PARTNER

PHASE II SUBSURFACE INVESTIGATION REPORT

Kingston Portfolio - The Shirt Factory
77 Cornell Street
Kingston, New York 12401

January 3, 2019
Partner Project Number: 18-228431.6

Prepared for:

Duna Real Estate Group
1412 Broadway, Suite 2304
New York, New York 10018

Engineers who understand your business

PARTNER

January 3, 2019

Hagai Barlev
Duna Real Estate Group
1412 Broadway, Suite 2304
New York, New York 10018

Subject: Phase II Subsurface Investigation Report
Kingston Portfolio - The Shirt Factory
77 Cornell Street
Kingston, New York 12401
Partner Project Number: 18-228431.6

Dear Hagai Barley:

Partner Assessment Corporation (Partner) is pleased to provide the results of the assessment performed on the above-referenced property. The following report describes the field activities, methods, and findings of the Phase II Subsurface Investigation conducted at the above-referenced property.

This assessment was performed utilizing methods and procedures consistent with good commercial or customary practices designed to conform to acceptable industry standards. The independent conclusions represent Partner's best professional judgment based upon existing conditions and the information and data available to us during the course of this assignment.

We appreciate the opportunity to provide these services. If you have any questions concerning this report, or if we can assist you in any other matter, please contact Sarah Fonseca at (646) 863-8537.

Sincerely,

Partner Assessment Corporation

Michael Lawlor, Jr.
Senior Assessor

Kristine MacWilliams
Technical Director – Subsurface Investigation

Sarah Fonseca
Principal

TABLE OF CONTENTS

ATTACHMENTS

1.0 INTRODUCTION

1.1 Purpose

The main objective of the project was to identify the location of on-site underground storage tanks (USTs), former tankholds, and/or other associated features and to evaluate the potential impact of petroleum hydrocarbons, volatile organic compounds (VOCs), and/or polynuclear aromatic hydrocarbons (PAHs) to soil, groundwater and/or soil gas as a consequence of a release or releases from the historic operations and suspected/former USTs. Based on findings as a result of the geophysical survey, and information provided by subject property management, the scope of work was revised to include only interior soil gas samples. Duna Real Estate Group provided project authorization of Partner Proposal Number P18-228431.3.

1.2 Limitations

This report presents a summary of work conducted by Partner. The work includes observations of site conditions encountered and the analytical results provided by an independent third-party laboratory of samples collected during the course of the project. The number and location of samples were selected to provide the required information. However, it cannot be assumed that the limited available data are representative of subsurface conditions in areas not sampled.

Conclusions and/or recommendations are based on the observations, laboratory analyses, and the governing regulations. Conclusions and/or recommendations beyond those stated and reported herein should not be inferred from this document.

Partner warrants that the environmental consulting services contained herein were accomplished in accordance with generally-accepted practices in the environmental engineering, geology, and hydrogeology fields that existed at the time and location of work. No other warranties are implied or expressed.

1.3 User Reliance

Partner was engaged by Duna Real Estate Group (the Addressee), or their authorized representative, to perform this investigation. The engagement agreement specifically states the scope and purpose of the investigation, as well as the contractual obligations and limitations of both parties. This report and the information therein, are for the exclusive use of the Addressee. This report has no other purpose and may not be relied upon, or used, by any other person or entity without the written consent of Partner. Third parties that obtain this report, or the information therein, shall have no rights of recourse or recovery against Partner, its officers, employees, vendors, successors or assigns. Any such unauthorized user shall be responsible to protect, indemnify and hold Partner, the Addressee and their respective officers, employees, vendors, successors and assigns harmless from any and all claims, damages, losses, liabilities, expenses (including reasonable attorneys' fees) and costs attributable to such use. Unauthorized use of this report shall constitute acceptance of, and commitment to, these responsibilities, which shall be irrevocable and shall apply regardless of the cause of action or legal theory pled or asserted.

This report has been completed under specific Terms and Conditions relating to scope, relying parties, limitations of liability, indemnification, dispute resolution, and other factors relevant to any reliance on this report. Any parties relying on this report do so having accepted Partner's standard Terms and Conditions, a copy of which can be found at http: / www.partneresi.com/terms-and-conditions.php

2.0 SITE BACKGROUND

2.1 Site Description

The subject property consists of one parcel of land comprising approximately 0.88-acres located on the west side of Cornell Street, the south side of Smith Avenue and the north side of Tremper Avenue within a mixed commercial and residential area of the City of Kingston. The subject property is currently occupied by 65 tenant spaces for commercial and residential use. Onsite operations consist of typical residential housing, artist loft/studio, professional office and storage activities, and associated property maintenance. The subject property consists of a four-story building located on the northern portion of the lot. In addition to the current structure, the subject property is improved with a paved parking lot on the southern portion of the site, as well as associated landscaping.

Refer to Figure 1 for a site plan showing site features and surrounding properties.

2.2 Site History

Partner completed a *Phase I Environmental Site Assessment Report* (Phase I), dated November 12, 2018, prepared on behalf of Duna Real Estate Group. According to available historical sources, the subject property was formerly developed with residences on the southern portion as early as 1899 and developed with the current four-story, mixed-use structure in 1916. The residences were demolished by 1978 and the southern portion was developed with a parking lot. The four-story building was occupied by garment manufacturing tenants from the time of initial development until at least 1979, and subsequently was occupied by various light industrial, office and retail tenants.

The Phase I identified the following recognized environmental condition (REC) associated with the subject property:

- The subject property, identified as Gant Shirt Makers at 77 Cornell Street, is identified on the New York Drycleaners database under Facility ID 3-5108-00012. Based on a review of historical sources, this tenant operated onsite roughly between 1968 and 1979, a time of limited to no regulatory oversight. Additionally, former tenants including Not Fade Away Tie Dye and QPD Electronics, utilized hazardous wastes, including benzene, ignitable wastes and tetrachloroethylene (PCE) on site from at least 1982 through 1999. Dry cleaning operations typically use chlorinated solvents, particularly PCE, during the dry-cleaning process. These solvents, even when properly stored and disposed of, can be released from these facilities in small, frequent releases through floor drains, cracked concrete, and sewer systems. Chlorinated solvents are highly mobile chemicals that can easily accumulate in the soil and migrate to the groundwater beneath a facility. Based on the confirmed use of chlorinated solvents, including PCE, onsite for approximately 30 years, the historical use of the subject property is considered a REC.
- Partner observed a suspected vent pipe along the eastern façade of the subject property building along Cornell Street. Its location does not correspond with the reported location of the heating oil UST formerly located in the parking lot. Given the absence of aboveground storage tanks (ASTs) in the basement, the suspect vent pipe is considered a REC.

The Phase I identified the following historical recognized environmental condition (HREC) associated with the subject property:

- The subject property was formerly equipped with one 5,000-gallon No. 2 fuel oil UST located to the south of the current building. The tank failed a tightness test due to small ullage leak and Spill Number 1000041 was reported to the New York State Department of Environmental Conservation (NYSDEC) in April 2010. Partner was provided with a Tank Removal & Closure Report prepared by Enviro Clean Services, LLC (ECS) in August 2010. According to the ECS report, the tank was re-tested and failed again on June 9, 2010. The tank was cut open, pumped out and cleaned. The tank was excavated and removed from the tank pit, with no significant pitting and/or "rush through" perforations observed by ECS. According to ECS, petroleum-contaminated soils (PCS) were not visually observed in the tank pit, and photoionization detector (PID) readings did not indicate the presence of PCS in the excavation. Four grab samples were collected from the pit walls and one two-point composite sample was collected from the bottom of the excavation. These samples were analyzed for VOCs and semi-VOCs (SVOCs). The soil samples from the north and south pit walls exhibited concentrations of the VOCs 1,2,4-trimethylbenzene and naphthalene [2.2 to 2.7 micrograms per kilogram (µg/kg) and 12.0 to 29.0 µg/kg, respectively]. No other VOCs were detected in the soil samples. The east pit wall exhibited low levels of five SVOCs, ranging from 0.30 to 1.10 parts per million (ppm). ECS stated that as the site is served by municipal water and sewer and no sensitive receptors are located in the vicinity, no further excavation of the remaining impacted soils would be necessary. ECS requested a letter of No Further Action (NFA) from the NYSDEC for Spill Number 1000041, and the case was granted regulatory closure and a letter of No Further Action (NFA) in October 2010. Based on the removal of the tank and regulatory closure, this former UST and associated spill case are considered an HREC for which no further action is necessary.

2.3 Geology and Hydrogeology

Based on a review of the United States Geological Survey (USGS), Kingston West, New York Quadrangle 7.5-minute series topographic map was reviewed for this ESA. According to the contour lines on the topographic map, the subject property is located at approximately 183 feet above mean sea level (MSL). The contour lines in the area of the subject property indicate the area is sloping moderately to the northwest. The subject property is depicted as situated in a developed area on the 2013 map.

Information specific to the subject property regarding the depth to groundwater and direction of groundwater flow was not available for the subject area. However, according to information obtained from online research, depth to the high water table is anticipated to be greater than 10 feet below ground surface (bgs).

The subject property is situated within the within the Valley and Ridge physiographic province. The Valley and Ridge province is a set of northeast-southwest trending valleys and ridges that stretch from central Alabama to New York. These ridges and valleys are the result of folded Paleozoic sedimentary beds that were eventually eroded away. This means that, structurally, the folds are alternating anticlines and synclinces that run nearly parallel with each other. These long narrow folds are sometimes overturned, overthrust or are plunging folds. According to the 1989 USGS Surficial Geologic Map of New York, Lower Hudson Sheet, the vicinity of the subject property is underlain by lacustrine sands, consisting of sand deposits associated with large bodies of water, generally a near-shore deposit or near a sand source, well sorted, stratified, generally quartz sand. Generally, the landscapes in southeastern New York have a pronounced glacial imprint, the effects of which are pronounced in the greater Hudson Valley area.

Based on information obtained from the USDA Natural Resources Conservation Service Web Soil Survey online database, the subject property is mapped as Riverhead sandy loam, described as well drained loamy glaciofluvial deposits overlying stratified sand and gravel formed in deltas and terraces.

Groundwater was not encountered during this investigation and was not a part of the scope of work.

3.0 FIELD ACTIVITIES

The scope of the Phase II Subsurface Investigation included a geophysical survey and the advancement of three borings for the collection of representative soil gas samples. Refer to Table 1 for a summary of the borings, sampling schedule and laboratory analyses for this investigation.

3.1 Preparatory Activities

Prior to the initiation of fieldwork, Partner completed the following activities.

3.1.1 Utility Clearance

Partner retained Nature's Way Environmental (NWE) of Alden, New York, to notify Dig Safely New York to clear public utility lines as required by law at least 48 hours prior to drilling activities. Dig Safely New York issued ticket number 12038-185-039 for the project.

In addition, Partner subcontracted with Delta Geophysics, Inc. (Delta) of Catasauqua, Pennsylvania, on December 10, 2018, to clear boring locations of utilities. The geophysical survey was performed using a Geophysical Survey Systems Inc. SIR-3000 cart-mounted Ground Penetrating Radar (GPR) with a 400 megaHertz (MHz) antenna, Radio-detection RD7000 precision utility locator, and Fisher M-Scope TW-6 pipe and cable locator and the data was interpreted in real time for evidence of utility lines and/or other subsurface features of potential concern. Boring placement was chosen based on the geophysical survey results and to avoid damaging underground features.

