PSG

PHASE II SUBSURFACE INVESTIGATION REPORT

Widewaters Syracuse
5840 Bridge Street (not actual address)
East Syracuse, New York 13057

August 16, 2021
PSG Project Number: 21-323758.2

Prepared for:

Firstrust Bank
15 East Ridge Pike
Conshohocken, Pennsylvania 19428

Engineers who understand your business

August 16, 2021

John Rooney
Firstrust Bank
15 East Ridge Pike
Conshohocken, Pennsylvania 19428

Subject: **Phase II Subsurface Investigation Report**
Widewaters Syracuse
5840 Bridge Street (not actual address)
East Syracuse, New York 13057
PSG Project Number: 21-323758.2

Dear Mr. Rooney:

PSG Engineering and Geology, D.P.C. (PSG) is pleased to provide the results of the assessment performed at 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 consistent with acceptable industry standards. The independent conclusions represent PSG'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 AJ Nosek at (716) 572-1408.

Sincerely,

PSG Engineering and Geology, D.P.C.

Jonathan Lokko
Project Scientist

Jodi Markowsky
Senior Project Manager

AJ Nosek
National Client Manager

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1.0 INTRODUCTION

1.1 Purpose

The purpose of the investigation was to evaluate the current groundwater conditions and the vapor intrusion pathway relating to the previously detected volatile organic compounds (VOCs). Firstrust Bank provided project authorization of PSG Proposal Number P21-323758.2.

1.2 Limitations

This report presents a summary of work conducted by PSG. 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. 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.

PSG 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

PSG was engaged by Firstrust Bank (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 PSG. Third parties that obtain this report, or the information therein, shall have no rights of recourse or recovery against PSG, its officers, employees, vendors, successors or assigns. Any such unauthorized user shall be responsible to protect, indemnify and hold PSG, 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 PSG'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 two parcels of land comprising approximately 5.61 acres located on the south side of Widewaters Parkway, north and east of Phyllis Lane, within a commercial area of East Syracuse, Onondaga County, New York. The subject property is currently vacant land, with no buildings, improvements, or occupants.

The subject property is bound by Widewaters Parkway beyond which is Holiday Inn Express & Suites (5908 Widewaters Parkway) and Dunn Tire (5830 Bridge Street) to the north, vacant land to the east, warehouse and office (6615 Towpath Road) to the south, and Home Depot (5814 Bridge Street) and Cornerstone Paving contractor's office (5820 Phyllis Lane) to the west. Refer to Figure 1 for a site vicinity map showing site features and surrounding properties.

2.2 Site History

Partner Assessment Corporation (Partner) completed a *Phase I Environmental Site Assessment Report* (Phase I) for the subject property, dated July 1, 2021 on behalf of Firstrust Bank. According to the reviewed historical sources, the subject property was formerly undeveloped land and/or agricultural land from as early as 1895 through the 1950s. By 1966, debris piles and a drainage ditch were evident on the property, as well as one or two small sheds. A prior environmental report indicated that the area was likely used as a muck farm. By 1978, the southern portion of the property appeared to be used as a contractor storage yard, and by 1995, a significant quantity of stored materials and containers were evident on the southern portion of the property. In 1997, abandoned oil drums and other debris were removed from the site, as well as a significant quantity of contaminated soil. By 2006, the property was vacant grass land and has remained as such to present day.

The following recognized environmental condition (REC) was identified in the Partner Phase I:

> Three spills (Spill Numbers: 9206711, 9304349 and 9600805) related to the identification of hazardous materials being improperly stored and/or handled at the subject property were reported to the New York State Department of Environmental Conservation (NYSDEC) between 1992 and 1996. A Phase I conducted at the subject property in 1997 indicated that the southern portion of the subject property was used as a contractor's storage yard beginning in at least 1978. During the site reconnaissance, the consultant identified five-gallon pails and 55-gallon drums of unidentifiable materials (presumably petroleum products) on the southern portion of the subject property. In addition, areas of mounded earth and debris piles were also identified. These conditions were identified as a REC and a Phase II subsurface investigation was recommended.
>
> A Phase II subsurface investigation was conducted at the subject property in March 1997. The scope of work included the installation of test pits and monitoring wells for the collection of soil and groundwater samples. The following contaminants of concern were identified in soil and/or groundwater at the subject property in excess of regulatory criteria: trichloroethene (TCE), 1,2-dichloroethene (1,2-DCE), vinyl chloride, toluene and xylenes. Based on the soil and groundwater analytical results, remedial activities at the subject property were determined to be necessary.

By October 1997, construction/demolition debris had been removed from the subject property and disposed off-site, eight 55-gallon drums had been preliminarily characterized, sampled and overpacked, and an additional area exhibiting soil staining was identified. The drums were subsequently characterized and disposed in accordance with state regulations. Contaminated soils from three areas of concern located on the southern and western portions of the subject property were excavated on October 6 and 7, 1997. Soil confirmation samples collected from the sidewalls of the excavations were submitted for laboratory analysis. Detected concentrations of contaminants of concern were reported below the cleanup guidance values, except for a slight exceedance of 1,2-dichlrorethene in one location. Approximately 77 tons of soil were transported for off-site disposal. Post excavation groundwater samples collected following excavation activities showed a substantial decrease in the concentration of detectable contaminants of concern. Two additional test pits were installed in the vicinity of the newly identified area of staining. No visual and/or olfactory evidence or elevated photoionization detector (PID) readings were identified in the test pits.

Although concentrations of contaminants in the monitoring well located on the northern portion of the subject property (MW-1) were shown to have declined, chlorinated solvents detected in the monitoring well installed on the central portion of the subject property (MW-2) were not addressed. The Phase II report indicated that the chlorinated solvents may be migrating on-site from an off-site source and have the potential to impact future construction activities at the subject property.

The consultant concluded that based on the availability of municipal water in the subject property vicinity, the commercial/light industrial land use of the subject property vicinity, the proposed development of the subject property as a single-story slab on grade retail structure and the presence an asphalt paved parking area in the vicinity of the monitoring well impacted by chlorinated solvents, no further investigation was recommended.

Although all three spills associated with the remedial activities identified in the remedial activities report received regulatory closure, the identification of chlorinated solvents in groundwater at concentrations in excess of screening criteria represents a vapor intrusion concern for any future development. Additionally, based on the shallow depth to groundwater (approximately 4 to 6 feet below ground surface (bgs), the presence of chlorinated solvents in groundwater is also a concern for construction workers. Based on the historic presence of chlorinated solvents in groundwater at the subject property, this condition represents a REC.

2.3 Geology and Hydrogeology

Review of the United States Geological Survey (USGS) *Syracuse East, New York* Quadrangle topographic map, indicates the subject property is situated approximately 450 feet above mean sea level, and the local topography is sloping gently to the northwest. Refer to Figure 2 for a topographic map of the site vicinity

According to USGS New York State Geology Online Spatial Data, geologic rock formations in the area of the subject property are part of the Syracuse Formation of Upper Silurian age, consisting of dolostone, shale, gypsum, and salt.

Based on borings advanced during this investigation, the underlying subsurface consists predominantly of brown silty sand with varying portions of gravel from the ground surface to approximately 7 feet below ground surface (bgs). From 7 to 10 feet bgs, the subsurface consists predominantly of grayish brown silty clay. From 10 to 12 feet bgs, the subsurface consists predominantly of fine brown sand to the terminal drilling depth of 12 feet bgs. Groundwater was encountered during this investigation between 5.3 and 10 feet bgs. Refer to Appendix A for boring logs from this investigation.

3.0 FIELD ACTIVITIES

The Phase II Subsurface Investigation scope included the advancement of four borings (B-1 through B-4) to collect investigative groundwater samples and the collection of four soil gas samples (SG-1 through SG-4). 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, PSG completed the following activities.

3.1.1 Utility Clearance

NW Contracting (NW) notified Dig Safe New York to clear public utility lines as required by law at least three business days prior to drilling activities. Dig Safe New York issued ticket number 07201-001-635 for the project. In addition, PSG subcontracted with East Coast Geophysics, Inc. (ECG) of Bensalem, Pennsylvania on July 27, 2021 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) unit with a 400 Mhz antenna, TW-6 Metallic Locator, and Radio detection RD7000 precision utility locator.

A closely spaced rectilinear grid was established around the proposed boring locations. The grid was systematically traversed using electromagnetic induction (EM) equipment, GPR equipment, and/or utility tracers. The equipment data was interpreted in real time and compiled as necessary in order to identify subsurface anomalies consistent with utilities. Based on the findings of the GPR survey, no subsurface utilities were identified within the boring locations.

3.1.2 Health and Safety Plan

PSG 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 Drilling Equipment

On July 27, 2021, PSG subcontracted with NW to provide and operate drilling equipment. NW, under the direction of PSG, advanced borings B-1 through B-4 and temporary soil gas points SG-1 through SG-4 with a track-mounted Geoprobe Model 66DT direct-push rig. Sampling equipment was decontaminated between sample intervals and boring locations to prevent cross-contamination.

3.3 Sample Locations

Boring B-1 was advanced west of reported onsite monitoring well MW-2 location. Boring B-2 was advanced south of reported onsite monitoring well MW-2 location. Boring B-3 was advanced east of reported onsite monitoring well MW-2 location. Boring B-4 was advanced north of reported onsite monitoring well MW-2 location. Soil gas samples SG-1 through SG-4 were installed immediately adjacent to borings B-1 through B-4, respectively. Refer to Figure 3 for a map indicating sample locations.

3.4 Soil Boring

Borings B-1 through B-4 were located in unimproved areas. Borings B-1 through B-4 were advanced to a terminal depth of 12 feet bgs Soil borings B-1 through B-4 were each advanced using a 4-foot long by 2-inch diameter MacroCore sampler with a 4-foot-long acetate liner, which was advanced by the direct-push drill rig using 4-foot long by 1.5-inch diameter drill rods. The samplers were driven into the subsurface to allow undisturbed soil to enter the open MacroCore barrel and retrieved to recover the soil-filled liners. A lengthwise section of each acetate liner was removed with a splitting tool to expose the soil and the samples were collected. The soil column at each boring was visually inspected for discoloration, monitored for odors and classified in accordance with the Unified Soil Classification System (USCS). Additionally, the soil column was field screened with a photoionization detector (PID) calibrated to 100 parts per million (ppm) isobutylene.

No olfactory evidence of impacted conditions were detected on the soil profile screened from any of the borings. PID readings on the soil profile screened from borings B-1 through B-4 ranged from 0.1 ppm to 0.2 ppm. Refer to Appendix A for boring logs from this investigation.

3.5 Groundwater Sampling

Temporary well points B-1GW through B-4GW were respectively installed within soil borings B-1 through B-4. Temporary groundwater sampling points B-1GW through B-4GW consisted of 5 feet of 1-inch diameter polyvinyl chloride (PVC) screen. Groundwater samples B-1GW through B-4GW were retrieved using new dedicated disposal bailers. Groundwater samples from each temporary well were conveyed into three hydrochloric acid-preserved, 40 milliliter (mL) vials for submittal of samples for VOC analysis. Each vial was filled with no observable headspace or air bubbles to minimize the potential for volatilization, labeled for identification and stored in an iced-cooler.

3.6 Soil Gas Sampling

To facilitate the collection of soil gas samples, temporary soil gas sampling points SG-1 through SG-4 were installed adjacent to soil boring location B-1 through B-4, respectively. Soil gas sampling points SG-1, SG-3, and SG-4 were each screened from 2.0 to 2.5 feet bgs. Soil gas sampling point SG-2 was screened from 3.5 to 4.0 feet bgs. The soil gas sampling point consisted of a 6-inch prefabricated stainless-steel slotted screen. Sand was poured into the annulus to form a sand pack around the slotted screen and approximately 2 inches of dry, granular bentonite was placed atop the sand pack, and the remainder of the borehole was backfilled with hydrated bentonite to the ground surface to form a seal.

The soil gas sample was collected using a 2.7-liter, stainless-steel, cylindrical SUMMA® canisters. The sampling container was provided by Alpha Analytical Laboratories (Alpha), a state-certified laboratory in Westborough Massachusetts, which subjected the canister to a rigorous cleaning process using a combination of dilution, heat, and high vacuum. After cleaning, the canister was batch-certified to be free of target contaminants to a specified reporting limit via gas chromatography/mass spectroscopy prior to delivery.

PSG received the SUMMA® canisters evacuated approximately -29 inches of mercury. The SUMMA® canisters were fitted with stainless-steel flow controllers, which Alpha calibrated to maintain constant flow rate of 10 minutes of sampling time.

PSG purged each soil gas sampling point by connecting new Teflon sample tubing to a PID for approximately three minutes. PID readings ranging from 0.2 parts per million (ppm) to 1.2 ppm were detected during the purging of soil gas samples SG-1, SG-2, SG-3, and SG-4. Once the sampling trains were purged of ambient air, the sampling ends of the tubing were fitted to the sampling canisters and the port valves were opened, causing air to enter the sample containers due to the pressure differential. PSG closed the valves after the canisters were evacuated to approximately 0.6 to 1.2 inches of mercury and after the 10 minutes duration, with pertinent data (e.g., time, canister vacuum) recorded at the start and end of sampling. There was a false vacuum reading on SG-2 due to groundwater getting sucked into the canister. The SUMMA® canisters were labeled for identification and stored away from direct sunlight prior to analysis. Refer to Appendix B for the soil gas sampling log from this investigation.

3.7 Post-Sampling Activities

Probes/temporary well points and soil gas points were removed from the subsurface and the boreholes were backfilled with hydrated bentonite chips following sampling activities. Boreholes advanced in improved areas were capped with concrete or asphalt patch to match existing ground cover after being backfilled.

No significant amounts of derived wastes were generated during this investigation.

4.0 DATA ANALYSIS

4.1 Laboratory Analysis

PSG collected four groundwater samples B-1GW through B-4GW and four soil gas samples SG-1 through SG-4 on July 27, 2021 which were transported under chain-of-custody protocol to Alpha, a state-certified laboratory [Environmental Laboratory Accreditation Program (ELAP) certificate number 11148] in Westborough (groundwater) and Mansfield (soil gas), Massachusetts for analysis.

Groundwater samples B-1GW through B-4GW were analyzed for VOCs in accordance with EPA Method 8260. Soil gas samples SG-1, SG-3 and SG-4 were analyzed for VOCs in accordance with EPA Method TO-15. Soil gas sample SG-2 was not analyzed due to suction of groundwater in the canister which will present false analytical results data.

Laboratory analytical results are included in Appendix C and discussed below collected.

4.2 Regulatory Agency Comparison Criteria

4.2.1 Groundwater

The groundwater analytical results were compared to the NYSDEC New York Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards (AWQS).

4.2.2 Soil Gas

The EPA Office of Land and Emergency Management (OLEM) issued the guidance document *"Office of Solid Waste and Emergency Response (OSWER) Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air*," dated June 2015, to specifically address the "vapor intrusion pathway." The intent of this guidance document is to provide a tool to help the user conduct a screening evaluation as to whether the vapor intrusion exposure pathway to indoor air is complete and, if so, whether it poses an unacceptable risk to human health. The EPA recommends using an individual lifetime cancer risk of 10^{-6} as a point of departure for establishing cleanup levels based upon potential cancer effects.

Given the commercial development of the subject property, the soil gas samples were compared to the EPA Calculated 10^{-6} Target Soil Gas Concentrations for Carcinogens in the Commercial Exposure Scenario, which represents the most stringent Vapor Intrusion Screening Levels (VISLs) applicable to the subject property use; the EPA Calculated 10^{-5} Target Soil Gas Concentrations for Carcinogens in the Commercial Exposure Scenario, which represents the EPA's recommended VISLs for the vapor intrusion pathway applicable to the subject property use; and to the EPA Calculated 10^{-4} Target Soil Gas Concentrations for Carcinogens in the Commercial Exposure Scenario, which represents the least stringent VISLs applicable to the subject property use. Exceedance of the 10^{-4} criteria typically indicates the need for remedial action.

Further, as multiple VOCs were identified and may be present in the soil gas samples, a Target Hazard Quotient of 0.1 was utilized to calculate the VISLs due to the potential for cumulative health effects. The criteria were produced by accessing the EPA Vapor Intrusion Screening Calculator (https://epa-visl.ornl.gov/cgi-bin/visl_search). Refer to Appendix D for the EPA Calculated VISLs.

Neither the NYSDEC nor the New York State Department of Health (NYSDOH) provide direct sub-slab soil gas comparison criteria. However, the NYSDOH has established Soil Vapor/Indoor Air Matrices for various VOCs, which are included in Appendix E and are further discussed below.

4.3 Groundwater Sample Data Analysis

Five VOC analytes including 1,2-DCE, acetone, cis-1,2-DCE, TCE, and vinyl chloride were detected at concentrations above the laboratory method detection limits (MDLs) in the groundwater samples B-1GW through B-4GW collected from borings B-1 through B-4, respectively. Of the detected VOCs, the concentrations of cis-1,2-DCE [28 micrograms per liter (µg/l)] and vinyl chloride (3.9 µg/l) were reported above the TOGS 1.1.1 AWQS in the groundwater sample B-4GW. The remaining VOCs were not identified at concentrations above the TOGS 1.1.1 AWQS. Refer to Table 2 for a summary of the groundwater sample laboratory analysis results.

4.4 Soil Gas Sample Data Analysis

4.4.1 EPA VISLs

As shown in Table 3, thirty VOC analytes were detected at concentrations above the laboratory reporting limits (RLs) in soil gas samples SG-1 and SG-3 through SG-4. Of the detected VOCs, TCE was detected in SG-1 at a concentration of 110 micrograms per cubic meter (µg/m^3) which exceeds the 10^{-6}, 10^{-5}, and 10^{-4} Target Soil Gas Concentrations for Carcinogens for the Commercial Exposure. All the detected VOCs in soil gas samples were below the most stringent EPA VISL 10^{-6} Target Soil-Gas Concentrations for Carcinogens in the Commercial scenario.

Refer to Table 3 for a summary of the soil gas sample VOCs laboratory analysis results.

4.4.2 NYSDOH Decision Matrices

NYSDOH Decision Matrix A

The NYSDOH Soil Vapor/Indoor Air Matrix A (May 2017), a copy of which is provided as Appendix E, was designed to compare TCE, cis-1,2-DCE, 1,1-DCE and carbon tetrachloride sub-slab analytical results with their respective indoor air analytical results, and by extension, to determine the necessity for mitigation. Indoor air samples were not collected during this investigation.

As shown in Table 3, TCE was detected in soil gas samples SG-1 (110 µg/m^3) and SG-4 (2.99 µg/m^3). When entering the highest TCE concentration detected in soil gas sample SG-1 into Matrix A in the sub-slab soil gas sample entry row "60 µg/m^3 and above", the matrix returns a value of "mitigate" regardless of the indoor air concentration of TCE. As TCE was additionally identified above the 10^{-6}, 10^{-5}, and 10^{-4} Target Soil Gas Concentrations for Carcinogens in the Commercial Exposure Scenario in soil gas sample SG-1, further investigation and/or mitigation regarding TCE is recommended.

The following table compares the highest TCE concentration detected during this investigation to the applicable NYSDOH Matrix A guidance recommendations (highlighted in yellow):

Matrix A - TCE		**Indoor Air = Not Sampled**		
		< 0.2	0.2 to < 1	1 and above
Soil Gas SG-1 = 110 µg/m3	< 6	No further action	No further action	Identify source(s) and resample or mitigate
	6 to < 60	No further action	Monitor	Mitigate
	60 and above	**Mitigate**	**Mitigate**	**Mitigate**

Cis-1,2-DCE was detected in soil gas sample SG-1 (8.45 µg/m^3). When entering the cis-1,2-DCE concentration detected in soil gas sample SG-1 into Matrix A in the sub-slab soil gas sample entry row "6 to <6 µg/m3," the matrix returns a value of either "no further action" or "monitor" or "mitigate" depending on the indoor air concentration of cis-1,2-DCE. Cis-1,2-DCE was not detected above the laboratory reporting limit in soil gas samples SG-3 and SG-4.

The following table compares the cis-1,2-DCE concentration detected during this investigation to the applicable NYSDOH Matrix A guidance recommendations (highlighted in yellow):

Matrix A - cis-1,2-DCE		**Indoor Air = Not Sampled**		
		< 0.2	0.2 to < 1	1 and above
Soil Gas SG-1 = 8.45 µg/m3	< 6	No further action	No further action	Identify source(s) and resample or mitigate
	6 to < 60	**No further action**	**Monitor**	**Mitigate**
	60 and above	Mitigate	Mitigate	Mitigate

1,1-DCE, and carbon tetrachloride were not detected at concentrations above the laboratory RLs in the soil gas samples SG-1, SG-3, and SG-4. Based on this information, no further investigation/mitigation appears to be warranted regarding 1,1-DCE and carbon tetrachloride.

NYSDOH Decision Matrix B

The NYSDOH Soil Vapor/Indoor Air Matrix B (May 2017), a copy of which is provided as Appendix E, was designed to compare PCE, 1,1,1-TCA, and methylene chloride sub-slab analytical results with their respective indoor air analytical results, and by extension, to determine the necessity for mitigation. Indoor air samples were not collected during this investigation.

As shown in table 3, PCE was detected in soil gas samples SG-1 (2.96 µg/m^3), SG-3 (11 µg/m^3), and SG-4 (7.05 µg/m^3). When entering the highest PCE concentration detected in sub-slab soil gas sample SG-3 into Matrix B in the sub-slab soil gas sample entry row "<100 µg/m^3," the matrix returns a value of either "no further action" or "identify source(s) and resample or mitigate" depending on the indoor air concentrations, identify source(s), and resample or mitigate. Indoor air samples were not collected as a part of this investigation. The concentrations of PCE detected in sub-slab soil gas samples SG-1, SG-3 and SG-4 were not identified above the most stringent 10^{-6} Target Soil Gas Concentrations for Carcinogens in the Commercial Exposure Scenario. Based on this information, no further investigation/mitigation appears to be warranted regarding PCE.

The following table compares the highest PCE concentration detected during this investigation to the applicable NYSDOH Matrix B guidance recommendations (highlighted in yellow):

Matrix B - PCE		**Indoor Air = Not Sampled**		
		< 3	3 to < 10	10 and above
Soil Gas SG-3= 11 µg/m3	< 100	**No further action**	**No further action**	**Identify source(s) and resample or mitigate**
	100 to < 1,000	No further action	Monitor	Mitigate
	1,000 and above	Mitigate	Mitigate	Mitigate

1,1,1-TCA and methylene chloride were not detected at concentrations above the laboratory RLs in soil gas samples SG-1, SG-3 and SG-4. Based on this information, no further investigation/mitigation appears to be warranted regarding 1,1,1-TCA and methylene chloride.

