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Sent via email to joseph.jones@dec.ny.gov

January 31, 2022
IMPL0115.6

Mr. Joseph Jones
New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway, 12th Floor
Albany, New York 12233-7015

Re: Remedial Work Plan
Former Imperial Cleaners Site (BCP #C130225)
218 Lakeville Road, Lake Success, NY

Dear Mr. Jones:

Walden Environmental Engineering, PLLC (Walden) is submitting the *Remedial Work Plan* (attached) for the Former Imperial Cleaners Site on behalf of the owner and BCP Volunteer, 218 Lakeville Acquisition LLC. This Work Plan describes the remedial alternative that will be implemented to achieve the Remedial Action Objectives for the Site as stated in NYSDEC's December 10, 2021 letter to the Volunteer.

Please call me if you have any questions.

Very truly yours,
Walden Environmental Engineering, PLLC

Nora M. Brew

Nora M. Brew, P.E.
VP/Senior Project Manager

cc: R. Corcoran, NYSDEC
A. Tamuno, Esq., NYSDEC
C. Bethoney, NYSDOH
A. Martin, NYSDOH
K. Mintzer, Esq.
N. Weisfeld, 218 Lakeville Aquisition LLC

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Remedial Work Plan

at

Former Imperial Cleaners Site
218 Lakeville Road
Lake Success, New York 11020

NYSDEC BCP Site #C130225

January 2022

Prepared for:

Mr. Joseph Jones
Project Manager
NYS Department of Environmental Conservation
Remedial Bureau A, 11th Floor
625 Broadway
Albany, New York 12233

WALDEN ENVIRONMENTAL ENGINEERING, PLLC
Industry Leader in Environmental Engineering Consulting
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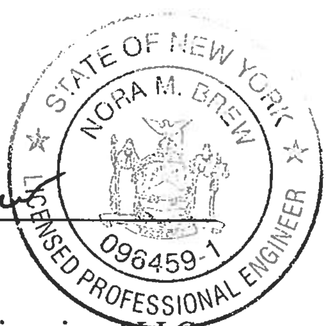
Professional Engineer Certification

I certify that I am currently a professional engineer licensed to practice in New York State in accordance with New York State Education Law, Article 145, Section 7200 et seq. I have completed accredited university courses and degrees in engineering and have sufficient training and experience in remediation, groundwater hydrology, and related fields that enable me to make sound professional judgments with regards to engineering design.

I further certify that this submittal, *Remedial Work Plan*, dated January 31, 2022, was prepared under my direction, in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).



Nora M Brew

1/31/2022

Nora M. Brew, P.E.
Walden Environmental Engineering, PLLC

Date

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1 INTRODUCTION

This *Remedial Work Plan* ("*RWP*") describes the remedial alternative to be implemented at the Former Imperial Cleaners Site, 218 Lakeville Road, Lake Success, New York (the "Site" or "Subject Property"). Walden Environmental Engineering, PLLC ("Walden") has prepared this *RWP* on behalf of 218 Lakeville Aquisition LLC, the Owner of the Subject Property. The remedial alternative will address residual VOC contamination identified during site investigations conducted to characterize soil, groundwater and soil vapor intrusion (SVI) impacts attributable to the Site. These investigations are listed below and summarized in Section 2 of this *RWP*.

- February 2016 SVI Investigation
- April 2019 SVI Investigation
- May 2019 On-Site Soil and Groundwater Investigation
- August-September 2020 On-Site Soil Investigation
- December 2020 Off-Site Groundwater Investigation

These investigations were performed in accordance with work plans approved by the New York State Department of Environmental Conservation ("NYSDEC") and the New York State Department of Health ("NYSDOH"), collectively referred to as "the Departments". The remedial alternative detailed in this *RWP* will achieve the remedial action objectives established for the Subject Property based on the investigation results and will support Site closure and development of a Site Management Plan.

The Subject Property's previous owner, 218 Lakeville Associates L.P., entered into Voluntary Cleanup Agreement ("VCA") #D1-30001-01-03 with the NYSDEC, effective April 18, 2001, to address VOC contamination associated with the Former Imperial Cleaners Site. At that time, the Subject Property was assigned Voluntary Cleanup Program ("VCP") Site No. V-00244-1.