3.1.2 Health and Safety Plan

Partner prepared a site-specific Health and Safety Plan, which was reviewed with on-site personnel involved in the project prior to the commencement of drilling activities.

3.2 Geophysical Survey

On December 10, 2018, Delta conducted a geophysical survey under the supervision of Partner. The purpose of the geophysical survey was to identify USTs remaining in place and/or backfilled tankholds and clear boring locations of utilities. The geophysical survey was conducted with the aforementioned equipment in the southeastern exterior.

Delta systematically free-traversed the investigation area with the aforementioned equipment. The equipment data were interpreted in real time and compiled as necessary in order to identify subsurface anomalies consistent with USTs, disturbed soil resembling backfilled tankholds, piping trenches, utility lines, and/or other subsurface conduits/features.

During the geophysical survey, Delta determined utilities located in the former UST area would prevent the advancement of soil borings. Additionally, representatives of subject property ownership indicated the "former UST" was an old coal furnace/chute area. Therefore, the two soil borings to be advanced in this area were abandoned.

Refer to Appendix A for a copy of the geophysical survey report, which provides additional details regarding the geophysical survey equipment and methodology.

3.3 Drilling Equipment

On December 12, 2018, Partner advanced three borings with an electric hand drill for the purpose of collecting soil vapor samples. After drilling through the concrete flooring, a temporary soil vapor point was installed in each boring, to a depth of 4 inches below grade. Molding clay was installed around each soil vapor point to create an air-tight seal.

Sampling equipment was decontaminated between sample intervals and boring locations to prevent cross-contamination.

3.4 Boring Locations

Borings SVP-1 and SVP-2 were advanced in the furnace/boiler room in the partial basement located in the southern portion of the subject property building, in the vicinity of the suspected vent pipe area/coal furnace/chute area. Boring SVP-3 was advanced in the northeastern interior portion of the subject property, in the suspected vicinity of the former dry-cleaners at the subject property.

Refer to Figure 3 for a map indicating boring locations.

3.5 Sub-Slab Soil Gas Sampling

Soil vapor samples were collected in general accordance with the New York State Department of Health's (NYSDOH) *Guidance for Evaluating Soil Vapor Intrusion in the State of New York*, (October 2006; Revised August 2017).

Soil gas samples were collected using 2.7-liter, stainless-steel, cylindrical SUMMA® canisters. The sampling containers were provided by Alpha Analytical (Alpha), a state-certified laboratory [Environmental Laboratory Accreditation Program (ELAP) certificate number 11627], which subjected the canisters to a rigorous cleaning process using a combination of dilution, heat, and high vacuum. After cleaning, the canisters were batch certified to be free of target contaminants to a specified reporting limit via gas chromatography/mass spectroscopy prior to delivery.

Partner received the SUMMA® canisters evacuated to approximately minus 30 inches of mercury. The SUMMA® canisters were fitted with stainless-steel flow controllers, which Alpha calibrated to maintain constant flow (approximately 0.18 liter per minute) for approximately 15 minutes of sampling time.

Each probe was allowed to equilibrate for a minimum of one hour after installation prior to sampling. After equilibration, the sample tubing and sampler screen were purged of ambient air using a photoionization detector (PID) to both purge the sampler of three volumes of soil vapors, as well as screen for total organic vapors (TOV). A Tracer gas (helium) was placed around each probe at the ground surface while sampling to detect ambient air intrusion utilizing a helium shroud and a helium detector. The tracer gas was not detected in the shroud, indicating that the integrity of the seal was maintained. The sampling end of the tubing was fitted to the sampling canister and the port valve was opened, causing air to enter the sample container due to the pressure differential.

Partner closed the valves after the canister was evacuated to approximately minus 1 to 2 inches of mercury, with pertinent data (e.g., time, canister vacuum) recorded at the start and end of sampling.

No TOVs were identified in the soil vapor sampling borings.

3.6 Post-Sampling Activities

Boreholes advanced in improved areas were capped with concrete to match existing ground cover after being backfilled.

No significant amounts of derived wastes were generated during this investigation

4.0 LABORATORY ANALYSIS

4.1 Laboratory Analysis

Partner collected three soil gas samples on December 12, 2018, which were transported under chain-of-custody protocol to Alpha for analysis on December 13, 2018, for VOCs by EPA Method TO-15.

4.2 Laboratory Analytical Results

Laboratory analytical results are included in Appendix B and discussed below.

4.2.1 Sub-Slab Soil Gas Sample Analytical Results

A total of 22 VOCs [1,1,1-trichloroethane, 1,2,4-trimethylbenzene, 1,3-butadiene, 2-butanone, 2-hexanone, acetone, benzene, bromodichloromethane, chloroform, dichlorodifluoromethane, ethyl alcohol, ethylbenzene, isp-propyl alcohol, o- and p/m-xylenes, styrene, tert-butyl alcohol, tetrachloroethene (PCE), tetrahydrofuran, toluene, and trichloroethene(TCE)] were detected in soil vapor samples SVP-1, SVP-2, and SVP-3.

Refer to Table 2 for a summary of the soil vapor sample VOC laboratory analysis results.

5.0 DISCUSSION AND CONCLUSIONS

5.1 Regulatory Agency Guidance

According to the *Guidance for Evaluating Soil Vapor Intrusion in the State of New York*, published by the NYSDOH (October 2006; revised May 2017), the State of New York does not have any standards, criteria or guidance values for concentrations of volatile chemicals in subsurface vapors (either soil vapor or sub-slab vapor).

The New York State Department of Health (NYSDOH) has developed several guidelines for chemicals in air. The development process is initiated for specific situations. Air guidance values derived by the NYSDOH were reviewed. The purpose of a guideline is to help guide decisions about the nature of efforts to reduce exposure to the chemical. NYSDOH Matrices A, B, and C Sub-Slab Vapor Concentrations Criteria were compared to the analytical data collected during the course of this investigation.

5.2 Discussion

The NYSDOH Soil Vapor/Indoor Air Matrix A (May 2017), a copy of which is provided as Appendix D, was designed to compare TCE, and other chlorinated VOCs [including cis-1,2-dichloroethene (cis-1,2-DCE), 1,1-dichloroethene (1,1-DCE), and carbon tetrachloride], soil vapor analytical results to determine the necessity for mitigation. No indoor air samples were collected during this investigation.

TCE was detected in soil vapor sample SVP-3 at 88.1 micrograms per cubic meter (µg/m^3), exceeding the NYSDOH Matrix A Concentration of 60 µg/m^3 that results in Mitigate. The general recommendation of Mitigate is regardless of potential indoor air concentrations.

TCE was detected in soil vapor sample SVP-1 at 15.2 µg/m^3, exceeding the NYSDOH Matrix A Concentration of 6 µg/m^3. Soil vapor concentrations between 6 µg/m^3 and 60 µg/m^3 correspond with the following possible recommendations: No Further Action, Monitor, or Mitigate. The selected recommendation is dependent on indoor air concentrations.

Based on the analytical results, there appears to be evidence of a historic release or releases to the subject property from historical operations. Partner recommends further investigation of sub-surface conditions at the subject property, including, but not limited to delineation sampling of soil gas, possible exploring the source of soil gas, groundwater sampling, soil sampling, indoor air sampling, and possible mitigation.

5.3 Summary and Conclusions

Partner conducted a Phase II Subsurface Investigation at the subject property to investigate the potential impact of petroleum hydrocarbons, VOCs, and/or PAHs to soil, soil gas, and/or groundwater as a consequence of a release or releases from the historic operations and suspected UST RECs. Based on the geophysical survey and information provided by subject property management indicating no presence of a UST near the suspected vent pipe observed by Partner during the Phase I, the scope of work was revised to include only interior soil vapor sampling. The scope of the Phase II Subsurface Investigation included a geophysical survey and the installation of three temporary soil vapor points. Three soil vapor samples were analyzed for VOCs.

TCE was detected in soil vapor sample SVP-3 at 88.1 micrograms per cubic meter (µg/m^3), exceeding the NYSDOH Matrix A Concentration of 60 µg/m^3 that results in Mitigate. The general recommendation of Mitigate is regardless of potential indoor air concentrations.

TCE was detected in soil vapor sample SVP-1 at 15.2 µg/m^3, exceeding the NYSDOH Matrix A Concentration of 6 µg/m^3. Soil vapor concentrations between 6 µg/m^3 and 60 µg/m^3 correspond with the following possible recommendations: No Further Action, Monitor, or Mitigate. The selected recommendation is dependent on indoor air concentrations.

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TABLES

Table 1: Summary of Investigation Scope
77 Cornell Street
Kingston, New York 12401
Partner Project Number 18-228431.6
December 12, 2018

Boring Identification	Location	Terminal Depth (feet bgs)	Matrix Sampled	Sampling Depths* (feet bgs)	Target Analytes
SVP-1	Current Furnace Room	0.25	Soil Gas	**0.25**	VOCs
SVP-2	Current Furnace Room	0.25	Soil Gas	**0.25**	VOCs
SVP-3	Northeast Stairwell	0.25	Soil Gas	**0.25**	VOCs

Notes:

*Depths in **bold** analyzed for Volatile Organic Compounds (VOCs) in accordance with EPA Method TO-15.

bgs = below ground surface

Table 2: Soil Gas Sample VOCs Laboratory Results
77 Cornell Street
Kingston, New York
Partner Project Number 18-228431.6
December 12, 2018

EPA Method	VOCs via TO-15					
Units	(ug/m^3)					
Analyte	NY-SSC-A	NY-SSC-B	NY-SSC-C	SVP-1	SVP-2	SVP-3
1,1,1-Trichloroethane	**NE**	**100**	**NE**	<2.18	<2.18	3.23
1,2,4-Trimethylbenzene	**NE**	**NE**	**NE**	2.53	<1.97	<0.983
1,3-Butadiene	**NE**	**NE**	**NE**	1.94	<0.885	<0.442
2-Butanone	**NE**	**NE**	**NE**	27.2	3.36	<1.47
2-Hexanone	**NE**	**NE**	**NE**	4.01	<1.64	<0.82
Acetone	**NE**	**NE**	**NE**	233	47	9.38
Benzene	**NE**	**NE**	**NE**	4.63	<1.28	<0.639
Bromodichloromethane	**NE**	**NE**	**NE**	3.03	2.95	<1.34
Chloroform	**NE**	**NE**	**NE**	625	625	2.38
Chloromethane	**NE**	**NE**	**NE**	1.43	<0.826	<0.413
Dichlorodifluoromethane	**NE**	**NE**	**NE**	2.18	2.41	2.17
Ethyl Alcohol	**NE**	**NE**	**NE**	55.4	<18.8	<9.42
Ethylbenzene	**NE**	**NE**	**NE**	3.18	<1.74	<0.869
iso-Propyl Alcohol	**NE**	**NE**	**NE**	19.2	5.92	6.24
o-Xylene	**NE**	**NE**	**NE**	1.88	<1.74	<0.869
p/m-Xylene	**NE**	**NE**	**NE**	4.07	<3.47	<1.74
Styrene	**NE**	**NE**	**NE**	22.4	<1.7	<0.852
tert-Butyl Alcohol	**NE**	**NE**	**NE**	3.64	<3.03	<1.52
Tetrachloroethene	**NE**	**100**	**NE**	46.3	17.9	39.5
Tetrahydrofuran	**NE**	**NE**	**NE**	5.6	<2.95	<1.47
Toluene	**NE**	**NE**	**NE**	7.05	<1.51	1.77
Trichloroethene	**6**	**NE**	**NE**	**15.2**	5.86	**88.1**