NYSDOH Decision Matrix C

The NYSDOH Soil Vapor/Indoor Air Matrix C (May 2017), a copy of which is provided as Appendix E, was designed to compare vinyl chloride sub-slab analytical results with their respective indoor air analytical results, and by extension, to determine the necessity for mitigation. Indoor air samples were not collected during this investigation. Vinyl chloride was not detected at concentrations above the laboratory RLs in soil gas samples SG-1, SG-3 and SG-4. Based on this information, no further investigation/mitigation appears to be warranted regarding vinyl chloride.

Refer to Table 3 for a summary of the soil gas sample VOCs laboratory analysis results.

4.5 Discussion

4.5.1 Groundwater

As presented in Table 2, concentrations of VOCs (cis-1,2-DCE and vinyl chloride) were detected in groundwater samples collected from borings B-4 at concentrations above their corresponding their applicable NYSDEC AWQS. Based on the groundwater analytical results, there is evidence of groundwater impacts at the subject property. Based on these findings, further groundwater investigation or monitoring warranted.

4.5.2 Soil Gas

Based on the analytical results of the soil gas samples compared to EPA criteria, there is evidence of TCE, impacts in soil gas below the subject property. Further, comparison of the TCE concentrations detected in soil gas sample SG-1 to the NYSDOH Decision Matrices indicates the need for additional investigation and/or mitigation of TCE impacts.

5.0 SUMMARY AND CONCLUSIONS

PSG conducted a Phase II Subsurface Investigation at the subject property to evaluate the current groundwater conditions and the vapor intrusion pathway relating to the previously detected VOCs.

The scope of the Phase II Subsurface Investigation the advancement of four borings (B-1 through B-4) to collect representative groundwater samples and the installation of four temporary soil gas sampling points (SG-1 through SG-4) to collect soil gas samples.

Four groundwater samples B-1GW through B-4GW and three soil gas samples SG-1, SG-3 and SG-4 were analyzed for VOCs.

The groundwater analytical results indicate that VOCs (cis-1,2-DCE and vinyl chloride) were detected in groundwater samples collected from borings B-4 at concentrations above their corresponding their applicable NYSDEC AWQS. Based on the groundwater analytical results, there is evidence of groundwater impacts at the subject property.

Based on the analytical results of the soil gas samples compared to EPA criteria, there is evidence of TCE impacts in soil gas below the subject property. Further, comparison of the TCE concentrations detected in soil gas sample SG-1 to the NYSDOH Decision Matrices indicates the need for additional investigation and/or mitigation of TCE impacts.

Based on these findings, further groundwater investigation and vapor assessment is warranted at the subject property.

TABLES

PSG

Table 1: Summary of Investigation Scope
Widewaters Syracus-Vacant Land
5840 Bridge Street (not actual address)
East Syracuse, New York 13057
PSG Project Number 21-323758.2
July 27, 2021

Boring Identification	REC/Issue	Location	Terminal Depth (feet bgs)	Sample Identification	Matrix Sampled	Sampling Depths (feet bgs)	Target Analytes
B-1	On-site groundwater contamination	West of reported onsite monitoring well MW-2 location	12.0	B-1GW	Groundwater	7.0-12.0	VOCs (8260)
B-2		South of reported onsite monitoring well MW-2 location	12.0	B-2GW		7.0-12.0	
B-3		East of reported onsite monitoring well MW-2 location	12.0	B-3GW		7.0-12.0	
B-4		North of reported onsite monitoring well MW-2 location	12.0	B-4GW		7.0-12.0	
SG-1		Adjacent to boring B-1 location	2.5	SG-1	Soil gas	2.0-2.5	VOCs (TO-15)
SG-2		Adjacent to boring B-2 location	4.0	SG-2		3.5-4.0	
SG-3		Adjacent to boring B-3 location	2.5	SG-3		2.0-2.5	
SG-4		Adjacent boring B-4 location	2.5	SG-4		2.0-2.5	

Notes:
VOCs (8260)= Volatile organic compounds in accordance with United States Environmental Protection Agency (EPA) method 8260
VOCs (TO-15)= Volatile organic compounds in accordance with United States Environmental Protection Agency (EPA) method TO-15
REC = Recognized environmental condition
bgs = Below ground surface

Table 2: Groundwater Sample Laboratory Results Summary
Widewaters Syracuse-Vacant Land
5840 Bridge Street (not actual address)
East Syracuse, New York 13057
PSG Project Number 21-323758.2
July 27, 2021

Analyte	NY-AWQS	B-1GW	B-2GW	B-3GW	B-4GW
VOCs via EPA method 8260 (µg/l)					
1,2-Dichloroethene, Total	NE	2.1J	<2.5	<2.5	28
Acetone	50	4.8J	3.2J	5.2	3.2J
cis-1,2-Dichloroethene	5	2.1J	<2.5	<2.5	28
Trichloroethene	5	0.86	<0.5	<0.5	0.99
Vinyl chloride	2	0.61J	0.14J	<1	3.9

Notes:
NY-AWQS=New York TOGS 111 Ambient Water Quality Standards criteria reflects all addendum to criteria through June 2004.
VOCs = Volatile Organic Compounds in accordance with Environmental Protection Agency (EPA) method 8260
EPA = United States Environmental Protection Agency
µg/l = micrograms per liter
NE = Not established
Exceeds standard

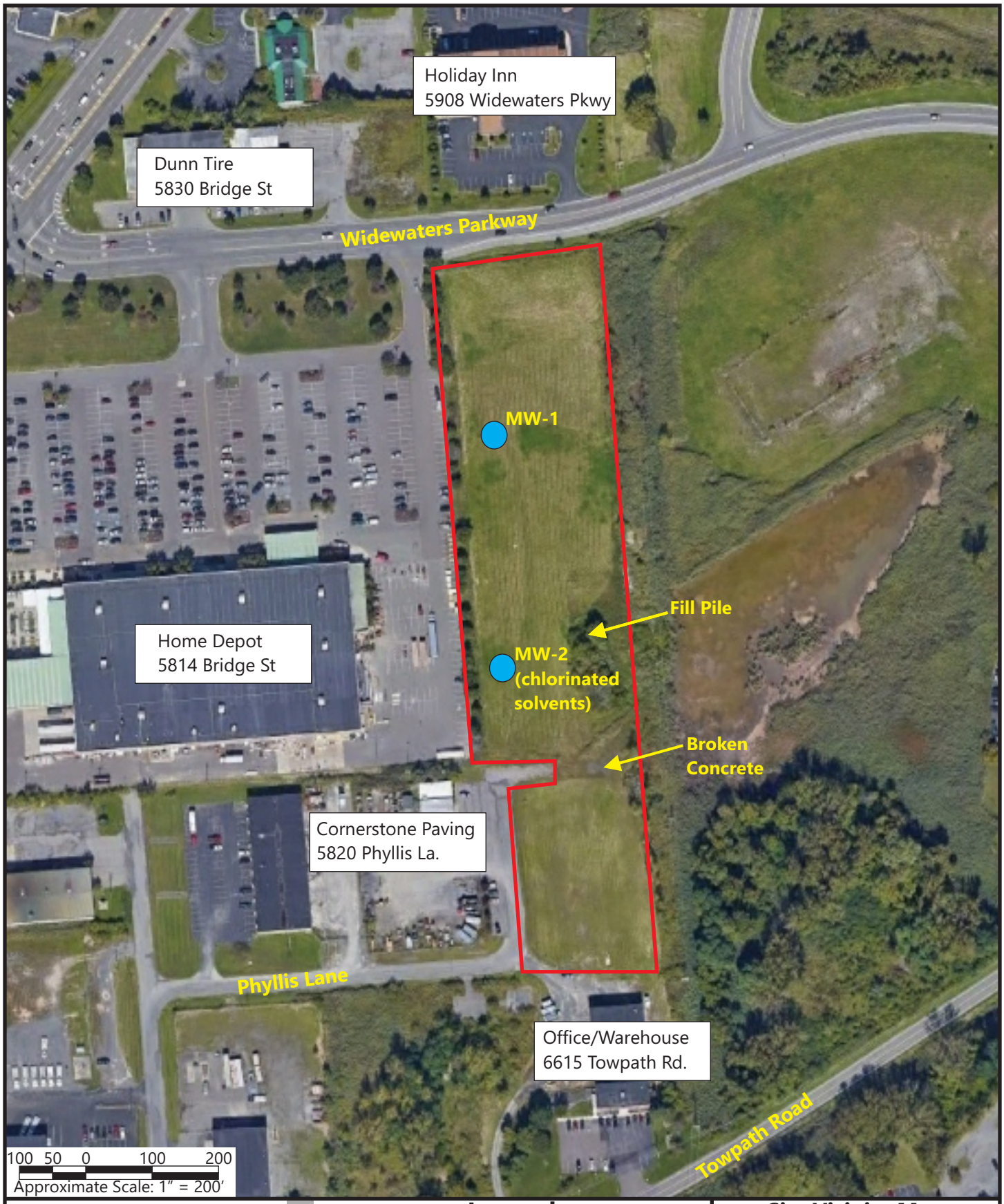
Table 3: Soil Gas Sample Laboratory Results Summary
Widewaters Syracuse-Vacant Land
5840 Bridge Street (not actual address)
East Syracuse, New York 13057
PSG Project Number 21-323758.2
July 27, 2021

Analyte	EPA Commercial VISL (10^{-6})*	EPA Commercial VISL (10^{-5})*	EPA Commercial VISL (10^{-4})*	SG-1	SG-3	SG-4
VOCs via EPA Method TO-15 (µg/m^3)						
1,2,4-Trimethylbenzene	876	876	876	63.9	66.4	51.1
1,2-Dichloroethene (total)	NE	NE	NE	8.45	<0.793	<0.793
1,3,5-Trimethylbenzene	876	876	876	30.4	31.1	23.5
1,3-Butadiene	13.6	29.2	29.2	2.11	4.76	1.27
2-Butanone	73000	73000	73000	11.1	44.5	25.8
2-Hexanone	438	438	438	<0.82	12.5	3.48
4-Ethyltoluene	NE	NE	NE	<0.983	7.72	5.41
4-Methyl-2-pentanone	43800	43800	43800	<2.05	11.5	15.4
Acetone	451000	451000	451000	143	290	235
Benzene	52.4	438	438	22.7	24.7	35.1
Carbon disulfide	10200	10200	10200	3.61	12.1	8.38
Carbon tetrachloride	68.1	681	1460	<1.26	<1.26	14.5
Chloroform	17.8	178	1430	2.85	2.74	4.09
Chloromethane	1310	1310	1310	<0.413	1.16	0.859
cis-1,2-Dichloroethene	NE	NE	NE	8.45	<0.793	<0.793
Cyclohexane	87600	87600	87600	50.3	27.6	46.5
Dichlorodifluoromethane	1460	1460	1460	2.96	1.67	2.91
Ethyl Alcohol	NE	NE	NE	<9.42	29	33.2
Ethylbenzene	164	1640	14600	5.04	17.7	10.6
Heptane	5840	5840	5840	67.2	39.3	66.4
iso-Propyl Alcohol	2920	2920	2920	2.21	7.03	8.85
n-Hexane	10200	10200	10200	101	57.1	103
o-Xylene	1460	1460	1460	47.3	58.2	41.5
p/m-Xylene	NE	NE	NE	27.9	67.3	50.4
tert-Butyl Alcohol	NE	NE	NE	<1.52	7.34	11.2
Tetrachloroethene	584	584	584	2.96	11	7.05
Toluene	73000	73000	73000	20.1	84.4	69.3
Trichloroethene	29.2	29.2	29.2	110	<1.07	2.99
Trichlorofluoromethane	NE	NE	NE	77.6	1.34	8.09
Xylene (Total)	1460	1460	1460	75.1	126	92.1

Notes:
VOCs = Volatile Organic Compounds
EPA = United States Environmental Protection Agency
µg/m^3 = micrograms per cubic meter
VISL = Vapor Intrusion Screening Level
* = Target Soil-Gas Concentrations for Carcinogens in the Commercial Exposure Scenario
< = not detected above the indicated laboratory reporting limit (RL)
Exceeds standard

FIGURES

PSG



PSG Engineering and Geology, D.P.C.

362 Fifth Avenue, Suite 501
New York, New York 10001

PSG Project Number: 21-323758.2

N

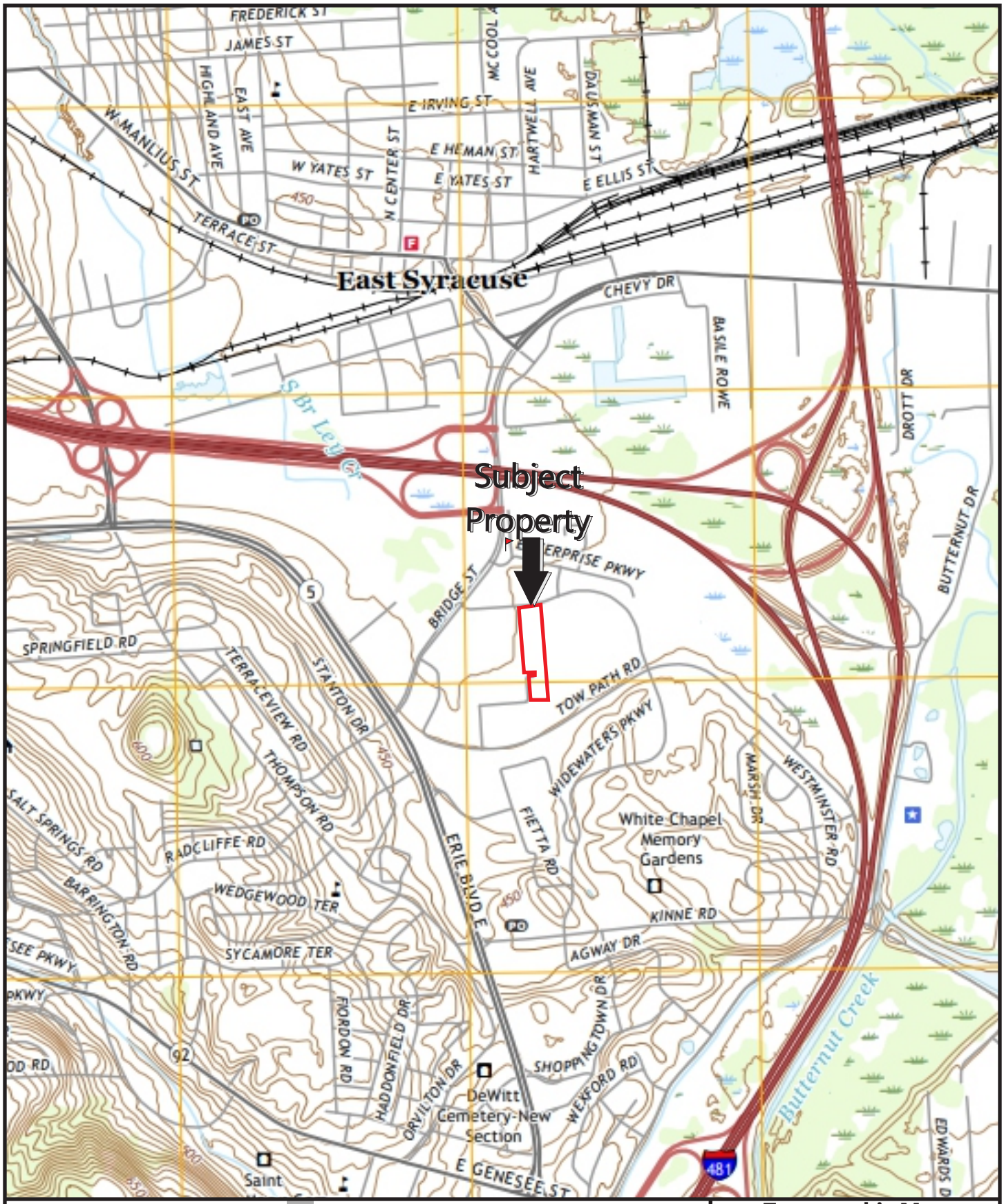
Legend

Subject Property

Site Vicinity Map

Figure	Prepared By	Date
1	J. Lokko	August 2021

5840 Bridge Street (not actual address) East Syracuse, NY 13057



PSG Engineering and Geology, D.P.C.
362 Fifth Avenue, Suite 501
New York, New York 10001

PSG Project Number: 21-323758.2

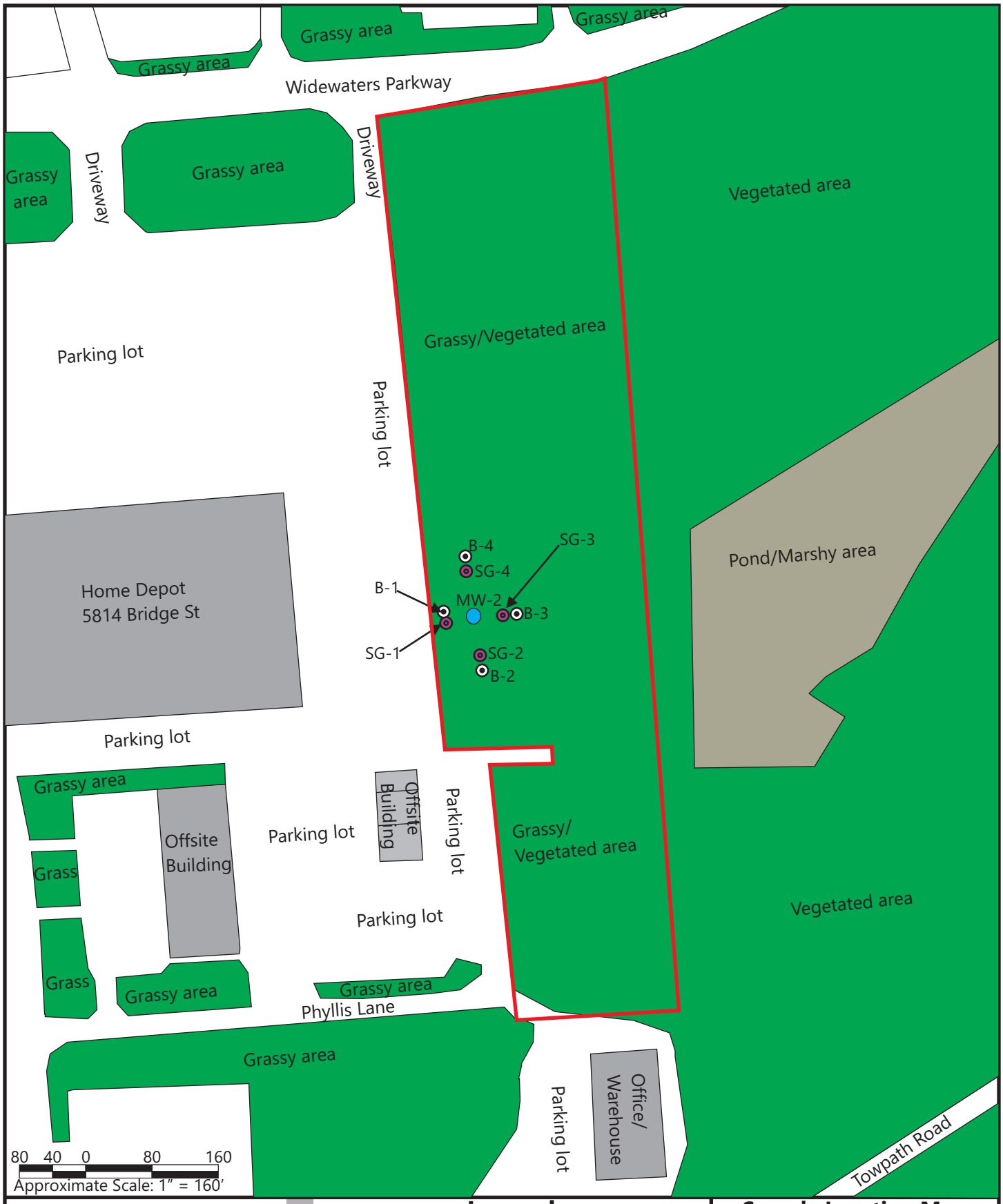
N

USGS *Syracuse East, New York* Quadrangle
Version: 2019

Topographic Map

Figure	Prepared By	Date
2	J. Lokko	August 2021

5840 Bridge Street (not actual address), East Syracuse, NY 13057



PSG Engineering and Geology, D.P.C.

362 Fifth Avenue, Suite 501
New York, New York 10001

PSG Project Number: 21-323758.2

N

Legend

- Subject Property
- Boring Location
- Soil Gas Location

Sample Location Map

Figure	Prepared By	Date
3	J. Lokko	August 2021

5840 Bridge Street (not actual address), East Syracuse, NY 13057

APPENDIX A: BORING LOGS

Boring Number:	**B-1**				Page 1 of 1
Location:	West of reported onsite monitoring well MW-2 location			Date Started:	7/27/2021
Site Address:	5840 Bridge Street (not actual address)			Date Completed:	7/27/2021
	East Syracuse, New York 13057			Depth to Groundwater:	5.3 feet
Project Number:	21-323758.2			Field Technician:	Jonathan Lokko
Drill Rig Type:	Geoprobe 66DT			**PSG Engineering and Geology, D.P.C**	
Sampling Equipment:	4 ft Macrocores			362 Fifth Avenue, Suite 501	
Borehole Diameter:	2 inch			New York, New York 10001	

Depth	Sample	PID	USCS	Description	Notes
1		0.0	SM	Brown silty Sand with gravel	3.5 feet recovery. No odors or staining observed.
2		0.1			
3		0.2			
4		0.1			
5		0.0	SM	Brown silty Sand with gravel, wet	3.0 feet recovery. No odors or staining observed.
6		0.0			
7		0.0			
8		0.0	CL	Grayish brown silty Clay, wet	
9		0.0	CL	Grayish brown silty Clay, wet	3.5 feet recovery. No odors or staining observed.
10		0.0			
11		0.0	SM	Brown fine Sand, saturated	
12		0.0			
				Boring terminated at 12.0 feet bgs	Boring converted to temporary well point B-1GW at terminal depth of 12.0 ft; screened from 7.0 to 12.0 ft bgs.

Boring Number:	**B-2**				Page 1 of 1
Location:	South of reported onsite monitoring well MW-2 location			Date Started:	7/27/2021
Site Address:	5840 Bridge Street (not actual address)			Date Completed:	7/27/2021
	East Syracuse, New York 13057			Depth to Groundwater:	8.0 feet
Project Number:	21-323758.2			Field Technician:	Jonathan Lokko
Drill Rig Type:	Geoprobe 66DT			**PSG Engineering and Geology, D.P.C**	
Sampling Equipment:	4 ft Macrocores			362 Fifth Avenue, Suite 501	
Borehole Diameter:	2 inch			New York, New York 10001	

Depth	Sample	PID	USCS	Description	Notes
1		0.0	SM	Brown silty Sand with gravel	3.5 feet recovery. No odors or staining observed.
2		0.1			
3		0.1			
4		0.1			
5		0.1	SM	Brown silty Sand with gravel	3.0 feet recovery. No odors or staining observed.
6		0.1			
7		0.0			
8		0.0	CL	Grayish brown silty Clay, wet at 8 feet	
9		0.0	CL	Grayish brown silty Clay, wet	3.8 feet recovery. No odors or staining observed.
10		0.0			
11		0.0	SM	Brown fine Sand, saturated	
12		0.0			
				Boring terminated at 12.0 feet bgs	Boring converted to temporary well point B-2GW at terminal depth of 12.0 ft; screened from 7.0 to 12.0 ft bgs.