When 218 Lakeville Aquisition LLC purchased the Site on July 28, 2015, the VCA was amended to reflect the change in property ownership. In April 2017, the NYSDEC notified 218 Lakeville Aquisition LLC that the VCP was being terminated, as of March 31, 2018. Therefore, the Owner submitted a Brownfields Cleanup Program ("BCP") application and supporting documentation to NYSDEC in order to complete the required remediation, site closure and post-closure management as a Volunteer participant in the BCP. NYSDEC approved the BCP application and the Former Imperial Cleaners Site was accepted into the Brownfield program and assigned Site #C130225. The Brownfield Cleanup Agreement ("BCA", Index No. C130225-01-18) was fully executed by 218 Lakeville Aquisition LLC (hereinafter "Volunteer") and the NYSDEC on February 12, 2018.

This *RWP* was prepared in accordance with the requirements specified in NYSDEC *DER-10: Technical Guidance for Site Investigation and Remediation* and includes Section 5: Alternatives Analysis which establishes the basis for the selected remedial alternative to achieve the remedial action objectives for the Subject Property.

A brief Site description and summary of the subsurface and SVI investigations completed by the Owner are presented in Section 2. Section 3 presents an exposure assessment which evaluates potential exposures to Site-related contaminants and Section 4 describes the Remedial Action Objectives ("RAOs") for the Site. Section 5 presents the Alternatives Analysis and selection of the proposed on-Site remedy. Section 6 provides a detailed description of the proposed on-Site remedial action and how it will be implemented. Section 7 summarizes the Quality Assurance Project Plan ("QAPP"), Health and Safety Plan ("HASP") and Community Air Monitoring Plan ("CAMP") that will be followed during implementation of the on-Site remedy. Section 8 presents the tentative project schedule and Section 9 discusses the Site Management Plan and Site restrictions that will be prepared once the remedy is implemented.

Note that off-Site SVI impacts attributable to the Former Imperial Cleaners Site will be addressed as an Interim Remedial Measure (IRM) as directed by the Departments. Off-Site SVI mitigation is described separately in the *Generic Interim Remedial Measure Work Plan* (Walden, January 2022).

2 SITE DESCRIPTION AND HISTORY

2.1 Site Description

The Site location is illustrated on **Figure 1**. The Subject Property is a commercial center with a one-story building occupying approximately 4,250 square feet, with four (4) current tenants (CCQ Construction Inc., W Brothers Realty, Tobacco Plaza, Ltd. and Real Eyes Optical) as shown on **Figure 2**. Residential land uses are located south and directly west of the Site. The basement of the on-Site building has concrete block walls and a poured concrete floor slab. Outside the building footprint, the property is completely paved. Note that there is a perched water table underlying the Site at approximately 30 feet below grade, a confining clay layer approximately 35 to 50 feet below grade, and the groundwater table is located approximately 150 feet below land surface. Groundwater flow at the Site varies from west to west-northwest.

2.2 Site History and Investigations/Remediation by Previous Owner

A release of tetrachloroethylene (“PCE”) at the Site was first noted in 1995. The PCE contamination was suspected to originate from floor drains within the tenant space occupied by a dry cleaner (Former Imperial Cleaners) at that time and from a leaching pool and dry well on the property that were associated with the former dry-cleaner operations. A site investigation followed to identify source areas and determine the extent of contaminated soil and groundwater at the Site. The site investigation and remediation work described below was conducted by 218 Lakeville Associates L.P., the previous owner of the Subject Property, as required by NYSDEC under the VCP.

Contaminated sediments were removed from the source areas (dry well, interior floor drains, and leaching pool associated with the Former Imperial Cleaners operations) in 1996 and 2000 to the extent possible without undermining the structures. Post-excavation endpoint soil sampling following the source area removal actions indicated that volatile organic compounds (“VOCs”) remained in the subsurface at concentrations above the NYSDEC TAGM 4046 Recommended Soil Cleanup Objectives (“SCOs”). However, no additional materials were removed because it was determined that further excavation would threaten the integrity of the structures. 218 Lakeville Associates L.P. then installed a soil vapor extraction (“SVE”) system to remove VOC vapors remaining in the soil in order to address the source areas and improve soil and groundwater quality. The SVE system, which consisted of eight (8) vapor extraction wells, began operating in 2001. A soil, soil gas, groundwater and indoor air monitoring program was implemented to track the reductions in VOC concentrations achieved by operation of the SVE system under the VCP.