Notes:

VOCs = volatile organic compounds

EPA = United States Environmental Protection Agency

NY-SSC-A: New York DOH Matrix A Sub-slab Vapor Concentrations Criteria per Guidance for Evaluating Soil Vapor Intrusion, October 2006, and updated May 2017.
NY-SSC-B: New York DOH Matrix B Sub-slab Vapor Concentrations Criteria per Guidance for Evaluating Soil Vapor Intrusion, October 2006, and updated May 2017.
NY-SSC-C: New York DOH Matrix C Sub-slab Vapor Concentrations Criteria per Guidance for Evaluating Soil Vapor Intrusion, October 2006, and updated May 2017.

ug/m3 = micrograms per cubic meter

< = not detected above indicated laboratory Practical Quantitation Limit (PQL)

ND = not detected above laboratory RLs

NE = none established

Values in **bold** exceed Guidance Criteria

FIGURES

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N

KEY:
Subject Property

FIGURE 1: SITE PLAN
Project No. 18-228431.6

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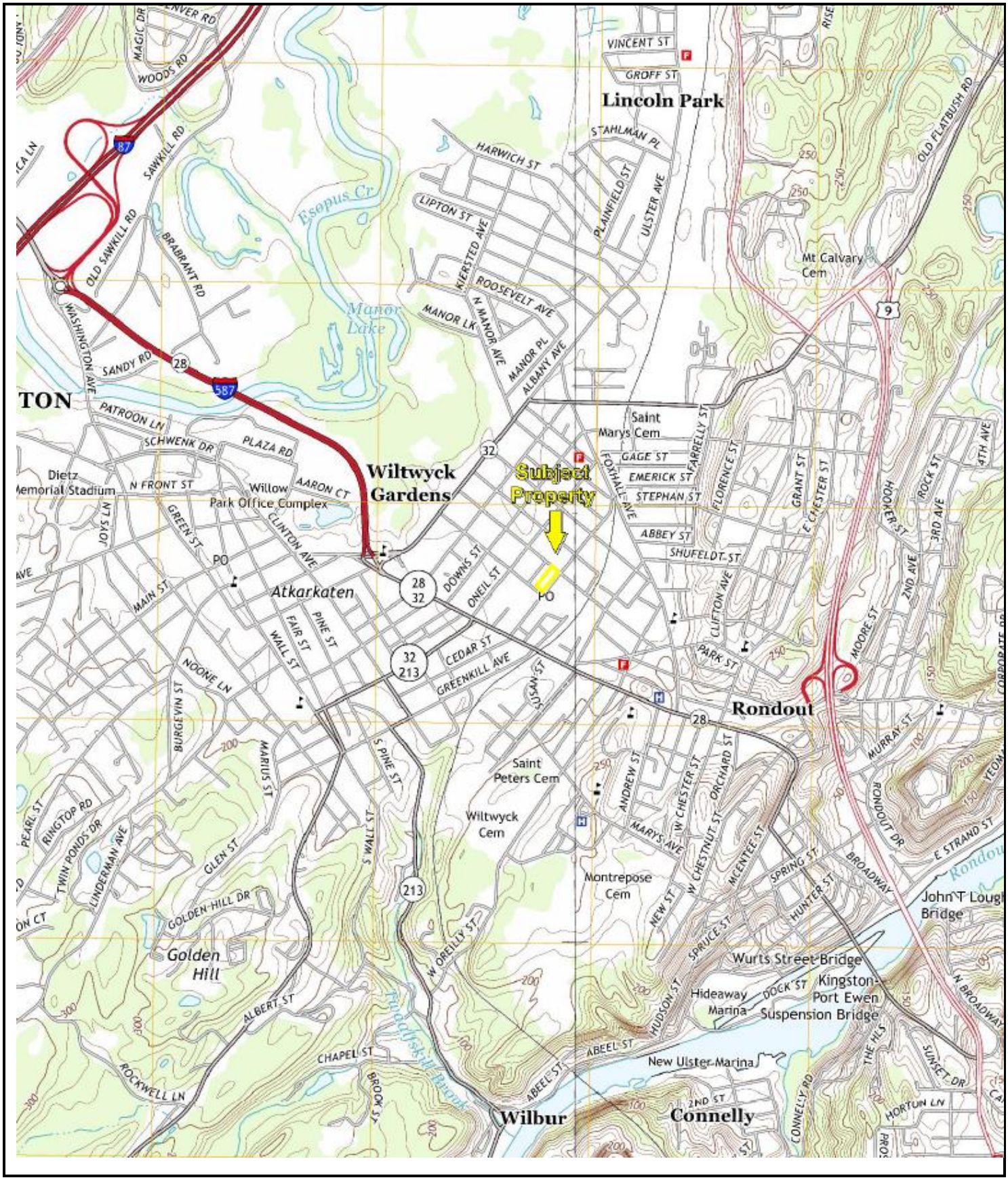

N

USGS 7.5 Minute *Kingston West, New York* Quadrangle
Created: 2013

KEY:
Subject Property

FIGURE 2: TOPOGRAPHIC MAP
Project No. 18-228431.6

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KEY:
Subject Property

FIGURE 3: SAMPLE LOCATION MAP
Project No. 18-228431.6

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APPENDIX A: BORING LOGS

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Project Name:	Kingston Portfolio - The Shirt Factory			Page 1 of 1
			Date Started:	12/12/2018
Site Address:	77 Cornell Street		Date Completed:	12/12/2018
	Kingston, New York		Depth to Groundwater:	N/A
Project Number:	18-228431.6		Field Technician:	M.Lawlor
Drill Rig Type:	Electric Power Drill		**Partner Assessment Corporation**	
Sampling Equipment:	Summa Canister		1090 Elm Street, Suite 100	
Borehole Diameter:	0.5"		Rocky Hill, CT 06067	

Sample ID: SVP-1	Canister # 423		Train # 0078	Notes
Location: Current Furnace Room		Time	Pressure	
	Initial:	1147	-29.17	
	Final:	1205	-0.09	

Sample ID SVP-2	Canister # 407		Train # 0592	Notes
Location: Current Furnace Room		Time	Pressure	
	Initial:	1210	-29.6	
	Final:	1229	-0.08	

Sample ID SVP-3	Canister # 382		Train # 0929	Notes
Location: Northeast Stairwell		Time	Pressure	
	Initial:	1246	-29.96	
	Final:	1306	-0.09	

Sample ID	Canister #		Train #	Notes
Location:		Time	Pressure	
	Initial:			
	Final:			

Sample ID	Canister #		Train #	Notes
Location:		Time	Pressure	
	Initial:			
	Final:			

Sample ID	Canister #		Train #	Notes
Location:		Time	Pressure	
	Initial:			
	Final:			

APPENDIX B: GEOPHYSICAL SURVEY REPORT

PARTNER

DELTA Geophysics Inc.

GEOPHYSICAL INVESTIGATION REPORT

SITE LOCATION:

77 CORNELL STREET, KINGSTON, NEW YORK

PREPARED FOR:

PARTNER ENGINEERING AND SCIENCE

100 Deerfield Lane, Suite 100, Malvern, Pennsylvania

PREPARED BY:

Benjamin Rimler
Delta Geophysics Inc.
738 Front Street
Catasauqua, PA 18032

December 19, 2018

Delta Geophysics, Inc. (Delta) is pleased to provide the results of the geophysical survey conducted at 77 Cornell Street, Kingston, New York.

1.0 INTRODUCTION

On December 10, 2018 Delta Geophysics personnel performed a limited geophysical investigation at 77 Cornell Street, Kingston, New York. The area of interest included the area on the south corner of the building where a vent pipe was located. An underground storage tank (UST) was believed to have been in the area and its exact location was uncertain. During the time of the survey, subsurface conditions were unknown; surface conditions consisted of asphalt, concrete, and grass.

2.0 SCOPE OF WORK

The objective of this survey was to investigate the subsurface for anomalies consistent with underground storage tanks (USTs) and/or former excavations. A secondary objective was to locate and mark all underground utilities within the survey area, and clear for soil borings.

3.0 METHODOLOGY

Selection of survey equipment is dependent upon site conditions and project objectives. For this project the technician utilized the following equipment to survey the area of concern:

- Geophysical Survey Systems Inc. SIR-3000 cart-mounted Ground Penetrating Radar (GPR) unit with a 400 Mhz antenna.
- Radiodetection RD7000 precision utility locator.
- Fisher M-Scope TW-6 pipe and cable locator.

Ground penetrating radar (commonly called GPR) is a geophysical method that has been developed over the past thirty years for shallow, high-resolution, subsurface investigations of the earth. GPR uses high frequency pulsed electromagnetic waves (generally 10 MHz to 1,000 MHz) to acquire subsurface information. Energy is propagated downward into the ground and is reflected back to the surface from boundaries at which there are electrical property contrasts. GPR is a method that is commonly used for environmental, engineering, archeological, and other shallow investigations.

The GSSI SIR-3000 GPR can accept a wide variety of antennas which provide various depths of penetration and levels of resolution. The 400 MHz antenna can achieve depths of penetration up to about 20 feet, but this depth may be greatly reduced due to site-specific conditions. Signal penetration decreases with increased soil conductivity. Conductive materials attenuate or absorb the GPR signal. As depth increases the return signal becomes weaker. Penetration is the greatest in unsaturated sands and fine gravels. Clayey, highly saline or saturated soils, areas covered by steel reinforced concrete, foundry slag, of other highly conductive materials significantly reduces GPR depth of penetration.

The 400MHz antenna was configured to transmit to a depth of approximately 10 feet below the subsurface, but actual signal penetration was limited to approximately 2-4 feet below ground surface (bgs). The limiting factor was signal attenuation from near surface soils.

The RD7000 precision utility locator uses radio emission to trace the location of metal bearing utilities. This radio emission can be active or passive. Active tracing requires the attachment of a radio transmitter to the utility, passive tracing uses radio emissions that are present on the utility. Underground electrical utilities typically emit radio signals that this device can detect.

The TW-6 is designed to find pipes, cables and other metallic objects such as underground storage tanks. One surveyor can carry both the transmitter and receiver together, making it ideally suited for exploration type searches of ferrous metal masses. Metal detectors of this type operate by generating a magnetic field at the transmitter which causes metallic objects in the subsurface to generate a secondary magnetic field. The induced secondary field is detected by the receiver, which generates an audible tone equal to the strength of the secondary field.