Boring Number:	**B-3**				Page 1 of 1
Location:	East of reported onsite monitoring well MW-2 location			Date Started:	7/27/2021
Site Address:	5840 Bridge Street (not actual address)			Date Completed:	7/27/2021
	East Syracuse, New York 13057			Depth to Groundwater:	6.5 feet
Project Number:	21-323758.2			Field Technician:	Jonathan Lokko
Drill Rig Type:	Geoprobe 66DT			**PSG Engineering and Geology, D.P.C**	
Sampling Equipment:	4 ft Macrocores			362 Fifth Avenue, Suite 501	
Borehole Diameter:	2 inch			New York, New York 10001	

Depth	Sample	PID	USCS	Description	Notes
1		0.0	SM	Brown silty Sand with gravel	3.5 feet recovery. No odors or staining observed.
2		0.2			
3		0.2			
4		0.2			
5		0.1	SM	Brown silty Sand with gravel, wet 6.5 feet	3.0 feet recovery. No odors or staining observed.
6		0.1			
7		0.0			
8		0.0	CL	Grayish brown silty Clay, moist	
9		0.0	SM	Brown fine Sand, saturated	3.8 feet recovery. No odors or staining observed.
10		0.0			
11		0.0			
12		0.0			
				Boring terminated at 12.0 feet bgs	Boring converted to temporary well point B-3GW at terminal depth of 12.0 ft; screened from 7.0 to 12.0 ft bgs.

Boring Number:	**B-4**				Page 1 of 1
Location:	North of reported onsite monitoring well MW-2 location			Date Started:	7/27/2021
Site Address:	5840 Bridge Street (not actual address)			Date Completed:	7/27/2021
	East Syracuse, New York 13057			Depth to Groundwater:	7.0 feet
Project Number:	21-323758.2			Field Technician:	Jonathan Lokko
Drill Rig Type:	Geoprobe 66DT			**PSG Engineering and Geology, D.P.C**	
Sampling Equipment:	4 ft Macrocores			362 Fifth Avenue, Suite 501	
Borehole Diameter:	2 inch			New York, New York 10001	

Depth	Sample	PID	USCS	Description	Notes
1		0.0	SM	Brown silty Sand with gravel	3.5 feet recovery. No odors or staining observed.
2		0.0			
3		0.0			
4		0.0			
5		0.0	SM	Brown silty Sand with gravel, wet 6.5 feet	3.0 feet recovery. No odors or staining observed.
6		0.0			
7		0.0			
8		0.0	CL	Grayish brown silty Clay, moist	
9		0.0	SM	Brown fine Sand, saturated	3.8 feet recovery. No odors or staining observed.
10		0.0			
11		0.0			
12		0.0			
				Boring terminated at 12.0 feet bgs	Boring converted to temporary well point B-4GW at terminal depth of 12.0 ft; screened from 7.0 to 12.0 ft bgs.

APPENDIX B: SOIL GAS SAMPLING LOG

PSG

Appendix B: Soil Gas Sampling Log				Page 1 of 1
Site Address:	5840 Bridge Street (not actual address)			Date Sampled: 7/27/2021
	East Syracuse, New York 13057			**PSG Engineering and Geology, D.P.C**
Project Number:	21-323758.2			365 Fifth Avenue, Suite 501
Field Technician:	Jonathan Lokko			New York, New York 10001
Sample ID: SG-1	Canister # 3210		Flow Controller # 02118	Notes
Location: Adjacent to boring B-1 location		Time	Vacuum	Maximum PID reading observed during purging: 1.2 ppm
	Initial:	11:13	-29.08	
	Final:	11:23	-2.67	
Sample ID: SG-2	Canister # 3242		Flow Controller # 01227	Notes
Location: Adjacent to boring B-2 location		Time	Vacuum	Maximum PID reading observed during purging: 0.9 ppm. False vacuum readinngs realised in the canister due to suction of groundwater
	Initial:	11:43	-29.26	
	Final:	11:53	-21.30	
Sample ID: SG-3	Canister # 2769		Flow Controller # 01050	Notes
Location: Adjacent to boring B-3 location		Time	Vacuum	Maximum PID reading observed during purging: 0.2 ppm
	Initial:	15:00	-29.13	
	Final:	15:10	0.65	
Sample ID: SG-4	Canister # 3171		Flow Controller # 0864	Notes
Location:Adjacent to boring B-4 location		Time	Vacuum	Maximum PID reading observed during purging: 0.6 ppm
	Initial:	14:56	-29.12	
	Final:	15:06	-1.51	

APPENDIX C: LABORATORY ANALYTICAL REPORT

PSG

ANALYTICAL REPORT

Lab Number:	L2140362
Client:	Partner Engineering & Science, Inc. 611 Industrial Way W. Eatontown, NJ 07724
ATTN:	Jonathan Lokko
Phone:	(732) 380-1700
Project Name:	21-323758.2
Project Number:	21-323758.2
Report Date:	08/03/21

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: 21-323758.2
Project Number: 21-323758.2

Lab Number: L2140362
Report Date: 08/03/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2140362-01	B-1GW	WATER	BRIDGE STREET, EAST SYRACUSE, NY	07/27/21 11:55	07/27/21
L2140362-02	B-2GW	WATER	BRIDGE STREET, EAST SYRACUSE, NY	07/27/21 11:30	07/27/21
L2140362-03	B-3GW	WATER	BRIDGE STREET, EAST SYRACUSE, NY	07/27/21 14:40	07/27/21
L2140362-04	B-4GW	WATER	BRIDGE STREET, EAST SYRACUSE, NY	07/27/21 15:15	07/27/21

Project Name:	21-323758.2	**Lab Number:**	L2140362
Project Number:	21-323758.2	**Report Date:**	08/03/21

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. 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 Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data 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.

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 Alpha Project Manager 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 Project Management at 800-624-9220 with any questions.

Project Name:	21-323758.2	**Lab Number:**	L2140362
Project Number:	21-323758.2	**Report Date:**	08/03/21

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Sample Receipt

L2140362-02: The collection date and time on the chain of custody was 27-JUL-21 11:35; however, the collection time on the container label was 11:30. At the client's request, the collection date/time is reported as 27-JUL-21 11:30.

L2140362-04B: Headspace was noted in the sample container submitted for Volatile Organics.

Volatile Organics

L2140362-01, -02, -03, and -04: The pH of the sample was greater than two; however, the sample was analyzed within the method required holding time.

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: Caitlin Walukevich

Title: Technical Director/Representative Date: 08/03/21

ORGANICS

VOLATILES

Project Name: 21-323758.2 **Lab Number:** L2140362

Project Number: 21-323758.2 **Report Date:** 08/03/21

SAMPLE RESULTS

Lab ID: L2140362-01 Date Collected: 07/27/21 11:55
Client ID: B-1GW Date Received: 07/27/21
Sample Location: BRIDGE STREET, EAST SYRACUSE, NY Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 07/30/21 16:02
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	ND		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14	1
1,1-Dichloropropene	ND		ug/l	2.5	0.70	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	0.61	J	ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1

Project Name: 21-323758.2 **Lab Number:** L2140362

Project Number: 21-323758.2 **Report Date:** 08/03/21

SAMPLE RESULTS

Lab ID: L2140362-01 Date Collected: 07/27/21 11:55

Client ID: B-1GW Date Received: 07/27/21

Sample Location: BRIDGE STREET, EAST SYRACUSE, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Trichloroethene	0.86		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
Methyl tert butyl ether	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
Xylenes, Total	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	2.1	J	ug/l	2.5	0.70	1
1,2-Dichloroethene, Total	2.1	J	ug/l	2.5	0.70	1
Dibromomethane	ND		ug/l	5.0	1.0	1
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70	1
Acrylonitrile	ND		ug/l	5.0	1.5	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	4.8	J	ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	1.0	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
2,2-Dichloropropane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,3-Dichloropropane	ND		ug/l	2.5	0.70	1
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70	1
Bromobenzene	ND		ug/l	2.5	0.70	1
n-Butylbenzene	ND		ug/l	2.5	0.70	1
sec-Butylbenzene	ND		ug/l	2.5	0.70	1
tert-Butylbenzene	ND		ug/l	2.5	0.70	1
o-Chlorotoluene	ND		ug/l	2.5	0.70	1
p-Chlorotoluene	ND		ug/l	2.5	0.70	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Hexachlorobutadiene	ND		ug/l	2.5	0.70	1
Isopropylbenzene	ND		ug/l	2.5	0.70	1
p-Isopropyltoluene	ND		ug/l	2.5	0.70	1
Naphthalene	ND		ug/l	2.5	0.70	1

Project Name: 21-323758.2 **Lab Number:** L2140362

Project Number: 21-323758.2 **Report Date:** 08/03/21

SAMPLE RESULTS

Lab ID: L2140362-01 Date Collected: 07/27/21 11:55

Client ID: B-1GW Date Received: 07/27/21

Sample Location: BRIDGE STREET, EAST SYRACUSE, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
n-Propylbenzene	ND		ug/l	2.5	0.70	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,4-Dioxane	ND		ug/l	250	61.	1
p-Diethylbenzene	ND		ug/l	2.0	0.70	1
p-Ethyltoluene	ND		ug/l	2.0	0.70	1
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.0	0.54	1
Ethyl ether	ND		ug/l	2.5	0.70	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	109		70-130

Project Name: 21-323758.2 **Lab Number:** L2140362

Project Number: 21-323758.2 **Report Date:** 08/03/21

SAMPLE RESULTS

Lab ID: L2140362-02
Client ID: B-2GW
Sample Location: BRIDGE STREET, EAST SYRACUSE, NY

Date Collected: 07/27/21 11:30
Date Received: 07/27/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 07/29/21 20:38
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	ND		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14	1
1,1-Dichloropropene	ND		ug/l	2.5	0.70	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	0.14	J	ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1

Project Name: 21-323758.2 **Lab Number:** L2140362

Project Number: 21-323758.2 **Report Date:** 08/03/21

SAMPLE RESULTS

Lab ID: L2140362-02 Date Collected: 07/27/21 11:30

Client ID: B-2GW Date Received: 07/27/21

Sample Location: BRIDGE STREET, EAST SYRACUSE, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
Methyl tert butyl ether	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
Xylenes, Total	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
1,2-Dichloroethene, Total	ND		ug/l	2.5	0.70	1
Dibromomethane	ND		ug/l	5.0	1.0	1
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70	1
Acrylonitrile	ND		ug/l	5.0	1.5	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	3.2	J	ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	1.0	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
2,2-Dichloropropane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,3-Dichloropropane	ND		ug/l	2.5	0.70	1
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70	1
Bromobenzene	ND		ug/l	2.5	0.70	1
n-Butylbenzene	ND		ug/l	2.5	0.70	1
sec-Butylbenzene	ND		ug/l	2.5	0.70	1
tert-Butylbenzene	ND		ug/l	2.5	0.70	1
o-Chlorotoluene	ND		ug/l	2.5	0.70	1
p-Chlorotoluene	ND		ug/l	2.5	0.70	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Hexachlorobutadiene	ND		ug/l	2.5	0.70	1
Isopropylbenzene	ND		ug/l	2.5	0.70	1
p-Isopropyltoluene	ND		ug/l	2.5	0.70	1
Naphthalene	ND		ug/l	2.5	0.70	1

Project Name: 21-323758.2 **Lab Number:** L2140362

Project Number: 21-323758.2 **Report Date:** 08/03/21

SAMPLE RESULTS

Lab ID: L2140362-02 Date Collected: 07/27/21 11:30

Client ID: B-2GW Date Received: 07/27/21

Sample Location: BRIDGE STREET, EAST SYRACUSE, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
n-Propylbenzene	ND		ug/l	2.5	0.70	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,4-Dioxane	ND		ug/l	250	61.	1
p-Diethylbenzene	ND		ug/l	2.0	0.70	1
p-Ethyltoluene	ND		ug/l	2.0	0.70	1
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.0	0.54	1
Ethyl ether	ND		ug/l	2.5	0.70	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	96		70-130

Project Name: 21-323758.2 **Lab Number:** L2140362

Project Number: 21-323758.2 **Report Date:** 08/03/21

SAMPLE RESULTS

Lab ID: L2140362-03 Date Collected: 07/27/21 14:40
Client ID: B-3GW Date Received: 07/27/21
Sample Location: BRIDGE STREET, EAST SYRACUSE, NY Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 07/29/21 21:00
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	ND		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14	1
1,1-Dichloropropene	ND		ug/l	2.5	0.70	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1

Project Name: 21-323758.2 **Lab Number:** L2140362

Project Number: 21-323758.2 **Report Date:** 08/03/21

SAMPLE RESULTS

Lab ID: L2140362-03 Date Collected: 07/27/21 14:40

Client ID: B-3GW Date Received: 07/27/21

Sample Location: BRIDGE STREET, EAST SYRACUSE, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
Methyl tert butyl ether	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
Xylenes, Total	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
1,2-Dichloroethene, Total	ND		ug/l	2.5	0.70	1
Dibromomethane	ND		ug/l	5.0	1.0	1
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70	1
Acrylonitrile	ND		ug/l	5.0	1.5	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	5.2		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	1.0	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
2,2-Dichloropropane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,3-Dichloropropane	ND		ug/l	2.5	0.70	1
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70	1
Bromobenzene	ND		ug/l	2.5	0.70	1
n-Butylbenzene	ND		ug/l	2.5	0.70	1
sec-Butylbenzene	ND		ug/l	2.5	0.70	1
tert-Butylbenzene	ND		ug/l	2.5	0.70	1
o-Chlorotoluene	ND		ug/l	2.5	0.70	1
p-Chlorotoluene	ND		ug/l	2.5	0.70	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Hexachlorobutadiene	ND		ug/l	2.5	0.70	1
Isopropylbenzene	ND		ug/l	2.5	0.70	1
p-Isopropyltoluene	ND		ug/l	2.5	0.70	1
Naphthalene	ND		ug/l	2.5	0.70	1

Project Name: 21-323758.2 **Lab Number:** L2140362

Project Number: 21-323758.2 **Report Date:** 08/03/21

SAMPLE RESULTS

Lab ID: L2140362-03 Date Collected: 07/27/21 14:40

Client ID: B-3GW Date Received: 07/27/21

Sample Location: BRIDGE STREET, EAST SYRACUSE, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
n-Propylbenzene	ND		ug/l	2.5	0.70	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,4-Dioxane	ND		ug/l	250	61.	1
p-Diethylbenzene	ND		ug/l	2.0	0.70	1
p-Ethyltoluene	ND		ug/l	2.0	0.70	1
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.0	0.54	1
Ethyl ether	ND		ug/l	2.5	0.70	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	96		70-130

Project Name: 21-323758.2 **Lab Number:** L2140362

Project Number: 21-323758.2 **Report Date:** 08/03/21

SAMPLE RESULTS

Lab ID: L2140362-04
Client ID: B-4GW
Sample Location: BRIDGE STREET, EAST SYRACUSE, NY

Date Collected: 07/27/21 15:15
Date Received: 07/27/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 07/29/21 21:23
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	ND		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14	1
1,1-Dichloropropene	ND		ug/l	2.5	0.70	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	3.9		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1

Project Name: 21-323758.2 **Lab Number:** L2140362

Project Number: 21-323758.2 **Report Date:** 08/03/21

SAMPLE RESULTS

Lab ID: L2140362-04 Date Collected: 07/27/21 15:15

Client ID: B-4GW Date Received: 07/27/21

Sample Location: BRIDGE STREET, EAST SYRACUSE, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Trichloroethene	0.99		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
Methyl tert butyl ether	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
Xylenes, Total	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	28		ug/l	2.5	0.70	1
1,2-Dichloroethene, Total	28		ug/l	2.5	0.70	1
Dibromomethane	ND		ug/l	5.0	1.0	1
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70	1
Acrylonitrile	ND		ug/l	5.0	1.5	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	3.2	J	ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	1.0	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
2,2-Dichloropropane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,3-Dichloropropane	ND		ug/l	2.5	0.70	1
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70	1
Bromobenzene	ND		ug/l	2.5	0.70	1
n-Butylbenzene	ND		ug/l	2.5	0.70	1
sec-Butylbenzene	ND		ug/l	2.5	0.70	1
tert-Butylbenzene	ND		ug/l	2.5	0.70	1
o-Chlorotoluene	ND		ug/l	2.5	0.70	1
p-Chlorotoluene	ND		ug/l	2.5	0.70	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Hexachlorobutadiene	ND		ug/l	2.5	0.70	1
Isopropylbenzene	ND		ug/l	2.5	0.70	1
p-Isopropyltoluene	ND		ug/l	2.5	0.70	1
Naphthalene	ND		ug/l	2.5	0.70	1

Project Name: 21-323758.2 **Lab Number:** L2140362

Project Number: 21-323758.2 **Report Date:** 08/03/21

SAMPLE RESULTS

Lab ID: L2140362-04 Date Collected: 07/27/21 15:15

Client ID: B-4GW Date Received: 07/27/21

Sample Location: BRIDGE STREET, EAST SYRACUSE, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
n-Propylbenzene	ND		ug/l	2.5	0.70	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,4-Dioxane	ND		ug/l	250	61.	1
p-Diethylbenzene	ND		ug/l	2.0	0.70	1
p-Ethyltoluene	ND		ug/l	2.0	0.70	1
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.0	0.54	1
Ethyl ether	ND		ug/l	2.5	0.70	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	96		70-130

Project Name: 21-323758.2 **Lab Number:** L2140362

Project Number: 21-323758.2 **Report Date:** 08/03/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/29/21 19:29
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 02-04 Batch: WG1529798-5					
Methylene chloride	ND		ug/l	2.5	0.70
1,1-Dichloroethane	ND		ug/l	2.5	0.70
Chloroform	ND		ug/l	2.5	0.70
Carbon tetrachloride	ND		ug/l	0.50	0.13
1,2-Dichloropropane	ND		ug/l	1.0	0.14
Dibromochloromethane	ND		ug/l	0.50	0.15
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50
Tetrachloroethene	ND		ug/l	0.50	0.18
Chlorobenzene	ND		ug/l	2.5	0.70
Trichlorofluoromethane	ND		ug/l	2.5	0.70
1,2-Dichloroethane	ND		ug/l	0.50	0.13
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70
Bromodichloromethane	ND		ug/l	0.50	0.19
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14
1,1-Dichloropropene	ND		ug/l	2.5	0.70
Bromoform	ND		ug/l	2.0	0.65
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17
Benzene	ND		ug/l	0.50	0.16
Toluene	ND		ug/l	2.5	0.70
Ethylbenzene	ND		ug/l	2.5	0.70
Chloromethane	ND		ug/l	2.5	0.70
Bromomethane	ND		ug/l	2.5	0.70
Vinyl chloride	ND		ug/l	1.0	0.07
Chloroethane	ND		ug/l	2.5	0.70
1,1-Dichloroethene	ND		ug/l	0.50	0.17
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70
Trichloroethene	ND		ug/l	0.50	0.18

Project Name: 21-323758.2 **Lab Number:** L2140362

Project Number: 21-323758.2 **Report Date:** 08/03/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/29/21 19:29
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 02-04 Batch: WG1529798-5					
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70
Methyl tert butyl ether	ND		ug/l	2.5	0.70
p/m-Xylene	ND		ug/l	2.5	0.70
o-Xylene	ND		ug/l	2.5	0.70
Xylenes, Total	ND		ug/l	2.5	0.70
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70
1,2-Dichloroethene, Total	ND		ug/l	2.5	0.70
Dibromomethane	ND		ug/l	5.0	1.0
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70
Acrylonitrile	ND		ug/l	5.0	1.5
Styrene	ND		ug/l	2.5	0.70
Dichlorodifluoromethane	ND		ug/l	5.0	1.0
Acetone	ND		ug/l	5.0	1.5
Carbon disulfide	ND		ug/l	5.0	1.0
2-Butanone	ND		ug/l	5.0	1.9
Vinyl acetate	ND		ug/l	5.0	1.0
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0
2-Hexanone	ND		ug/l	5.0	1.0
Bromochloromethane	ND		ug/l	2.5	0.70
2,2-Dichloropropane	ND		ug/l	2.5	0.70
1,2-Dibromoethane	ND		ug/l	2.0	0.65
1,3-Dichloropropane	ND		ug/l	2.5	0.70
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70
Bromobenzene	ND		ug/l	2.5	0.70
n-Butylbenzene	ND		ug/l	2.5	0.70
sec-Butylbenzene	ND		ug/l	2.5	0.70
tert-Butylbenzene	ND		ug/l	2.5	0.70

Project Name: 21-323758.2 **Lab Number:** L2140362

Project Number: 21-323758.2 **Report Date:** 08/03/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/29/21 19:29
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 02-04 Batch: WG1529798-5					
o-Chlorotoluene	ND		ug/l	2.5	0.70
p-Chlorotoluene	ND		ug/l	2.5	0.70
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70
Hexachlorobutadiene	ND		ug/l	2.5	0.70
Isopropylbenzene	ND		ug/l	2.5	0.70
p-Isopropyltoluene	ND		ug/l	2.5	0.70
Naphthalene	ND		ug/l	2.5	0.70
n-Propylbenzene	ND		ug/l	2.5	0.70
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.70
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.70
1,4-Dioxane	ND		ug/l	250	61.
p-Diethylbenzene	ND		ug/l	2.0	0.70
p-Ethyltoluene	ND		ug/l	2.0	0.70
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.0	0.54
Ethyl ether	ND		ug/l	2.5	0.70
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	95		70-130