Site closure sampling (soil, soil vapor and indoor air perc badge sampling) was conducted in November 2007 – January 2008 in accordance with a NYSDEC approved work plan. The closure sampling results indicated that the SVE system had successfully reduced soil contaminant concentrations to below the NYSDEC TAGM 4046 Recommended SCOs. Permanent shutdown of the SVE system was recommended based on the 2007-2008 closure sampling results. 218 Lakeville Associates L.P. subsequently shut down the SVE system circa 2008 without approval from the Departments. These activities occurred approximately seven (7) years before the current Owner/Volunteer purchased the Site or had any involvement in the Site.

2.3 Volunteer's February 2016 Soil Vapor Intrusion Investigation

After 218 Lakeville Aquisition LLC purchased the Subject Property from 218 Lakeville Associates L.P. in July 2015, an SVI investigation was conducted to address the potential for vapor intrusion from contaminated soil vapor and potential impacts on indoor air quality at the Site and neighboring off-Site properties. The SVI investigation was completed in accordance with the NYSDEC approved *Soil Vapor Intrusion Investigation Work Plan* (Work Plan; Walden, December 2015) which was developed in accordance with the guidelines set forth in NYSDEC *DER-13: Strategy for Evaluating Soil Vapor Intrusion at Remedial Sites in New York* (dated October 18, 2006) and NYSDOH *Guidance for Evaluating Soil Vapor Intrusion in the State of New York* (dated October 2006, with updates, referred to herein as "SVI Guidance"). The field work was completed in February 2016 (during the 2015-2016 heating season) and consisted of sub-slab vapor, indoor air, and outdoor air sampling and analysis at the on-Site and off-Site locations shown on **Figure 3**.

The results of this sampling are documented in the May 2017 *Soil Vapor Intrusion Investigation Summary Report*, prepared by Walden and submitted to the NYSDEC. This report is included as an appendix to the *Soil Vapor Intrusion Investigation Summary Report (Revised)* (Walden, September 2021) presented in **Attachment 1**. The significant 2016 SVI investigation findings are summarized as follows:

- The sub-slab sampling results revealed that vapors (mainly PCE and breakdown products trichloroethylene ["TCE"] and cis-1,2-dichloroethylene ["cis-1,2-DCE"]) attributable to the historic release of VOCs at the Former Imperial Cleaners Site remain in the subsurface. While the SVE remedial system at 218 Lakeville Road removed VOCs and reduced concentrations to levels acceptable to NYSDEC and NYSDOH, the current SVI sampling results show that VOC concentrations have rebounded since the SVE system was shut down.
- Based on a comparison of the target compound concentrations reported for the sub-slab and indoor air samples to the concentration ranges compared in the NYSDOH decision matrices, mitigation was recommended for 218 Lakeville Road, 2 University Place and 4 University Place (now known as 6 University Place) to address potential SVI impacts and prevent exposure to VOCs in indoor air.

- The decision matrix comparison indicates that monitoring is recommended to ensure that residual VOCs do not impact indoor air at 220 Lakeville Road; no action is recommended at 216 Lakeville Road.

2.4 Volunteer's April 2019 Soil Vapor Intrusion Investigation

A subsequent SVI investigation was performed in April 2019 to confirm the February 2016 SVI sampling results at the Site and the adjacent property to the south, 220 Lakeville Road, and to evaluate the potential for vapor migration and intrusion at additional off-Site properties not included in the February 2016 investigation. The April 2019 investigation included the collection of sub-slab soil vapor, indoor air and outdoor air samples at the Site, 220 Lakeville Road and one (1) additional off-Site residential property to the west (5 University Place, the only off-Site property to grant permission for sampling) at the locations shown on **Figure 3**. Sampling was performed in accordance with the procedures described in the NYSDEC- and NYSDOH-approved *Soil Vapor Intrusion Investigation Work Plan* (Walden, December 2015).

The results are documented in the *Soil Vapor Intrusion Investigation Summary Report (Revised)* (Walden, September 2021) presented in **Attachment 1**, which indicated that subsurface vapors contain elevated concentrations of VOCs (mainly PCE and breakdown products TCE and cis-1,2-DCE) attributable to historic releases at the Former Imperial Cleaners Site. The SVI sampling data for the April 2019 investigation are presented on **Figure 3.** This figure also includes the February 2016 SVI data for 2 University Place and 4 (now 6) University Place for reference, as permission was not granted to sample these properties during the 2019 event.