4.0 SURVEY FINDINGS

All accessible areas within the specified location were examined during this survey. The area was surveyed with the TW-6 and GPR for potential anomalous features, and then also surveyed with the RD7000 for potential subsurface utilities. Delta personnel were unable to definitively determine whether a metallic anomaly detected was a UST due to site limitations. The following sections detail the findings of the geophysical investigation.

Potential UST

Delta utilized the TW-6, and GPR to survey the area on the south corner of the building. TW-6 transects indicated conductivity change indicative of a metallic anomaly, however this was detected in an area which was close to metal framing on the building. GPR transects were inconclusive due to vegetation severely restricting the ability to survey this area. RD7000 was used to trace the vent pipe in the direction of the metallic anomaly. This however could have been skewed due to signal jumping to a nearby water line. The limitations of surveying this area were discussed with Partner Engineering's representative and two borings were placed in safe locations near the possible UST.

Utility Survey

Delta performed a utility survey throughout survey location. The following utilities were identified, gas, water, and vent lines. All utilities were marked onsite with appropriate colors, vent lines were marked in pink.

A site map (121618) is included with all located subsurface features.

5.0 SURVEY LIMITATIONS

GPR depth of penetration was limited to approximately 2-4 feet bgs. The limiting factor was due to conductive soils. The TW-6 was unable to be used near reinforced concrete in sidewalk. See limits on GPR use previously mentioned in Survey Findings.

6.0 WARRANTIES AND DISCLAIMER

As with any geophysical method, it must be stressed that caution be used during any excavation or intrusive testing in proximity to any anomalies indicated in this report. In addition, the absence of detected signatures does not preclude the possibility that targets may exist. To the extent the client desires more definitive conclusions than are warranted by the currently available facts; it is specifically Delta's intent that the conclusions stated herein will be intended as guidance.

This report is based upon the application of scientific principles and professional judgment to certain facts with resultant subjective interpretations. Professional judgments expressed herein are based on the facts currently available within the limit or scope of work, budget and schedule. Delta represents that the services were performed in a manner consistent with currently accepted professional practices employed by geophysical/geological consultants under similar circumstances. No other representations to Client, express or implied, and no warranty or guarantee is included or intended in this agreement, or in any report, document, or otherwise.

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APPENDIX C: LABORATORY ANALYTICAL REPORT

PARTNER

ANALYTICAL REPORT

Lab Number:	L1851434
Client:	Partner Engineering & Science, Inc. 100 Deerfield Lane Suite 200 Malvern, PA 19355
ATTN:	James Duba
Phone:	(610) 537-5078
Project Name:	77 CORNELL ST
Project Number:	18-228431.6
Report Date:	12/20/18

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), 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 #P330-17-00150), USFWS (Permit #206964).

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

Project Name: 77 CORNELL ST
Project Number: 18-228431.6

Lab Number: L1851434
Report Date: 12/20/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1851434-01	SVP-1	SOIL_VAPOR	KINGSTON,NY	12/12/18 12:05	12/13/18
L1851434-02	SVP-2	SOIL_VAPOR	KINGSTON,NY	12/12/18 12:29	12/13/18
L1851434-03	SVP-3	SOIL_VAPOR	KINGSTON,NY	12/12/18 13:06	12/13/18

Project Name: 77 CORNELL ST
Project Number: 18-228431.6

Lab Number: L1851434
Report Date: 12/20/18

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:	77 CORNELL ST	**Lab Number:**	L1851434
Project Number:	18-228431.6	**Report Date:**	12/20/18

Case Narrative (continued)

Volatile Organics in Air

Canisters were released from the laboratory on December 11, 2018. The canister certification results are provided as an addendum.

L1851434-01 & -02: The samples have elevated detection limits due to the dilution required by the elevated concentrations of target compounds in the samples.

L1851434-03 results for Acetone should be considered estimated due to co-elution with a non-target peak.

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: Andy Rezendes

Title: Technical Director/Representative Date: 12/20/18

AIR

Project Name: 77 CORNELL ST
Project Number: 18-228431.6
Lab Number: L1851434
Report Date: 12/20/18

SAMPLE RESULTS

Lab ID: L1851434-01 D
Client ID: SVP-1
Sample Location: KINGSTON,NY

Date Collected: 12/12/18 12:05
Date Received: 12/13/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 12/19/18 00:41
Analyst: EW

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Dichlorodifluoromethane	0.440	0.400	--	2.18	1.98	--		2
Chloromethane	0.692	0.400	--	1.43	0.826	--		2
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	0.400	--	ND	2.80	--		2
Vinyl chloride	ND	0.400	--	ND	1.02	--		2
1,3-Butadiene	0.876	0.400	--	1.94	0.885	--		2
Bromomethane	ND	0.400	--	ND	1.55	--		2
Chloroethane	ND	0.400	--	ND	1.06	--		2
Ethyl Alcohol	29.4	10.0	--	55.4	18.8	--		2
Vinyl bromide	ND	0.400	--	ND	1.75	--		2
Acetone	98.2	2.00	--	233	4.75	--		2
Trichlorofluoromethane	ND	0.400	--	ND	2.25	--		2
iso-Propyl Alcohol	7.80	1.00	--	19.2	2.46	--		2
1,1-Dichloroethene	ND	0.400	--	ND	1.59	--		2
tert-Butyl Alcohol	1.20	1.00	--	3.64	3.03	--		2
Methylene chloride	ND	1.00	--	ND	3.47	--		2
3-Chloropropene	ND	0.400	--	ND	1.25	--		2
Carbon disulfide	ND	0.400	--	ND	1.25	--		2
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.400	--	ND	3.07	--		2
trans-1,2-Dichloroethene	ND	0.400	--	ND	1.59	--		2
1,1-Dichloroethane	ND	0.400	--	ND	1.62	--		2
Methyl tert butyl ether	ND	0.400	--	ND	1.44	--		2
2-Butanone	9.23	1.00	--	27.2	2.95	--		2
cis-1,2-Dichloroethene	ND	0.400	--	ND	1.59	--		2

Project Name: 77 CORNELL ST
Project Number: 18-228431.6

Lab Number: L1851434
Report Date: 12/20/18

SAMPLE RESULTS

Lab ID: L1851434-01 D
Client ID: SVP-1
Sample Location: KINGSTON,NY

Date Collected: 12/12/18 12:05
Date Received: 12/13/18
Field Prep: Not Specified

Sample Depth:

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								
Ethyl Acetate	ND	1.00	--	ND	3.60	--		2
Chloroform	128	0.400	--	625	1.95	--		2
Tetrahydrofuran	1.90	1.00	--	5.60	2.95	--		2
1,2-Dichloroethane	ND	0.400	--	ND	1.62	--		2
n-Hexane	ND	0.400	--	ND	1.41	--		2
1,1,1-Trichloroethane	ND	0.400	--	ND	2.18	--		2
Benzene	1.45	0.400	--	4.63	1.28	--		2
Carbon tetrachloride	ND	0.400	--	ND	2.52	--		2
Cyclohexane	ND	0.400	--	ND	1.38	--		2
1,2-Dichloropropane	ND	0.400	--	ND	1.85	--		2
Bromodichloromethane	0.452	0.400	--	3.03	2.68	--		2
1,4-Dioxane	ND	0.400	--	ND	1.44	--		2
Trichloroethene	2.82	0.400	--	15.2	2.15	--		2
2,2,4-Trimethylpentane	ND	0.400	--	ND	1.87	--		2
Heptane	ND	0.400	--	ND	1.64	--		2
cis-1,3-Dichloropropene	ND	0.400	--	ND	1.82	--		2
4-Methyl-2-pentanone	ND	1.00	--	ND	4.10	--		2
trans-1,3-Dichloropropene	ND	0.400	--	ND	1.82	--		2
1,1,2-Trichloroethane	ND	0.400	--	ND	2.18	--		2
Toluene	1.87	0.400	--	7.05	1.51	--		2
2-Hexanone	0.978	0.400	--	4.01	1.64	--		2
Dibromochloromethane	ND	0.400	--	ND	3.41	--		2
1,2-Dibromoethane	ND	0.400	--	ND	3.07	--		2
Tetrachloroethene	6.83	0.400	--	46.3	2.71	--		2
Chlorobenzene	ND	0.400	--	ND	1.84	--		2
Ethylbenzene	0.732	0.400	--	3.18	1.74	--		2

Project Name: 77 CORNELL ST
Project Number: 18-228431.6
Lab Number: L1851434
Report Date: 12/20/18

SAMPLE RESULTS

Lab ID: L1851434-01 D
Client ID: SVP-1
Sample Location: KINGSTON,NY

Date Collected: 12/12/18 12:05
Date Received: 12/13/18
Field Prep: Not Specified

Sample Depth:

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								
p/m-Xylene	0.936	0.800	--	4.07	3.47	--		2
Bromoform	ND	0.400	--	ND	4.14	--		2
Styrene	5.25	0.400	--	22.4	1.70	--		2
1,1,2,2-Tetrachloroethane	ND	0.400	--	ND	2.75	--		2
o-Xylene	0.432	0.400	--	1.88	1.74	--		2
4-Ethyltoluene	ND	0.400	--	ND	1.97	--		2
1,3,5-Trimethylbenzene	ND	0.400	--	ND	1.97	--		2
1,2,4-Trimethylbenzene	0.514	0.400	--	2.53	1.97	--		2
Benzyl chloride	ND	0.400	--	ND	2.07	--		2
1,3-Dichlorobenzene	ND	0.400	--	ND	2.40	--		2
1,4-Dichlorobenzene	ND	0.400	--	ND	2.40	--		2
1,2-Dichlorobenzene	ND	0.400	--	ND	2.40	--		2
1,2,4-Trichlorobenzene	ND	0.400	--	ND	2.97	--		2
Hexachlorobutadiene	ND	0.400	--	ND	4.27	--		2

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	101		60-140
Bromochloromethane	98		60-140
chlorobenzene-d5	102		60-140

Project Name: 77 CORNELL ST
Project Number: 18-228431.6

Lab Number: L1851434
Report Date: 12/20/18

SAMPLE RESULTS

Lab ID: L1851434-02 D
Client ID: SVP-2
Sample Location: KINGSTON,NY

Date Collected: 12/12/18 12:29
Date Received: 12/13/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 12/19/18 01:18
Analyst: EW

