC Sample: L1705765-01 Client ID: DUP Sample | | | | | | |
| Benzyl chloride | ND | ND | ppbV | NC | | 25 |
| 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 |

**Project Name:** B3300 TEMP SYSTEMS

**Lab Number:** L1705802

**Project Number:** 2999.07

**Report Date:** 03/02/17

## 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L1705802-01 | BALLROOM | 386 | 2.7L Can | 02/13/17 | 236858 | L1703959-01 | Pass | -29.1 | -5.9 | - | - | - | - |
| L1705802-02 | SP4003 | 477 | 2.7L Can | 02/13/17 | 236858 | L1703959-01 | Pass | -29.0 | -8.6 | - | - | - | - |
| L1705802-03 | UNUSED CANISTER 185 | 185 | 2.7L Can | 02/13/17 | 236858 | L1703959-01 | Pass | -29.1 | -29.2 | - | - | - | - |

**Project Name:** BATCH CANISTER CERTIFICATION
**Project Number:** CANISTER QC BAT
**Lab Number:** L1703959
**Report Date:** 03/02/17

# Air Canister Certification Results

Lab ID: L1703959-01
Client ID: CAN 465 SHELF 2
Sample Location:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 02/09/17 20:48
Analyst: RY

Date Collected: 02/07/17 16:00
Date Received: 02/08/17
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 | 5.00 | -- | ND | 9.42 | -- | | 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 | 0.500 | -- | ND | 1.09 | -- | | 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
**Project Number:** CANISTER QC BAT
**Lab Number:** L1703959
**Report Date:** 03/02/17

# Air Canister Certification Results

Lab ID: L1703959-01
Client ID: CAN 465 SHELF 2
Sample Location:
Date Collected: 02/07/17 16:00
Date Received: 02/08/17
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 | 0.500 | -- | ND | 1.74 | -- | | 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 | 1.00 | -- | ND | 3.52 | -- | | 1 |
| 2-Butanone | ND | 0.500 | -- | ND | 1.47 | -- | | 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 | 0.500 | -- | ND | 1.47 | -- | | 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:** L1703959
**Report Date:** 03/02/17

# Air Canister Certification Results

Lab ID: L1703959-01
Client ID: CAN 465 SHELF 2
Sample Location:
Date Collected: 02/07/17 16:00
Date Received: 02/08/17
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 | | | | | | | | |
| 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 | 0.500 | -- | ND | 2.05 | -- | | 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:** L1703959
**Report Date:** 03/02/17

# Air Canister Certification Results

Lab ID: L1703959-01
Client ID: CAN 465 SHELF 2
Sample Location:

Date Collected: 02/07/17 16:00
Date Received: 02/08/17
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
**Project Number:** CANISTER QC BAT
**Lab Number:** L1703959
**Report Date:** 03/02/17

# Air Canister Certification Results

Lab ID: L1703959-01
Client ID: CAN 465 SHELF 2
Sample Location:
Date Collected: 02/07/17 16:00
Date Received: 02/08/17
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 | | | | | | | | |

| Internal Standard | % Recovery | Qualifier | Acceptance Criteria |
|---|---|---|---|
| 1,4-Difluorobenzene | 83 | | 60-140 |
| Bromochloromethane | 90 | | 60-140 |
| chlorobenzene-d5 | 96 | | 60-140 |

**Project Name:** BATCH CANISTER CERTIFICATION
**Project Number:** CANISTER QC BAT
**Lab Number:** L1703959
**Report Date:** 03/02/17

# Air Canister Certification Results

Lab ID: L1703959-01
Client ID: CAN 465 SHELF 2
Sample Location:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 02/09/17 20:48
Analyst: MB

Date Collected: 02/07/17 16:00
Date Received: 02/08/17
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 | 0.200 | -- | ND | 0.989 | -- | | 1 |
| Chloromethane | ND | 0.200 | -- | ND | 0.413 | -- | | 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 | 1.00 | -- | ND | 2.38 | -- | | 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 | 0.500 | -- | ND | 1.74 | -- | | 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 | 0.200 | -- | ND | 0.721 | -- | | 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:** L1703959
**Report Date:** 03/02/17

# Air Canister Certification Results

Lab ID: L1703959-01
Client ID: CAN 465 SHELF 2
Sample Location:
Date Collected: 02/07/17 16:00
Date Received: 02/08/17
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 | 0.100 | -- | ND | 0.461 | -- | | 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 | 0.200 | -- | ND | 0.983 | -- | | 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 | 0.200 | -- | ND | 1.10 | -- | | 1 |
| p-Isopropyltoluene | ND | 0.200 | -- | ND | 1.10 | -- | | 1 |
| 1,2-Dichlorobenzene | ND | 0.020 | -- | ND | 0.120 | -- | | 1 |

**Project Name:** BATCH CANISTER CERTIFICATION
**Project Number:** CANISTER QC BAT
**Lab Number:** L1703959
**Report Date:** 03/02/17

# Air Canister Certification Results

Lab ID: L1703959-01
Client ID: CAN 465 SHELF 2
Sample Location:
Date Collected: 02/07/17 16:00
Date Received: 02/08/17
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 | 0.200 | -- | ND | 1.10 | -- | | 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 | 93 | | 60-140 |
| bromochloromethane | 91 | | 60-140 |
| chlorobenzene-d5 | 95 | | 60-140 |

**Project Name:** B3300 TEMP SYSTEMS
**Project Number:** 2999.07

**Lab Number:** L1705802
**Report Date:** 03/02/17

## Sample Receipt and Container Information

Were project specific reporting limits specified? YES

**Cooler Information** **Custody Seal**

**Cooler**
N/A Absent

**Container Information**

| Container ID | Container Type | Cooler | pH | Temp deg C | Pres | Seal | Analysis(*) |
|---|---|---|---|---|---|---|---|
| L1705802-01A | Canister - 1 Liter | N/A | N/A | N/A | Y | Absent | TO15-LL(30) |
| L1705802-02A | Canister - 1 Liter | N/A | N/A | N/A | Y | Absent | TO15-LL(30) |
| L1705802-03A | Canister - 2.7 Liter | N/A | N/A | | Y | Absent | CLEAN-FEE() |

*Values in parentheses indicate holding time in days

| | | | |
|---|---|---|---|
| **Project Name:** | B3300 TEMP SYSTEMS | **Lab Number:** | L1705802 |
| **Project Number:** | 2999.07 | **Report Date:** | 03/02/17 |

## 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. |
| NDPA/DPA | - N-Nitrosodiphenylamine/Diphenylamine. |
| NI | - Not Ignitable. |
| NP | - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil. |
| 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. |
| STLP | - Semi-dynamic Tank Leaching Procedure per EPA Method 1315. |
| TIC | - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations. |

### *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*

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

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. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the |

*Report Format:* Data Usability Report

| | | | |
|---|---|---|---|
| **Project Name:** | B3300 TEMP SYSTEMS | **Lab Number:** | L1705802 |
| **Project Number:** | 2999.07 | **Report Date:** | 03/02/17 |

***Data Qualifiers***

reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

**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.

**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:** | B3300 TEMP SYSTEMS | **Lab Number:** | L1705802 |
| **Project Number:** | 2999.07 | **Report Date:** | 03/02/17 |

## 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

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

**Westborough Facility**
**EPA 624:** m/p-xylene, o-xylene
**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
**EPA 8270D:** NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
**EPA 300:** DW: Bromide
**EPA 6860:** NPW and SCM: Perchlorate
**EPA 9010:** NPW and SCM: Amenable Cyanide Distillation
**EPA 9012B:** NPW: Total Cyanide
**EPA 9050A:** NPW: Specific Conductance
**SM3500:** NPW: Ferrous Iron
**SM4500**: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO2, NO3.
**SM5310C:** DW: Dissolved Organic Carbon

**Mansfield Facility**
**SM 2540D:** TSS
**EPA 3005A** NPW
**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
**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.
**Biological Tissue Matrix:** EPA 3050B

**The following analytes are included in our Massachusetts DEP Scope of Accreditation**

**Westborough Facility:**

***Drinking Water***
**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; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
**Microbiology**: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

***Non-Potable Water***
**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH**, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **SM4500NO3-F, EPA 353.2**: Nitrate-N**, EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, 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, SM9221E.**

**Mansfield Facility:**

***Drinking Water***
**EPA 200.7:** Ba, Be, Cd, Cr, Cu, Ni, Na, Ca. **EPA 200.8:** Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, TL. **EPA 245.1** Hg.