The significant SVI investigation findings are summarized as follows:

- The SVI sampling results indicated that the indoor air within the basement of 218 Lakeville Road and the basements of the off-Site properties located at 220 Lakeville Road and 5 University Place meets the air guideline values (AGVs) established by the NYSDOH, with the exception of methylene chloride at 5 University Place. The methylene chloride concentration detected in indoor air sample IA-10 at 5 University Place exceeded the AGV established by the NYSDOH (120 $\mu g/m^3$ vs 60 $\mu g/m^3$ AGV). This methylene chloride concentration within 5 University Place is attributable to an unknown source unrelated to the Site, as this compound was not detected in the sub-slab vapor or outdoor air samples at this location.
- The sub-slab sampling results revealed that vapors (mainly PCE and breakdown products TCE and cis-1,2-DCE) attributable to the historic release of VOCs at the Former Imperial Cleaners Site remain in the subsurface. It is likely that the low permeability clay layer and perched water table located approximately 30 feet below grade in this area, create subsurface conditions which have trapped VOC vapors in the tight pore spaces and possibly on top of the perched water.

- Based on a comparison of the target compound concentrations reported for the sub-slab and indoor air samples with the concentration ranges compared in the SVI Guidance decision matrices, mitigation was recommended for the following off-Site locations 2 University Place, 4 (now 6) University Place and 5 University Place to address potential SVI impacts and prevent exposure to VOCs in indoor air.

2.5 Volunteer's May 2019 On-Site Soil and Groundwater Investigation

A pre-design subsurface investigation performed at the Site in May 2019 included the advancement of fourteen (14) soil borings (GB-1 through GB-14), conversion of seven (7) borings into temporary monitoring wells (TMW-1 through TMW-7), and the collection of twenty-eight (28) soil and seven (7) perched groundwater samples. The sampling locations are shown on **Figure 4**. This investigation was performed to evaluate the nature and extent of residual VOC contamination, to characterize geological conditions at the Site to support the design and implementation of a remediation system, and to identify residual VOC source material to be targeted for excavation. The results were documented in the *Pre-Design Subsurface Investigation Summary Report* (Walden, October 2019). A copy of this report is provided in **Attachment 2** for reference. Refer to **Figure 4** for a summary of the PCE and TCE concentrations detected at the on-Site soil and groundwater sampling locations.

The reported PCE concentration in the sample collected from boring GB-6, located in the southwestern corner of the Site immediately downgradient of stormwater drywell DW-1 at the suspected invert of this drainage structure (14.5-15.5 feet below grade), exceeded the 6 NYCRR/NYSDEC Part 375 NYSDEC SCO for Protection of Groundwater, suggesting that contaminant source material is present in and around this drywell structure. PCE was detected at concentrations exceeding the NYSDEC Class GA Ambient Water Quality Standard of 5 micrograms per liter (μg/L) in all temporary on-Site monitoring wells with the exception of TMW-7.

2.6 Volunteer's Additional On-Site Soil Investigation (August – September 2020) and Off-Site Groundwater Investigation (December 2020)

Additional pre-design subsurface investigations were performed at the Site in August/September and December 2020 to further evaluate on-Site soil and off-Site groundwater conditions as a follow up to the May 2019 on-Site investigation findings. The objectives of these investigations were as follows:

- To focus excavation of on-Site residual VOC source material by delineating the extent of VOC impacted soil in the suspected source areas in the vicinity of dry well DW-1 (see **Figure 5**) and beneath the Former Imperial Cleaners space;

- To support the design and implementation of an SVE system at the Site by identifying geological factors which may affect the radius of influence (ROI) and screened intervals of SVE wells in the unsaturated zone; and
- To evaluate off-Site perched groundwater quality.

Six (6) soil borings (GB-15A through GB-15D; GB-16A and GB-16B) were installed in the vicinity of drywell DW-1 in the rear parking lot near the Former Imperial Cleaners tenant space, and four (4) soil borings (GB-17 through GB-20) were advanced through the concrete slab floor in the basement of the former dry-cleaners space. The soil boring locations are shown on **Figure 5**. Soil samples were selected for laboratory analysis of VOCs based on field observations, PID screening results, and other factors including proximity to suspected source areas and depth.

Four (4) temporary monitoring wells (PW-1 through PW-4) were installed downgradient of the site on University Drive shown on **Figure 5** to evaluate off-Site perched groundwater quality. Groundwater samples were collected from the upper and lower portions of the water column in each well and analyzed for VOCs.

The results of this investigation were documented in the *Additional Pre-Design Subsurface Investigation Report* (Walden, October 2021). A copy of this report is provided in **Attachment 3** for reference. Refer to **Figure 5** for a summary of the PCE and TCE concentrations detected at the on-Site soil and off-Site perched groundwater sampling locations. The results are discussed below.