Project Name: 21-323758.2 **Lab Number:** L2140362

Project Number: 21-323758.2 **Report Date:** 08/03/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/30/21 10:44
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1530559-5					
Methylene chloride	ND		ug/l	2.5	0.70
1,1-Dichloroethane	ND		ug/l	2.5	0.70
Chloroform	ND		ug/l	2.5	0.70
Carbon tetrachloride	ND		ug/l	0.50	0.13
1,2-Dichloropropane	ND		ug/l	1.0	0.14
Dibromochloromethane	ND		ug/l	0.50	0.15
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50
Tetrachloroethene	ND		ug/l	0.50	0.18
Chlorobenzene	ND		ug/l	2.5	0.70
Trichlorofluoromethane	ND		ug/l	2.5	0.70
1,2-Dichloroethane	ND		ug/l	0.50	0.13
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70
Bromodichloromethane	ND		ug/l	0.50	0.19
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14
1,1-Dichloropropene	ND		ug/l	2.5	0.70
Bromoform	ND		ug/l	2.0	0.65
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17
Benzene	ND		ug/l	0.50	0.16
Toluene	ND		ug/l	2.5	0.70
Ethylbenzene	ND		ug/l	2.5	0.70
Chloromethane	ND		ug/l	2.5	0.70
Bromomethane	ND		ug/l	2.5	0.70
Vinyl chloride	ND		ug/l	1.0	0.07
Chloroethane	ND		ug/l	2.5	0.70
1,1-Dichloroethene	ND		ug/l	0.50	0.17
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70
Trichloroethene	ND		ug/l	0.50	0.18

Project Name: 21-323758.2 **Lab Number:** L2140362

Project Number: 21-323758.2 **Report Date:** 08/03/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/30/21 10:44
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1530559-5					
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70
Methyl tert butyl ether	ND		ug/l	2.5	0.70
p/m-Xylene	ND		ug/l	2.5	0.70
o-Xylene	ND		ug/l	2.5	0.70
Xylenes, Total	ND		ug/l	2.5	0.70
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70
1,2-Dichloroethene, Total	ND		ug/l	2.5	0.70
Dibromomethane	ND		ug/l	5.0	1.0
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70
Acrylonitrile	ND		ug/l	5.0	1.5
Styrene	ND		ug/l	2.5	0.70
Dichlorodifluoromethane	ND		ug/l	5.0	1.0
Acetone	ND		ug/l	5.0	1.5
Carbon disulfide	ND		ug/l	5.0	1.0
2-Butanone	ND		ug/l	5.0	1.9
Vinyl acetate	ND		ug/l	5.0	1.0
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0
2-Hexanone	ND		ug/l	5.0	1.0
Bromochloromethane	ND		ug/l	2.5	0.70
2,2-Dichloropropane	ND		ug/l	2.5	0.70
1,2-Dibromoethane	ND		ug/l	2.0	0.65
1,3-Dichloropropane	ND		ug/l	2.5	0.70
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70
Bromobenzene	ND		ug/l	2.5	0.70
n-Butylbenzene	ND		ug/l	2.5	0.70
sec-Butylbenzene	ND		ug/l	2.5	0.70
tert-Butylbenzene	ND		ug/l	2.5	0.70

Project Name: 21-323758.2 **Lab Number:** L2140362

Project Number: 21-323758.2 **Report Date:** 08/03/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/30/21 10:44
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1530559-5					
o-Chlorotoluene	ND		ug/l	2.5	0.70
p-Chlorotoluene	ND		ug/l	2.5	0.70
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70
Hexachlorobutadiene	ND		ug/l	2.5	0.70
Isopropylbenzene	ND		ug/l	2.5	0.70
p-Isopropyltoluene	ND		ug/l	2.5	0.70
Naphthalene	ND		ug/l	2.5	0.70
n-Propylbenzene	ND		ug/l	2.5	0.70
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.70
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.70
1,4-Dioxane	ND		ug/l	250	61.
p-Diethylbenzene	ND		ug/l	2.0	0.70
p-Ethyltoluene	ND		ug/l	2.0	0.70
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.0	0.54
Ethyl ether	ND		ug/l	2.5	0.70
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	93		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	108		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: 21-323758.2

Project Number: 21-323758.2

Lab Number: L2140362

Report Date: 08/03/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 02-04 Batch: WG1529798-3 WG1529798-4								
Methylene chloride	92		92		70-130	0		20
1,1-Dichloroethane	100		100		70-130	0		20
Chloroform	94		94		70-130	0		20
Carbon tetrachloride	100		99		63-132	1		20
1,2-Dichloropropane	100		100		70-130	0		20
Dibromochloromethane	88		88		63-130	0		20
1,1,2-Trichloroethane	87		86		70-130	1		20
Tetrachloroethene	94		93		70-130	1		20
Chlorobenzene	93		93		75-130	0		20
Trichlorofluoromethane	96		95		62-150	1		20
1,2-Dichloroethane	94		94		70-130	0		20
1,1,1-Trichloroethane	96		94		67-130	2		20
Bromodichloromethane	90		90		67-130	0		20
trans-1,3-Dichloropropene	83		83		70-130	0		20
cis-1,3-Dichloropropene	85		86		70-130	1		20
1,1-Dichloropropene	98		96		70-130	2		20
Bromoform	76		76		54-136	0		20
1,1,2,2-Tetrachloroethane	91		92		67-130	1		20
Benzene	96		96		70-130	0		20
Toluene	96		95		70-130	1		20
Ethylbenzene	96		95		70-130	1		20
Chloromethane	90		90		64-130	0		20
Bromomethane	56		64		39-139	13		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: 21-323758.2

Project Number: 21-323758.2

Lab Number: L2140362

Report Date: 08/03/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 02-04 Batch: WG1529798-3 WG1529798-4								
Vinyl chloride	100		98		55-140	2		20
Chloroethane	98		98		55-138	0		20
1,1-Dichloroethene	93		94		61-145	1		20
trans-1,2-Dichloroethene	99		98		70-130	1		20
Trichloroethene	94		94		70-130	0		20
1,2-Dichlorobenzene	88		90		70-130	2		20
1,3-Dichlorobenzene	91		92		70-130	1		20
1,4-Dichlorobenzene	90		90		70-130	0		20
Methyl tert butyl ether	90		90		63-130	0		20
p/m-Xylene	95		95		70-130	0		20
o-Xylene	90		90		70-130	0		20
cis-1,2-Dichloroethene	94		94		70-130	0		20
Dibromomethane	81		82		70-130	1		20
1,2,3-Trichloropropane	85		88		64-130	3		20
Acrylonitrile	100		100		70-130	0		20
Styrene	85		85		70-130	0		20
Dichlorodifluoromethane	77		76		36-147	1		20
Acetone	84		86		58-148	2		20
Carbon disulfide	98		97		51-130	1		20
2-Butanone	87		85		63-138	2		20
Vinyl acetate	110		110		70-130	0		20
4-Methyl-2-pentanone	79		85		59-130	7		20
2-Hexanone	78		79		57-130	1		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: 21-323758.2

Project Number: 21-323758.2

Lab Number: L2140362

Report Date: 08/03/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 02-04 Batch: WG1529798-3 WG1529798-4								
Bromochloromethane	91		94		70-130	3		20
2,2-Dichloropropane	100		99		63-133	1		20
1,2-Dibromoethane	84		85		70-130	1		20
1,3-Dichloropropane	89		90		70-130	1		20
1,1,1,2-Tetrachloroethane	91		90		64-130	1		20
Bromobenzene	87		89		70-130	2		20
n-Butylbenzene	99		99		53-136	0		20
sec-Butylbenzene	110		110		70-130	0		20
tert-Butylbenzene	99		98		70-130	1		20
o-Chlorotoluene	96		94		70-130	2		20
p-Chlorotoluene	94		94		70-130	0		20
1,2-Dibromo-3-chloropropane	73		77		41-144	5		20
Hexachlorobutadiene	100		110		63-130	10		20
Isopropylbenzene	100		99		70-130	1		20
p-Isopropyltoluene	100		100		70-130	0		20
Naphthalene	82		89		70-130	8		20
n-Propylbenzene	98		97		69-130	1		20
1,2,3-Trichlorobenzene	80		89		70-130	11		20
1,2,4-Trichlorobenzene	88		92		70-130	4		20
1,3,5-Trimethylbenzene	96		95		64-130	1		20
1,2,4-Trimethylbenzene	95		94		70-130	1		20
1,4-Dioxane	64		72		56-162	12		20
p-Diethylbenzene	100		100		70-130	0		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: 21-323758.2

Project Number: 21-323758.2

Lab Number: L2140362

Report Date: 08/03/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 02-04 Batch: WG1529798-3 WG1529798-4								
p-Ethyltoluene	100		98		70-130	2		20
1,2,4,5-Tetramethylbenzene	100		100		70-130	0		20
Ethyl ether	91		94		59-134	3		20
trans-1,4-Dichloro-2-butene	82		83		70-130	1		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	96		96		70-130
Toluene-d8	101		103		70-130
4-Bromofluorobenzene	104		104		70-130
Dibromofluoromethane	97		98		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: 21-323758.2

Project Number: 21-323758.2

Lab Number: L2140362

Report Date: 08/03/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1530559-3 WG1530559-4								
Methylene chloride	110		110		70-130	0		20
1,1-Dichloroethane	110		100		70-130	10		20
Chloroform	110		100		70-130	10		20
Carbon tetrachloride	110		110		63-132	0		20
1,2-Dichloropropane	100		97		70-130	3		20
Dibromochloromethane	92		89		63-130	3		20
1,1,2-Trichloroethane	88		84		70-130	5		20
Tetrachloroethene	110		100		70-130	10		20
Chlorobenzene	110		100		75-130	10		20
Trichlorofluoromethane	120		110		62-150	9		20
1,2-Dichloroethane	98		94		70-130	4		20
1,1,1-Trichloroethane	110		100		67-130	10		20
Bromodichloromethane	98		93		67-130	5		20
trans-1,3-Dichloropropene	87		83		70-130	5		20
cis-1,3-Dichloropropene	96		91		70-130	5		20
1,1-Dichloropropene	120		110		70-130	9		20
Bromoform	80		77		54-136	4		20
1,1,2,2-Tetrachloroethane	96		92		67-130	4		20
Benzene	110		100		70-130	10		20
Toluene	110		100		70-130	10		20
Ethylbenzene	110		100		70-130	10		20
Chloromethane	95		88		64-130	8		20
Bromomethane	130		120		39-139	8		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: 21-323758.2

Project Number: 21-323758.2

Lab Number: L2140362

Report Date: 08/03/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1530559-3 WG1530559-4								
Vinyl chloride	120		110		55-140	9		20
Chloroethane	130		120		55-138	8		20
1,1-Dichloroethene	110		110		61-145	0		20
trans-1,2-Dichloroethene	120		110		70-130	9		20
Trichloroethene	98		93		70-130	5		20
1,2-Dichlorobenzene	100		100		70-130	0		20
1,3-Dichlorobenzene	110		100		70-130	10		20
1,4-Dichlorobenzene	110		100		70-130	10		20
Methyl tert butyl ether	95		92		63-130	3		20
p/m-Xylene	105		100		70-130	5		20
o-Xylene	105		100		70-130	5		20
cis-1,2-Dichloroethene	110		110		70-130	0		20
Dibromomethane	100		98		70-130	2		20
1,2,3-Trichloropropane	86		84		64-130	2		20
Acrylonitrile	86		86		70-130	0		20
Styrene	100		95		70-130	5		20
Dichlorodifluoromethane	110		110		36-147	0		20
Acetone	73		75		58-148	3		20
Carbon disulfide	120		110		51-130	9		20
2-Butanone	**58**	Q	**62**	Q	63-138	7		20
Vinyl acetate	89		86		70-130	3		20
4-Methyl-2-pentanone	63		61		59-130	3		20
2-Hexanone	58		57		57-130	2		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: 21-323758.2

Project Number: 21-323758.2

Lab Number: L2140362

Report Date: 08/03/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1530559-3 WG1530559-4								
Bromochloromethane	110		110		70-130	0		20
2,2-Dichloropropane	120		110		63-133	9		20
1,2-Dibromoethane	92		89		70-130	3		20
1,3-Dichloropropane	95		91		70-130	4		20
1,1,1,2-Tetrachloroethane	94		91		64-130	3		20
Bromobenzene	100		100		70-130	0		20
n-Butylbenzene	100		99		53-136	1		20
sec-Butylbenzene	120		120		70-130	0		20
tert-Butylbenzene	110		100		70-130	10		20
o-Chlorotoluene	100		100		70-130	0		20
p-Chlorotoluene	100		98		70-130	2		20
1,2-Dibromo-3-chloropropane	76		72		41-144	5		20
Hexachlorobutadiene	110		100		63-130	10		20
Isopropylbenzene	110		100		70-130	10		20
p-Isopropyltoluene	110		100		70-130	10		20
Naphthalene	94		92		70-130	2		20
n-Propylbenzene	110		100		69-130	10		20
1,2,3-Trichlorobenzene	96		94		70-130	2		20
1,2,4-Trichlorobenzene	100		98		70-130	2		20
1,3,5-Trimethylbenzene	100		94		64-130	6		20
1,2,4-Trimethylbenzene	100		96		70-130	4		20
1,4-Dioxane	90		88		56-162	2		20
p-Diethylbenzene	100		100		70-130	0		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: 21-323758.2

Project Number: 21-323758.2

Lab Number: L2140362

Report Date: 08/03/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1530559-3 WG1530559-4								
p-Ethyltoluene	110		100		70-130	10		20
1,2,4,5-Tetramethylbenzene	100		100		70-130	0		20
Ethyl ether	100		100		59-134	0		20
trans-1,4-Dichloro-2-butene	71		**66**	Q	70-130	7		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	91		92		70-130
Toluene-d8	101		101		70-130
4-Bromofluorobenzene	95		94		70-130
Dibromofluoromethane	103		103		70-130

Project Name: 21-323758.2
Project Number: 21-323758.2

Lab Number: L2140362
Report Date: 08/03/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2140362-01A	Vial HCl preserved	A	NA		2.4	Y	Absent		NYTCL-8260(14)
L2140362-01B	Vial HCl preserved	A	NA		2.4	Y	Absent		NYTCL-8260(14)
L2140362-01C	Vial HCl preserved	A	NA		2.4	Y	Absent		NYTCL-8260(14)
L2140362-02A	Vial HCl preserved	A	NA		2.4	Y	Absent		NYTCL-8260(14)
L2140362-02B	Vial HCl preserved	A	NA		2.4	Y	Absent		NYTCL-8260(14)
L2140362-02C	Vial HCl preserved	A	NA		2.4	Y	Absent		NYTCL-8260(14)
L2140362-02D	Vial HCl preserved	A	NA		2.4	Y	Absent		NYTCL-8260(14)
L2140362-03A	Vial HCl preserved	A	NA		2.4	Y	Absent		NYTCL-8260(14)
L2140362-03B	Vial HCl preserved	A	NA		2.4	Y	Absent		NYTCL-8260(14)
L2140362-03C	Vial HCl preserved	A	NA		2.4	Y	Absent		NYTCL-8260(14)
L2140362-04A	Vial HCl preserved	A	NA		2.4	Y	Absent		NYTCL-8260(14)
L2140362-04B	Vial HCl preserved	A	NA		2.4	Y	Absent		NYTCL-8260(14)
L2140362-04C	Vial HCl preserved	A	NA		2.4	Y	Absent		NYTCL-8260(14)
L2140362-04D	Vial HCl preserved	A	NA		2.4	Y	Absent		NYTCL-8260(14)
L2140362-04E	Vial HCl preserved	A	NA		2.4	Y	Absent		NYTCL-8260(14)

*Values in parentheses indicate holding time in days

Project Name:	21-323758.2	**Lab Number:**	L2140362
Project Number:	21-323758.2	**Report Date:**	08/03/21

GLOSSARY

Acronyms

DL	- 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 limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
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.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
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. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
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.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
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.

Report Format: DU Report with 'J' Qualifiers

Project Name:	21-323758.2	**Lab Number:**	L2140362
Project Number:	21-323758.2	**Report Date:**	08/03/21

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.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

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.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

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.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

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.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

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.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

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

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	21-323758.2	**Lab Number:**	L2140362
Project Number:	21-323758.2	**Report Date:**	08/03/21

Data Qualifiers

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.

Project Name:	21-323758.2	**Lab Number:**	L2140362
Project Number:	21-323758.2	**Report Date:**	08/03/21

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

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, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
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, SM4500NO2-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, SM9222D.**

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, EPA 537.1.

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.

NEW YORK CHAIN OF CUSTODY

ALPHA ANALYTICAL

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

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

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 1 of 1

Date Rec'd in Lab 07/28/21

ALPHA Job # L2140362

Client Information

Client: PSG Engineering & Geology
Address: 362 Fifth Ave, Suite 501
New York NY 10001
Phone: 646 273 1290
Fax: 646 513 2321
Email: lokko@partnersei.com

Project Information

Project Name: 21-323758.2
Project Location: Bridge Street, East Syracuse NY 13057
Project # 21-323758.2
(Use Project name as Project #) ☐
Project Manager: Andres Simonson
ALPHAQuote #:

Turn-Around Time

Standard ☒ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables

☐ ASP-A ☐ ASP-B
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Regulatory Requirement

☒ NY TOGS ☐ NY Part 375
☐ AWQ Standards ☐ NY CP-51
☐ NY Restricted Use ☐ Other
☐ NY Unrestricted Use
☐ NYC Sewer Discharge

Billing Information

☐ Same as Client Info
PO #

Disposal Site Information

Please identify below location of applicable disposal facilities.
Disposal Facility:
☐ NJ ☐ NY
☐ Other:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:

Please specify Metals or TAL.

ANALYSIS

TCL (8260)

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

Sample Specific Comments

Total Bottle

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	TCL (8260)	Total Bottle
40362-01	B-1GW	7/27/21	10:55	GW	JL	X	
-02	B-2GW	7/27/21	11:30	GW	JL	X	
-03	B-3GW	7/27/21	14:40	GW	JL	X	
-04	B-4GW	7/27/21	13:15	GW	JL	X	

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Container Type
Preservative

Relinquished By:	Date/Time	Received By:	Date/Time
	7/27/21 1530		
	7/27/21 1530		7/27/21 13:50

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

Form No: 01-25 HC (rev. 30-Sept-2013)

JOB: L2140286 REPORT STYLE: Data Usability Report
0010: Alpha Analytical Report Cover Page - OK
0015: Sample Cross Reference Summary - OK
0060: Case Narrative - OK
2000: Air VOA Sample Results - OK
2010: Air VOA Method Blank Report - OK
2020: Air VOA LCS Report - OK
2030: Air VOA Duplicate Report - OK
4900: Air Canister & Flow Controller Information - OK
5000: Air Canister Certification Report - OK
5100: Sample Receipt & Container Information Report - OK
5200: Glossary - OK
5400: References - OK

ANALYTICAL REPORT

Lab Number:	L2140286
Client:	Partner Engineering & Science, Inc. 611 Industrial Way W. Eatontown, NJ 07724
ATTN:	Andres Simonson
Phone:	(732) 380-1700
Project Name:	21-323758.2
Project Number:	21-323758.2
Report Date:	08/03/21

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: 21-323758.2
Project Number: 21-323758.2

Lab Number: L2140286
Report Date: 08/03/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2140286-01	SG-1	SOIL_VAPOR	BRIDGE STREET EAST SYRACUSE NY	07/27/21 11:23	07/27/21
L2140286-02	SG-2	SOIL_VAPOR	BRIDGE STREET EAST SYRACUSE NY	07/27/21 11:53	07/27/21
L2140286-03	SG-3	SOIL_VAPOR	BRIDGE STREET EAST SYRACUSE NY	07/27/21 15:10	07/27/21
L2140286-04	SG-4	SOIL_VAPOR	BRIDGE STREET EAST SYRACUSE NY	07/27/21 15:06	07/27/21

Project Name:	21-323758.2	**Lab Number:**	L2140286
Project Number:	21-323758.2	**Report Date:**	08/03/21

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. 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 Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data 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.

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 Alpha Project Manager 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 Project Management at 800-624-9220 with any questions.

Project Name:	21-323758.2	**Lab Number:**	L2140286
Project Number:	21-323758.2	**Report Date:**	08/03/21

Case Narrative (continued)

Report Submission

This is a partial report including the final results for the samples reported. A final report will be issued as soon as the associated air samples which are currently on hold are either released for analysis or disposal.

Volatile Organics in Air

Canisters were released from the laboratory on July 26, 2021. The canister certification results are provided as an addendum.

The WG1530005-3 LCS recoveries for propylene (139%), pentane (138%), 3-chloropropene (142%) and benzyl chloride (139%) are above the upper 130% acceptance limit. All samples associated with this LCS do not have reportable amounts of these analytes.