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Dichlorodifluoromethane	0.488	0.400	--	2.41	1.98	--		2
Chloromethane	ND	0.400	--	ND	0.826	--		2
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	0.400	--	ND	2.80	--		2
Vinyl chloride	ND	0.400	--	ND	1.02	--		2
1,3-Butadiene	ND	0.400	--	ND	0.885	--		2
Bromomethane	ND	0.400	--	ND	1.55	--		2
Chloroethane	ND	0.400	--	ND	1.06	--		2
Ethyl Alcohol	ND	10.0	--	ND	18.8	--		2
Vinyl bromide	ND	0.400	--	ND	1.75	--		2
Acetone	19.8	2.00	--	47.0	4.75	--		2
Trichlorofluoromethane	ND	0.400	--	ND	2.25	--		2
iso-Propyl Alcohol	2.41	1.00	--	5.92	2.46	--		2
1,1-Dichloroethene	ND	0.400	--	ND	1.59	--		2
tert-Butyl Alcohol	ND	1.00	--	ND	3.03	--		2
Methylene chloride	ND	1.00	--	ND	3.47	--		2
3-Chloropropene	ND	0.400	--	ND	1.25	--		2
Carbon disulfide	ND	0.400	--	ND	1.25	--		2
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.400	--	ND	3.07	--		2
trans-1,2-Dichloroethene	ND	0.400	--	ND	1.59	--		2
1,1-Dichloroethane	ND	0.400	--	ND	1.62	--		2
Methyl tert butyl ether	ND	0.400	--	ND	1.44	--		2
2-Butanone	1.14	1.00	--	3.36	2.95	--		2
cis-1,2-Dichloroethene	ND	0.400	--	ND	1.59	--		2

Project Name: 77 CORNELL ST
Project Number: 18-228431.6

Lab Number: L1851434
Report Date: 12/20/18

SAMPLE RESULTS

Lab ID: L1851434-02 D
Client ID: SVP-2
Sample Location: KINGSTON,NY

Date Collected: 12/12/18 12:29
Date Received: 12/13/18
Field Prep: Not Specified

Sample Depth:

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								
Ethyl Acetate	ND	1.00	--	ND	3.60	--		2
Chloroform	128	0.400	--	625	1.95	--		2
Tetrahydrofuran	ND	1.00	--	ND	2.95	--		2
1,2-Dichloroethane	ND	0.400	--	ND	1.62	--		2
n-Hexane	ND	0.400	--	ND	1.41	--		2
1,1,1-Trichloroethane	ND	0.400	--	ND	2.18	--		2
Benzene	ND	0.400	--	ND	1.28	--		2
Carbon tetrachloride	ND	0.400	--	ND	2.52	--		2
Cyclohexane	ND	0.400	--	ND	1.38	--		2
1,2-Dichloropropane	ND	0.400	--	ND	1.85	--		2
Bromodichloromethane	0.440	0.400	--	2.95	2.68	--		2
1,4-Dioxane	ND	0.400	--	ND	1.44	--		2
Trichloroethene	1.09	0.400	--	5.86	2.15	--		2
2,2,4-Trimethylpentane	ND	0.400	--	ND	1.87	--		2
Heptane	ND	0.400	--	ND	1.64	--		2
cis-1,3-Dichloropropene	ND	0.400	--	ND	1.82	--		2
4-Methyl-2-pentanone	ND	1.00	--	ND	4.10	--		2
trans-1,3-Dichloropropene	ND	0.400	--	ND	1.82	--		2
1,1,2-Trichloroethane	ND	0.400	--	ND	2.18	--		2
Toluene	ND	0.400	--	ND	1.51	--		2
2-Hexanone	ND	0.400	--	ND	1.64	--		2
Dibromochloromethane	ND	0.400	--	ND	3.41	--		2
1,2-Dibromoethane	ND	0.400	--	ND	3.07	--		2
Tetrachloroethene	2.64	0.400	--	17.9	2.71	--		2
Chlorobenzene	ND	0.400	--	ND	1.84	--		2
Ethylbenzene	ND	0.400	--	ND	1.74	--		2

Project Name: 77 CORNELL ST
Project Number: 18-228431.6
Lab Number: L1851434
Report Date: 12/20/18

SAMPLE RESULTS

Lab ID: L1851434-02 D
Client ID: SVP-2
Sample Location: KINGSTON,NY

Date Collected: 12/12/18 12:29
Date Received: 12/13/18
Field Prep: Not Specified

Sample Depth:

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								
p/m-Xylene	ND	0.800	--	ND	3.47	--		2
Bromoform	ND	0.400	--	ND	4.14	--		2
Styrene	ND	0.400	--	ND	1.70	--		2
1,1,2,2-Tetrachloroethane	ND	0.400	--	ND	2.75	--		2
o-Xylene	ND	0.400	--	ND	1.74	--		2
4-Ethyltoluene	ND	0.400	--	ND	1.97	--		2
1,3,5-Trimethylbenzene	ND	0.400	--	ND	1.97	--		2
1,2,4-Trimethylbenzene	ND	0.400	--	ND	1.97	--		2
Benzyl chloride	ND	0.400	--	ND	2.07	--		2
1,3-Dichlorobenzene	ND	0.400	--	ND	2.40	--		2
1,4-Dichlorobenzene	ND	0.400	--	ND	2.40	--		2
1,2-Dichlorobenzene	ND	0.400	--	ND	2.40	--		2
1,2,4-Trichlorobenzene	ND	0.400	--	ND	2.97	--		2
Hexachlorobutadiene	ND	0.400	--	ND	4.27	--		2

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	101		60-140
Bromochloromethane	99		60-140
chlorobenzene-d5	100		60-140

Project Name: 77 CORNELL ST
Project Number: 18-228431.6
Lab Number: L1851434
Report Date: 12/20/18

SAMPLE RESULTS

Lab ID: L1851434-03
Client ID: SVP-3
Sample Location: KINGSTON,NY

Date Collected: 12/12/18 13:06
Date Received: 12/13/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 12/19/18 01:57
Analyst: EW

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Dichlorodifluoromethane	0.438	0.200	--	2.17	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	0.200	--	ND	1.40	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethyl Alcohol	ND	5.00	--	ND	9.42	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acetone	3.95	1.00	--	9.38	2.38	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
iso-Propyl Alcohol	2.54	0.500	--	6.24	1.23	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1
tert-Butyl Alcohol	ND	0.500	--	ND	1.52	--		1
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
1,1,2-Trichloro-1,2,2-Trifluoroethane	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
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1

Project Name: 77 CORNELL ST
Project Number: 18-228431.6

Lab Number: L1851434
Report Date: 12/20/18

SAMPLE RESULTS

Lab ID: L1851434-03
Client ID: SVP-3
Sample Location: KINGSTON,NY

Date Collected: 12/12/18 13:06
Date Received: 12/13/18
Field Prep: Not Specified

Sample Depth:

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	0.487	0.200	--	2.38	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
1,1,1-Trichloroethane	0.592	0.200	--	3.23	1.09	--		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
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
Trichloroethene	16.4	0.200	--	88.1	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		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	0.471	0.200	--	1.77	0.754	--		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
Tetrachloroethene	5.83	0.200	--	39.5	1.36	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1

Project Name: 77 CORNELL ST
Project Number: 18-228431.6
Lab Number: L1851434
Report Date: 12/20/18

SAMPLE RESULTS

Lab ID: L1851434-03
Client ID: SVP-3
Sample Location: KINGSTON,NY

Date Collected: 12/12/18 13:06
Date Received: 12/13/18
Field Prep: Not Specified

Sample Depth:

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								
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
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		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
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	97		60-140
Bromochloromethane	98		60-140
chlorobenzene-d5	97		60-140

Project Name: 77 CORNELL ST
Project Number: 18-228431.6
Lab Number: L1851434
Report Date: 12/20/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 12/18/18 15:38

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): 01-03 Batch: WG1190828-4								
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
1,2-Dichloro-1,1,2,2-tetrafluoroethane	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
Ethyl Alcohol	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
iso-Propyl Alcohol	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
tert-Butyl Alcohol	ND	0.500	--	ND	1.52	--		1

Project Name: 77 CORNELL ST
Project Number: 18-228431.6
Lab Number: L1851434
Report Date: 12/20/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 12/18/18 15:38

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): 01-03 Batch: WG1190828-4								
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
1,1,2-Trichloro-1,2,2-Trifluoroethane	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
Isopropyl Ether	ND	0.200	--	ND	0.836	--		1
Ethyl-Tert-Butyl-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
Tertiary-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1
Dibromomethane	ND	0.200	--	ND	1.42	--		1

Project Name: 77 CORNELL ST
Project Number: 18-228431.6
Lab Number: L1851434
Report Date: 12/20/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 12/18/18 15:38

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): 01-03 Batch: WG1190828-4								
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
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

Project Name: 77 CORNELL ST
Project Number: 18-228431.6
Lab Number: L1851434
Report Date: 12/20/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 12/18/18 15:38

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): 01-03 Batch: WG1190828-4								
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 (C9)	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1
o-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
p-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 (C10)	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 (C12)	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1

Project Name: 77 CORNELL ST
Project Number: 18-228431.6
Lab Number: L1851434
Report Date: 12/20/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 12/18/18 15:38

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): 01-03 Batch: WG1190828-4								
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

Lab Control Sample Analysis

Batch Quality Control

Project Name: 77 CORNELL ST

Project Number: 18-228431.6

Lab Number: L1851434

Report Date: 12/20/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-03 Batch: WG1190828-3								
Chlorodifluoromethane	99		-		70-130	-		
Propylene	104		-		70-130	-		
Propane	97		-		70-130	-		
Dichlorodifluoromethane	101		-		70-130	-		
Chloromethane	112		-		70-130	-		
1,2-Dichloro-1,1,2,2-tetrafluoroethane	110		-		70-130	-		
Methanol	94		-		70-130	-		
Vinyl chloride	110		-		70-130	-		
1,3-Butadiene	123		-		70-130	-		
Butane	98		-		70-130	-		
Bromomethane	111		-		70-130	-		
Chloroethane	112		-		70-130	-		
Ethyl Alcohol	95		-		70-130	-		
Dichlorofluoromethane	84		-		70-130	-		
Vinyl bromide	112		-		70-130	-		
Acrolein	103		-		70-130	-		
Acetone	90		-		70-130	-		
Acetonitrile	93		-		70-130	-		
Trichlorofluoromethane	95		-		70-130	-		
iso-Propyl Alcohol	100		-		70-130	-		
Acrylonitrile	104		-		70-130	-		
Pentane	86		-		70-130	-		
Ethyl ether	99		-		70-130	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: 77 CORNELL ST

Project Number: 18-228431.6

Lab Number: L1851434

Report Date: 12/20/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-03 Batch: WG1190828-3								
1,1-Dichloroethene	98		-		70-130	-		
tert-Butyl Alcohol	97		-		70-130	-		
Methylene chloride	103		-		70-130	-		
3-Chloropropene	98		-		70-130	-		
Carbon disulfide	106		-		70-130	-		
1,1,2-Trichloro-1,2,2-Trifluoroethane	108		-		70-130	-		
trans-1,2-Dichloroethene	96		-		70-130	-		
1,1-Dichloroethane	96		-		70-130	-		
Methyl tert butyl ether	107		-		70-130	-		
Vinyl acetate	95		-		70-130	-		
2-Butanone	89		-		70-130	-		
cis-1,2-Dichloroethene	99		-		70-130	-		
Ethyl Acetate	114		-		70-130	-		
Chloroform	102		-		70-130	-		
Tetrahydrofuran	92		-		70-130	-		
2,2-Dichloropropane	94		-		70-130	-		
1,2-Dichloroethane	86		-		70-130	-		
n-Hexane	121		-		70-130	-		
Isopropyl Ether	111		-		70-130	-		
Ethyl-Tert-Butyl-Ether	100		-		70-130	-		
1,1,1-Trichloroethane	99		-		70-130	-		
1,1-Dichloropropene	98		-		70-130	-		
Benzene	101		-		70-130	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: 77 CORNELL ST