- Field observations and elevated PID readings indicated evidence of potential soil contamination in the six (6) soil borings advanced in the vicinity of DW-1, particularly in GB-15A; however, no VOCs were detected at concentrations above the 6 NYCRR/NYSDEC Part 375 SCOs for Commercial Site Use and Protection of Groundwater in any of the soil samples collected from these borings.
- PCE was detected in soil samples collected from beneath the basement slab in borings GB-17 and GB-18 at concentrations exceeding the applicable NYSDEC Protection of Groundwater SCO, indicating that VOC-impacted soils remain beneath this portion of the Site building.
- None of the groundwater samples contained VOCs at concentrations above the NYSDEC Class GA Ambient Water Quality Standards, indicating that there are no impacts to the off-Site perched groundwater quality.

3 EXPOSURE ASSESSMENT

An Exposure Assessment has been conducted in accordance with DER-10 to evaluate and document potential exposures to Site-related contaminants now and under reasonably anticipated future use of the Site.

Subsurface investigations have identified PCE and its degradation by-products TCE and cis-1,2-DCE as the primary constituents of concern in soil, perched groundwater and soil vapor at the Former Imperial Cleaners Site. Since the majority of the Site is covered by buildings and pavement, people will not come into contact with Site-related contaminants in soil unless they dig below the surface. Therefore, exposure to contaminated soils via direct contact or ingestion is unlikely and there are currently no complete exposure pathways for contaminants in soil. The planned continued commercial use of the Subject Property, and controls that will be placed on the Site (i.e., environmental easements and Site Management Plan as discussed in Section 9) will prevent future exposure pathways.

A confining clay layer is present approximately 50 feet below the Site and the surrounding area. A perched groundwater table underlies the Site at approximately 35 to 50 feet below grade. The confining clay layer was encountered at all four corners of the Site during on-Site perched groundwater sampling in 2019 and was also encountered during off-Site perched groundwater sampling in 2020. The confining clay layer restricts migration of perched groundwater in the area of the Site to the underlying portions of the Upper Glacial aquifer. The perched groundwater is not a source of drinking water. Rather, the Site and its surrounding area are connected to public water supply systems which source drinking water from the Magothy aquifer, located approximately 150 feet below ground surface, and the deeper Lloyd aquifer. Therefore, no complete exposure pathways for contaminants in groundwater currently exist. Groundwater beneath the Site is not anticipated to be used for any purpose, now or in the foreseeable future.

Impacted soil vapor caused by volatilization of subsurface contaminants (e.g., PCE and TCE) in soil and/or groundwater, if present, migrates through soil pore spaces. These soil vapors can migrate through cracks and penetrations in building foundations/slabs, basement floors, and walls via SVI. Soil vapor may enter on-Site and off-Site buildings under current or future conditions and affect indoor air quality via SVI. Mitigation systems will be installed as described in this *RWP* and the *Generic IRM Work Plan* to effectively control off-Site vapor migration and address potential SVI exposures.

The primary route of exposure to soil is dermal contact during excavation or other intrusive activities at the Site. On-Site soil disturbance may release soil vapors, creating the possibility of exposure to contaminants due to inhalation by on-Site workers or building occupants. Such exposures can be controlled through engineering measures during investigation or construction such as the HASP and CAMP. In addition, controls will be established in the Site Management Plan that will be prepared in accordance with the procedures established by NYSDEC to eliminate any future exposure pathways. If institutional controls are required to restrict or prohibit certain uses or future development of the Subject Property (based on the Site conditions), environmental easement(s) will be prepared and executed in accordance with the procedures established by NYSDEC.

4 REMEDIAL ACTION OBJECTIVES

Based on results of the subsurface and SVI investigations detailed in Section 2, and the Owner's plans for continued commercial use of the Subject Property, remedial action objectives ("RAOs") have been developed to guide the selection of an appropriate remedial alternative for the Site and to support future development of Site closure/management plans.

The selected remedial alternative described in this *RWP* will be implemented to meet the following RAOs:

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.
- Prevent contact with, or inhalation of volatiles, from contaminated groundwater.
- Remove VOCs from the perched groundwater and vadose (unsaturated) zone to the extent practicable.
- Remove the source of ground or surface water contamination.
- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of or exposure to contaminants volatilizing from contaminants in soil.
- Prevent migration of contaminants that would result in groundwater or surface water contamination.
- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at a site.