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

Authorized Signature: Christopher J. Anderson

Title: Technical Director/Representative Date: 08/03/21

AIR

Project Name: 21-323758.2
Project Number: 21-323758.2

Lab Number: L2140286
Report Date: 08/03/21

SAMPLE RESULTS

Lab ID: L2140286-01
Client ID: SG-1
Sample Location: BRIDGE STREET EAST SYRACUSE NY

Date Collected: 07/27/21 11:23
Date Received: 07/27/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 07/30/21 16:56
Analyst: TS

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Dichlorodifluoromethane	0.599	0.200	--	2.96	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	0.956	0.200	--	2.11	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	60.1	1.00	--	143	2.38	--		1
Trichlorofluoromethane	13.8	0.200	--	77.6	1.12	--		1
iso-Propyl Alcohol	0.901	0.500	--	2.21	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	1.16	0.200	--	3.61	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	3.77	0.500	--	11.1	1.47	--		1
cis-1,2-Dichloroethene	2.13	0.200	--	8.45	0.793	--		1

Project Name: 21-323758.2
Project Number: 21-323758.2

Lab Number: L2140286
Report Date: 08/03/21

SAMPLE RESULTS

Lab ID: L2140286-01
Client ID: SG-1
Sample Location: BRIDGE STREET EAST SYRACUSE NY

Date Collected: 07/27/21 11:23
Date Received: 07/27/21
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	0.500	--	ND	1.80	--		1
Chloroform	0.584	0.200	--	2.85	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	28.6	0.200	--	101	0.705	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Benzene	7.10	0.200	--	22.7	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	14.6	0.200	--	50.3	0.688	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
Xylene (Total)	17.3	0.200	--	75.1	0.869	--		1
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1
Trichloroethene	20.5	0.200	--	110	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Heptane	16.4	0.200	--	67.2	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	5.34	0.200	--	20.1	0.754	--		1
1,2-Dichloroethene (total)	2.13	0.200	--	8.45	0.793	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,3-Dichloropropene, Total	ND	0.200	--	ND	0.908	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1

Project Name: 21-323758.2 ***Lab Number:*** L2140286

Project Number: 21-323758.2 ***Report Date:*** 08/03/21

SAMPLE RESULTS

Lab ID: L2140286-01
Client ID: SG-1
Sample Location: BRIDGE STREET EAST SYRACUSE NY

Date Collected: 07/27/21 11:23
Date Received: 07/27/21
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								
Tetrachloroethene	0.437	0.200	--	2.96	1.36	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	1.16	0.200	--	5.04	0.869	--		1
p/m-Xylene	6.42	0.400	--	27.9	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	10.9	0.200	--	47.3	0.869	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	6.18	0.200	--	30.4	0.983	--		1
1,2,4-Trimethylbenzene	13.0	0.200	--	63.9	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	96		60-140
chlorobenzene-d5	99		60-140

Project Name: 21-323758.2
Project Number: 21-323758.2

Lab Number: L2140286
Report Date: 08/03/21

SAMPLE RESULTS

Lab ID: L2140286-03
Client ID: SG-3
Sample Location: BRIDGE STREET EAST SYRACUSE NY

Date Collected: 07/27/21 15:10
Date Received: 07/27/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 07/30/21 17:35
Analyst: TS

	ppbV			ug/m3				
Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Dichlorodifluoromethane	0.337	0.200	--	1.67	0.989	--		1
Chloromethane	0.562	0.200	--	1.16	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	2.15	0.200	--	4.76	0.442	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethyl Alcohol	15.4	5.00	--	29.0	9.42	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acetone	122	1.00	--	290	2.38	--		1
Trichlorofluoromethane	0.239	0.200	--	1.34	1.12	--		1
iso-Propyl Alcohol	2.86	0.500	--	7.03	1.23	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1
tert-Butyl Alcohol	2.42	0.500	--	7.34	1.52	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	3.89	0.200	--	12.1	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	15.1	0.500	--	44.5	1.47	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1

Project Name: 21-323758.2 **Lab Number:** L2140286

Project Number: 21-323758.2 **Report Date:** 08/03/21

SAMPLE RESULTS

Lab ID: L2140286-03
Client ID: SG-3
Sample Location: BRIDGE STREET EAST SYRACUSE NY

Date Collected: 07/27/21 15:10
Date Received: 07/27/21
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	0.500	--	ND	1.80	--		1
Chloroform	0.562	0.200	--	2.74	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	16.2	0.200	--	57.1	0.705	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Benzene	7.74	0.200	--	24.7	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	8.03	0.200	--	27.6	0.688	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
Xylene (Total)	28.9	0.200	--	126	0.869	--		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
Heptane	9.60	0.200	--	39.3	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	2.80	0.500	--	11.5	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	22.4	0.200	--	84.4	0.754	--		1
1,2-Dichloroethene (total)	ND	0.200	--	ND	0.793	--		1
2-Hexanone	3.04	0.200	--	12.5	0.820	--		1
1,3-Dichloropropene, Total	ND	0.200	--	ND	0.908	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1

Project Name: 21-323758.2
Project Number: 21-323758.2

Lab Number: L2140286
Report Date: 08/03/21

SAMPLE RESULTS

Lab ID: L2140286-03
Client ID: SG-3
Sample Location: BRIDGE STREET EAST SYRACUSE NY

Date Collected: 07/27/21 15:10
Date Received: 07/27/21
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								
Tetrachloroethene	1.62	0.200	--	11.0	1.36	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	4.08	0.200	--	17.7	0.869	--		1
p/m-Xylene	15.5	0.400	--	67.3	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	13.4	0.200	--	58.2	0.869	--		1
4-Ethyltoluene	1.57	0.200	--	7.72	0.983	--		1
1,3,5-Trimethylbenzene	6.32	0.200	--	31.1	0.983	--		1
1,2,4-Trimethylbenzene	13.5	0.200	--	66.4	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	122		60-140
Bromochloromethane	127		60-140
chlorobenzene-d5	109		60-140

Project Name: 21-323758.2
Project Number: 21-323758.2

Lab Number: L2140286
Report Date: 08/03/21

SAMPLE RESULTS

Lab ID: L2140286-04
Client ID: SG-4
Sample Location: BRIDGE STREET EAST SYRACUSE NY

Date Collected: 07/27/21 15:06
Date Received: 07/27/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 08/03/21 00:27
Analyst: TS

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Dichlorodifluoromethane	0.588	0.200	--	2.91	0.989	--		1
Chloromethane	0.416	0.200	--	0.859	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	0.575	0.200	--	1.27	0.442	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethyl Alcohol	17.6	5.00	--	33.2	9.42	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acetone	98.8	1.00	--	235	2.38	--		1
Trichlorofluoromethane	1.44	0.200	--	8.09	1.12	--		1
iso-Propyl Alcohol	3.60	0.500	--	8.85	1.23	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1
tert-Butyl Alcohol	3.71	0.500	--	11.2	1.52	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	2.69	0.200	--	8.38	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	8.76	0.500	--	25.8	1.47	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1

Project Name: 21-323758.2
Project Number: 21-323758.2

Lab Number: L2140286
Report Date: 08/03/21

SAMPLE RESULTS

Lab ID: L2140286-04
Client ID: SG-4
Sample Location: BRIDGE STREET EAST SYRACUSE NY

Date Collected: 07/27/21 15:06
Date Received: 07/27/21
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	0.500	--	ND	1.80	--		1
Chloroform	0.838	0.200	--	4.09	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	29.1	0.200	--	103	0.705	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Benzene	11.0	0.200	--	35.1	0.639	--		1
Carbon tetrachloride	2.31	0.200	--	14.5	1.26	--		1
Cyclohexane	13.5	0.200	--	46.5	0.688	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
Xylene (Total)	21.2	0.200	--	92.1	0.869	--		1
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1
Trichloroethene	0.556	0.200	--	2.99	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Heptane	16.2	0.200	--	66.4	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	3.75	0.500	--	15.4	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	18.4	0.200	--	69.3	0.754	--		1
1,2-Dichloroethene (total)	ND	0.200	--	ND	0.793	--		1
2-Hexanone	0.849	0.200	--	3.48	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,3-Dichloropropene, Total	ND	0.200	--	ND	0.908	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1

Project Name: 21-323758.2 ***Lab Number:*** L2140286

Project Number: 21-323758.2 ***Report Date:*** 08/03/21

SAMPLE RESULTS

Lab ID: L2140286-04
Client ID: SG-4
Sample Location: BRIDGE STREET EAST SYRACUSE NY

Date Collected: 07/27/21 15:06
Date Received: 07/27/21
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								
Tetrachloroethene	1.04	0.200	--	7.05	1.36	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	2.44	0.200	--	10.6	0.869	--		1
p/m-Xylene	11.6	0.400	--	50.4	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	9.56	0.200	--	41.5	0.869	--		1
4-Ethyltoluene	1.10	0.200	--	5.41	0.983	--		1
1,3,5-Trimethylbenzene	4.79	0.200	--	23.5	0.983	--		1
1,2,4-Trimethylbenzene	10.4	0.200	--	51.1	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	99		60-140
Bromochloromethane	99		60-140
chlorobenzene-d5	103		60-140

Project Name: 21-323758.2 **Lab Number:** L2140286

Project Number: 21-323758.2 **Report Date:** 08/03/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 07/30/21 14:51

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: WG1530005-4								
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: 21-323758.2 **Lab Number:** L2140286

Project Number: 21-323758.2 **Report Date:** 08/03/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 07/30/21 14:51

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: WG1530005-4								
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
Xylene (Total)	ND	0.200	--	ND	0.869	--		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
1,2-Dichloroethene (total)	ND	0.200	--	ND	0.793	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,3-Dichloropropene, Total	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1

Project Name: 21-323758.2 **Lab Number:** L2140286

Project Number: 21-323758.2 **Report Date:** 08/03/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 07/30/21 14:51

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: WG1530005-4								
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
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

Project Name: 21-323758.2 **Lab Number:** L2140286

Project Number: 21-323758.2 **Report Date:** 08/03/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 07/30/21 14:51

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: WG1530005-4								
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1
Nonane (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

Project Name: 21-323758.2 **Lab Number:** L2140286

Project Number: 21-323758.2 **Report Date:** 08/03/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 07/30/21 14:51

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: WG1530005-4								
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
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: 21-323758.2 **Lab Number:** L2140286

Project Number: 21-323758.2 **Report Date:** 08/03/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 08/02/21 14:57

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): 04 Batch: WG1530669-4								
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: 21-323758.2 **Lab Number:** L2140286

Project Number: 21-323758.2 **Report Date:** 08/03/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 08/02/21 14:57

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): 04 Batch: WG1530669-4								
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
Xylene (Total)	ND	0.200	--	ND	0.869	--		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
1,2-Dichloroethene (total)	ND	0.200	--	ND	0.793	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,3-Dichloropropene, Total	ND	0.200	--	ND	0.908	--		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

Project Name: 21-323758.2 **Lab Number:** L2140286

Project Number: 21-323758.2 **Report Date:** 08/03/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 08/02/21 14:57

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): 04 Batch: WG1530669-4								
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
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

Project Name: 21-323758.2 **Lab Number:** L2140286

Project Number: 21-323758.2 **Report Date:** 08/03/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 08/02/21 14:57

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): 04 Batch: WG1530669-4								
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1
Nonane (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

Project Name: 21-323758.2 **Lab Number:** L2140286

Project Number: 21-323758.2 **Report Date:** 08/03/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 08/02/21 14:57

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): 04 Batch: WG1530669-4								
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
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: 21-323758.2
Project Number: 21-323758.2

Lab Number: L2140286
Report Date: 08/03/21

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: WG1530005-3								
Chlorodifluoromethane	93		-		70-130	-		
Propylene	**139**	Q	-		70-130	-		
Propane	96		-		70-130	-		
Dichlorodifluoromethane	101		-		70-130	-		
Chloromethane	107		-		70-130	-		
1,2-Dichloro-1,1,2,2-tetrafluoroethane	102		-		70-130	-		
Methanol	88		-		70-130	-		
Vinyl chloride	107		-		70-130	-		
1,3-Butadiene	108		-		70-130	-		
Butane	108		-		70-130	-		
Bromomethane	103		-		70-130	-		
Chloroethane	95		-		70-130	-		
Ethyl Alcohol	99		-		40-160	-		
Dichlorofluoromethane	102		-		70-130	-		
Vinyl bromide	101		-		70-130	-		
Acrolein	91		-		60-113	-		
Acetone	111		-		40-160	-		
Acetonitrile	103		-		70-130	-		
Trichlorofluoromethane	127		-		70-130	-		
iso-Propyl Alcohol	94		-		40-160	-		
Acrylonitrile	96		-		70-130	-		
Pentane	**138**	Q	-		70-130	-		
Ethyl ether	107		-		70-130	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: 21-323758.2

Project Number: 21-323758.2

Lab Number: L2140286

Report Date: 08/03/21

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: WG1530005-3								
1,1-Dichloroethene	129		-		70-130	-		
tert-Butyl Alcohol	112		-		70-130	-		
Methylene chloride	125		-		70-130	-		
3-Chloropropene	**142**	Q	-		70-130	-		
Carbon disulfide	100		-		70-130	-		
1,1,2-Trichloro-1,2,2-Trifluoroethane	117		-		70-130	-		
trans-1,2-Dichloroethene	112		-		70-130	-		
1,1-Dichloroethane	113		-		70-130	-		
Methyl tert butyl ether	100		-		70-130	-		
Vinyl acetate	120		-		70-130	-		
2-Butanone	114		-		70-130	-		
cis-1,2-Dichloroethene	117		-		70-130	-		
Ethyl Acetate	121		-		70-130	-		
Chloroform	108		-		70-130	-		
Tetrahydrofuran	113		-		70-130	-		
2,2-Dichloropropane	103		-		70-130	-		
1,2-Dichloroethane	114		-		70-130	-		
n-Hexane	111		-		70-130	-		
Isopropyl Ether	100		-		70-130	-		
Ethyl-Tert-Butyl-Ether	109		-		70-130	-		
1,2-Dichloroethene (total)	114		-			-		
1,2-Dichloroethene (total)	114		-			-		
1,1,1-Trichloroethane	112		-		70-130	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: 21-323758.2

Project Number: 21-323758.2

Lab Number: L2140286

Report Date: 08/03/21

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: WG1530005-3								
1,1-Dichloropropene	96		-		70-130	-		
Benzene	98		-		70-130	-		
Carbon tetrachloride	123		-		70-130	-		
Cyclohexane	110		-		70-130	-		
Tertiary-Amyl Methyl Ether	97		-		70-130	-		
Dibromomethane	104		-		70-130	-		
1,2-Dichloropropane	118		-		70-130	-		
Bromodichloromethane	112		-		70-130	-		
1,4-Dioxane	96		-		70-130	-		
Trichloroethene	108		-		70-130	-		
2,2,4-Trimethylpentane	114		-		70-130	-		
Methyl Methacrylate	100		-		40-160	-		
Heptane	119		-		70-130	-		
cis-1,3-Dichloropropene	111		-		70-130	-		
4-Methyl-2-pentanone	125		-		70-130	-		
trans-1,3-Dichloropropene	99		-		70-130	-		
1,1,2-Trichloroethane	112		-		70-130	-		
Toluene	98		-		70-130	-		
1,3-Dichloropropane	82		-		70-130	-		
2-Hexanone	81		-		70-130	-		
Dibromochloromethane	114		-		70-130	-		
1,2-Dibromoethane	95		-		70-130	-		
Butyl Acetate	90		-		70-130	-		

Lab Control Sample Analysis
Batch Quality Control

Project Name: 21-323758.2
Project Number: 21-323758.2

Lab Number: L2140286
Report Date: 08/03/21

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: WG1530005-3								
Octane	89		-		70-130	-		
Tetrachloroethene	94		-		70-130	-		
1,1,1,2-Tetrachloroethane	98		-		70-130	-		
Chlorobenzene	96		-		70-130	-		
Ethylbenzene	102		-		70-130	-		
p/m-Xylene	103		-		70-130	-		
Bromoform	121		-		70-130	-		
Styrene	95		-		70-130	-		
1,1,2,2-Tetrachloroethane	110		-		70-130	-		
o-Xylene	106		-		70-130	-		
1,2,3-Trichloropropane	90		-		70-130	-		
Nonane (C9)	101		-		70-130	-		
Isopropylbenzene	93		-		70-130	-		
Bromobenzene	91		-		70-130	-		
o-Chlorotoluene	92		-		70-130	-		
n-Propylbenzene	99		-		70-130	-		
p-Chlorotoluene	95		-		70-130	-		
4-Ethyltoluene	96		-		70-130	-		
1,3,5-Trimethylbenzene	100		-		70-130	-		
tert-Butylbenzene	100		-		70-130	-		
1,2,4-Trimethylbenzene	105		-		70-130	-		
Decane (C10)	103		-		70-130	-		
Benzyl chloride	**139**	Q	-		70-130	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: 21-323758.2

Project Number: 21-323758.2

Lab Number: L2140286

Report Date: 08/03/21

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: WG1530005-3								
1,3-Dichlorobenzene	103		-		70-130	-		
1,4-Dichlorobenzene	102		-		70-130	-		
sec-Butylbenzene	94		-		70-130	-		
p-Isopropyltoluene	95		-		70-130	-		
1,2-Dichlorobenzene	103		-		70-130	-		
n-Butylbenzene	104		-		70-130	-		
1,2-Dibromo-3-chloropropane	106		-		70-130	-		
Undecane	108		-		70-130	-		
Dodecane (C12)	111		-		70-130	-		
1,2,4-Trichlorobenzene	103		-		70-130	-		
Naphthalene	101		-		70-130	-		
1,2,3-Trichlorobenzene	97		-		70-130	-		
Hexachlorobutadiene	103		-		70-130	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: 21-323758.2

Project Number: 21-323758.2

Lab Number: L2140286

Report Date: 08/03/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 04 Batch: WG1530669-3								
Chlorodifluoromethane	81		-		70-130	-		
Propylene	126		-		70-130	-		
Propane	74		-		70-130	-		
Dichlorodifluoromethane	107		-		70-130	-		
Chloromethane	93		-		70-130	-		
1,2-Dichloro-1,1,2,2-tetrafluoroethane	106		-		70-130	-		
Methanol	83		-		70-130	-		
Vinyl chloride	113		-		70-130	-		
1,3-Butadiene	105		-		70-130	-		
Butane	98		-		70-130	-		
Bromomethane	127		-		70-130	-		
Chloroethane	115		-		70-130	-		
Ethyl Alcohol	79		-		40-160	-		
Dichlorofluoromethane	102		-		70-130	-		
Vinyl bromide	104		-		70-130	-		
Acrolein	85		-		60-113	-		
Acetone	102		-		40-160	-		
Acetonitrile	98		-		70-130	-		
Trichlorofluoromethane	123		-		70-130	-		
iso-Propyl Alcohol	100		-		40-160	-		
Acrylonitrile	84		-		70-130	-		
Pentane	97		-		70-130	-		
Ethyl ether	73		-		70-130	-		

Lab Control Sample Analysis
Batch Quality Control

Project Name: 21-323758.2
Project Number: 21-323758.2

Lab Number: L2140286
Report Date: 08/03/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 04 Batch: WG1530669-3								
1,1-Dichloroethene	126		-		70-130	-		
tert-Butyl Alcohol	104		-		70-130	-		
Methylene chloride	108		-		70-130	-		
3-Chloropropene	130		-		70-130	-		
Carbon disulfide	92		-		70-130	-		
1,1,2-Trichloro-1,2,2-Trifluoroethane	109		-		70-130	-		
trans-1,2-Dichloroethene	106		-		70-130	-		
1,1-Dichloroethane	105		-		70-130	-		
Methyl tert butyl ether	100		-		70-130	-		
Vinyl acetate	104		-		70-130	-		
2-Butanone	113		-		70-130	-		
cis-1,2-Dichloroethene	109		-		70-130	-		
Ethyl Acetate	111		-		70-130	-		
Chloroform	122		-		70-130	-		
Tetrahydrofuran	106		-		70-130	-		
2,2-Dichloropropane	93		-		70-130	-		
1,2-Dichloroethane	124		-		70-130	-		
n-Hexane	100		-		70-130	-		
Isopropyl Ether	87		-		70-130	-		
Ethyl-Tert-Butyl-Ether	84		-		70-130	-		
1,2-Dichloroethene (total)	108		-			-		
1,2-Dichloroethene (total)	108		-			-		
1,1,1-Trichloroethane	102		-		70-130	-		

Lab Control Sample Analysis
Batch Quality Control

Project Name: 21-323758.2
Project Number: 21-323758.2

Lab Number: L2140286
Report Date: 08/03/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 04 Batch: WG1530669-3								
1,1-Dichloropropene	81		-		70-130	-		
Benzene	91		-		70-130	-		
Carbon tetrachloride	111		-		70-130	-		
Cyclohexane	100		-		70-130	-		
Tertiary-Amyl Methyl Ether	75		-		70-130	-		
Dibromomethane	85		-		70-130	-		
1,2-Dichloropropane	95		-		70-130	-		
Bromodichloromethane	111		-		70-130	-		
1,4-Dioxane	104		-		70-130	-		
Trichloroethene	99		-		70-130	-		
2,2,4-Trimethylpentane	103		-		70-130	-		
Methyl Methacrylate	77		-		40-160	-		
Heptane	100		-		70-130	-		
cis-1,3-Dichloropropene	96		-		70-130	-		
4-Methyl-2-pentanone	108		-		70-130	-		
trans-1,3-Dichloropropene	85		-		70-130	-		
1,1,2-Trichloroethane	91		-		70-130	-		
Toluene	88		-		70-130	-		
1,3-Dichloropropane	72		-		70-130	-		
2-Hexanone	96		-		70-130	-		
Dibromochloromethane	100		-		70-130	-		
1,2-Dibromoethane	86		-		70-130	-		
Butyl Acetate	**67**	Q	-		70-130	-		

Lab Control Sample Analysis
Batch Quality Control

Project Name: 21-323758.2
Project Number: 21-323758.2

Lab Number: L2140286
Report Date: 08/03/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 04 Batch: WG1530669-3								
Octane	77		-		70-130	-		
Tetrachloroethene	83		-		70-130	-		
1,1,1,2-Tetrachloroethane	76		-		70-130	-		
Chlorobenzene	89		-		70-130	-		
Ethylbenzene	86		-		70-130	-		
p/m-Xylene	89		-		70-130	-		
Bromoform	87		-		70-130	-		
Styrene	83		-		70-130	-		
1,1,2,2-Tetrachloroethane	99		-		70-130	-		
o-Xylene	92		-		70-130	-		
1,2,3-Trichloropropane	76		-		70-130	-		
Nonane (C9)	74		-		70-130	-		
Isopropylbenzene	75		-		70-130	-		
Bromobenzene	78		-		70-130	-		
o-Chlorotoluene	74		-		70-130	-		
n-Propylbenzene	79		-		70-130	-		
p-Chlorotoluene	72		-		70-130	-		
4-Ethyltoluene	87		-		70-130	-		
1,3,5-Trimethylbenzene	88		-		70-130	-		
tert-Butylbenzene	81		-		70-130	-		
1,2,4-Trimethylbenzene	92		-		70-130	-		
Decane (C10)	80		-		70-130	-		
Benzyl chloride	90		-		70-130	-		

Lab Control Sample Analysis
Batch Quality Control

Project Name: 21-323758.2
Project Number: 21-323758.2

Lab Number: L2140286
Report Date: 08/03/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 04 Batch: WG1530669-3								
1,3-Dichlorobenzene	89		-		70-130	-		
1,4-Dichlorobenzene	86		-		70-130	-		
sec-Butylbenzene	75		-		70-130	-		
p-Isopropyltoluene	76		-		70-130	-		
1,2-Dichlorobenzene	87		-		70-130	-		
n-Butylbenzene	80		-		70-130	-		
1,2-Dibromo-3-chloropropane	83		-		70-130	-		
Undecane	81		-		70-130	-		
Dodecane (C12)	84		-		70-130	-		
1,2,4-Trichlorobenzene	87		-		70-130	-		
Naphthalene	78		-		70-130	-		
1,2,3-Trichlorobenzene	76		-		70-130	-		
Hexachlorobutadiene	88		-		70-130	-		

Lab Duplicate Analysis
Batch Quality Control

Project Name: 21-323758.2
Project Number: 21-323758.2

Lab Number: L2140286
Report Date: 08/03/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1530005-5 QC Sample: L2140286-03 Client ID: SG-3						
Dichlorodifluoromethane	0.337	0.302	ppbV	11		25
Chloromethane	0.562	0.510	ppbV	10		25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	ND	ppbV	NC		25
Vinyl chloride	ND	ND	ppbV	NC		25
1,3-Butadiene	2.15	2.01	ppbV	7		25
Bromomethane	ND	ND	ppbV	NC		25
Chloroethane	ND	ND	ppbV	NC		25
Ethyl Alcohol	15.4	14.4	ppbV	7		25
Vinyl bromide	ND	ND	ppbV	NC		25
Acetone	122	108	ppbV	12		25
Trichlorofluoromethane	0.239	ND	ppbV	NC		25
iso-Propyl Alcohol	2.86	2.73	ppbV	5		25
1,1-Dichloroethene	ND	ND	ppbV	NC		25
tert-Butyl Alcohol	2.42	2.44	ppbV	1		25
Methylene chloride	ND	ND	ppbV	NC		25
3-Chloropropene	ND	ND	ppbV	NC		25
Carbon disulfide	3.89	3.97	ppbV	2		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