Project Number: 18-228431.6

Lab Number: L1851434

Report Date: 12/20/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-03 Batch: WG1190828-3								
Carbon tetrachloride	98		-		70-130	-		
Cyclohexane	112		-		70-130	-		
Tertiary-Amyl Methyl Ether	97		-		70-130	-		
Dibromomethane	97		-		70-130	-		
1,2-Dichloropropane	102		-		70-130	-		
Bromodichloromethane	103		-		70-130	-		
1,4-Dioxane	109		-		70-130	-		
Trichloroethene	101		-		70-130	-		
2,2,4-Trimethylpentane	112		-		70-130	-		
Methyl Methacrylate	100		-		70-130	-		
Heptane	110		-		70-130	-		
cis-1,3-Dichloropropene	107		-		70-130	-		
4-Methyl-2-pentanone	108		-		70-130	-		
trans-1,3-Dichloropropene	93		-		70-130	-		
1,1,2-Trichloroethane	107		-		70-130	-		
Toluene	106		-		70-130	-		
1,3-Dichloropropane	99		-		70-130	-		
2-Hexanone	107		-		70-130	-		
Dibromochloromethane	112		-		70-130	-		
1,2-Dibromoethane	106		-		70-130	-		
Butyl Acetate	100		-		70-130	-		
Octane	102		-		70-130	-		
Tetrachloroethene	104		-		70-130	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: 77 CORNELL ST

Project Number: 18-228431.6

Lab Number: L1851434

Report Date: 12/20/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-03 Batch: WG1190828-3								
1,1,1,2-Tetrachloroethane	99		-		70-130	-		
Chlorobenzene	108		-		70-130	-		
Ethylbenzene	107		-		70-130	-		
p/m-Xylene	110		-		70-130	-		
Bromoform	122		-		70-130	-		
Styrene	114		-		70-130	-		
1,1,2,2-Tetrachloroethane	116		-		70-130	-		
o-Xylene	114		-		70-130	-		
1,2,3-Trichloropropane	103		-		70-130	-		
Nonane (C9)	108		-		70-130	-		
Isopropylbenzene	112		-		70-130	-		
Bromobenzene	107		-		70-130	-		
o-Chlorotoluene	105		-		70-130	-		
n-Propylbenzene	109		-		70-130	-		
p-Chlorotoluene	104		-		70-130	-		
4-Ethyltoluene	115		-		70-130	-		
1,3,5-Trimethylbenzene	118		-		70-130	-		
tert-Butylbenzene	111		-		70-130	-		
1,2,4-Trimethylbenzene	122		-		70-130	-		
Decane (C10)	116		-		70-130	-		
Benzyl chloride	130		-		70-130	-		
1,3-Dichlorobenzene	118		-		70-130	-		
1,4-Dichlorobenzene	120		-		70-130	-		

Lab Control Sample Analysis
Batch Quality Control

Project Name: 77 CORNELL ST
Project Number: 18-228431.6

Lab Number: L1851434
Report Date: 12/20/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-03 Batch: WG1190828-3								
sec-Butylbenzene	115		-		70-130	-		
p-Isopropyltoluene	107		-		70-130	-		
1,2-Dichlorobenzene	120		-		70-130	-		
n-Butylbenzene	118		-		70-130	-		
1,2-Dibromo-3-chloropropane	113		-		70-130	-		
Undecane	124		-		70-130	-		
Dodecane (C12)	**132**	Q	-		70-130	-		
1,2,4-Trichlorobenzene	127		-		70-130	-		
Naphthalene	116		-		70-130	-		
1,2,3-Trichlorobenzene	121		-		70-130	-		
Hexachlorobutadiene	122		-		70-130	-		

Lab Duplicate Analysis
Batch Quality Control

Project Name: 77 CORNELL ST
Project Number: 18-228431.6

Lab Number: L1851434
Report Date: 12/20/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1190828-5 QC Sample: L1851499-02 Client ID: DUP Sample						
Dichlorodifluoromethane	0.581	0.576	ppbV	1		25
Chloromethane	0.775	0.794	ppbV	2		25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	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	110	110	ppbV	0		25
Vinyl bromide	ND	ND	ppbV	NC		25
Acetone	7.42	7.37	ppbV	1		25
Trichlorofluoromethane	3.92	3.93	ppbV	0		25
iso-Propyl Alcohol	23.4	23.2	ppbV	1		25
tert-Butyl Alcohol	ND	ND	ppbV	NC		25
Methylene chloride	1.52	1.54	ppbV	1		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
1,1-Dichloroethane	ND	ND	ppbV	NC		25
Methyl tert butyl ether	ND	ND	ppbV	NC		25
2-Butanone	0.515	0.508	ppbV	1		25
Ethyl Acetate	2.44	2.45	ppbV	0		25

Lab Duplicate Analysis
Batch Quality Control

Project Name: 77 CORNELL ST
Project Number: 18-228431.6

Lab Number: L1851434
Report Date: 12/20/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1190828-5 QC Sample: L1851499-02 Client ID: DUP Sample						
Chloroform	2.08	2.09	ppbV	0		25
Tetrahydrofuran	0.546	0.545	ppbV	0		25
1,2-Dichloroethane	ND	ND	ppbV	NC		25
n-Hexane	0.482	0.477	ppbV	1		25
Benzene	0.473	0.470	ppbV	1		25
Cyclohexane	0.251	0.246	ppbV	2		25
1,2-Dichloropropane	ND	ND	ppbV	NC		25
Bromodichloromethane	ND	ND	ppbV	NC		25
1,4-Dioxane	ND	ND	ppbV	NC		25
2,2,4-Trimethylpentane	0.323	0.325	ppbV	1		25
Heptane	0.201	0.200	ppbV	0		25
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	1.13	1.15	ppbV	2		25
2-Hexanone	ND	ND	ppbV	NC		25
Dibromochloromethane	ND	ND	ppbV	NC		25
1,2-Dibromoethane	ND	ND	ppbV	NC		25
Chlorobenzene	ND	ND	ppbV	NC		25
Ethylbenzene	ND	ND	ppbV	NC		25

Lab Duplicate Analysis
Batch Quality Control

Project Name: 77 CORNELL ST
Project Number: 18-228431.6

Lab Number: L1851434
Report Date: 12/20/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1190828-5 QC Sample: L1851499-02 Client ID: DUP Sample						
p/m-Xylene	0.403	ND	ppbV	NC		25
Bromoform	ND	ND	ppbV	NC		25
Styrene	0.213	0.220	ppbV	3		25
1,1,2,2-Tetrachloroethane	ND	ND	ppbV	NC		25
o-Xylene	ND	ND	ppbV	NC		25
4-Ethyltoluene	ND	ND	ppbV	NC		25
1,3,5-Trimethylbenzene	ND	ND	ppbV	NC		25
1,2,4-Trimethylbenzene	ND	ND	ppbV	NC		25
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: 77 CORNELL ST

Lab Number: L1851434

Project Number: 18-228431.6

Report Date: 12/20/18

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
L1851434-01	SVP-1	0078	Flow 1	12/11/18	280772		-	-	-	Pass	144	155	7
L1851434-01	SVP-1	423	2.7L Can	12/11/18	280772	L1849865-02	Pass	-29.7	-0.69	-	-	-	-
L1851434-02	SVP-2	0592	Flow 5	12/11/18	280772		-	-	-	Pass	144	164	13
L1851434-02	SVP-2	407	2.7L Can	12/11/18	280772	L1849865-02	Pass	-29.7	-0.80	-	-	-	-
L1851434-03	SVP-3	0929	Flow 2	12/11/18	280772		-	-	-	Pass	144	150	4
L1851434-03	SVP-3	382	2.7L Can	12/11/18	280772	L1849865-02	Pass	-29.7	0.62	-	-	-	-

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1849865
Report Date: 12/20/18

Air Canister Certification Results

Lab ID: L1849865-02
Client ID: CAN 388 SHELF 2
Sample Location:

Date Collected: 12/05/18 16:00
Date Received: 12/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 12/06/18 19:26
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**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

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1849865
Report Date: 12/20/18

Air Canister Certification Results

Lab ID: L1849865-02
Client ID: CAN 388 SHELF 2
Sample Location:

Date Collected: 12/05/18 16:00
Date Received: 12/06/18
Field Prep: Not Specified

Sample Depth:

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								
Tertiary butyl Alcohol	ND	0.500	--	ND	1.52	--		1
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

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1849865
Report Date: 12/20/18

Air Canister Certification Results

Lab ID: L1849865-02
Client ID: CAN 388 SHELF 2
Sample Location:

Date Collected: 12/05/18 16:00
Date Received: 12/06/18
Field Prep: Not Specified

Sample Depth:

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								
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1
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

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1849865
Report Date: 12/20/18

Air Canister Certification Results

Lab ID: L1849865-02
Client ID: CAN 388 SHELF 2
Sample Location:

Date Collected: 12/05/18 16:00
Date Received: 12/06/18
Field Prep: Not Specified

Sample Depth:

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								
Nonane	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1
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

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1849865
Report Date: 12/20/18

Air Canister Certification Results

Lab ID: L1849865-02
Client ID: CAN 388 SHELF 2
Sample Location:

Date Collected: 12/05/18 16:00
Date Received: 12/06/18
Field Prep: Not Specified

Sample Depth:

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								

	Results	Qualifier	Units	RDL	Dilution Factor
Tentatively Identified Compounds					

No Tentatively Identified Compounds

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

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1849865
Report Date: 12/20/18

Air Canister Certification Results

Lab ID: L1849865-02
Client ID: CAN 388 SHELF 2
Sample Location:

Date Collected: 12/05/18 16:00
Date Received: 12/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 12/06/18 19:26
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**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	0.100	--	ND	0.264	--		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
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 **Lab Number:** L1849865

Project Number: CANISTER QC BAT **Report Date:** 12/20/18

Air Canister Certification Results

Lab ID: L1849865-02
Client ID: CAN 388 SHELF 2
Sample Location:

Date Collected: 12/05/18 16:00
Date Received: 12/06/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.050	--	ND	0.188	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.100	--	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
Benzyl chloride	ND	0.200	--	ND	1.04	--		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

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1849865
Report Date: 12/20/18

Air Canister Certification Results

Lab ID: L1849865-02
Client ID: CAN 388 SHELF 2
Sample Location:

Date Collected: 12/05/18 16:00
Date Received: 12/06/18
Field Prep: Not Specified

Sample Depth:

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								
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
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	90		60-140
bromochloromethane	90		60-140
chlorobenzene-d5	89		60-140

Project Name: 77 CORNELL ST
Project Number: 18-228431.6

Lab Number: L1851434
Report Date: 12/20/18

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
N/A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1851434-01A	Canister - 2.7 Liter	N/A	NA			Y	Absent		TO15-LL(30)
L1851434-02A	Canister - 2.7 Liter	N/A	NA			Y	Absent		TO15-LL(30)
L1851434-03A	Canister - 2.7 Liter	N/A	NA			Y	Absent		TO15-LL(30)

*Values in parentheses indicate holding time in days

Project Name:	77 CORNELL ST	**Lab Number:**	L1851434
Project Number:	18-228431.6	**Report Date:**	12/20/18

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).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
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.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample¿s toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
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

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.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

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.