***Non-Potable Water***
**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.
**EPA 245.1** Hg.
**SM2340B**

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

# AIR ANALYSIS

**CHAIN OF CUSTODY**

PAGE 1 OF 1

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

Date Rec'd in Lab:

ALPHA Job #:

**Client Information**

Client: Sanborn Head
Address: 1 Technology Park Dr
Westford, MA 01886
Phone: 978-392-0900
Fax: —
Email: SSOOS@sanbornhead.com
☐ These samples have been previously analyzed by Alpha

**Project Information**

Project Name: B3300 Temp Systems
Project Location: Hopewell Junction, NY
Project #: 2999.07
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 | Res / Comm |
|---|---|---|
| | | |
| | | |
| | | |

Other Project Specific Requirements/Comments:

Project-Specific Target Compound List: ☒ IBM EFK VOCs: PCE, TCE, Cis/trans 1,2 DCE, VC

**All Columns Below Must Be Filled Out**

| ALPHA Lab ID (Lab Use Only) | Sample ID | COLLECTION End 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-15 | TO-15 SIM | APH Subtract Non-petroleum HCs ☐ | Fixed Gases | Sulfides & Mercaptans by TO-15 | Sample Comments (i.e. PID) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ballroom | 2/15/17 | 1750 | 1750 | -30" | -5" | SV | JWF | 1L | 386 | N/A | X | | | | | |
| | SP4003 | 2/21/17 | 1615 | 1615 | -29 | -5 | SV | JWC | 1L | 477 | N/A | X | | | | | PID = 3,500 ppm |
| | | | | | | | | | | | | | | | | | |
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2/15/17
(edited by JWC on 2/24/17)

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

Container Type: CS

| Relinquished By: | Date/Time | Received By: | Date/Time: |
|---|---|---|---|
| Ashley James | 2/24/17 1000 | [illegible] AAL | 2/24/17 1800 |
| [illegible] | 2/24/17 | | |

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.

Form No: 101-02 Rev: (25-Sep-15)

# 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: 2/24/17

ALPHA Job #: L1705802

## Client Information

Client: Sanborn Head
Address: 1 Technology Park Dr
Westford, MA 01886
Phone: 978-392-0900
Fax: —
Email: SSOOS@sanbornhead.com

☐ These samples have been previously analyzed by Alpha

## Project Information

Project Name: B330D Temp Systems
Project Location: Hopewell Junction, NY
Project #: 2999.07
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 | Res / Comm |
|---|---|---|
| | | |
| | | |
| | | |

Other Project Specific Requirements/Comments:

Project-Specific Target Compound List: ☒ IBM EFK VOCs: PCE, TCE, Cis/trans 1,2 DCE, VC

**All Columns Below Must Be Filled Out**

| ALPHA Lab ID (Lab Use Only) | Sample ID | COLLECTION End 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-15 | TO-15 SIM | APH Subject Non-petroleum HCs ☐ | Fixed Gases | Sulfides & Mercaptans by TO-15 | | | Sample Comments (i.e. PID) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5802-01 | Ballroom | 11/5/17 | 1750 | 1750 | -30" | -5" | SV | JVF | 1L | 386 | N/A | X | | | | | | | |
| -02 | SP4003 | 2/21/17 | 1615 | 1615 | -29 | -5 | SV | JWC | 1L | 477 | N/A | X | | | | | | | PID = 3,500 ppm |
| | | | | | | | | | | | | | | | | | | | |
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*SAMPLE MATRIX CODES

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

Container Type: CS

| Relinquished By: | Date/Time | Received By: | Date/Time: |
|---|---|---|---|
| Ashley James | 2/24/17 1000 | [illegible] AAL | 2/24/17 1800 |
| [illegible] | 2/24/17 1345 | [illegible] | 2/24/17 13:45 |

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.

Form No: 101-02 Rev: (25-Sep-15)

# ANALYTICAL REPORT

| | |
|---|---|
| Lab Number: | L1625551 |
| Client: | Sanborn, Head & Associates, Inc.<br>20 Foundry Street<br>Concord, NH 03301 |
| ATTN: | Seth Soos |
| Phone: | (603) 229-1900 |
| Project Name: | B330D SP TEST |
| Project Number: | 2999.05 |
| Report Date: | 08/22/16 |



Certifications & Approvals: NY (11627), CT (PH-0141), NH (2206), NJ NELAP (MA015), RI (LAO00299), ME (MA00030), PA (68-02089), VA (460194), LA NELAP (03090), FL (E87814), TX (T104704419), WA (C954), USFWS (Permit #LE2069641), 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:** B330D SP TEST
**Project Number:** 2999.05

**Lab Number:** L1625551
**Report Date:** 08/22/16

| Alpha Sample ID | Client ID | Matrix | Sample Location | Collection Date/Time | Receive Date |
|---|---|---|---|---|---|
| L1625551-01 | SP4001 | SOIL_VAPOR | HOPEWELL JUNCTION, NY | 08/14/16 14:24 | 08/16/16 |
| L1625551-02 | UNUSED CANISTER 2088 | SOIL_VAPOR | HOPEWELL JUNCTION, NY | | 08/16/16 |

| | | | |
|---|---|---|---|
| **Project Name:** | B330D SP TEST | **Lab Number:** | L1625551 |
| **Project Number:** | 2999.05 | **Report Date:** | 08/22/16 |

## 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 NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. 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. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. 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. All specific QC 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. 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:** B330D SP TEST
**Project Number:** 2999.05

**Lab Number:** L1625551
**Report Date:** 08/22/16

**Case Narrative (continued)**

Volatile Organics in Air

Canisters were released from the laboratory on August 9, 2016. The canister certification results are provided as an addendum.

Sample L1625551-01: The sample was diluted and re-analyzed to quantify the results within the calibration range. The result(s) should be considered estimated, and are qualified with an E flag, for any compound(s) that exceeded the calibration range in the initial analysis. The re-analysis was performed only for the compound(s) that exceeded the calibration range.

Sample L1625551-01: 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.

Sample L1625551-01: The sample has elevated detection limits due to the dilution required by the elevated concentrations of target compounds in the sample.

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: 08/22/16

# AIR

***Project Name:*** B330D SP TEST
***Project Number:*** 2999.05
***Lab Number:*** L1625551
***Report Date:*** 08/22/16

## *SAMPLE RESULTS*

Lab ID: L1625551-01 D
Client ID: SP4001
Sample Location: HOPEWELL JUNCTION, NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 08/20/16 00:20
Analyst: MB

Date Collected: 08/14/16 14:24
Date Received: 08/16/16
Field Prep: Not Specified

| | ppbV | | | ug/m3 | | | | |
|---|---|---|---|---|---|---|---|---|
| **Parameter** | **Results** | **RL** | **MDL** | **Results** | **RL** | **MDL** | **Qualifier** | **Dilution Factor** |
| Volatile Organics in Air - Mansfield Lab | | | | | | | | |
| Vinyl chloride | ND | 519. | -- | ND | 1330 | -- | | 2596 |
| trans-1,2-Dichloroethene | ND | 519. | -- | ND | 2060 | -- | | 2596 |
| cis-1,2-Dichloroethene | 2100 | 519 | -- | 8330 | 2060 | -- | | 2596 |
| Trichloroethene | 698 | 519 | -- | 3750 | 2790 | -- | | 2596 |
| Tetrachloroethene | 308000 | 519 | -- | 2090000 | 3520 | -- | E | 2596 |

| **Internal Standard** | **% Recovery** | **Qualifier** | **Acceptance Criteria** |
|---|---|---|---|
| 1,4-Difluorobenzene | 103 | | 60-140 |
| Bromochloromethane | 96 | | 60-140 |
| chlorobenzene-d5 | 89 | | 60-140 |