Lab Duplicate Analysis
Batch Quality Control

Project Name: 21-323758.2
Project Number: 21-323758.2

Lab Number: L2140286
Report Date: 08/03/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1530005-5 QC Sample: L2140286-03 Client ID: SG-3						
2-Butanone	15.1	14.5	ppbV	4		25
cis-1,2-Dichloroethene	ND	ND	ppbV	NC		25
Ethyl Acetate	ND	ND	ppbV	NC		25
Chloroform	0.562	0.543	ppbV	3		25
Tetrahydrofuran	ND	ND	ppbV	NC		25
1,2-Dichloroethane	ND	ND	ppbV	NC		25
n-Hexane	16.2	16.2	ppbV	0		25
1,1,1-Trichloroethane	ND	ND	ppbV	NC		25
Benzene	7.74	7.94	ppbV	3		25
Carbon tetrachloride	ND	ND	ppbV	NC		25
Cyclohexane	8.03	8.12	ppbV	1		25
1,2-Dichloropropane	ND	ND	ppbV	NC		25
Xylene (Total)	28.9	29.4	ppbV	2		25
Bromodichloromethane	ND	ND	ppbV	NC		25
1,4-Dioxane	ND	ND	ppbV	NC		25
Trichloroethene	ND	ND	ppbV	NC		25
2,2,4-Trimethylpentane	ND	ND	ppbV	NC		25
Heptane	9.60	9.41	ppbV	2		25
cis-1,3-Dichloropropene	ND	ND	ppbV	NC		25
4-Methyl-2-pentanone	2.80	2.74	ppbV	2		25
trans-1,3-Dichloropropene	ND	ND	ppbV	NC		25

Lab Duplicate Analysis
Batch Quality Control

Project Name: 21-323758.2
Project Number: 21-323758.2

Lab Number: L2140286
Report Date: 08/03/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1530005-5 QC Sample: L2140286-03 Client ID: SG-3						
1,1,2-Trichloroethane	ND	ND	ppbV	NC		25
Toluene	22.4	23.2	ppbV	4		25
1,2-Dichloroethene (total)	ND	ND	ppbV	NC		25
2-Hexanone	3.04	3.10	ppbV	2		25
Dibromochloromethane	ND	ND	ppbV	NC		25
1,3-Dichloropropene, Total	ND	ND	ppbV	NC		25
1,2-Dibromoethane	ND	ND	ppbV	NC		25
Tetrachloroethene	1.62	1.73	ppbV	7		25
Chlorobenzene	ND	ND	ppbV	NC		25
Ethylbenzene	4.08	4.13	ppbV	1		25
p/m-Xylene	15.5	15.8	ppbV	2		25
Bromoform	ND	ND	ppbV	NC		25
Styrene	ND	ND	ppbV	NC		25
1,1,2,2-Tetrachloroethane	ND	ND	ppbV	NC		25
o-Xylene	13.4	13.5	ppbV	1		25
4-Ethyltoluene	1.57	1.61	ppbV	3		25
1,3,5-Trimethylbenzene	6.32	6.54	ppbV	3		25
1,2,4-Trimethylbenzene	13.5	13.7	ppbV	1		25
Benzyl chloride	ND	ND	ppbV	NC		25
1,3-Dichlorobenzene	ND	ND	ppbV	NC		25
1,4-Dichlorobenzene	ND	ND	ppbV	NC		25

Lab Duplicate Analysis
Batch Quality Control

Project Name: 21-323758.2
Project Number: 21-323758.2

Lab Number: L2140286
Report Date: 08/03/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1530005-5 QC Sample: L2140286-03 Client ID: SG-3						
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: 21-323758.2

Project Number: 21-323758.2

Lab Number: L2140286

Report Date: 08/03/21

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
L2140286-01	SG-1	02118	SV200	07/26/21	359116		-	-	-	Pass	219	218	0
L2140286-01	SG-1	3210	2.7L Can	07/26/21	359116	L2138920-07	Pass	-29.1	-3.5	-	-	-	-
L2140286-02	SG-2	01227	SV200	07/26/21	359116		-	-	-	Pass	218	118	60
L2140286-02	SG-2	3242	2.7L Can	07/26/21	359116	L2138920-07	Pass	-29.1	-22.4	-	-	-	-
L2140286-03	SG-3	01050	SV200	07/26/21	359116		-	-	-	Pass	218	215	1
L2140286-03	SG-3	2769	2.7L Can	07/26/21	359116	L2138920-07	Pass	-29.1	-1.1	-	-	-	-
L2140286-04	SG-4	0864	SV200	07/26/21	359116		-	-	-	Pass	218	214	2
L2140286-04	SG-4	3171	2.7L Can	07/26/21	359116	L2138920-07	Pass	-29.1	-1.9	-	-	-	-

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L2138920
Report Date: 08/03/21

Air Canister Certification Results

Lab ID: L2138920-07
Client ID: CAN 2032 SHELF 8
Sample Location:

Date Collected: 07/21/21 09:00
Date Received: 07/21/21
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 07/22/21 20:55
Analyst: RY

	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 **Lab Number:** L2138920

Project Number: CANISTER QC BAT **Report Date:** 08/03/21

Air Canister Certification Results

Lab ID: L2138920-07
Client ID: CAN 2032 SHELF 8
Sample Location:

Date Collected: 07/21/21 09:00
Date Received: 07/21/21
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
Xylenes, total	ND	0.600	--	ND	0.869	--		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
1,2-Dichloroethene (total)	ND	1.00	--	ND	1.00	--		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

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L2138920
Report Date: 08/03/21

Air Canister Certification Results

Lab ID: L2138920-07
Client ID: CAN 2032 SHELF 8
Sample Location:

Date Collected: 07/21/21 09:00
Date Received: 07/21/21
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								
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1
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

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L2138920
Report Date: 08/03/21

Air Canister Certification Results

Lab ID: L2138920-07
Client ID: CAN 2032 SHELF 8
Sample Location:

Date Collected: 07/21/21 09:00
Date Received: 07/21/21
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								
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1
Nonane	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1
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: L2138920
Report Date: 08/03/21

Air Canister Certification Results

Lab ID: L2138920-07
Client ID: CAN 2032 SHELF 8
Sample Location:

Date Collected: 07/21/21 09:00
Date Received: 07/21/21
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	89		60-140
Bromochloromethane	98		60-140
chlorobenzene-d5	89		60-140

Project Name: BATCH CANISTER CERTIFICATION **Lab Number:** L2138920

Project Number: CANISTER QC BAT **Report Date:** 08/03/21

Air Canister Certification Results

Lab ID: L2138920-07
Client ID: CAN 2032 SHELF 8
Sample Location:

Date Collected: 07/21/21 09:00
Date Received: 07/21/21
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 07/22/21 20:55
Analyst: RY

	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
Acrolein	ND	0.050	--	ND	0.115	--		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

Project Name: BATCH CANISTER CERTIFICATION **Lab Number:** L2138920

Project Number: CANISTER QC BAT **Report Date:** 08/03/21

Air Canister Certification Results

Lab ID: L2138920-07
Client ID: CAN 2032 SHELF 8
Sample Location:

Date Collected: 07/21/21 09:00
Date Received: 07/21/21
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								
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1
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

Project Name: BATCH CANISTER CERTIFICATION **Lab Number:** L2138920

Project Number: CANISTER QC BAT **Report Date:** 08/03/21

Air Canister Certification Results

Lab ID: L2138920-07
Client ID: CAN 2032 SHELF 8
Sample Location:

Date Collected: 07/21/21 09:00
Date Received: 07/21/21
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								
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
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	89		60-140
bromochloromethane	98		60-140
chlorobenzene-d5	90		60-140

Project Name: 21-323758.2
Project Number: 21-323758.2

Lab Number: L2140286
Report Date: 08/03/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
NA	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2140286-01A	Canister - 2.7 Liter	NA	NA			Y	Absent		TO15-LL(30)
L2140286-02A	Canister - 2.7 Liter	NA	NA			Y	Absent		HOLD-AIR-INV(30)
L2140286-03A	Canister - 2.7 Liter	NA	NA			Y	Absent		TO15-LL(30)
L2140286-04A	Canister - 2.7 Liter	NA	NA			Y	Absent		TO15-LL(30)

*Values in parentheses indicate holding time in days

Project Name:	21-323758.2	**Lab Number:**	L2140286
Project Number:	21-323758.2	**Report Date:**	08/03/21

GLOSSARY

Acronyms

DL	- 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 limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
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.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
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. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
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.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
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.

Report Format: Data Usability Report

Project Name:	21-323758.2	**Lab Number:**	L2140286
Project Number:	21-323758.2	**Report Date:**	08/03/21

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.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

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.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

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.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

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.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

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.

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

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

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

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where

Report Format: Data Usability Report

Project Name:	21-323758.2	**Lab Number:**	L2140286
Project Number:	21-323758.2	**Report Date:**	08/03/21

Data Qualifiers

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.

Project Name:	21-323758.2	**Lab Number:**	L2140286
Project Number:	21-323758.2	**Report Date:**	08/03/21

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, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
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, SM4500NO2-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, SM9222D.**

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, EPA 537.1.

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: 7/28/21

ALPHA Job #: L2140286

Client Information

Client: PSG Engineering & Geology
Address: 362 Fifth Ave Suite 501
New York NY 10001
Phone: 646 273 1290
Fax: 646 513 2381
Email: jlokko@partnersi.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: 21-323758.2
Project Location: Bridge Street East Syracuse NY
Project #: 21-323758.2
Project Manager: Andrew Simonson
ALPHA Quote #:

Turn-Around Time

☑ Standard ☐ RUSH (only confirmed if pre-approved)

Date Due: Time:

Report Information - Data Deliverables

☐ FAX
☑ ADEx
Criteria Checker:
(Default based on Regulatory Criteria indicated)
Other Formats:
☑ EMAIL (standard pdf report)
☐ Additional Deliverables:

Report to: (if different than Project Manager)

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed	Program	Res / Comm

Other Project Specific Requirements/Comments:

Project-Specific Target Compound List: ☐

ANALYSIS

TO-15 VOC
TO-15 SIM
APH (Aliphatic non-petroleum HCs) ☐
Fixed Gases
Sulfides & Mercaptans by TO-15

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	ID Can	ID - Flow Controller	TO-15	TO-15 SIM	APH	Fixed Gases	Sulfides & Mercaptans by TO-15	Sample Comments (i.e. PID)
40286-01	SG-1	7/27/21	11:13	11:23	29.28	2.67	SV	JL	2.7L	3210	0218	X					
02	SG-2	7/27/21	11:43	11:53	29.26	21.30	SV	JL	2.7L	3042	0227	X					
03	SG-3	7/27/21	15:00	15:10	29.13	0.65	SV	JL	2.7L	2769	0165	X					
04	SG-4	7/27/21	14:56	15:06	29.12	1.51	SV	JL	2.7L	3171	0264	X					

*SAMPLE MATRIX CODES

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

Container Type

Relinquished By:	Date/Time	Received By:	Date/Time:
	7/27/21 15:30	AAL	7/27/21 1530
Mike Rodzewicz	7/27/21 15:30		7/28/21 00:25
Wendy Mowry	7/28/21 4:40		7/28/21 0420
T. Hamblin	7/28/21 0530		

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.

APPENDIX D: EPA CALCULATED VISLS

PSG

Commercial Air Inputs

Variable	Commercial Air Default Value	Form-input Value
AF_{gw} (Attenuation Factor Groundwater) unitless	0.001	0.001
AF_{ss} (Attenuation Factor Sub-Slab) unitless	0.03	0.03
AT_{w} (averaging time - composite worker)	365	365
ED_{w} (exposure duration - composite worker) yr	25	25
EF_{w} (exposure frequency - composite worker) day/yr	250	250
ET_{w} (exposure time - composite worker) hr	8	8
THQ (target hazard quotient) unitless	0.1	0.1
LT (lifetime) yr	70	70
TR (target risk) unitless	1.0E-06	1.0E-04

Commercial Vapor Intrusion Screening Levels (VISL)

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; U = user provided; G = see RSL User's Guide Section 5; CA = cancer; NC = noncancer.

Chemical	CAS Number	Does the chemical meet the definition for volatility? (HLC>1E-5 or VP>1)	Does the chemical have inhalation toxicity data? (IUR and/or RfC)	Is Chemical Sufficiently Volatile and Toxic to Pose Inhalation Risk Via Vapor Intrusion from Soil Source? ($C_{vp} > C_{i,a}$,Target?)	Is Chemical Sufficiently Volatile and Toxic to Pose Inhalation Risk Via Vapor Intrusion from Groundwater Source? ($C_{hc} > C_{i,a}$,Target?)	Target Indoor Air Concentration (TCR=0.0001 or THQ=0.1) MIN($C_{ia,c}$,$C_{ia,nc}$) ($\mu g/m^3$)	Toxicity Basis	Target Sub-Slab and Near-source Soil Gas Concentration (TCR=0.0001 or THQ=0.1) C_{sg},Target ($\mu g/m^3$)	Target Groundwater Concentration (TCR=0.0001 or THQ=0.1) C_{gw},Target ($\mu g/L$)
Acetone	67-64-1	Yes	Yes	Yes	Yes	1.35E+04	NC	4.51E+05	9.46E+06
Benzene	71-43-2	Yes	Yes	Yes	Yes	1.31E+01	NC	4.38E+02	5.79E+01
Butadiene, 1,3-	106-99-0	Yes	Yes	Yes	Yes	8.76E-01	NC	2.92E+01	2.91E-01
Butyl Alcohol, t-	75-65-0	Yes	No	No Inhal. Tox. Info	No Inhal. Tox. Info	-		-	-
Carbon Disulfide	75-15-0	Yes	Yes	Yes	Yes	3.07E+02	NC	1.02E+04	5.21E+02
Carbon Tetrachloride	56-23-5	Yes	Yes	Yes	Yes	4.38E+01	NC	1.46E+03	3.88E+01
Chloroform	67-66-3	Yes	Yes	Yes	Yes	4.28E+01	NC	1.43E+03	2.85E+02
Chloromethane	74-87-3	Yes	Yes	Yes	Yes	3.94E+01	NC	1.31E+03	1.09E+02
Cyclohexane	110-82-7	Yes	Yes	Yes	Yes	2.63E+03	NC	8.76E+04	4.29E+02
Dichlorodifluoromethane	75-71-8	Yes	Yes	Yes	Yes	4.38E+01	NC	1.46E+03	3.12E+00
Dichloroethylene, cis-1,2-	156-59-2	Yes	No	No Inhal. Tox. Info	No Inhal. Tox. Info	-		-	-
Ethanol	64-17-5	Yes	No	No Inhal. Tox. Info	No Inhal. Tox. Info	-		-	-
Ethylbenzene	100-41-4	Yes	Yes	Yes	Yes	4.38E+02	NC	1.46E+04	1.36E+03
Heptane, N-	142-82-5	Yes	Yes	Yes	Yes	1.75E+02	NC	5.84E+03	2.14E+00
Hexane, N-	110-54-3	Yes	Yes	Yes	Yes	3.07E+02	NC	1.02E+04	4.17E+00
Hexanone, 2-	591-78-6	Yes	Yes	Yes	Yes	1.31E+01	NC	4.38E+02	3.45E+03
Isopropanol	67-63-0	Yes	Yes	Yes	Yes	8.76E+01	NC	2.92E+03	2.65E+05
Methyl Ethyl Ketone (2-Butanone)	78-93-3	Yes	Yes	Yes	Yes	2.19E+03	NC	7.30E+04	9.41E+05
Methyl Isobutyl Ketone (4-methyl-2-pentanone)	108-10-1	Yes	Yes	Yes	Yes	1.31E+03	NC	4.38E+04	2.33E+05
Tetrachloroethylene	127-18-4	Yes	Yes	Yes	Yes	1.75E+01	NC	5.84E+02	2.42E+01
Toluene	108-88-3	Yes	Yes	Yes	Yes	2.19E+03	NC	7.30E+04	8.07E+03
Trichloroethylene	79-01-6	Yes	Yes	Yes	Yes	8.76E-01	NC	2.92E+01	2.18E+00
Trichlorofluoromethane	75-69-4	Yes	No	No Inhal. Tox. Info	No Inhal. Tox. Info	-		-	-

Commercial Vapor Intrusion Screening Levels (VISL)

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; U = user provided; G = see RSL User's Guide Section 5; CA = cancer; NC = noncancer.

Is Target Groundwater Concentration < MCL? (C_{gw} < MCL?)	Pure Phase Vapor Concentration C_{vp} \ (25 °C)\ (µg/m³)	Maximum Groundwater Vapor Concentration C_{hc} \ (µg/m³)	Temperature for Maximum Groundwater Vapor Concentration (°C)	Lower Explosive Limit LEL (% by volume)	LEL Ref	IUR (ug/m³)$^{-1}$	IUR Ref	RfC (mg/m³)	RfC Ref	Mutagenic Indicator	Carcinogenic VISL TCR=0.0001 $C_{ia,c}$ (µg/m³)	Noncarcinogenic VISL THQ=0.1 $C_{ia,nc}$ (µg/m³)
--	7.25E+08	1.43E+09	25	2.50	U	-		3.09E+01	U	No	-	1.35E+04
No (5)	3.98E+08	4.06E+08	25	1.20	U	7.80E-06	U	3.00E-02	U	No	1.57E+02	1.31E+01
--	6.14E+09	2.21E+09	25	2.00	U	3.00E-05	U	2.00E-03	U	No	4.09E+01	8.76E-01
	1.62E+08	3.70E+08	25	2.40	U	-		-		No	-	-
--	1.47E+09	1.27E+09	25	1.30	U	-		7.00E-01	U	No	-	3.07E+02
No (5)	9.51E+08	8.95E+08	25	-		6.00E-06	U	1.00E-01	U	No	2.04E+02	4.38E+01
No (80)	1.26E+09	1.19E+09	25	-		2.30E-05	U	9.77E-02	U	No	5.33E+01	4.28E+01
--	1.17E+10	1.92E+09	25	8.10	U	-		9.00E-02	U	No	-	3.94E+01
--	4.39E+08	3.37E+08	25	1.30	U	-		6.00E+00	U	No	-	2.63E+03
--	3.15E+10	3.93E+09	25	-		-		1.00E-01	U	No	-	4.38E+01
	1.04E+09	1.07E+09	25	3.00	U	-		-		No	-	-
	1.47E+08	2.04E+08	25	3.30	U	-		-		No	-	-
No (700)	5.48E+07	5.44E+07	25	0.80	U	2.50E-06	U	1.00E+00	U	No	4.91E+02	4.38E+02
--	2.48E+08	2.78E+08	25	1.05	U	-		4.00E-01	U	No	-	1.75E+02
--	7.00E+08	6.99E+08	25	1.10	U	-		7.00E-01	U	No	-	3.07E+02
--	6.25E+07	6.55E+07	25	1.00	U	-		3.00E-02	U	No	-	1.31E+01
--	1.47E+08	3.31E+08	25	2.00	U	-		2.00E-01	U	No	-	8.76E+01
--	3.51E+08	5.19E+08	25	1.40	U	-		5.00E+00	U	No	-	2.19E+03
--	1.07E+08	1.07E+08	25	1.20	U	-		3.00E+00	U	No	-	1.31E+03
No (5)	1.65E+08	1.49E+08	25	-		2.60E-07	U	4.00E-02	U	No	4.72E+03	1.75E+01
No (1000)	1.41E+08	1.43E+08	25	1.10	U	-		5.00E+00	U	No	-	2.19E+03
Yes (5)	4.88E+08	5.15E+08	25	8.00	U	4.10E-06	U	2.00E-03	U	Mut	2.99E+02	8.76E-01
	5.93E+09	4.36E+09	25	-		-		-		No	-	-

Commercial Vapor Intrusion Screening Levels (VISL)

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; U = user provided; G = see RSL User's Guide Section 5; CA = cancer; NC = noncancer.

Chemical	CAS Number	Does the chemical meet the definition for volatility? (HLC>1E-5 or VP>1)	Does the chemical have inhalation toxicity data? (IUR and/or RfC)	Is Chemical Sufficiently Volatile and Toxic to Pose Inhalation Risk Via Vapor Intrusion from Soil Source? ($C_{vp} > C_{i,a}$,Target?)	Is Chemical Sufficiently Volatile and Toxic to Pose Inhalation Risk Via Vapor Intrusion from Groundwater Source? ($C_{hc} > C_{i,a}$,Target?)	Target Indoor Air Concentration (TCR=0.0001 or THQ=0.1) MIN($C_{ia,c}$,$C_{ia,nc}$) ($\mu g/m^3$)	Toxicity Basis	Target Sub-Slab and Near-source Soil Gas Concentration (TCR=0.0001 or THQ=0.1) C_{sg},Target ($\mu g/m^3$)	Target Groundwater Concentration (TCR=0.0001 or THQ=0.1) C_{gw},Target ($\mu g/L$)
Trimethylbenzene, 1,2,4-	95-63-6	Yes	Yes	Yes	Yes	2.63E+01	NC	8.76E+02	1.04E+02
Trimethylbenzene, 1,3,5-	108-67-8	Yes	Yes	Yes	Yes	2.63E+01	NC	8.76E+02	7.33E+01
Xylene, o-	95-47-6	Yes	Yes	Yes	Yes	4.38E+01	NC	1.46E+03	2.07E+02
Xylenes	1330-20-7	Yes	Yes	Yes	Yes	4.38E+01	NC	1.46E+03	1.62E+02

Commercial Vapor Intrusion Screening Levels (VISL)

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; U = user provided; G = see RSL User's Guide Section 5; CA = cancer; NC = noncancer.