Report Format: Data Usability Report

Project Name:	77 CORNELL ST	**Lab Number:**	L1851434
Project Number:	18-228431.6	**Report Date:**	12/20/18

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 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:	77 CORNELL ST	**Lab Number:**	L1851434
Project Number:	18-228431.6	**Report Date:**	12/20/18

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 624/624.1: 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 6860: SCM: Perchlorate

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
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: Chloride, 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: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, 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 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: 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 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522.

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, Fe, Pb, Mn, Ni, K, Se, Ag, Na, 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

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

Date Rec'd in Lab: 12/13/18

ALPHA Job #: L1851434

Client Information

Client: Partner ESI
Address: 1090 Elm St, Ste 100
Rocky Hill, CT 06067
Phone: 860-310-7397
Fax:
Email: mlawlor@partneresi.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: 77 Cornell St
Project Location: Kingston, NY
Project #: 18-228431.6
Project Manager: James Duby
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)
mlawlor@partneresi.com
jduby@partneresi.com

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: ☐

* end time SVP-1: 1205

ANALYSIS

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	TO-15 VOC	TO-15 SIM	APH Subset Non-petroleum HCs	Fixed Gases	Sulfides & Mercaptans by TO-15	☐	Sample Comments (i.e. PID)
1851434-01	SVP-1	12/12/18	1147	~~1202*~~	29.17	0.09	SV	ML	2.7	423	0078	X						PID = 0.0
02	SVP-2	↓	1210	1229	29.60	0.08	SV	ML	2.7	407	0592	X						PID = 0.0
03	SVP-3	↓	1246	1306	29.16	0.09	SV	ML	2.7	382	0929	X						PID = 0.0

*SAMPLE MATRIX CODES

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

Container Type: C, S

Relinquished By:	Date/Time	Received By:	Date/Time:
	12/12/18 1600	FedEx	12/13/18 1245
	12/13/18 1245		12-13-18 1537
	12/13/18 1537		12/13/18 2130
DWS 12-13-18 21:30			

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.

				SAMPLE ID:	SVP-1				SVP-2				SVP-3			
				LAB ID:	L1851434-01				L1851434-02				L1851434-03			
				COLLECTION DATE:	12/12/2018				12/12/2018				12/12/2018			
				SAMPLE DEPTH:												
				SAMPLE MATRIX:	SOIL_VAPOR				SOIL_VAPOR				SOIL_VAPOR			
		NY-SSC-A	NY-SSC-B	NY-SSC-C												
ANALYTE	CAS	(ug/m3)	(ug/m3)	(ug/m3)	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL
VOLATILE ORGANICS IN AIR																
1,1,1-Trichloroethane	71-55-6		100		<2.18	U	2.18	-	<2.18	U	2.18	-	3.23		1.09	-
1,2,4-Trimethylbenzene	95-63-6				2.53		1.97	-	<1.97	U	1.97	-	<0.983	U	0.983	-
1,3-Butadiene	106-99-0				1.94		0.885	-	<0.885	U	0.885	-	<0.442	U	0.442	-
2-Butanone	78-93-3				27.2		2.95	-	3.36		2.95	-	<1.47	U	1.47	-
2-Hexanone	591-78-6				4.01		1.64	-	<1.64	U	1.64	-	<0.82	U	0.82	-
Acetone	67-64-1				233		4.75	-	47		4.75	-	9.38		2.38	-
Benzene	71-43-2				4.63		1.28	-	<1.28	U	1.28	-	<0.639	U	0.639	-
Bromodichloromethane	75-27-4				3.03		2.68	-	2.95		2.68	-	<1.34	U	1.34	-
Chloroform	67-66-3				625		1.95	-	625		1.95	-	2.38		0.977	-
Chloromethane	74-87-3				1.43		0.826	-	<0.826	U	0.826	-	<0.413	U	0.413	-
Dichlorodifluoromethane	75-71-8				2.18		1.98	-	2.41		1.98	-	2.17		0.989	-
Ethyl Alcohol	64-17-5				55.4		18.8	-	<18.8	U	18.8	-	<9.42	U	9.42	-
Ethylbenzene	100-41-4				3.18		1.74	-	<1.74	U	1.74	-	<0.869	U	0.869	-
iso-Propyl Alcohol	67-63-0				19.2		2.46	-	5.92		2.46	-	6.24		1.23	-
o-Xylene	95-47-6				1.88		1.74	-	<1.74	U	1.74	-	<0.869	U	0.869	-
p/m-Xylene	179601-23-1				4.07		3.47	-	<3.47	U	3.47	-	<1.74	U	1.74	-
Styrene	100-42-5				22.4		1.7	-	<1.7	U	1.7	-	<0.852	U	0.852	-
tert-Butyl Alcohol	75-65-0				3.64		3.03	-	<3.03	U	3.03	-	<1.52	U	1.52	-
Tetrachloroethene	127-18-4		100		46.3		2.71	-	17.9		2.71	-	39.5		1.36	-
Tetrahydrofuran	109-99-9				5.6		2.95	-	<2.95	U	2.95	-	<1.47	U	1.47	-
Toluene	108-88-3				7.05		1.51	-	<1.51	U	1.51	-	1.77		0.754	-
Trichloroethene	79-01-6	6			15.2		2.15	-	5.86		2.15	-	88.1		1.07	-

* Comparison is not performed on parameters with non-numeric criteria.

NY-SSC-A: New York DOH Matrix A Sub-slab Vapor Concentrations Criteria per Guidance for Evaluating Soil Vapor Intrusion, October 2006, and updated May 2017.
NY-SSC-B: New York DOH Matrix B Sub-slab Vapor Concentrations Criteria per Guidance for Evaluating Soil Vapor Intrusion, October 2006, and updated May 2017.
NY-SSC-C: New York DOH Matrix C Sub-slab Vapor Concentrations Criteria per Guidance for Evaluating Soil Vapor Intrusion, October 2006, and updated May 2017.

APPENDIX D: NEW YORK STATE DEPARTMENT OF HEALTH SOIL VAPOR MATRICES

PARTNER

Soil Vapor/Indoor Air Matrix A

May 2017

Analytes Assigned:
Trichloroethene (TCE), *cis*-1,2-Dichloroethene (*c*12-DCE), 1,1-Dichloroethene (11-DCE), Carbon Tetrachloride

	INDOOR AIR CONCENTRATION of COMPOUND (mcg/m^3)		
SUB-SLAB VAPOR CONCENTRATION of COMPOUND (mcg/m^3)	< 0.2	0.2 to < 1	1 and above
< 6	1. No further action	2. No Further Action	3. IDENTIFY SOURCE(S) and RESAMPLE or MITIGATE
6 to < 60	4. No further action	5. MONITOR	6. MITIGATE
60 and above	7. MITIGATE	8. MITIGATE	9. MITIGATE

No further action: No additional actions are recommended to address human exposures.

Identify Source(s) and Resample or Mitigate: We recommend that reasonable and practical actions be taken to identify the source(s) affecting the indoor air quality and that actions be implemented to reduce indoor air concentrations to within background ranges. For example, if an indoor or outdoor air source is identified, we recommend the appropriate party implement actions to reduce the levels. In the event that indoor or outdoor sources are not readily identified or confirmed, resampling (which might include additional sub-slab vapor and indoor air sampling locations) is recommended to demonstrate that SVI mitigation actions are not needed. Based on the information available, mitigation might also be recommended when soil vapor intrusion cannot be ruled out.

Monitor: We recommend monitoring (sampling on a recurring basis), including but not necessarily limited to sub-slab vapor, basement air and outdoor air sampling, to determine whether concentrations in the indoor air or sub-slab vapor have changed and/or to evaluate temporal influences. Monitoring might also be recommended to determine whether existing building conditions (e.g., positive pressure heating, ventilation and air-conditioning systems) are maintaining the desired mitigation endpoint and to determine whether changes are needed. The type and frequency of monitoring is determined based on site-, building- and analyte-specific information, taking into account applicable environmental data and building operating conditions. Monitoring is an interim measure required to evaluate exposures related to soil vapor intrusion until contaminated environmental media are remediated.

Mitigate: We recommend mitigation to minimize current or potential exposures associated with soil vapor intrusion. The most common mitigation methods are sealing preferential pathways in conjunction with installing a sub-slab depressurization system and changing the pressurization of the building in conjunction with monitoring. The type, or combination of types, of mitigation is determined on a building-specific basis, taking into account building construction and operating conditions. Mitigation is considered a temporary measure implemented to address exposures related to soil vapor intrusion until contaminated environmental media are remediated.

These general recommendations are made with consideration being given to the additional notes on page 2.

ADDITIONAL NOTES FOR MATRIX A

This matrix summarizes actions recommended to address current and potential exposures related to soil vapor intrusion. To use the matrix appropriately as a tool in the decision-making process, the following should be noted:

[1] The matrix is generic. As such, it may be appropriate to modify a recommended action to accommodate analyte-specific, building-specific conditions (e.g., dirt floor in basement, crawl spaces, thick slabs, current occupancy, etc.), and/or factors provided in Section 3.2 of the guidance (e.g., current land use, environmental conditions, etc.). For example, collection of additional samples may be recommended when the matrix indicates "no further action" for a particular building, but the results of adjacent buildings (especially sub-slab vapor results) indicate a need to take actions to address exposures related to soil vapor intrusion. Mitigation might be recommended when the results of multiple contaminants indicate monitoring is recommended. Proactive actions may be proposed at any time. For example, the party implementing the actions may decide to install sub-slab depressurization systems on buildings where the matrix indicates "no further action" or "monitoring." Such an action might be undertaken for reasons other than public health (e.g., seeking community acceptance, reducing costs, etc.). However, actions implemented *in lieu* of sampling will typically be expected to be captured in the final engineering report and site management plan, and might not rule out the need for post-implementation sampling (e.g., to document effectiveness or to support terminating the action).

[2] Actions provided in the matrix are specific to addressing human exposures. Implementation of these actions does not preclude investigating possible sources of soil vapor contamination, nor does it preclude remediating contaminated soil vapor or the source of soil vapor contamination.

[3] Appropriate care should be taken during all aspects of sample collection to ensure that high quality data are obtained. Since the data are being used in the decision-making process, the laboratory analyzing the environmental samples must have current Environmental Laboratory Approval Program (ELAP) certification for the appropriate analyte and environmental matrix combinations. Furthermore, samples should be analyzed by methods that can achieve a minimum reporting limit of 0.20 microgram per cubic meter for indoor and outdoor air samples. For sub-slab vapor samples and dirt floor soil vapor samples, a minimum reporting limit of 1 microgram per cubic meter is recommended.

[4] Sub-slab vapor and indoor air samples are typically collected when the likelihood of soil vapor intrusion is considered to be the greatest (i.e., worst-case conditions). If samples are collected at other times (typically, samples collected outside of the heating season), then resampling during worst-case conditions might be appropriate to verify that actions taken to address exposures related to soil vapor intrusion are protective of human health.