***Project Name:*** B330D SP TEST
***Project Number:*** 2999.05
***Lab Number:*** L1625551
***Report Date:*** 08/22/16

## *SAMPLE RESULTS*

Lab ID: L1625551-01 D2
Client ID: SP4001
Sample Location: HOPEWELL JUNCTION, NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 08/20/16 09:28
Analyst: MB

Date Collected: 08/14/16 14:24
Date Received: 08/16/16
Field Prep: Not Specified

| | ppbV | | | ug/m3 | | | | |
|---|---|---|---|---|---|---|---|---|
| **Parameter** | **Results** | **RL** | **MDL** | **Results** | **RL** | **MDL** | **Qualifier** | **Dilution Factor** |
| Volatile Organics in Air - Mansfield Lab | | | | | | | | |
| Tetrachloroethene | 311000 | 1040 | -- | 2110000 | 7050 | -- | | 5198 |

| **Internal Standard** | **% Recovery** | **Qualifier** | **Acceptance Criteria** |
|---|---|---|---|
| 1,4-Difluorobenzene | 97 | | 60-140 |
| Bromochloromethane | 96 | | 60-140 |
| chlorobenzene-d5 | 95 | | 60-140 |

**Project Name:** B330D SP TEST
**Project Number:** 2999.05

**Lab Number:** L1625551
**Report Date:** 08/22/16

# Method Blank Analysis
## Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 08/19/16 17:12

| 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 for sample(s): 01 Batch: WG924267-4 | | | | | | | | |
| Vinyl chloride | ND | 0.200 | -- | ND | 0.511 | -- | | 1 |
| trans-1,2-Dichloroethene | ND | 0.200 | -- | ND | 0.793 | -- | | 1 |
| cis-1,2-Dichloroethene | ND | 0.200 | -- | ND | 0.793 | -- | | 1 |
| Trichloroethene | ND | 0.200 | -- | ND | 1.07 | -- | | 1 |
| Tetrachloroethene | ND | 0.200 | -- | ND | 1.36 | -- | | 1 |

# Lab Control Sample Analysis

## Batch Quality Control

**Project Name:** B330D SP TEST

**Project Number:** 2999.05

**Lab Number:** L1625551

**Report Date:** 08/22/16

| Parameter | LCS %Recovery | Qual | LCSD %Recovery | Qual | %Recovery Limits | RPD | Qual | RPD Limits |
|---|---|---|---|---|---|---|---|---|
| Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 Batch: WG924267-3 | | | | | | | | |
| Chlorodifluoromethane | 96 | | - | | 70-130 | - | | |
| Propylene | 122 | | - | | 70-130 | - | | |
| Propane | 87 | | - | | 70-130 | - | | |
| Dichlorodifluoromethane | 115 | | - | | 70-130 | - | | |
| Chloromethane | 100 | | - | | 70-130 | - | | |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | 104 | | - | | 70-130 | - | | |
| Methanol | 83 | | - | | 70-130 | - | | |
| Vinyl chloride | 106 | | - | | 70-130 | - | | |
| 1,3-Butadiene | 110 | | - | | 70-130 | - | | |
| Butane | 110 | | - | | 70-130 | - | | |
| Bromomethane | 107 | | - | | 70-130 | - | | |
| Chloroethane | 103 | | - | | 70-130 | - | | |
| Ethyl Alcohol | 92 | | - | | 70-130 | - | | |
| Dichlorofluoromethane | 106 | | - | | 70-130 | - | | |
| Vinyl bromide | 96 | | - | | 70-130 | - | | |
| Acrolein | 87 | | - | | 70-130 | - | | |
| Acetone | 110 | | - | | 70-130 | - | | |
| Acetonitrile | 113 | | - | | 70-130 | - | | |
| Trichlorofluoromethane | 114 | | - | | 70-130 | - | | |
| iso-Propyl Alcohol | 104 | | - | | 70-130 | - | | |
| Acrylonitrile | 93 | | - | | 70-130 | - | | |

# Lab Control Sample Analysis

## Batch Quality Control

**Project Name:** B330D SP TEST

**Project Number:** 2999.05

**Lab Number:** L1625551

**Report Date:** 08/22/16

| Parameter | LCS %Recovery | Qual | LCSD %Recovery | Qual | %Recovery Limits | RPD | Qual | RPD Limits |
|---|---|---|---|---|---|---|---|---|
| Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 Batch: WG924267-3 | | | | | | | | |
| Pentane | 93 | | - | | 70-130 | - | | |
| Ethyl ether | 101 | | - | | 70-130 | - | | |
| 1,1-Dichloroethene | 115 | | - | | 70-130 | - | | |
| tert-Butyl Alcohol | 99 | | - | | 70-130 | - | | |
| Methylene chloride | 95 | | - | | 70-130 | - | | |
| 3-Chloropropene | 114 | | - | | 70-130 | - | | |
| Carbon disulfide | 99 | | - | | 70-130 | - | | |
| 1,1,2-Trichloro-1,2,2-Trifluoroethane | 100 | | - | | 70-130 | - | | |
| trans-1,2-Dichloroethene | 105 | | - | | 70-130 | - | | |
| 1,1-Dichloroethane | 113 | | - | | 70-130 | - | | |
| Methyl tert butyl ether | 99 | | - | | 70-130 | - | | |
| Vinyl acetate | 127 | | - | | 70-130 | - | | |
| 2-Butanone | 104 | | - | | 70-130 | - | | |
| cis-1,2-Dichloroethene | 128 | | - | | 70-130 | - | | |
| Ethyl Acetate | 112 | | - | | 70-130 | - | | |
| Chloroform | 115 | | - | | 70-130 | - | | |
| Tetrahydrofuran | 102 | | - | | 70-130 | - | | |
| 2,2-Dichloropropane | 100 | | - | | 70-130 | - | | |
| 1,2-Dichloroethane | 123 | | - | | 70-130 | - | | |
| n-Hexane | 111 | | - | | 70-130 | - | | |
| Isopropyl Ether | 97 | | - | | 70-130 | - | | |

# Lab Control Sample Analysis

## Batch Quality Control

**Project Name:** B330D SP TEST

**Project Number:** 2999.05

**Lab Number:** L1625551

**Report Date:** 08/22/16

| Parameter | LCS %Recovery | Qual | LCSD %Recovery | Qual | %Recovery Limits | RPD | Qual | RPD Limits |
|---|---|---|---|---|---|---|---|---|
| Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 Batch: WG924267-3 | | | | | | | | |
| Ethyl-Tert-Butyl-Ether | 102 | | - | | 70-130 | - | | |
| 1,1,1-Trichloroethane | 116 | | - | | 70-130 | - | | |
| 1,1-Dichloropropene | 106 | | - | | 70-130 | - | | |
| Benzene | 103 | | - | | 70-130 | - | | |
| Carbon tetrachloride | 124 | | - | | 70-130 | - | | |
| Cyclohexane | 111 | | - | | 70-130 | - | | |
| Tertiary-Amyl Methyl Ether | 92 | | - | | 70-130 | - | | |
| Dibromomethane | 103 | | - | | 70-130 | - | | |
| 1,2-Dichloropropane | 113 | | - | | 70-130 | - | | |
| Bromodichloromethane | 120 | | - | | 70-130 | - | | |
| 1,4-Dioxane | 105 | | - | | 70-130 | - | | |
| Trichloroethene | 103 | | - | | 70-130 | - | | |
| 2,2,4-Trimethylpentane | 125 | | - | | 70-130 | - | | |
| Methyl Methacrylate | 115 | | - | | 70-130 | - | | |
| Heptane | 105 | | - | | 70-130 | - | | |
| cis-1,3-Dichloropropene | 101 | | - | | 70-130 | - | | |
| 4-Methyl-2-pentanone | 110 | | - | | 70-130 | - | | |
| trans-1,3-Dichloropropene | 114 | | - | | 70-130 | - | | |
| 1,1,2-Trichloroethane | 107 | | - | | 70-130 | - | | |
| Toluene | 91 | | - | | 70-130 | - | | |
| 1,3-Dichloropropane | 90 | | - | | 70-130 | - | | |