Is Target Groundwater Concentration < MCL? (C_{gw} < MCL?)	Pure Phase Vapor Concentration C_{vp} (25 °C) (µg/m³)	Maximum Groundwater Vapor Concentration C_{hc} (µg/m³)	Temperature for Maximum Groundwater Vapor Concentration (°C)	Lower Explosive Limit LEL (% by volume)	LEL Ref	IUR (ug/m³)$^{-1}$	IUR Ref	RfC (mg/m³)	RfC Ref	Mutagenic Indicator	Carcinogenic VISL TCR=0.0001 $C_{ia,c}$ (µg/m³)	Noncarcinogenic VISL THQ=0.1 $C_{ia,nc}$ (µg/m³)
--	1.36E+07	1.44E+07	25	0.90	U	-		6.00E-02	U	No	-	2.63E+01
--	1.60E+07	1.73E+07	25	1.00	U	-		6.00E-02	U	No	-	2.63E+01
--	3.77E+07	3.77E+07	25	0.90	U	-		1.00E-01	U	No	-	4.38E+01
Yes (10000)	4.56E+07	2.87E+07	25	-		-		1.00E-01	U	No	-	4.38E+01

Chemical Properties

Chemical	CAS Number	Does the chemical meet the definition for volatility? (HLC>1E-5 or VP>1)	Does the chemical have inhalation toxicity data? (IUR and/or RfC)	MW	MW Ref	Vapor Pressure VP (mm Hg)	VP Ref	S (mg/L)	S Ref	MCL (ug/L)
Acetone	67-64-1	Yes	Yes	58.08	U	2.32E+02	U	1.00E+06	U	-
Benzene	71-43-2	Yes	Yes	78.12	U	9.48E+01	U	1.79E+03	U	5
Butadiene, 1,3-	106-99-0	Yes	Yes	54.09	U	2.11E+03	U	7.35E+02	U	-
Butyl Alcohol, t-	75-65-0	Yes	No	74.12	U	4.07E+01	U	1.00E+06	U	-
Carbon Disulfide	75-15-0	Yes	Yes	76.14	U	3.59E+02	U	2.16E+03	U	-
Carbon Tetrachloride	56-23-5	Yes	Yes	153.82	U	1.15E+02	U	7.93E+02	U	5
Chloroform	67-66-3	Yes	Yes	119.38	U	1.97E+02	U	7.95E+03	U	80
Chloromethane	74-87-3	Yes	Yes	50.49	U	4.30E+03	U	5.32E+03	U	-
Cyclohexane	110-82-7	Yes	Yes	84.16	U	9.69E+01	U	5.50E+01	U	-
Dichlorodifluoromethane	75-71-8	Yes	Yes	120.91	U	4.85E+03	U	2.80E+02	U	-
Dichloroethylene, cis-1,2-	156-59-2	Yes	No	96.94	U	2.00E+02	U	6.41E+03	U	70
Ethanol	64-17-5	Yes	No	46.07	U	5.93E+01	U	1.00E+06	U	-
Ethylbenzene	100-41-4	Yes	Yes	106.17	U	9.60E+00	U	1.69E+02	U	700
Heptane, N-	142-82-5	Yes	Yes	100.21	U	4.60E+01	U	3.40E+00	U	-
Hexane, N-	110-54-3	Yes	Yes	86.18	U	1.51E+02	U	9.50E+00	U	-
Hexanone, 2-	591-78-6	Yes	Yes	100.16	U	1.16E+01	U	1.72E+04	U	-
Isopropanol	67-63-0	Yes	Yes	60.10	U	4.54E+01	U	1.00E+06	U	-
Methyl Ethyl Ketone (2-Butanone)	78-93-3	Yes	Yes	72.11	U	9.06E+01	U	2.23E+05	U	-
Methyl Isobutyl Ketone (4-methyl-2-pentanone)	108-10-1	Yes	Yes	100.16	U	1.99E+01	U	1.90E+04	U	-
Tetrachloroethylene	127-18-4	Yes	Yes	165.83	U	1.85E+01	U	2.06E+02	U	5
Toluene	108-88-3	Yes	Yes	92.14	U	2.84E+01	U	5.26E+02	U	1000
Trichloroethylene	79-01-6	Yes	Yes	131.39	U	6.90E+01	U	1.28E+03	U	5
Trichlorofluoromethane	75-69-4	Yes	No	137.37	U	8.03E+02	U	1.10E+03	U	-
Trimethylbenzene, 1,2,4-	95-63-6	Yes	Yes	120.20	U	2.10E+00	U	5.70E+01	U	-
Trimethylbenzene, 1,3,5-	108-67-8	Yes	Yes	120.20	U	2.48E+00	U	4.82E+01	U	-
Xylene, o-	95-47-6	Yes	Yes	106.17	U	6.61E+00	U	1.78E+02	U	-
Xylenes	1330-20-7	Yes	Yes	106.17	U	7.99E+00	U	1.06E+02	U	10000

Chemical Properties

HLC (atm-m³/mole)	Henry's Law Constant (unitless)	H` and HLC Ref	Henry's Law Constant Used in Calcs (unitless)	Normal Boiling Point BP (K)	BP Ref	Critical Temperature T_C\ (K)	T_C\ Ref	Enthalpy of vaporization at the normal boiling point $\Delta H_{v,b}$\ (cal/mol)	$\Delta H_{v,b}$\ Ref	Lower Explosive Limit LEL (% by volume)	LEL Ref
3.50E-05	1.43E-03	U	1.43E-03	329.15	U	5.08E+02	U	6960.00	U	2.50	U
5.55E-03	2.27E-01	U	2.27E-01	353.15	U	5.62E+02	U	7340.00	U	1.20	U
7.36E-02	3.01E+00	U	3.01E+00	268.75	U	4.25E+02	U	5370.00	U	2.00	U
9.05E-06	3.70E-04	U	3.70E-04	355.55	U	5.06E+02	U	9340.00	U	2.40	U
1.44E-02	5.89E-01	U	5.89E-01	319.15	U	5.52E+02	U	6390.00	U	1.30	U
2.76E-02	1.13E+00	U	1.13E+00	349.95	U	5.56E+02	U	7130.00	U	-	
3.67E-03	1.50E-01	U	1.50E-01	334.25	U	5.36E+02	U	6990.00	U	-	
8.82E-03	3.61E-01	U	3.61E-01	249.15	U	4.16E+02	U	5110.00	U	8.10	U
1.50E-01	6.13E+00	U	6.13E+00	353.85	U	5.53E+02	U	7160.00	U	1.30	U
3.43E-01	1.40E+01	U	1.40E+01	243.35	U	3.85E+02	U	4800.00	U	-	
4.08E-03	1.67E-01	U	1.67E-01	333.25	U	5.36E+02	U	7220.00	U	3.00	U
5.00E-06	2.04E-04	U	2.04E-04	351.35	U	5.15E+02	U	9220.00	U	3.30	U
7.88E-03	3.22E-01	U	3.22E-01	409.15	U	6.17E+02	U	8500.00	U	0.80	U
2.00E+00	8.18E+01	U	8.18E+01	371.65	U	5.40E+02	U	7590.00	U	1.05	U
1.80E+00	7.36E+01	U	7.36E+01	341.85	U	5.08E+02	U	6900.00	U	1.10	U
9.32E-05	3.81E-03	U	3.81E-03	401.15	U	5.87E+02	U	8690.00	U	1.00	U
8.10E-06	3.31E-04	U	3.31E-04	355.45	U	5.08E+02	U	9520.00	U	2.00	U
5.69E-05	2.33E-03	U	2.33E-03	352.65	U	5.37E+02	U	7480.00	U	1.40	U
1.38E-04	5.64E-03	U	5.64E-03	389.15	U	5.75E+02	U	8240.00	U	1.20	U
1.77E-02	7.24E-01	U	7.24E-01	394.15	U	6.20E+02	U	8290.00	U	-	
6.64E-03	2.71E-01	U	2.71E-01	384.15	U	5.92E+02	U	7930.00	U	1.10	U
9.85E-03	4.03E-01	U	4.03E-01	360.35	U	5.71E+02	U	7500.00	U	8.00	U
9.70E-02	3.97E+00	U	3.97E+00	296.85	U	4.71E+02	U	6000.00	U	-	
6.16E-03	2.52E-01	U	2.52E-01	442.15	U	6.49E+02	U	9370.00	U	0.90	U
8.77E-03	3.59E-01	U	3.59E-01	438.15	U	6.37E+02	U	9320.00	U	1.00	U
5.18E-03	2.12E-01	U	2.12E-01	417.15	U	6.30E+02	U	8660.00	U	0.90	U
6.63E-03	2.71E-01	U	2.71E-01	411.15	U	6.20E+02	U	8520.00	U	-	

Commercial Air Inputs

Variable	Commercial Air Default Value	Form-input Value
AF_{gw} (Attenuation Factor Groundwater) unitless	0.001	0.001
AF_{ss} (Attenuation Factor Sub-Slab) unitless	0.03	0.03
AT_{w} (averaging time - composite worker)	365	365
ED_{w} (exposure duration - composite worker) yr	25	25
EF_{w} (exposure frequency - composite worker) day/yr	250	250
ET_{w} (exposure time - composite worker) hr	8	8
THQ (target hazard quotient) unitless	0.1	0.1
LT (lifetime) yr	70	70
TR (target risk) unitless	1.0E-06	1.0E-05

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Commercial Vapor Intrusion Screening Levels (VISL)

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; U = user provided; G = see RSL User's Guide Section 5; CA = cancer; NC = noncancer.

Chemical	CAS Number	Does the chemical meet the definition for volatility? (HLC>1E-5 or VP>1)	Does the chemical have inhalation toxicity data? (IUR and/or RfC)	Is Chemical Sufficiently Volatile and Toxic to Pose Inhalation Risk Via Vapor Intrusion from Soil Source? ($C_{vp} > C_{i,a}$,Target?)	Is Chemical Sufficiently Volatile and Toxic to Pose Inhalation Risk Via Vapor Intrusion from Groundwater Source? ($C_{hc} > C_{i,a}$,Target?)	Target Indoor Air Concentration (TCR=1E-05 or THQ=0.1) MIN($C_{ia,c}$,$C_{ia,nc}$) ($\mu g/m^3$)	Toxicity Basis	Target Sub-Slab and Near-source Soil Gas Concentration (TCR=1E-05 or THQ=0.1) C_{sg},Target ($\mu g/m^3$)	Target Groundwater Concentration (TCR=1E-05 or THQ=0.1) C_{gw},Target ($\mu g/L$)
Acetone	67-64-1	Yes	Yes	Yes	Yes	1.35E+04	NC	4.51E+05	9.46E+06
Benzene	71-43-2	Yes	Yes	Yes	Yes	1.31E+01	NC	4.38E+02	5.79E+01
Butadiene, 1,3-	106-99-0	Yes	Yes	Yes	Yes	8.76E-01	NC	2.92E+01	2.91E-01
Butyl Alcohol, t-	75-65-0	Yes	No	No Inhal. Tox. Info	No Inhal. Tox. Info	-		-	-
Carbon Disulfide	75-15-0	Yes	Yes	Yes	Yes	3.07E+02	NC	1.02E+04	5.21E+02
Carbon Tetrachloride	56-23-5	Yes	Yes	Yes	Yes	2.04E+01	CA	6.81E+02	1.81E+01
Chloroform	67-66-3	Yes	Yes	Yes	Yes	5.33E+00	CA	1.78E+02	3.55E+01
Chloromethane	74-87-3	Yes	Yes	Yes	Yes	3.94E+01	NC	1.31E+03	1.09E+02
Cyclohexane	110-82-7	Yes	Yes	Yes	Yes	2.63E+03	NC	8.76E+04	4.29E+02
Dichlorodifluoromethane	75-71-8	Yes	Yes	Yes	Yes	4.38E+01	NC	1.46E+03	3.12E+00
Dichloroethylene, cis-1,2-	156-59-2	Yes	No	No Inhal. Tox. Info	No Inhal. Tox. Info	-		-	-
Ethanol	64-17-5	Yes	No	No Inhal. Tox. Info	No Inhal. Tox. Info	-		-	-
Ethylbenzene	100-41-4	Yes	Yes	Yes	Yes	4.91E+01	CA	1.64E+03	1.52E+02
Heptane, N-	142-82-5	Yes	Yes	Yes	Yes	1.75E+02	NC	5.84E+03	2.14E+00
Hexane, N-	110-54-3	Yes	Yes	Yes	Yes	3.07E+02	NC	1.02E+04	4.17E+00
Hexanone, 2-	591-78-6	Yes	Yes	Yes	Yes	1.31E+01	NC	4.38E+02	3.45E+03
Isopropanol	67-63-0	Yes	Yes	Yes	Yes	8.76E+01	NC	2.92E+03	2.65E+05
Methyl Ethyl Ketone (2-Butanone)	78-93-3	Yes	Yes	Yes	Yes	2.19E+03	NC	7.30E+04	9.41E+05
Methyl Isobutyl Ketone (4-methyl-2-pentanone)	108-10-1	Yes	Yes	Yes	Yes	1.31E+03	NC	4.38E+04	2.33E+05
Tetrachloroethylene	127-18-4	Yes	Yes	Yes	Yes	1.75E+01	NC	5.84E+02	2.42E+01
Toluene	108-88-3	Yes	Yes	Yes	Yes	2.19E+03	NC	7.30E+04	8.07E+03
Trichloroethylene	79-01-6	Yes	Yes	Yes	Yes	8.76E-01	NC	2.92E+01	2.18E+00
Trichlorofluoromethane	75-69-4	Yes	No	No Inhal. Tox. Info	No Inhal. Tox. Info	-		-	-

Commercial Vapor Intrusion Screening Levels (VISL)

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; U = user provided; G = see RSL User's Guide Section 5; CA = cancer; NC = noncancer.

Is Target Groundwater Concentration < MCL? (C_{gw} < MCL?)	Pure Phase Vapor Concentration C_{vp}\ (25 °C)\ (µg/m³)	Maximum Groundwater Vapor Concentration C_{hc}\ (µg/m³)	Temperature for Maximum Groundwater Vapor Concentration (°C)	Lower Explosive Limit LEL (% by volume)	LEL Ref	IUR (ug/m³)$^{-1}$	IUR Ref	RfC (mg/m³)	RfC Ref	Mutagenic Indicator	Carcinogenic VISL TCR=1E-05 $C_{ia,c}$ (µg/m³)	Noncarcinogenic VISL THQ=0.1 $C_{ia,nc}$ (µg/m³)
--	7.25E+08	1.43E+09	25	2.50	U	-		3.09E+01	U	No	-	1.35E+04
No (5)	3.98E+08	4.06E+08	25	1.20	U	7.80E-06	U	3.00E-02	U	No	1.57E+01	1.31E+01
--	6.14E+09	2.21E+09	25	2.00	U	3.00E-05	U	2.00E-03	U	No	4.09E+00	8.76E-01
	1.62E+08	3.70E+08	25	2.40	U	-		-		No	-	-
--	1.47E+09	1.27E+09	25	1.30	U	-		7.00E-01	U	No	-	3.07E+02
No (5)	9.51E+08	8.95E+08	25	-		6.00E-06	U	1.00E-01	U	No	2.04E+01	4.38E+01
Yes (80)	1.26E+09	1.19E+09	25	-		2.30E-05	U	9.77E-02	U	No	5.33E+00	4.28E+01
--	1.17E+10	1.92E+09	25	8.10	U	-		9.00E-02	U	No	-	3.94E+01
--	4.39E+08	3.37E+08	25	1.30	U	-		6.00E+00	U	No	-	2.63E+03
--	3.15E+10	3.93E+09	25	-		-		1.00E-01	U	No	-	4.38E+01
	1.04E+09	1.07E+09	25	3.00	U	-		-		No	-	-
	1.47E+08	2.04E+08	25	3.30	U	-		-		No	-	-
Yes (700)	5.48E+07	5.44E+07	25	0.80	U	2.50E-06	U	1.00E+00	U	No	4.91E+01	4.38E+02
--	2.48E+08	2.78E+08	25	1.05	U	-		4.00E-01	U	No	-	1.75E+02
--	7.00E+08	6.99E+08	25	1.10	U	-		7.00E-01	U	No	-	3.07E+02
--	6.25E+07	6.55E+07	25	1.00	U	-		3.00E-02	U	No	-	1.31E+01
--	1.47E+08	3.31E+08	25	2.00	U	-		2.00E-01	U	No	-	8.76E+01
--	3.51E+08	5.19E+08	25	1.40	U	-		5.00E+00	U	No	-	2.19E+03
--	1.07E+08	1.07E+08	25	1.20	U	-		3.00E+00	U	No	-	1.31E+03
No (5)	1.65E+08	1.49E+08	25	-		2.60E-07	U	4.00E-02	U	No	4.72E+02	1.75E+01
No (1000)	1.41E+08	1.43E+08	25	1.10	U	-		5.00E+00	U	No	-	2.19E+03
Yes (5)	4.88E+08	5.15E+08	25	8.00	U	4.10E-06	U	2.00E-03	U	Mut	2.99E+01	8.76E-01
	5.93E+09	4.36E+09	25	-		-		-		No	-	-

Commercial Vapor Intrusion Screening Levels (VISL)

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; U = user provided; G = see RSL User's Guide Section 5; CA = cancer; NC = noncancer.

Chemical	CAS Number	Does the chemical meet the definition for volatility? (HLC>1E-5 or VP>1)	Does the chemical have inhalation toxicity data? (IUR and/or RfC)	Is Chemical Sufficiently Volatile and Toxic to Pose Inhalation Risk Via Vapor Intrusion from Soil Source? ($C_{vp} > C_{i,a}$,Target?)	Is Chemical Sufficiently Volatile and Toxic to Pose Inhalation Risk Via Vapor Intrusion from Groundwater Source? ($C_{hc} > C_{i,a}$,Target?)	Target Indoor Air Concentration (TCR=1E-05 or THQ=0.1) MIN($C_{ia,c}$,$C_{ia,nc}$) ($\mu g/m^3$)	Toxicity Basis	Target Sub-Slab and Near-source Soil Gas Concentration (TCR=1E-05 or THQ=0.1) C_{sg},Target ($\mu g/m^3$)	Target Groundwater Concentration (TCR=1E-05 or THQ=0.1) C_{gw},Target ($\mu g/L$)
Trimethylbenzene, 1,2,4-	95-63-6	Yes	Yes	Yes	Yes	2.63E+01	NC	8.76E+02	1.04E+02
Trimethylbenzene, 1,3,5-	108-67-8	Yes	Yes	Yes	Yes	2.63E+01	NC	8.76E+02	7.33E+01
Xylene, o-	95-47-6	Yes	Yes	Yes	Yes	4.38E+01	NC	1.46E+03	2.07E+02
Xylenes	1330-20-7	Yes	Yes	Yes	Yes	4.38E+01	NC	1.46E+03	1.62E+02

Commercial Vapor Intrusion Screening Levels (VISL)

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; U = user provided; G = see RSL User's Guide Section 5; CA = cancer; NC = noncancer.

Is Target Groundwater Concentration < MCL? (C_{gw} < MCL?)	Pure Phase Vapor Concentration C_{vp} \ (25 °C)\ (µg/m³)	Maximum Groundwater Vapor Concentration C_{hc} \ (µg/m³)	Temperature for Maximum Groundwater Vapor Concentration (°C)	Lower Explosive Limit LEL (% by volume)	LEL Ref	IUR (ug/m³)$^{-1}$	IUR Ref	RfC (mg/m³)	RfC Ref	Mutagenic Indicator	Carcinogenic VISL TCR=1E-05 $C_{ia,c}$ (µg/m³)	Noncarcinogenic VISL THQ=0.1 $C_{ia,nc}$ (µg/m³)
--	1.36E+07	1.44E+07	25	0.90	U	-		6.00E-02	U	No	-	2.63E+01
--	1.60E+07	1.73E+07	25	1.00	U	-		6.00E-02	U	No	-	2.63E+01
--	3.77E+07	3.77E+07	25	0.90	U	-		1.00E-01	U	No	-	4.38E+01
Yes (10000)	4.56E+07	2.87E+07	25	-		-		1.00E-01	U	No	-	4.38E+01

Chemical Properties

Chemical	CAS Number	Does the chemical meet the definition for volatility? (HLC>1E-5 or VP>1)	Does the chemical have inhalation toxicity data? (IUR and/or RfC)	MW	MW Ref	Vapor Pressure VP (mm Hg)	VP Ref	S (mg/L)	S Ref	MCL (ug/L)
Acetone	67-64-1	Yes	Yes	58.08	U	2.32E+02	U	1.00E+06	U	-
Benzene	71-43-2	Yes	Yes	78.12	U	9.48E+01	U	1.79E+03	U	5
Butadiene, 1,3-	106-99-0	Yes	Yes	54.09	U	2.11E+03	U	7.35E+02	U	-
Butyl Alcohol, t-	75-65-0	Yes	No	74.12	U	4.07E+01	U	1.00E+06	U	-
Carbon Disulfide	75-15-0	Yes	Yes	76.14	U	3.59E+02	U	2.16E+03	U	-
Carbon Tetrachloride	56-23-5	Yes	Yes	153.82	U	1.15E+02	U	7.93E+02	U	5
Chloroform	67-66-3	Yes	Yes	119.38	U	1.97E+02	U	7.95E+03	U	80
Chloromethane	74-87-3	Yes	Yes	50.49	U	4.30E+03	U	5.32E+03	U	-
Cyclohexane	110-82-7	Yes	Yes	84.16	U	9.69E+01	U	5.50E+01	U	-
Dichlorodifluoromethane	75-71-8	Yes	Yes	120.91	U	4.85E+03	U	2.80E+02	U	-
Dichloroethylene, cis-1,2-	156-59-2	Yes	No	96.94	U	2.00E+02	U	6.41E+03	U	70
Ethanol	64-17-5	Yes	No	46.07	U	5.93E+01	U	1.00E+06	U	-
Ethylbenzene	100-41-4	Yes	Yes	106.17	U	9.60E+00	U	1.69E+02	U	700
Heptane, N-	142-82-5	Yes	Yes	100.21	U	4.60E+01	U	3.40E+00	U	-
Hexane, N-	110-54-3	Yes	Yes	86.18	U	1.51E+02	U	9.50E+00	U	-
Hexanone, 2-	591-78-6	Yes	Yes	100.16	U	1.16E+01	U	1.72E+04	U	-
Isopropanol	67-63-0	Yes	Yes	60.10	U	4.54E+01	U	1.00E+06	U	-
Methyl Ethyl Ketone (2-Butanone)	78-93-3	Yes	Yes	72.11	U	9.06E+01	U	2.23E+05	U	-
Methyl Isobutyl Ketone (4-methyl-2-pentanone)	108-10-1	Yes	Yes	100.16	U	1.99E+01	U	1.90E+04	U	-
Tetrachloroethylene	127-18-4	Yes	Yes	165.83	U	1.85E+01	U	2.06E+02	U	5
Toluene	108-88-3	Yes	Yes	92.14	U	2.84E+01	U	5.26E+02	U	1000
Trichloroethylene	79-01-6	Yes	Yes	131.39	U	6.90E+01	U	1.28E+03	U	5
Trichlorofluoromethane	75-69-4	Yes	No	137.37	U	8.03E+02	U	1.10E+03	U	-
Trimethylbenzene, 1,2,4-	95-63-6	Yes	Yes	120.20	U	2.10E+00	U	5.70E+01	U	-
Trimethylbenzene, 1,3,5-	108-67-8	Yes	Yes	120.20	U	2.48E+00	U	4.82E+01	U	-
Xylene, o-	95-47-6	Yes	Yes	106.17	U	6.61E+00	U	1.78E+02	U	-
Xylenes	1330-20-7	Yes	Yes	106.17	U	7.99E+00	U	1.06E+02	U	10000