The selected alternative will be performed in accordance with NYSDEC Standards, Criteria and Guidance ("SCGs") that are applicable apply to the remedial actions. The SCG values that apply to remediation of the Subject Property are as follows:

- Contaminant concentrations in soil are subject to the NYSDEC SCOs based on the lower value for protection of groundwater or commercial use (consistent with current and planned Site use and zoning) as set forth in 6 NYCRR 375-6.8(b) and the Commissioner Policy on Soil Cleanup Guidance (CP-51). The Part 375 SCOs for the contaminants of concern are listed below. All exceedances of applicable Part 375 SCOs shall be evaluated and addressed.
    - PCE – 1.3 mg/kg (protection of groundwater SCO); 150 mg/kg (commercial use SCO)
    - TCE – 0.47 mg/kg (protection of groundwater SCO); 200 mg/kg (commercial use SCO)
    - Cis-1,2-DCE – 0.25 mg/kg (protection of groundwater SCO); 500 mg/kg (commercial use SCO)

- Contaminant concentrations in groundwater are subject to the NYSDEC Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. NYSDEC's Class GA groundwater standards are health-based values developed to protect sources of drinking water. The TOGS 1.1.1 standards for the contaminants of concern are listed below.
    - PCE – 5 µg /L (Class GA groundwater quality standard)
    - TCE – 5 µg /L (Class GA groundwater quality standard)
    - Cis-1,2-DCE – 5 µg /L (Class GA groundwater quality standard)

- The NYSDOH SVI Guidance (latest update May 2017) contains Air Guideline Values (AGVs) that apply to indoor air concentrations for certain VOCs. The AGVs for contaminants detected in indoor air samples collected during on-Site and off-Site SVI investigations are as follows:
    - PCE – 30 µg/m^3
    - TCE – 2 µg/m^3
    - Methylene chloride - 60 µg/m^3

- The State of New York does not have any SCG values for concentrations of volatile chemicals in subsurface vapors, so the sub-slab vapor concentrations cannot be compared to any regulatory threshold values. However, the sub-slab vapor concentrations factor into the decision matrices contained in the NYSDOH SVI guidance. The SVI decision matrices consider the concentrations of PCE, TCE, cis-1,2- DCE, and several other VOCs detected in indoor air samples and sub-slab vapor samples collected concurrently at the same location. The matrices recommend actions (monitoring and/or mitigation) intended to address SVI exposures based on the relationship between the sub-slab vapor and corresponding indoor air concentrations at a given sampling location. The NYSDOH SVI Guidance (latest update May 2017) decision matrices recommend mitigation based on indoor air and sub-slab vapor concentrations as follows:
    - PCE (Matrix B) – indoor air concentration 10 µg/m^3 and above AND sub-slab vapor concentration 100 µg/m^3 and above; OR sub-slab vapor concentration 1,000 µg/m^3 and above (regardless of indoor air concentration)
    - TCE (Matrix A) – indoor air concentration 1 µg/m^3 and above AND sub-slab vapor concentration 6 µg/m^3 and above; OR sub-slab vapor concentration 60 µg/m^3 and above (regardless of indoor air concentration)
    - Cis-1,2-DCE (Matrix A) – indoor air concentration 1 µg/m^3 and above AND sub-slab vapor concentration 6 µg/m^3 and above; OR sub-slab vapor concentration 60 µg/m^3 and above (regardless of indoor air concentration)

5 ALTERNATIVES ANALYSIS

This Alternatives Analysis (AA) has been prepared in accordance with the requirements specified in NYSDEC DER-10 and establishes the basis for the selected remedial alternative to be implemented at the Subject Property.

This AA does not address off-Site SVI impacts attributable to the Site; these impacts will be addressed separately as an IRM as described in the *Generic Interim Remedial Measure Work Plan* (Walden, January 2022). Under the IRM, sub-slab depressurization (SSD) systems will be installed in off-Site properties that have been identified as requiring mitigation based on SVI sampling data and whose owners provide access for the installation. All IRM activities will be performed in accordance with the *Generic IRM Work Plan* and NYSDEC/NYSDOH requirements.

5.1 Development & Initial Screening of Remedial Alternatives

<u>No Further Action/Monitored Natural Attenuation (MNA)</u>
MNA allows the biological processes already prevalent in the subsurface to naturally breakdown VOCs. A scheduled sub-slab vapor and indoor air monitoring program would be conducted to assess the effective progress of the in-situ microbial population, with focus on exposure to receptive populations. This monitoring program would be in operation during heating seasons, when risk of exposure is highest to the susceptible population.