# Lab Control Sample Analysis

## Batch Quality Control

**Project Name:** B330D SP TEST

**Project Number:** 2999.05

**Lab Number:** L1625551

**Report Date:** 08/22/16

| Parameter | LCS %Recovery | Qual | LCSD %Recovery | Qual | %Recovery Limits | RPD | Qual | RPD Limits |
|---|---|---|---|---|---|---|---|---|
| Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 Batch: WG924267-3 | | | | | | | | |
| 2-Hexanone | 98 | | - | | 70-130 | - | | |
| Dibromochloromethane | 99 | | - | | 70-130 | - | | |
| 1,2-Dibromoethane | 92 | | - | | 70-130 | - | | |
| Butyl Acetate | 84 | | - | | 70-130 | - | | |
| Octane | 89 | | - | | 70-130 | - | | |
| Tetrachloroethene | 88 | | - | | 70-130 | - | | |
| 1,1,1,2-Tetrachloroethane | 92 | | - | | 70-130 | - | | |
| Chlorobenzene | 94 | | - | | 70-130 | - | | |
| Ethylbenzene | 95 | | - | | 70-130 | - | | |
| p/m-Xylene | 98 | | - | | 70-130 | - | | |
| Bromoform | 100 | | - | | 70-130 | - | | |
| Styrene | 89 | | - | | 70-130 | - | | |
| 1,1,2,2-Tetrachloroethane | 104 | | - | | 70-130 | - | | |
| o-Xylene | 99 | | - | | 70-130 | - | | |
| 1,2,3-Trichloropropane | 93 | | - | | 70-130 | - | | |
| Nonane (C9) | 91 | | - | | 70-130 | - | | |
| Isopropylbenzene | 91 | | - | | 70-130 | - | | |
| Bromobenzene | 94 | | - | | 70-130 | - | | |
| o-Chlorotoluene | 86 | | - | | 70-130 | - | | |
| n-Propylbenzene | 90 | | - | | 70-130 | - | | |
| p-Chlorotoluene | 90 | | - | | 70-130 | - | | |

# Lab Control Sample Analysis

## Batch Quality Control

**Project Name:** B330D SP TEST

**Project Number:** 2999.05

**Lab Number:** L1625551

**Report Date:** 08/22/16

| Parameter | LCS %Recovery | Qual | LCSD %Recovery | Qual | %Recovery Limits | RPD | Qual | RPD Limits |
|---|---|---|---|---|---|---|---|---|
| Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 Batch: WG924267-3 | | | | | | | | |
| 4-Ethyltoluene | 91 | | - | | 70-130 | - | | |
| 1,3,5-Trimethylbenzene | 96 | | - | | 70-130 | - | | |
| tert-Butylbenzene | 93 | | - | | 70-130 | - | | |
| 1,2,4-Trimethylbenzene | 100 | | - | | 70-130 | - | | |
| Decane (C10) | 102 | | - | | 70-130 | - | | |
| Benzyl chloride | 106 | | - | | 70-130 | - | | |
| 1,3-Dichlorobenzene | 96 | | - | | 70-130 | - | | |
| 1,4-Dichlorobenzene | 95 | | - | | 70-130 | - | | |
| sec-Butylbenzene | 90 | | - | | 70-130 | - | | |
| p-Isopropyltoluene | 87 | | - | | 70-130 | - | | |
| 1,2-Dichlorobenzene | 95 | | - | | 70-130 | - | | |
| n-Butylbenzene | 98 | | - | | 70-130 | - | | |
| 1,2-Dibromo-3-chloropropane | 110 | | - | | 70-130 | - | | |
| Undecane | 105 | | - | | 70-130 | - | | |
| Dodecane (C12) | 118 | | - | | 70-130 | - | | |
| 1,2,4-Trichlorobenzene | 93 | | - | | 70-130 | - | | |
| Naphthalene | 93 | | - | | 70-130 | - | | |
| 1,2,3-Trichlorobenzene | 95 | | - | | 70-130 | - | | |
| Hexachlorobutadiene | 99 | | - | | 70-130 | - | | |

# Lab Duplicate Analysis
## Batch Quality Control

**Project Name:** B330D SP TEST
**Project Number:** 2999.05

**Lab Number:** L1625551
**Report Date:** 08/22/16

| Parameter | Native Sample | Duplicate Sample | Units | RPD | Qual | RPD Limits |
|---|---|---|---|---|---|---|
| Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG924267-5 QC Sample: L1625564-04 Client ID: DUP Sample | | | | | | |
| Dichlorodifluoromethane | 2.19 | 2.21 | ppbV | 1 | | 25 |
| Chloromethane | ND | ND | ppbV | NC | | 25 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | ND | ppbV | NC | | 25 |
| Vinyl chloride | ND | ND | ppbV | NC | | 25 |
| 1,3-Butadiene | ND | ND | ppbV | NC | | 25 |
| Bromomethane | ND | ND | ppbV | NC | | 25 |
| Chloroethane | ND | ND | ppbV | NC | | 25 |
| Ethyl Alcohol | ND | ND | ppbV | NC | | 25 |
| Vinyl bromide | ND | ND | ppbV | NC | | 25 |
| Acetone | 19.9 | 20.1 | ppbV | 1 | | 25 |
| Trichlorofluoromethane | 144 | 147 | ppbV | 2 | | 25 |
| iso-Propyl Alcohol | 1.33 | 1.39 | ppbV | 4 | | 25 |
| 1,1-Dichloroethene | ND | ND | ppbV | NC | | 25 |
| tert-Butyl Alcohol | ND | ND | ppbV | NC | | 25 |
| Methylene chloride | ND | ND | ppbV | NC | | 25 |
| 3-Chloropropene | ND | ND | ppbV | NC | | 25 |
| Carbon disulfide | 1.33 | 1.32 | ppbV | 1 | | 25 |
| 1,1,2-Trichloro-1,2,2-Trifluoroethane | ND | ND | ppbV | NC | | 25 |
| trans-1,2-Dichloroethene | ND | ND | ppbV | NC | | 25 |

# Lab Duplicate Analysis
## Batch Quality Control

**Project Name:** B330D SP TEST
**Project Number:** 2999.05

**Lab Number:** L1625551
**Report Date:** 08/22/16

| Parameter | Native Sample | Duplicate Sample | Units | RPD | RPD Limits |
|---|---|---|---|---|---|
| Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG924267-5 QC Sample: L1625564-04 Client ID: DUP Sample | | | | | |
| 1,1-Dichloroethane | ND | ND | ppbV | NC | 25 |
| Methyl tert butyl ether | ND | ND | ppbV | NC | 25 |
| 2-Butanone | 15.4 | 15.5 | ppbV | 1 | 25 |
| cis-1,2-Dichloroethene | ND | ND | ppbV | NC | 25 |
| Ethyl Acetate | ND | ND | ppbV | NC | 25 |
| Chloroform | 8.49 | 8.68 | ppbV | 2 | 25 |
| Tetrahydrofuran | 1.58 | 1.59 | ppbV | 1 | 25 |
| 1,2-Dichloroethane | ND | ND | ppbV | NC | 25 |
| n-Hexane | 1.09 | 1.09 | ppbV | 0 | 25 |
| 1,1,1-Trichloroethane | ND | ND | ppbV | NC | 25 |
| Benzene | 0.608 | 0.612 | ppbV | 1 | 25 |
| Carbon tetrachloride | ND | ND | ppbV | NC | 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 | ND | ND | ppbV | NC | 25 |
| 2,2,4-Trimethylpentane | ND | ND | ppbV | NC | 25 |
| Heptane | 0.724 | 0.750 | ppbV | 4 | 25 |