[5] When current exposures are attributed to sources other than soil vapor intrusion, the agencies should be given documentation (e.g., applicable environmental data, completed indoor air sampling questionnaire, digital photographs, etc.) to support a proposed action other than that provided in the matrix box and to support agency assessment and follow-up.

[6] The party responsible for implementing the recommended actions will differ depending upon several factors, including but not limited to the following: the identified source of the volatile chemicals, the environmental remediation program, and analyte-specific, site-specific and building-specific factors.

Soil Vapor/Indoor Air Matrix B

May 2017

Analytes Assigned:
Tetrachloroethene (PCE), 1,1,1-Trichloroethane (111-TCA), Methylene Chloride

	INDOOR AIR CONCENTRATION of COMPOUND (mcg/m^3)		
SUB-SLAB VAPOR CONCENTRATION of COMPOUND (mcg/m^3)	< 3	3 to < 10	10 and above
< 100	1. No further action	2. No Further Action	3. IDENTIFY SOURCE(S) and RESAMPLE or MITIGATE
100 to < 1,000	4. No further action	5. MONITOR	6. MITIGATE
1,000 and above	7. MITIGATE	8. MITIGATE	9. MITIGATE

No further action: No additional actions are recommended to address human exposures.

Identify Source(s) and Resample or Mitigate: We recommend that reasonable and practical actions be taken to identify the source(s) affecting the indoor air quality and that actions be implemented to reduce indoor air concentrations to within background ranges. For example, if an indoor or outdoor air source is identified, we recommend the appropriate party implement actions to reduce the levels. In the event that indoor or outdoor sources are not readily identified or confirmed, resampling (which might include additional sub-slab vapor and indoor air sampling locations) is recommended to demonstrate that SVI mitigation actions are not needed. Based on the information available, mitigation might also be recommended when soil vapor intrusion cannot be ruled out.

Monitor: We recommend monitoring (sampling on a recurring basis), including but not necessarily limited to sub-slab vapor, basement air and outdoor air sampling, to determine whether concentrations in the indoor air or sub-slab vapor have changed and/or to evaluate temporal influences. Monitoring might also be recommended to determine whether existing building conditions (e.g., positive pressure heating, ventilation and air-conditioning systems) are maintaining the desired mitigation endpoint and to determine whether changes are needed. The type and frequency of monitoring is determined based on site-, building- and analyte-specific information, taking into account applicable environmental data and building operating conditions. Monitoring is an interim measure required to evaluate exposures related to soil vapor intrusion until contaminated environmental media are remediated.

Mitigate: We recommend mitigation to minimize current or potential exposures associated with soil vapor intrusion. The most common mitigation methods are sealing preferential pathways in conjunction with installing a sub-slab depressurization system and changing the pressurization of the building in conjunction with monitoring. The type, or combination of types, of mitigation is determined on a building-specific basis, taking into account building construction and operating conditions. Mitigation is considered a temporary measure implemented to address exposures related to soil vapor intrusion until contaminated environmental media are remediated.

These general recommendations are made with consideration being given to the additional notes on page 2.

ADDITIONAL NOTES FOR MATRIX B

This matrix summarizes actions recommended to address current and potential exposures related to soil vapor intrusion. To use the matrix appropriately as a tool in the decision-making process, the following should be noted:

[1] The matrix is generic. As such, it may be appropriate to modify a recommended action to accommodate analyte-specific, building-specific conditions (e.g., dirt floor in basement, crawl spaces, thick slabs, current occupancy, etc.), and/or factors provided in Section 3.2 of the guidance (e.g., current land use, environmental conditions, etc.). For example, collection of additional samples may be recommended when the matrix indicates "no further action" for a particular building, but the results of adjacent buildings (especially sub-slab vapor results) indicate a need to take actions to address exposures related to soil vapor intrusion. Mitigation might be recommended when the results of multiple contaminants indicate monitoring is recommended. Proactive actions may be proposed at any time. For example, the party implementing the actions may decide to install sub-slab depressurization systems on buildings where the matrix indicates "no further action" or "monitoring." Such an action might be undertaken for reasons other than public health (e.g., seeking community acceptance, reducing costs, etc.). However, actions implemented *in lieu* of sampling will typically be expected to be captured in the final engineering report and site management plan, and might not rule out the need for post-implementation sampling (e.g., to document effectiveness or to support terminating the action).

[2] Actions provided in the matrix are specific to addressing human exposures. Implementation of these actions does not preclude investigating possible sources of soil vapor contamination, nor does it preclude remediating contaminated soil vapor or the source of soil vapor contamination.

[3] Appropriate care should be taken during all aspects of sample collection to ensure that high quality data are obtained. Since the data are being used in the decision-making process, the laboratory analyzing the environmental samples must have current Environmental Laboratory Approval Program (ELAP) certification for the appropriate analyte and environmental matrix combinations. Furthermore, samples should be analyzed by methods that can achieve a minimum reporting limit of 1 microgram per cubic meter for indoor and outdoor air samples. For sub-slab vapor samples and dirt floor soil vapor samples, a minimum reporting limit of 1 microgram per cubic meter is recommended.

[4] Sub-slab vapor and indoor air samples are typically collected when the likelihood of soil vapor intrusion is considered to be the greatest (i.e., worst-case conditions). If samples are collected at other times (typically, samples collected outside of the heating season), then resampling during worst-case conditions might be appropriate to verify that actions taken to address exposures related to soil vapor intrusion are protective of human health.

[5] When current exposures are attributed to sources other than soil vapor intrusion, the agencies should be given documentation (e.g., applicable environmental data, completed indoor air sampling questionnaire, digital photographs, etc.) to support a proposed action other than that provided in the matrix box and to support agency assessment and follow-up.

[6] The party responsible for implementing the recommended actions will differ depending upon several factors, including but not limited to the following: the identified source of the volatile chemicals, the environmental remediation program, and analyte-specific, site-specific and building-specific factors.

Soil Vapor/Indoor Air Matrix C

May 2017

Analytes Assigned:
Vinyl Chloride

	INDOOR AIR CONCENTRATION of COMPOUND (mcg/m^3)	
SUB-SLAB VAPOR CONCENTRATION of COMPOUND (mcg/m^3)	< 0.2	0.2 and above
< 6	1. No further action	2. IDENTIFY SOURCE(S) and RESAMPLE or MITIGATE
6 to < 60	3. MONITOR	4. MITIGATE
60 and above	5. MITIGATE	6. MITIGATE

No further action: No additional actions are recommended to address human exposures.

Identify Source(s) and Resample or Mitigate: We recommend that reasonable and practical actions be taken to identify the source(s) affecting the indoor air quality and that actions be implemented to reduce indoor air concentrations to within background ranges. For example, if an indoor or outdoor air source is identified, we recommend the appropriate party implement actions to reduce the levels. In the event that indoor or outdoor sources are not readily identified or confirmed, resampling (which might include additional sub-slab vapor and indoor air sampling locations) is recommended to demonstrate that SVI mitigation actions are not needed. Based on the information available, mitigation might also be recommended when soil vapor intrusion cannot be ruled out.

Monitor: We recommend monitoring (sampling on a recurring basis), including but not necessarily limited to sub-slab vapor, basement air and outdoor air sampling, to determine whether concentrations in the indoor air or sub-slab vapor have changed and/or to evaluate temporal influences. Monitoring might also be recommended to determine whether existing building conditions (e.g., positive pressure heating, ventilation and air-conditioning systems) are maintaining the desired mitigation endpoint and to determine whether changes are needed. The type and frequency of monitoring is determined based on site-, building- and analyte-specific information, taking into account applicable environmental data and building operating conditions. Monitoring is an interim measure required to evaluate exposures related to soil vapor intrusion until contaminated environmental media are remediated.

Mitigate: We recommend mitigation to minimize current or potential exposures associated with soil vapor intrusion. The most common mitigation methods are sealing preferential pathways in conjunction with installing a sub-slab depressurization system and changing the pressurization of the building in conjunction with monitoring. The type, or combination of types, of mitigation is determined on a building-specific basis, taking into account building construction and operating conditions. Mitigation is considered a temporary measure implemented to address exposures related to soil vapor intrusion until contaminated environmental media are remediated.

These general recommendations are made with consideration being given to the additional notes on page 2.

ADDITIONAL NOTES FOR MATRIX C

This matrix summarizes actions recommended to address current and potential exposures related to soil vapor intrusion. To use the matrix appropriately as a tool in the decision-making process, the following should be noted:

[1] The matrix is generic. As such, it may be appropriate to modify a recommended action to accommodate analyte-specific, building-specific conditions (e.g., dirt floor in basement, crawl spaces, thick slabs, current occupancy, etc.), and/or factors provided in Section 3.2 of the guidance (e.g., current land use, environmental conditions, etc.). For example, collection of additional samples may be recommended when the matrix indicates "no further action" for a particular building, but the results of adjacent buildings (especially sub-slab vapor results) indicate a need to take actions to address exposures related to soil vapor intrusion. Mitigation might be recommended when the results of multiple contaminants indicate monitoring is recommended. Proactive actions may be proposed at any time. For example, the party implementing the actions may decide to install sub-slab depressurization systems on buildings where the matrix indicates "no further action" or "monitoring." Such an action might be undertaken for reasons other than public health (e.g., seeking community acceptance, reducing costs, etc.). However, actions implemented *in lieu* of sampling will typically be expected to be captured in the final engineering report and site management plan, and might not rule out the need for post-implementation sampling (e.g., to document effectiveness or to support terminating the action).

[2] Actions provided in the matrix are specific to addressing human exposures. Implementation of these actions does not preclude investigating possible sources of soil vapor contamination, nor does it preclude remediating contaminated soil vapor or the source of soil vapor contamination.

[3] Appropriate care should be taken during all aspects of sample collection to ensure that high quality data are obtained. Since the data are being used in the decision-making process, the laboratory analyzing the environmental samples must have current Environmental Laboratory Approval Program (ELAP) certification for the appropriate analyte and environmental matrix combinations. Furthermore, samples should be analyzed by methods that can achieve a minimum reporting limit of 0.20 microgram per cubic meter for indoor and outdoor air samples. For sub-slab vapor samples and dirt floor soil vapor samples, a minimum reporting limit of 1 microgram per cubic meter is recommended.

[4] Sub-slab vapor and indoor air samples are typically collected when the likelihood of soil vapor intrusion is considered to be the greatest (i.e., worst-case conditions). If samples are collected at other times (typically, samples collected outside of the heating season), then resampling during worst-case conditions might be appropriate to verify that actions taken to address exposures related to soil vapor intrusion are protective of human health.

[5] When current exposures are attributed to sources other than soil vapor intrusion, the agencies should be given documentation (e.g., applicable environmental data, completed indoor air sampling questionnaire, digital photographs, etc.) to support a proposed action other than that provided in the matrix box and to support agency assessment and follow-up.

[6] The party responsible for implementing the recommended actions will differ depending upon several factors, including but not limited to the following: the identified source of the volatile chemicals, the environmental remediation program, and analyte-specific, site-specific and building-specific factors.