<u>Excavation of On-Site VOC-Impacted Soil</u>
Excavating VOC-impacted soil at a site removes VOC mass and reduces the source of VOC vapors, thereby expediting the time it takes to meet the RAOs. As discussed in Section 2.6, soil sampling conducted at the Site in August – September 2020 indicated evidence of VOC-impacted soils remaining in the vicinity of dry well DW-1 in the southwest corner of the rear parking lot, and beneath the building slab in the Former Imperial Cleaners space. Excavation and off-Site disposal of this residual source material would reduce the overall remedial timeframe for the Site. Soil removal would be guided based on field observations and screening, and the limits of remedial excavation would be determined based on endpoint sampling to confirm that the soils meet applicable SCOs to the extent practicable. Residual contamination that remains on-Site after the remedial excavation is completed would be documented accordingly.

<u>Sub-slab Depressurization (SSD)</u>
SSD involves installing control measures to prevent contaminated soil vapors from entering the lowest level of susceptible buildings. The SSD system design would specify fans and piping to draw vapors from beneath the building slabs at the Subject Property. This is intended to create an

adequate vacuum to control the sub-slab VOC vapors and prevent vapors from entering the building to avoid indoor air quality impacts. Monitoring of sub-slab vapors and indoor air during heating seasons would be performed to gauge the effectiveness of the on-Site SSD system to determine if indoor air quality impacts are controlled. The SSD is not designed to be a remedial action and is only a mitigative measure. Additional engineering and institutional controls will be required to ensure potential vapor intrusion exposures are addressed.

<u>Soil Vapor Extraction (SVE)</u>
SVE systems extract gaseous phase contaminants from the soil pore space (in the unsaturated zone), encouraging VOCs to desorb from soils and partition into the vapor phase for capture by the SVE wells and treatment above ground. The SVE system design would specify the locations of on-Site SVE wells and their ROI, or the effective area from which a system creates a vacuum to collect vapors.

Air sparging is an efficient and widely used method that is often utilized in conjunction with SVE to enhance removal of VOCs from shallow groundwater. Air sparging is an in-situ remedial process in which compressed air is released through a well point below the water table, and the released air rises to the surface of groundwater and escapes to the vadose (unsaturated) zone. As the air rises, expands, and passes through the groundwater, dissolved VOCs volatize with the passing air bubbles and migrate to the water surface where they escape into the vadose zone. These gasses can then be removed from the vadose zone utilizing SVE wells.

Pilot testing would be conducted to determine the ROI and screen zones of SVE wells in the unsaturated zone to capture VOC vapors. Pilot testing would also be conducted to determine air sparging specifications to enhance the effectiveness of the on-Site SVE system.

The on-Site SVE system would be installed outside the 218 Lakeville Road building footprint to effectively contain VOCs on-Site and prevent off-Site VOC vapor migration while also actively removing vapors from the unsaturated zone, thus reducing the residual VOC mass at the Subject Property. Air sparging would be utilized to enhance VOC removal from perched groundwater.

In addition, the SVE system would use SVE wells to create a vacuum to capture VOC vapors within the SVE wells' zone of influence in the unsaturated zone. Therefore, once the new SVE system begins operating, monitoring would be conducted to confirm the SVE system's zone of influence and verify that the SVE system controls VOC migration from the Site. Timely environmental sampling of VOCs throughout the ROI would be performed to determine the effectiveness of the remediation system and indicate when the system has met the remedial action objectives. The on-Site SVE alternative would also include annual monitoring of sub-slab vapors and indoor air during heating seasons to gauge the effectiveness of the SVE system in preventing indoor air quality impacts at the Subject Property.

5.1.1 *Screening Based on Protection of Public Health, Environment*

No Further Action/MNA Alternative: This remedial alternative would not accelerate the treatment of contamination and would not achieve Remedial Action Objectives.

Excavation of On-Site VOC-Impacted Soil Alternative: Excavating VOC-impacted soils removes VOC mass and reduces the source of VOC vapors, thereby expediting the time it takes to meet the RAOs for a site.

SSD Alternative: An SSD system mitigates impacts to the human health by preventing vapor phase contaminants from entering indoor spaces, achieving remedial action objectives by protecting human health. However, this system would not hinder the migration of subsurface contamination.