# Lab Duplicate Analysis
## Batch Quality Control

**Project Name:** B330D SP TEST
**Project Number:** 2999.05

**Lab Number:** L1625551
**Report Date:** 08/22/16

| Parameter | Native Sample | Duplicate Sample | Units | RPD | RPD Limits |
|---|---|---|---|---|---|
| Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG924267-5 QC Sample: L1625564-04 Client ID: DUP Sample | | | | | |
| cis-1,3-Dichloropropene | ND | ND | ppbV | NC | 25 |
| 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 | 5.34 | 5.43 | ppbV | 2 | 25 |
| 2-Hexanone | 3.52 | 3.62 | ppbV | 3 | 25 |
| Dibromochloromethane | ND | ND | ppbV | NC | 25 |
| 1,2-Dibromoethane | ND | ND | ppbV | NC | 25 |
| Tetrachloroethene | 33.5 | 33.3 | ppbV | 1 | 25 |
| Chlorobenzene | ND | ND | ppbV | NC | 25 |
| Ethylbenzene | 2.16 | 2.16 | ppbV | 0 | 25 |
| p/m-Xylene | 9.07 | 9.25 | ppbV | 2 | 25 |
| Bromoform | ND | ND | ppbV | NC | 25 |
| Styrene | 6.78 | 6.97 | ppbV | 3 | 25 |
| 1,1,2,2-Tetrachloroethane | ND | ND | ppbV | NC | 25 |
| o-Xylene | 3.71 | 3.75 | ppbV | 1 | 25 |
| 4-Ethyltoluene | 0.828 | 0.824 | ppbV | 0 | 25 |
| 1,3,5-Trimethylbenzene | 1.46 | 1.48 | ppbV | 1 | 25 |
| 1,2,4-Trimethylbenzene | 5.05 | 5.14 | ppbV | 2 | 25 |

# Lab Duplicate Analysis
## Batch Quality Control

**Project Name:** B330D SP TEST
**Project Number:** 2999.05

**Lab Number:** L1625551
**Report Date:** 08/22/16

| Parameter | Native Sample | Duplicate Sample | Units | RPD | RPD Limits |
|---|---|---|---|---|---|
| Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG924267-5 QC Sample: L1625564-04 Client ID: DUP Sample | | | | | |
| Benzyl chloride | ND | ND | ppbV | NC | 25 |
| 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 |

**Project Name:** B330D SP TEST

**Project Number:** 2999.05

**Lab Number:** L1625551

**Report Date:** 08/22/16

## 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L1625551-01 | SP4001 | 1917 | 1.0L Can | 08/09/16 | 226822 | L1624034-02 | Pass | -30.0 | -5.7 | - | - | - | - |
| L1625551-02 | UNUSED CANISTER 2088 | 2088 | 1.0L Can | 08/09/16 | 226822 | L1624034-02 | Pass | -30.0 | -29.3 | - | - | - | - |

**Project Name:** BATCH CANISTER CERTIFICATION
**Project Number:** CANISTER QC BAT
**Lab Number:** L1624034
**Report Date:** 08/22/16

# Air Canister Certification Results

Lab ID: L1624034-02
Client ID: CAN 1502 SHELF 14
Sample Location:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 08/03/16 18:54
Analyst: MB

Date Collected: 08/02/16 16:00
Date Received: 08/03/16
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 | 5.00 | -- | ND | 9.42 | -- | | 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 | 0.500 | -- | ND | 1.09 | -- | | 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
**Project Number:** CANISTER QC BAT
**Lab Number:** L1624034
**Report Date:** 08/22/16

# Air Canister Certification Results

Lab ID: L1624034-02
Client ID: CAN 1502 SHELF 14
Sample Location:
Date Collected: 08/02/16 16:00
Date Received: 08/03/16
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 | 0.500 | -- | ND | 1.74 | -- | | 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 | 1.00 | -- | ND | 3.52 | -- | | 1 |
| 2-Butanone | ND | 0.500 | -- | ND | 1.47 | -- | | 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 | 0.500 | -- | ND | 1.47 | -- | | 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:** L1624034
**Report Date:** 08/22/16

# Air Canister Certification Results

Lab ID: L1624034-02
Client ID: CAN 1502 SHELF 14
Sample Location:
Date Collected: 08/02/16 16:00
Date Received: 08/03/16
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 | 0.500 | -- | ND | 2.05 | -- | | 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:** L1624034
**Report Date:** 08/22/16

# Air Canister Certification Results

Lab ID: L1624034-02
Client ID: CAN 1502 SHELF 14
Sample Location:
Date Collected: 08/02/16 16:00
Date Received: 08/03/16
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 | | | | | |
| Silanol, Trimethyl- | 1.8 | NJ | ppbV | | 1 |

**Project Name:** BATCH CANISTER CERTIFICATION
**Project Number:** CANISTER QC BAT
**Lab Number:** L1624034
**Report Date:** 08/22/16

# Air Canister Certification Results

Lab ID: L1624034-02
Client ID: CAN 1502 SHELF 14
Sample Location:
Date Collected: 08/02/16 16:00
Date Received: 08/03/16
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 | | | | | | | | |

| Internal Standard | % Recovery | Qualifier | Acceptance Criteria |
|---|---|---|---|
| 1,4-Difluorobenzene | 108 | | 60-140 |
| Bromochloromethane | 112 | | 60-140 |
| chlorobenzene-d5 | 109 | | 60-140 |

**Project Name:** BATCH CANISTER CERTIFICATION
**Project Number:** CANISTER QC BAT
**Lab Number:** L1624034
**Report Date:** 08/22/16

# Air Canister Certification Results

Lab ID: L1624034-02
Client ID: CAN 1502 SHELF 14
Sample Location:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 08/03/16 18:54
Analyst: MB

Date Collected: 08/02/16 16:00
Date Received: 08/03/16
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 | 0.200 | -- | ND | 0.989 | -- | | 1 |
| Chloromethane | ND | 0.200 | -- | ND | 0.413 | -- | | 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 | 1.00 | -- | ND | 2.38 | -- | | 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 | 0.500 | -- | ND | 1.74 | -- | | 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 | 0.200 | -- | ND | 0.721 | -- | | 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:** L1624034
**Report Date:** 08/22/16

# Air Canister Certification Results

Lab ID: L1624034-02
Client ID: CAN 1502 SHELF 14
Sample Location:

Date Collected: 08/02/16 16:00
Date Received: 08/03/16
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 | 0.100 | -- | ND | 0.461 | -- | | 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 | 0.200 | -- | ND | 0.983 | -- | | 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 | 0.200 | -- | ND | 1.10 | -- | | 1 |
| p-Isopropyltoluene | ND | 0.200 | -- | ND | 1.10 | -- | | 1 |
| 1,2-Dichlorobenzene | ND | 0.020 | -- | ND | 0.120 | -- | | 1 |

**Project Name:** BATCH CANISTER CERTIFICATION
**Project Number:** CANISTER QC BAT
**Lab Number:** L1624034
**Report Date:** 08/22/16

# Air Canister Certification Results

Lab ID: L1624034-02
Client ID: CAN 1502 SHELF 14
Sample Location:
Date Collected: 08/02/16 16:00
Date Received: 08/03/16
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 | 0.200 | -- | ND | 1.10 | -- | | 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 | 109 | | 60-140 |
| bromochloromethane | 114 | | 60-140 |
| chlorobenzene-d5 | 111 | | 60-140 |

**Project Name:** B330D SP TEST
**Project Number:** 2999.05

**Lab Number:** L1625551
**Report Date:** 08/22/16

## Sample Receipt and Container Information

Were project specific reporting limits specified? YES

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

**Container Information**

| Container ID | Container Type | Cooler | pH | Temp deg C | Pres | Seal | Analysis(*) |
|---|---|---|---|---|---|---|---|
| L1625551-01A | Canister - 1 Liter | N/A | N/A | | Y | Absent | TO15-LL(30) |
| L1625551-02A | Canister - 1 Liter | N/A | N/A | | Y | Absent | CLEAN-FEE() |

*Values in parentheses indicate holding time in days

| | | | |
|---|---|---|---|
| **Project Name:** | B330D SP TEST | **Lab Number:** | L1625551 |
| **Project Number:** | 2999.05 | **Report Date:** | 08/22/16 |

## 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. |
| NDPA/DPA | - N-Nitrosodiphenylamine/Diphenylamine. |
| NI | - Not Ignitable. |
| NP | - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil. |
| 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. |
| STLP | - Semi-dynamic Tank Leaching Procedure per EPA Method 1315. |
| TIC | - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations. |

### *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*

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

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. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the |

*Report Format:* Data Usability Report

| | | | |
|---|---|---|---|
| **Project Name:** | B330D SP TEST | **Lab Number:** | L1625551 |
| **Project Number:** | 2999.05 | **Report Date:** | 08/22/16 |