Chemical Properties

HLC (atm-m³/mole)	Henry's Law Constant (unitless)	H` and HLC Ref	Henry's Law Constant Used in Calcs (unitless)	Normal Boiling Point BP (K)	BP Ref	Critical Temperature T_C\ (K)	T_C\ Ref	Enthalpy of vaporization at the normal boiling point $\Delta H_{v,b}$\ (cal/mol)	$\Delta H_{v,b}$\ Ref	Lower Explosive Limit LEL (% by volume)	LEL Ref
3.50E-05	1.43E-03	U	1.43E-03	329.15	U	5.08E+02	U	6960.00	U	2.50	U
5.55E-03	2.27E-01	U	2.27E-01	353.15	U	5.62E+02	U	7340.00	U	1.20	U
7.36E-02	3.01E+00	U	3.01E+00	268.75	U	4.25E+02	U	5370.00	U	2.00	U
9.05E-06	3.70E-04	U	3.70E-04	355.55	U	5.06E+02	U	9340.00	U	2.40	U
1.44E-02	5.89E-01	U	5.89E-01	319.15	U	5.52E+02	U	6390.00	U	1.30	U
2.76E-02	1.13E+00	U	1.13E+00	349.95	U	5.56E+02	U	7130.00	U	-	
3.67E-03	1.50E-01	U	1.50E-01	334.25	U	5.36E+02	U	6990.00	U	-	
8.82E-03	3.61E-01	U	3.61E-01	249.15	U	4.16E+02	U	5110.00	U	8.10	U
1.50E-01	6.13E+00	U	6.13E+00	353.85	U	5.53E+02	U	7160.00	U	1.30	U
3.43E-01	1.40E+01	U	1.40E+01	243.35	U	3.85E+02	U	4800.00	U	-	
4.08E-03	1.67E-01	U	1.67E-01	333.25	U	5.36E+02	U	7220.00	U	3.00	U
5.00E-06	2.04E-04	U	2.04E-04	351.35	U	5.15E+02	U	9220.00	U	3.30	U
7.88E-03	3.22E-01	U	3.22E-01	409.15	U	6.17E+02	U	8500.00	U	0.80	U
2.00E+00	8.18E+01	U	8.18E+01	371.65	U	5.40E+02	U	7590.00	U	1.05	U
1.80E+00	7.36E+01	U	7.36E+01	341.85	U	5.08E+02	U	6900.00	U	1.10	U
9.32E-05	3.81E-03	U	3.81E-03	401.15	U	5.87E+02	U	8690.00	U	1.00	U
8.10E-06	3.31E-04	U	3.31E-04	355.45	U	5.08E+02	U	9520.00	U	2.00	U
5.69E-05	2.33E-03	U	2.33E-03	352.65	U	5.37E+02	U	7480.00	U	1.40	U
1.38E-04	5.64E-03	U	5.64E-03	389.15	U	5.75E+02	U	8240.00	U	1.20	U
1.77E-02	7.24E-01	U	7.24E-01	394.15	U	6.20E+02	U	8290.00	U	-	
6.64E-03	2.71E-01	U	2.71E-01	384.15	U	5.92E+02	U	7930.00	U	1.10	U
9.85E-03	4.03E-01	U	4.03E-01	360.35	U	5.71E+02	U	7500.00	U	8.00	U
9.70E-02	3.97E+00	U	3.97E+00	296.85	U	4.71E+02	U	6000.00	U	-	
6.16E-03	2.52E-01	U	2.52E-01	442.15	U	6.49E+02	U	9370.00	U	0.90	U
8.77E-03	3.59E-01	U	3.59E-01	438.15	U	6.37E+02	U	9320.00	U	1.00	U
5.18E-03	2.12E-01	U	2.12E-01	417.15	U	6.30E+02	U	8660.00	U	0.90	U
6.63E-03	2.71E-01	U	2.71E-01	411.15	U	6.20E+02	U	8520.00	U	-	

Commercial Air Inputs

Variable	Commercial Air Default Value	Form-input Value
AF_{gw} (Attenuation Factor Groundwater) unitless	0.001	0.001
AF_{ss} (Attenuation Factor Sub-Slab) unitless	0.03	0.03
AT_{w} (averaging time - composite worker)	365	365
ED_{w} (exposure duration - composite worker) yr	25	25
EF_{w} (exposure frequency - composite worker) day/yr	250	250
ET_{w} (exposure time - composite worker) hr	8	8
THQ (target hazard quotient) unitless	0.1	0.1
LT (lifetime) yr	70	70
TR (target risk) unitless	1.0E-06	1.0E-06

Commercial Vapor Intrusion Screening Levels (VISL)

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; U = user provided; G = see RSL User's Guide Section 5; CA = cancer; NC = noncancer.

Chemical	CAS Number	Does the chemical meet the definition for volatility? (HLC>1E-5 or VP>1)	Does the chemical have inhalation toxicity data? (IUR and/or RfC)	Is Chemical Sufficiently Volatile and Toxic to Pose Inhalation Risk Via Vapor Intrusion from Soil Source? ($C_{vp} > C_{i,a}$,Target?)	Is Chemical Sufficiently Volatile and Toxic to Pose Inhalation Risk Via Vapor Intrusion from Groundwater Source? ($C_{hc} > C_{i,a}$,Target?)	Target Indoor Air Concentration (TCR=1E-06 or THQ=0.1) MIN($C_{ia,c}$,$C_{ia,nc}$) ($\mu g/m^3$)	Toxicity Basis	Target Sub-Slab and Near-source Soil Gas Concentration (TCR=1E-06 or THQ=0.1) C_{sg},Target ($\mu g/m^3$)	Target Groundwater Concentration (TCR=1E-06 or THQ=0.1) C_{gw},Target ($\mu g/L$)
Acetone	67-64-1	Yes	Yes	Yes	Yes	1.35E+04	NC	4.51E+05	9.46E+06
Benzene	71-43-2	Yes	Yes	Yes	Yes	1.57E+00	CA	5.24E+01	6.93E+00
Butadiene, 1,3-	106-99-0	Yes	Yes	Yes	Yes	4.09E-01	CA	1.36E+01	1.36E-01
Butyl Alcohol, t-	75-65-0	Yes	No	No Inhal. Tox. Info	No Inhal. Tox. Info	-		-	-
Carbon Disulfide	75-15-0	Yes	Yes	Yes	Yes	3.07E+02	NC	1.02E+04	5.21E+02
Carbon Tetrachloride	56-23-5	Yes	Yes	Yes	Yes	2.04E+00	CA	6.81E+01	1.81E+00
Chloroform	67-66-3	Yes	Yes	Yes	Yes	5.33E-01	CA	1.78E+01	3.55E+00
Chloromethane	74-87-3	Yes	Yes	Yes	Yes	3.94E+01	NC	1.31E+03	1.09E+02
Cyclohexane	110-82-7	Yes	Yes	Yes	Yes	2.63E+03	NC	8.76E+04	4.29E+02
Dichlorodifluoromethane	75-71-8	Yes	Yes	Yes	Yes	4.38E+01	NC	1.46E+03	3.12E+00
Dichloroethylene, cis-1,2-	156-59-2	Yes	No	No Inhal. Tox. Info	No Inhal. Tox. Info	-		-	-
Ethanol	64-17-5	Yes	No	No Inhal. Tox. Info	No Inhal. Tox. Info	-		-	-
Ethylbenzene	100-41-4	Yes	Yes	Yes	Yes	4.91E+00	CA	1.64E+02	1.52E+01
Heptane, N-	142-82-5	Yes	Yes	Yes	Yes	1.75E+02	NC	5.84E+03	2.14E+00
Hexane, N-	110-54-3	Yes	Yes	Yes	Yes	3.07E+02	NC	1.02E+04	4.17E+00
Hexanone, 2-	591-78-6	Yes	Yes	Yes	Yes	1.31E+01	NC	4.38E+02	3.45E+03
Isopropanol	67-63-0	Yes	Yes	Yes	Yes	8.76E+01	NC	2.92E+03	2.65E+05
Methyl Ethyl Ketone (2-Butanone)	78-93-3	Yes	Yes	Yes	Yes	2.19E+03	NC	7.30E+04	9.41E+05
Methyl Isobutyl Ketone (4-methyl-2-pentanone)	108-10-1	Yes	Yes	Yes	Yes	1.31E+03	NC	4.38E+04	2.33E+05
Tetrachloroethylene	127-18-4	Yes	Yes	Yes	Yes	1.75E+01	NC	5.84E+02	2.42E+01
Toluene	108-88-3	Yes	Yes	Yes	Yes	2.19E+03	NC	7.30E+04	8.07E+03
Trichloroethylene	79-01-6	Yes	Yes	Yes	Yes	8.76E-01	NC	2.92E+01	2.18E+00
Trichlorofluoromethane	75-69-4	Yes	No	No Inhal. Tox. Info	No Inhal. Tox. Info	-		-	-

Commercial Vapor Intrusion Screening Levels (VISL)

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Is Target Groundwater Concentration < MCL? (C_{gw} < MCL?)	Pure Phase Vapor Concentration C_{vp}\ (25 °C)\ (µg/m³)	Maximum Groundwater Vapor Concentration C_{hc}\ (µg/m³)	Temperature for Maximum Groundwater Vapor Concentration (°C)	Lower Explosive Limit LEL (% by volume)	LEL Ref	IUR (ug/m³)$^{-1}$	IUR Ref	RfC (mg/m³)	RfC Ref	Mutagenic Indicator	Carcinogenic VISL TCR=1E-06 $C_{ia,c}$ (µg/m³)	Noncarcinogenic VISL THQ=0.1 $C_{ia,nc}$ (µg/m³)
--	7.25E+08	1.43E+09	25	2.50	U	-		3.09E+01	U	No	-	1.35E+04
No (5)	3.98E+08	4.06E+08	25	1.20	U	7.80E-06	U	3.00E-02	U	No	1.57E+00	1.31E+01
--	6.14E+09	2.21E+09	25	2.00	U	3.00E-05	U	2.00E-03	U	No	4.09E-01	8.76E-01
	1.62E+08	3.70E+08	25	2.40	U	-		-		No	-	-
--	1.47E+09	1.27E+09	25	1.30	U	-		7.00E-01	U	No	-	3.07E+02
Yes (5)	9.51E+08	8.95E+08	25	-		6.00E-06	U	1.00E-01	U	No	2.04E+00	4.38E+01
Yes (80)	1.26E+09	1.19E+09	25	-		2.30E-05	U	9.77E-02	U	No	5.33E-01	4.28E+01
--	1.17E+10	1.92E+09	25	8.10	U	-		9.00E-02	U	No	-	3.94E+01
--	4.39E+08	3.37E+08	25	1.30	U	-		6.00E+00	U	No	-	2.63E+03
--	3.15E+10	3.93E+09	25	-		-		1.00E-01	U	No	-	4.38E+01
	1.04E+09	1.07E+09	25	3.00	U	-		-		No	-	-
	1.47E+08	2.04E+08	25	3.30	U	-		-		No	-	-
Yes (700)	5.48E+07	5.44E+07	25	0.80	U	2.50E-06	U	1.00E+00	U	No	4.91E+00	4.38E+02
--	2.48E+08	2.78E+08	25	1.05	U	-		4.00E-01	U	No	-	1.75E+02
--	7.00E+08	6.99E+08	25	1.10	U	-		7.00E-01	U	No	-	3.07E+02
--	6.25E+07	6.55E+07	25	1.00	U	-		3.00E-02	U	No	-	1.31E+01
--	1.47E+08	3.31E+08	25	2.00	U	-		2.00E-01	U	No	-	8.76E+01
--	3.51E+08	5.19E+08	25	1.40	U	-		5.00E+00	U	No	-	2.19E+03
--	1.07E+08	1.07E+08	25	1.20	U	-		3.00E+00	U	No	-	1.31E+03
No (5)	1.65E+08	1.49E+08	25	-		2.60E-07	U	4.00E-02	U	No	4.72E+01	1.75E+01
No (1000)	1.41E+08	1.43E+08	25	1.10	U	-		5.00E+00	U	No	-	2.19E+03
Yes (5)	4.88E+08	5.15E+08	25	8.00	U	4.10E-06	U	2.00E-03	U	Mut	2.99E+00	8.76E-01
	5.93E+09	4.36E+09	25	-		-		-		No	-	-

Commercial Vapor Intrusion Screening Levels (VISL)

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; U = user provided; G = see RSL User's Guide Section 5; CA = cancer; NC = noncancer.

Chemical	CAS Number	Does the chemical meet the definition for volatility? (HLC>1E-5 or VP>1)	Does the chemical have inhalation toxicity data? (IUR and/or RfC)	Is Chemical Sufficiently Volatile and Toxic to Pose Inhalation Risk Via Vapor Intrusion from Soil Source? ($C_{vp} > C_{i,a}$,Target?)	Is Chemical Sufficiently Volatile and Toxic to Pose Inhalation Risk Via Vapor Intrusion from Groundwater Source? ($C_{hc} > C_{i,a}$,Target?)	Target Indoor Air Concentration (TCR=1E-06 or THQ=0.1) MIN($C_{ia,c}$,$C_{ia,nc}$) ($\mu g/m^3$)	Toxicity Basis	Target Sub-Slab and Near-source Soil Gas Concentration (TCR=1E-06 or THQ=0.1) C_{sg},Target ($\mu g/m^3$)	Target Groundwater Concentration (TCR=1E-06 or THQ=0.1) C_{gw},Target ($\mu g/L$)
Trimethylbenzene, 1,2,4-	95-63-6	Yes	Yes	Yes	Yes	2.63E+01	NC	8.76E+02	1.04E+02
Trimethylbenzene, 1,3,5-	108-67-8	Yes	Yes	Yes	Yes	2.63E+01	NC	8.76E+02	7.33E+01
Xylene, o-	95-47-6	Yes	Yes	Yes	Yes	4.38E+01	NC	1.46E+03	2.07E+02
Xylenes	1330-20-7	Yes	Yes	Yes	Yes	4.38E+01	NC	1.46E+03	1.62E+02

Commercial Vapor Intrusion Screening Levels (VISL)

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; U = user provided; G = see RSL User's Guide Section 5; CA = cancer; NC = noncancer.

Is Target Groundwater Concentration < MCL? (C_{gw} < MCL?)	Pure Phase Vapor Concentration C_{vp} \ (25 °C)\ (µg/m³)	Maximum Groundwater Vapor Concentration C_{hc} \ (µg/m³)	Temperature for Maximum Groundwater Vapor Concentration (°C)	Lower Explosive Limit LEL (% by volume)	LEL Ref	IUR (ug/m³)$^{-1}$	IUR Ref	RfC (mg/m³)	RfC Ref	Mutagenic Indicator	Carcinogenic VISL TCR=1E-06 $C_{ia,c}$ (µg/m³)	Noncarcinogenic VISL THQ=0.1 $C_{ia,nc}$ (µg/m³)
--	1.36E+07	1.44E+07	25	0.90	U	-		6.00E-02	U	No	-	2.63E+01
--	1.60E+07	1.73E+07	25	1.00	U	-		6.00E-02	U	No	-	2.63E+01
--	3.77E+07	3.77E+07	25	0.90	U	-		1.00E-01	U	No	-	4.38E+01
Yes (10000)	4.56E+07	2.87E+07	25	-		-		1.00E-01	U	No	-	4.38E+01

Chemical Properties

Chemical	CAS Number	Does the chemical meet the definition for volatility? (HLC>1E-5 or VP>1)	Does the chemical have inhalation toxicity data? (IUR and/or RfC)	MW	MW Ref	Vapor Pressure VP (mm Hg)	VP Ref	S (mg/L)	S Ref	MCL (ug/L)
Acetone	67-64-1	Yes	Yes	58.08	U	2.32E+02	U	1.00E+06	U	-
Benzene	71-43-2	Yes	Yes	78.12	U	9.48E+01	U	1.79E+03	U	5
Butadiene, 1,3-	106-99-0	Yes	Yes	54.09	U	2.11E+03	U	7.35E+02	U	-
Butyl Alcohol, t-	75-65-0	Yes	No	74.12	U	4.07E+01	U	1.00E+06	U	-
Carbon Disulfide	75-15-0	Yes	Yes	76.14	U	3.59E+02	U	2.16E+03	U	-
Carbon Tetrachloride	56-23-5	Yes	Yes	153.82	U	1.15E+02	U	7.93E+02	U	5
Chloroform	67-66-3	Yes	Yes	119.38	U	1.97E+02	U	7.95E+03	U	80
Chloromethane	74-87-3	Yes	Yes	50.49	U	4.30E+03	U	5.32E+03	U	-
Cyclohexane	110-82-7	Yes	Yes	84.16	U	9.69E+01	U	5.50E+01	U	-
Dichlorodifluoromethane	75-71-8	Yes	Yes	120.91	U	4.85E+03	U	2.80E+02	U	-
Dichloroethylene, cis-1,2-	156-59-2	Yes	No	96.94	U	2.00E+02	U	6.41E+03	U	70
Ethanol	64-17-5	Yes	No	46.07	U	5.93E+01	U	1.00E+06	U	-
Ethylbenzene	100-41-4	Yes	Yes	106.17	U	9.60E+00	U	1.69E+02	U	700
Heptane, N-	142-82-5	Yes	Yes	100.21	U	4.60E+01	U	3.40E+00	U	-
Hexane, N-	110-54-3	Yes	Yes	86.18	U	1.51E+02	U	9.50E+00	U	-
Hexanone, 2-	591-78-6	Yes	Yes	100.16	U	1.16E+01	U	1.72E+04	U	-
Isopropanol	67-63-0	Yes	Yes	60.10	U	4.54E+01	U	1.00E+06	U	-
Methyl Ethyl Ketone (2-Butanone)	78-93-3	Yes	Yes	72.11	U	9.06E+01	U	2.23E+05	U	-
Methyl Isobutyl Ketone (4-methyl-2-pentanone)	108-10-1	Yes	Yes	100.16	U	1.99E+01	U	1.90E+04	U	-
Tetrachloroethylene	127-18-4	Yes	Yes	165.83	U	1.85E+01	U	2.06E+02	U	5
Toluene	108-88-3	Yes	Yes	92.14	U	2.84E+01	U	5.26E+02	U	1000
Trichloroethylene	79-01-6	Yes	Yes	131.39	U	6.90E+01	U	1.28E+03	U	5
Trichlorofluoromethane	75-69-4	Yes	No	137.37	U	8.03E+02	U	1.10E+03	U	-
Trimethylbenzene, 1,2,4-	95-63-6	Yes	Yes	120.20	U	2.10E+00	U	5.70E+01	U	-
Trimethylbenzene, 1,3,5-	108-67-8	Yes	Yes	120.20	U	2.48E+00	U	4.82E+01	U	-
Xylene, o-	95-47-6	Yes	Yes	106.17	U	6.61E+00	U	1.78E+02	U	-
Xylenes	1330-20-7	Yes	Yes	106.17	U	7.99E+00	U	1.06E+02	U	10000

Chemical Properties

HLC (atm-m³/mole)	Henry's Law Constant (unitless)	H` and HLC Ref	Henry's Law Constant Used in Calcs (unitless)	Normal Boiling Point BP (K)	BP Ref	Critical Temperature T_C\ (K)	T_C\ Ref	Enthalpy of vaporization at the normal boiling point $\Delta H_{v,b}$\ (cal/mol)	$\Delta H_{v,b}$\ Ref	Lower Explosive Limit LEL (% by volume)	LEL Ref
3.50E-05	1.43E-03	U	1.43E-03	329.15	U	5.08E+02	U	6960.00	U	2.50	U
5.55E-03	2.27E-01	U	2.27E-01	353.15	U	5.62E+02	U	7340.00	U	1.20	U
7.36E-02	3.01E+00	U	3.01E+00	268.75	U	4.25E+02	U	5370.00	U	2.00	U
9.05E-06	3.70E-04	U	3.70E-04	355.55	U	5.06E+02	U	9340.00	U	2.40	U
1.44E-02	5.89E-01	U	5.89E-01	319.15	U	5.52E+02	U	6390.00	U	1.30	U
2.76E-02	1.13E+00	U	1.13E+00	349.95	U	5.56E+02	U	7130.00	U	-	
3.67E-03	1.50E-01	U	1.50E-01	334.25	U	5.36E+02	U	6990.00	U	-	
8.82E-03	3.61E-01	U	3.61E-01	249.15	U	4.16E+02	U	5110.00	U	8.10	U
1.50E-01	6.13E+00	U	6.13E+00	353.85	U	5.53E+02	U	7160.00	U	1.30	U
3.43E-01	1.40E+01	U	1.40E+01	243.35	U	3.85E+02	U	4800.00	U	-	
4.08E-03	1.67E-01	U	1.67E-01	333.25	U	5.36E+02	U	7220.00	U	3.00	U
5.00E-06	2.04E-04	U	2.04E-04	351.35	U	5.15E+02	U	9220.00	U	3.30	U
7.88E-03	3.22E-01	U	3.22E-01	409.15	U	6.17E+02	U	8500.00	U	0.80	U
2.00E+00	8.18E+01	U	8.18E+01	371.65	U	5.40E+02	U	7590.00	U	1.05	U
1.80E+00	7.36E+01	U	7.36E+01	341.85	U	5.08E+02	U	6900.00	U	1.10	U
9.32E-05	3.81E-03	U	3.81E-03	401.15	U	5.87E+02	U	8690.00	U	1.00	U
8.10E-06	3.31E-04	U	3.31E-04	355.45	U	5.08E+02	U	9520.00	U	2.00	U
5.69E-05	2.33E-03	U	2.33E-03	352.65	U	5.37E+02	U	7480.00	U	1.40	U
1.38E-04	5.64E-03	U	5.64E-03	389.15	U	5.75E+02	U	8240.00	U	1.20	U
1.77E-02	7.24E-01	U	7.24E-01	394.15	U	6.20E+02	U	8290.00	U	-	
6.64E-03	2.71E-01	U	2.71E-01	384.15	U	5.92E+02	U	7930.00	U	1.10	U
9.85E-03	4.03E-01	U	4.03E-01	360.35	U	5.71E+02	U	7500.00	U	8.00	U
9.70E-02	3.97E+00	U	3.97E+00	296.85	U	4.71E+02	U	6000.00	U	-	
6.16E-03	2.52E-01	U	2.52E-01	442.15	U	6.49E+02	U	9370.00	U	0.90	U
8.77E-03	3.59E-01	U	3.59E-01	438.15	U	6.37E+02	U	9320.00	U	1.00	U
5.18E-03	2.12E-01	U	2.12E-01	417.15	U	6.30E+02	U	8660.00	U	0.90	U
6.63E-03	2.71E-01	U	2.71E-01	411.15	U	6.20E+02	U	8520.00	U	-	

APPENDIX E: NYSDOH SOIL VAPOR/INDOOR AIR DECISION MATRICES

PSG

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.