***Data Qualifiers***

reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

**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.

**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:** | B330D SP TEST | **Lab Number:** | L1625551 |
| **Project Number:** | 2999.05 | **Report Date:** | 08/22/16 |

## 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

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

**Westborough Facility**
**EPA 624:** m/p-xylene, o-xylene
**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
**EPA 8270D:** NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
**EPA 300:** DW: Bromide
**EPA 6860:** NPW and SCM: Perchlorate
**EPA 9010:** NPW and SCM: Amenable Cyanide Distillation
**EPA 9012B:** NPW: Total Cyanide
**EPA 9050A:** NPW: Specific Conductance
**SM3500:** NPW: Ferrous Iron
**SM4500**: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO2, NO3.
**SM5310C:** DW: Dissolved Organic Carbon

**Mansfield Facility**
**SM 2540D:** TSS
**EPA 3005A** NPW
**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
**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.
**Biological Tissue Matrix:** ***EPA 3050B***

**The following analytes are included in our Massachusetts DEP Scope of Accreditation**

**Westborough Facility:**

***Drinking Water***
**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; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
**Microbiology**: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

***Non-Potable Water***
**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH**, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **SM4500NO3-F, EPA 353.2**: Nitrate-N**, EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, 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**.

**Mansfield Facility:**

***Drinking Water***
**EPA 200.7:** Ba, Be, Cd, Cr, Cu, Ni, Na, Ca. **EPA 200.8:** Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, TL. **EPA 245.1** Hg.

***Non-Potable Water***
**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.
**EPA 245.1** Hg.
**SM2340B**

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

# AIR ANALYSIS

PAGE 1 OF 1

**CHAIN OF CUSTODY**

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

Date Rec'd in Lab: 8/16/16

ALPHA Job #: L1625551

## Client Information

Client: Sanborn Head
Address: 1 Technology Park Dr
Westford, MA 01886
Phone: 978-392-0900
Fax: —
Email: SSoos@sanbornhead.com

☐ These samples have been previously analyzed by Alpha

## Project Information

Project Name: B330D SP Test
Project Location: Hopewell Junction, NY
Project #: 2999.05
Project Manager: S. 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 | Res / Comm |
|---|---|---|
| | | |
| | | |
| | | |

Other Project Specific Requirements/Comments:

Project-Specific Target Compound List: ☒ IBM East Fishkill VOCs: PCE, TCE, VC, cis/trans, 1-2 DCE

**All Columns Below Must Be Filled Out**

| ALPHA Lab ID (Lab Use Only) | Sample ID | COLLECTION End 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-15 | TO-15 SIM | APH Subtract Non-petroleum HCs ☐ | Fixed Gases | Sulfides & Mercaptans by TO-15 | | | Sample Comments (i.e. PID) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25551-01 | SP4001 | 8/14/16 | — | 1424 | 29.57 | 5.56 | SV | JWC | 1L | 1917 | - | X | | | | | | | PID = >15,000 ppm |
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*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: |
|---|---|---|---|
| Rob Maestro AAI | 8/16/16, 1020 | Rob Maestro AAI | 8/16/16 10:40 |
| | 8/16/16 1147 | | 8/16/16 11:47 |

# APPENDIX D

# DATA VALIDATION REPORT

# Data Usability Review
## Method TO-15 Hi/Lo Analysis

| | |
|---|---|
| **Client:** | Sanborn, Head & Associates, Inc., Concord, New Hampshire (SHA) |
| **Site:** | IBM East Fishkills Facility, Hopewell Junction, New York<br>Building 330D |
| **Laboratory:** | Eurofins Air Toxics, Inc. (EATL), Folsom, California |
| **SDG / Work Order:** | 1703515R1 |
| **Date(s) of Collection:** | March 17, 2017 |
| **Number and type Samples & analyses:** | 9 Indoor Air, 1 Ambient Air, and 1 Field Blank sample for twenty-two project-specific VOCs by Method TO-15 Hi/Lo |
| **Senior Data Reviewers:** | Dr. Nancy C. Rothman, New Environmental Horizons, Inc.<br>Susan D. Chapnick, New Environmental Horizons, Inc. |
| **Date Completed:** | May 1, 2017 |

This Data Usability Report was performed on the Work Order identified with the following intentions: 1) to determine if the data were generated and reported in accordance with the *Work Plan, RCRA Facility Investigation (RFI), VOC Source Assessment IBM East Fishkill Facility, Hopewell Junction, New York*, prepared by Sanborn, Head & Associates, June 2009; NYSDEC Analytical Services Protocol, June 2005 with NYSDEC Modifications to the EPA Region 9 TO-15 QA/QC Criteria, February 2008; USEPA Region 9, *Volatile Organic Compounds (VOCs) in Air (Ambient Air/Soil Vapor/Stack Gas) Samples Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/ Mass Spectrometry (GC/MS), EPA Method TO-15* (January 1999), 01/21/2000 revision; USEPA Region II SOP HW-31, *Validating Air Samples, Volatile Organic Analysis of Ambient Air in Canisters by Method TO-15*, Rev. 6, June 2014; and Method TO-15, *Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)*, Publication EPA/625/R-96/010b, January 1999; 2) to determine if the data met project data quality objectives for acceptable accuracy, precision, sensitivity; and technical usability; and 3) to update the project database with appropriate data quality qualifiers.

# I. Sample Descriptions and Analytical Parameters

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

Table 1. Sample Descriptions and Analytical Parameters

| Sample ID | Lab Sample ID | Collection Date | Matrix | Analytical Parameters | Sample Type |
|---|---|---|---|---|---|
| AA4002 | 1703515R1-01 | 03/17/17 | Ambient Air | VOCs | Field Sample |
| FB4002 | 1703515R1-02 | 03/17/17 | Air | VOCs | Field Blank |
| FD4002 | 1703515R1-03 | 03/17/17 | Indoor Air | VOCs | Field Duplicate of IA 4019 |
| IA AY-43 | 1703515R1-04 | 03/17/17 | Indoor Air | VOCs | Field Sample |
| IA BB-39 | 1703515R1-05 | 03/17/17 | Indoor Air | VOCs | Field Sample |
| IA BG-38 | 1703515R1-06 | 03/17/17 | Indoor Air | VOCs | Field Sample |
| IA BG-45 | 1703515R1-07 | 03/17/17 | Indoor Air | VOCs | Field Sample |
| IA BH-40 | 1703515R1-08 | 03/17/17 | Indoor Air | VOCs | Field Sample |
| IA 4017 | 1703515R1-09 | 03/17/17 | Indoor Air | VOCs | Field Sample |
| IA 4019 | 1703515R1-10 | 03/17/17 | Indoor Air | VOCs | Field Sample |
| IA BG-38G | 1703515R1-11 | 03/17/17 | Indoor Air | VOCs | Field Sample |

Analytical method reference:

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

## II. Data Deficiencies, Analytical Protocol Deviations, and Quality Control Problems

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

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

During this review of VOCs several results were estimated (J, UJ, JEB, EB) due to QC issues. Table 2 summarizes the actions taken during this review. NEH generated validated data spreadsheets based on the electronic project database files received from SHA for this Work Order. All results were considered acceptable compared to QAPP and method criteria and usable for project decisions with the understanding of the potential uncertainty (bias) in the qualified results.

The laboratory reported results for 22 project-specific VOCs from a single analysis with two mass spectrometer (MS) detectors, each operated in a different detection mode: one operated in the full scan electron impact mode and the other operated in the Selected Ion Monitoring (SIM) mode. This analysis, called TO-15 Hi/Lo by ATL, allowed the sensitivity requirements of the project, unless otherwise discussed in this report, to be met for all of the compounds. The Data Review Checklist indicates the compounds reported from each of the two modes of MS operation. The full scan analysis was reported with an "A" suffix and the SIM analysis with a "B" suffix appended to the laboratory sample ID.

The data package was revised and given a suffix "R1" to amend the reporting of a client sample ID that was reported incorrectly in the original data package due to a laboratory transcription error.

The Field Blank, FB4002, was received at the laboratory with a vacuum lower than the field final vacuum by more than 5 "Hg, which may indicate the canister leaked during transit to the laboratory. All results for the Field Blank were estimated (J or UJ) with possible low bias due to this vacuum disagreement, as indicated in Table 2.

Twenty results were estimated (JEB or EB) to indicate the Field Blank also reported a result for the same compound at a comparable level. The affected results are shown in Table 2.

One result was reported at a level below the calibration range (i.e., < RL) and flagged "J" by the laboratory. This result was accepted as estimated (J) with indeterminate bias due to uncertainty in quantitation below the instrument calibration range, as shown in Table 2.

Precision was acceptable for all VOCs in the Field Duplicate pair of IA 4019 and FD4002 except for acetone and toluene. The results for acetone and toluene in these samples were estimated (J) with indeterminate bias due to FD imprecision. These results are an indication of acceptable precision and representativeness of the samples for this site location for all the project-specific VOCs except for acetone and toluene.

All reporting limits were at a level below the Project required RL (as shown in Table B.1 of the QAPP) except for carbon tetrachloride in samples IA BB-39, IA BG-45, IA BH-40, and IA 4017. However, since carbon tetrachloride was detected in these samples, sensitivity is considered acceptable for these data.

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

Table 2. Summary of Data Validation Actions

| Field Sample ID | Analyte | Qualifier | Bias | Validation Comments |
|---|---|---|---|---|
| FB4002 | All VOCs | J or UJ | L | Field final and Lab receipt vacuums disagree |
| AA4002<br>IA AY-43<br>IA BB-39<br>IA BG-38<br>IA BG-45<br>IA BH-40<br>IA 4017 | Acetone | EB | H | Equipment Blank Action |
| IA AY-43<br>IA BG-45<br>IA 4019 | m,p-Xylene | EB | H | Equipment Blank Action |
| IA BG-38<br>IA 4019 | Methylene Chloride | EB | H | Equipment Blank Action |
| IA AY-43<br>IA BG-38<br>IA BG-38G | Toluene | EB | H | Equipment Blank Action |
| IA BH-40 | Toluene | JEB | I | Equipment Blank Action + Result < RL |
| IA 4019<br>FD4002 | Acetone<br>Toluene | JEB | I | Equipment Blank Action + FD imprecision |

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

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

*Abbreviations used in Table 2:*
*RL = Reporting Limit*
*FD = Field Duplicate*

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

Date Sampled: 3/17/17 No. Samples 8 IA + 1 FD + 1 AA + 1FB
Method of Analysis: TO-15 Hi/Lo

| Data Element Acceptable | Canister Receipt | HT | GC/MS Tunes + Calibrations | Internal Stds + Surrogates | LCS | Lab Dup (LCS and LD) | Field Duplicates | RL & Quant. |
|---|---|---|---|---|---|---|---|---|
| **Yes** | | √ | √ | √ | √ | √ | | |
| **No** | Estimate (J or UJ) 22 results | | | | | | Estimate (J) 4 results | Accept 1 "J" value |

***Other Issues*** : ***Blank Action:*** Estimate (JEB or EB) 20 results

***A combined Full Scan and SIM Analysis was performed for each sample for 22 Project-specific VOCs listed in Table B.1 of the Work Plan, as shown on page 4 of this checklist. The full scan analysis was reported with an "A" suffix and the SIM analysis with a "B" suffix appended to the laboratory sample ID.***

*The data package was revised and given a suffix "R1" to amend the reporting of a client sample ID that was reported incorrectly in the original data package due to a laboratory transcription error.*

These grab samples were received intact and in good condition on 3/27/17. The canister number identified on the Chain-of-Custody for sample AA4002 was incorrectly identified as #661; however, the actual canister number, which was verified in the logbooks and certification records, was #362.

Canisters were Certified pre-cleaned - certificates of analysis were reported and indicate that all Target compounds were non-detect in the canisters prior to being sent to the field.

The canister vacuums (field initial, field final and lab receipt) were all acceptable except FB4002 field final vacuum (15 "Hg) and lab receipt vacuum (9.2 "Hg) were different by more than 5 "Hg, which may be an indication that the Field Blank canister leaked during transit to the lab. All canisters were over-pressurized to 4.7 - 5.1 psi prior to analysis.
****ACTION: All results for FB4002 estimated (J or UJ) with possible low bias since the field final and lab receipt vacuums disagreed***

Date: ***4/30/17***
Data Reviewer: ***Nancy C. Rothman, Ph.D.***



**New Environmental Horizons, Inc.**

Associated Blanks: Method Blank: 20040406 /20040406 sim
FB: FB4002

| Blank ID | Contaminant / Level (µg/m$^3$) | Action Level FB DF = 2.3 * | Sample and reported result (µg/m$^3$) | | Corrected Database Result |
|---|---|---|---|---|---|
| 20040406 | None | | No Blank Action Required | | |
| 20040406 sim | None | | No Blank Action Required | | |
| FB4002 | Acetone 10 | 31 | AA4002 | 13 | 13 EB |
| | | 34 | FD4002 | 6.8 | 6.8 EB |
| | | 35 | IA AY-43 | 9.1 | 9.1 EB |
| | | 36 | IA BB-39 | 12 | 12 EB |
| | | 34 | IA BG-38 | 9.2 | 9.2 EB |
| | | 36 | IA BG-45 | 12 | 12 EB |
| | | 36 | IA BH-40 | 7.8 | 7.8 EB |
| | | 36 | IA 4017 | 6.1 | 6.1 EB |
| | | 30 | IA 4019 | 22 | 22 EB |
| | | 30 | IA BG-38G | 31 | No Action |
| FB4002 | Methylene Chloride 3.5 | 12 | IA BG-38 | 1.4 | 1.4 EB |
| | | 10 | IA 4019 | 2.7 | 2.7 EB |
| | | | All other samples were ND - no additional action | | |
| FB4002 | Toluene 3.8 | 13 | FD4002 | 0.74 | 0.74 EB |
| | | 13 | IA AY-43 | 0.76 | 0.76 EB |
| | | 13 | IA BG-38 | 2.2 | 2.2 EB |
| | | 14 | IA BH-40 | 0.6 J | 0.6 JEB |
| | | 11 | IA 4019 | 5.7 | 5.7 EB |
| | | 11 | IA BG-38G | 0.92 | 0.92 EB |
| | | | All other samples were ND - no additional action | | |
| FB4002 | m,p-Xylene 1.2 | 13 | IA AY-43 | 2 | 2 EB |
| | | 14 | IA BG-45 | 4.9 | 4.9 EB |
| | | 11 | IA 4019 | 1.1 | 1.1 EB |
| | | | All other samples were ND - no additional action | | |
| | | | | | |
| * Sample-specific Blank Action = Level found in Blank x 5 x (Sample DF/FB DF) | | | | | |
| | | | | | |

Date: ***4/30/17***
Data Reviewer: ***Nancy C. Rothman, Ph.D.***

Additional Notes:

Samples were analyzed on 4/4/17; therefore HT was met. No Action required.

***ICALs*** : Instrument 20 Full Scan and SIM performed on 3/29/17. Full Scan = 7- to 9-level calibration from 0.05, 0.1, or 0.5 to 40 ppbV for all 22 Target compounds plus several non-target compounds. SIM = 10- to 11-level calibration from 0.005 or 0.01 to 20 ppbV for 3 Target plus several other non-target compounds. %RSD ≤ 30% for all 22 Target Compounds. RLs reported (as indicated in the table at the end of this checklist for DF=2 analysis) were supported by the ICALs. No Action required

***CCALs:*** 20040402/20040402sim - % Recovery 70-130% for all 22 Target compounds - No Action required.

***BFB Tunes:*** Instrument 20 Tunes (1 for ICAL + 1 for CCAL) - all criteria in all tunes were met and all samples were analyzed within 12 hours of tune; therefore, No Action Required.

***Surrogates & Internal Standards*** **:** All 3 Surrogates had %Recovery within criteria and all IS' had Areas and RTs within criteria in all analyses; therefore, No Action Required.

***LCS/LCSD*** : 20040403/20040404 & 20040403sim/20040404sim - %Recovery acceptable for all 22 Targets in LCS and LCSD and LCS/LCSD RPDs all OK; therefore, acceptable accuracy and precision demonstrated for analysis of the 22 VOCs by Full Scan + SIM analysis.

LD analysis not performed for the samples in this Work Order. LCS/LCSD reported instead, which reported acceptable precision except as listed above.

There was 1 "J" results reported. This "J" result was accepted with indeterminate bias due to uncertainty in quantitation at a level below the Reporting limit (Result < RL). There were no other qualifiers (except "U") reported on the data.

All reporting limits were at a level below the Project required RL (as shown in Table B.1, which is reproduced on page 5 of this Checklist) except for Carbon Tetrachloride in samples IA BB-39, IA BG-45, IA BH-40, and IA 4017, which had RLs exceeding the expected RL; however, as carbon tetrachloride was detected in all of these samples, sensitivity for data is considered acceptable. No action required.

The narrative did not raise any additional issues that would affect data quality.

Date: ***4/30/17***
Data Reviewer: ***Nancy C. Rothman, Ph.D.***

Field Duplicate Evaluation_ Sample IDs: Sample = IA 4019 FD = FD4002

| Analyte Name | CAS No. | DF = 1.36* RL (µg/m³) | Sample Result µg/m3 | Q | Result Level | FD Result µg/m3 | Q | FD Level | RPD | Action |
|---|---|---|---|---|---|---|---|---|---|---|
| Freon 11 | 75-69-4 | 0.76 | 1.4 | | < 5xRL | 1.5 | | < 5xRL | 6.9 | None |
| Freon 113 | 76-13-1 | 1 | 1 | U | RL | 1.2 | U | RL | NA | None |
| 1,1-Dichloroethene | 75-35-4 | 0.54 | 0.54 | U | RL | 0.63 | U | RL | NA | None |
| Acetone | 67-64-1 | 1.6 | 22 | EB | > 5xRL | 6.8 | EB | < 5xRL | 105.6 | **J Both** |
| Methylene Chloride | 75-09-2 | 0.94 | 2.7 | EB | < 5xRL | 1.1 | U | < 5xRL | NA | None |
| cis-1,2-Dichloroethene | 156-59-2 | 0.54 | 0.54 | U | RL | 0.63 | U | RL | NA | None |
| 1,1,1-Trichloroethane | 71-55-6 | 0.74 | 0.74 | U | RL | 0.86 | U | RL | NA | None |
| Benzene | 71-43-2 | 0.43 | 0.6 | | < 5xRL | 0.52 | | < 5xRL | 14.3 | None |
| Toluene | 108-88-3 | 0.51 | 5.7 | EB | > 5xRL | 0.74 | EB | < 5xRL | 154.0 | **J Both** |
| Tetrachloroethene | 127-18-4 | 0.92 | 1.6 | | < 5xRL | 1.8 | | < 5xRL | 11.8 | None |
| Chlorobenzene | 108-90-7 | 0.63 | 0.63 | U | RL | 0.73 | U | RL | NA | None |
| Ethyl Benzene | 100-41-4 | 0.59 | 0.59 | U | RL | 0.69 | U | RL | NA | None |
| m,p-Xylene | 108-38-3/ 106-42-3 | 0.59 | 1.1 | EB | < 5xRL | 0.69 | U | < 5xRL | NA | None |
| o-Xylene | 95-47-6 | 0.59 | 0.59 | U | RL | 0.69 | U | RL | NA | None |
| 1,3-Dichlorobenzene | 541-73-1 | 0.82 | 0.82 | U | RL | 0.95 | U | RL | NA | None |
| 1,4-Dichlorobenzene | 106-46-7 | 0.82 | 0.82 | U | RL | 0.95 | U | RL | NA | None |
| 1,2-Dichlorobenzene | 95-50-1 | 0.82 | 0.82 | U | RL | 0.95 | U | RL | NA | None |
| 1,2,4-Trichlorobenzene | 120-82-1 | 5 | 5 | U | RL | 5.9 | U | RL | NA | None |
| Freon 12 | 75-71-8 | 0.67 | 2.6 | | < 5xRL | 2.5 | | < 5xRL | 3.9 | None |
| Vinyl Chloride | 75-01-4 | 0.035 | 0.035 | U | RL | 0.04 | U | RL | NA | None |
| Carbon Tetrachloride | 56-23-5 | 0.17 | 0.55 | | < 5xRL | 0.55 | | < 5xRL | 0.0 | None |
| Trichloroethene | 79-01-6 | 0.15 | 0.15 | U | RL | 0.17 | U | RL | NA | None |

*The FD DF was 1.58

** Action only taken for RPD > 20% if one or both results are > 5 x RL or if one result ND and other results > 5 x RL

Q = Data Qualifier as reported by EATL and/or NEH; U = non-detect, J = estimated result; UJ = non-detect is estimated; EB =Equipment Blank Action

NA = Not Applicable. RPD not calculated since one or both results were non-detect.

FD precision was acceptable for all Target VOCs in the FD pair of IA 4019 and FD4002 except for Acetone and Toluene.

***ACTION: Acetone and toluene estimated (J) in samples IA 4019 and FD4002 with indeterminate bias due to FD imprecision.***

Date: ***4/30/17***

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

Method of Analysis: TO-15 Hi/Lo

### *Compound List and Project-required Reporting Limits (RL)*

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

**Actions (see References below):**

| | |
|---|---|
| *Canister Integrity:* | If certification forms indicate issues, J/U or UJ results in samples |
| *Canister Vacuum (Vac):* | Initial Field Vac < 25" Hg, J/UJ all results; Lab Receipt Vac > 15" Hg, J/UJ results; Lab Receipt Vac > ± 5" Hg of Final Field Vac, J/UJ results |
| *Hold Time (HT):* | HT > 30 days, J detects/ UJ non-detects |
| *Blank Actions:* | Action Level = 5 x Level in Blank; Sample-specific Blank Action Level = Action Level x (Sample DF/Blank DF)<br>Method Blank (MB): Result < RL, U result at RL; RL<Result<Blank Action, U result at level reported<br>Equipment Blank (EB): Result<Blank Action, EB result at level reported |
| *BFB Tune:* | SW-846 method 8260B tune criteria not met, professional judgment on R of all data; samples analyzed > 12-hours after tune; professional judgment on J/UJ or R of results |
| *LCS and CCV:* | Percent Recovery (%Rec) <10%, J detects, R non-detects; 10% < %Rec <70%; J/UJ all associated data; %Rec >130%, J detects - no action for non-detects |
| *Initial Calibration (ICAL):* | %RSD > 30%, J/UJ associated results |
| *Internal Standard (IS):* | RT > ±0.33 min of IS RT in daily CCV, J/UJ associated results;<br>Area < 25% Area in CCV, J detects, R non-detects (or professional judgment); 25%< Area < 60% of CCV Area, J/UJ associated results; Area > 140% of CCV Area, J detects, no action for non-detects |
| *Surrogates:* | %Rec <10%, J detects, R non-detects; 10% < %Rec <70%; J/UJ all associated data; %Rec >130%, J detects - no action for non-detects |
| *Laboratory Duplicates:* | LCS/LCSD RPD or Sample/LD RPD > 20% for detects > 5x RL, J associated data; professional judgment for results < 5 x RL |
| *Field Duplicates:* | RPD > 20% for detects > 5x RL, J associated data; professional judgment for results < 5 x RL |
| *RLs + Quant:* | Compound reported outside calibration range (< RL or at ppbV level > sample-specific highest ICAL standard for compound), J data. Note if RL > expected RL from Table B.1 of Work Plan (see above) |

***References:*** *Work Plan, RCRA Facility Investigation (RFI), VOC Source Assessment IBM East Fishkill Facility, Hopewell Junction, New York* , prepared by Sanborn, Head & Associates, June 2009; NYSDEC Analytical Services Protocol, June 2005 with NYSDEC Modifications to the EPA Region 9 TO-15 QA/QC Criteria, February 2008; USEPA Region II SOP HW-31, Validating Air Samples, Volatile Organic Analysis of Ambient Air in Canisters by Method TO-15, Rev. 6, June 2014; and Method TO-15, Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS), Publication EPA/625/R-96/010b, January 1999