SVE Alternative: An SVE system would achieve the remedial action objectives by preventing the buildup of contaminated indoor air by creating a preferential pathway for soil vapors into vapor extraction wells, instead of cracks in foundations. This system also prevents the migration of contaminants off-Site and offers the ability to treat the on-Site soil to the point of achieving the SCGs. Coupling SVE with air sparging would increase VOC mass removal.

5.1.2 *Screening Based on Contamination Sources Removal*

No Further Action/MNA Alternative: This remedial alternative would not actively or fully remove contaminant sources and would not achieve the RAOs.

Excavation of On-Site VOC-Impacted Soil Alternative: Excavating source material and removing it from the Site would remove VOC mass and reduce the source of VOC vapors.

SSD Alternative: SSD systems do not specifically address the contaminant sources or soils with elevated VOC concentrations, allowing contamination to remain underground, but preventing it from accumulating in buildings.

SVE Alternative: SVE systems encourage the release of VOCs from soil and into the vapor phase, where the contaminants are collected and treated aboveground. This remedial strategy addresses and treats the source of impaired indoor air quality, removing it from the environment below and around the building slabs. Coupling SVE with air sparging to release VOCs from perched groundwater for capture by SVE wells would increase VOC mass removal.

5.1.3 Screening Based on Contamination Containment

No Further Action/MNA Alternative: This remedial alternative would not contain on-Site contaminants and would not achieve Remedial Action Objectives.

Excavation of On-Site VOC-Impacted Soil Alternative: This alternative would remove VOCs from the subsurface and reduce the source of VOC vapors. This would limit the mass of VOC vapors that could migrate off-Site.

SSD Alternative: The SSD remedial alternative offers no containment of subsurface PCE and its byproducts and would not create a barrier to prevent the spread of contamination in the subsurface. SSD systems only offer building-by-building protection.

SVE Alternative: The ROI of an SVE system represents the volume of subsurface media from which all soil vapors are collected and treated by the aboveground equipment. When designing the system, the ROI is the most important parameter for preventing the spread of contamination. Pilot testing of the SVE system would support the design of a remedial system that removes VOC mass and controls VOC vapor migration from the Site.

5.1.4 Screening Based on Elimination of Exposure

No Further Action/MNA Alternative: This remedial alternative would not prevent exposure to VOCs and would not achieve Remedial Action Objectives.

Excavation of On-Site VOC-Impacted Soil Alternative: Once VOC-impacted soils are excavated and removed from the Site, the potential for exposure to contaminants in this material would be eliminated.

SSD Alternative: Engineered controls are implemented in an SSD system to prevent exposure to VOCs. The pressure gradient effectively prevents vapors from entering the building environment for which it is designed.

SVE Alternative: SVE prevents exposure to contamination by diverting the path of vapors into extraction wells, where they are collected for treatment. The vacuum created by the SVE system would prevent VOCs from migrating within the ROI to eliminate exposure to building occupants within the treatment zone. The SVE system would prevent VOC migration from the Site.

5.1.5 Screening Based on Treatment of Source at Exposure

No Further Action/MNA Alternative: This remedial alternative would not treat or prevent exposure to VOC vapors, and would not achieve Remedial Action Objectives.

Excavation of On-Site VOC-Impacted Soil Alternative: This alternative would reduce the potential for exposure to contaminants and remove a source of VOC vapors by excavation and disposal; however, source material would not be treated.

SSD Alternative: SSD systems prevent human exposure by preventing VOC vapors from entering buildings, but do not treat contamination.

SVE Alternative: SVE systems have two forms of treatment, the collection of volatile contaminants at the wellhead and the effect of pulling fresh air into the voids that were previously filled with contaminated soil vapor, which may also enhance bio-activity.

5.1.6 Screening Based on Groundwater Protection Measures

No Further Action/MNA Alternative: This remedial alternative would not provide groundwater protection.

Excavation of On-Site VOC-Impacted Soil Alternative: By removing VOC source material and reducing VOC mass in the subsurface, this alternative would protect local perched groundwater.

SSD Alternative: This strategy does not remove VOCs from the subsurface and would not actively protect local perched groundwater.

SVE Alternative: By actively removing VOCs from the subsurface and encouraging the volatilization and capture of the contaminants, an SVE system would reduce subsurface VOC concentrations and protect local perched groundwater. Coupling SVE with air sparging would increase VOC mass removal.

5.2 Detailed Evaluation of Remedial Alternatives

Based on the remedial alternatives screening presented in Section 5.1, the No Further Action/MNA Alternative is not carried through the detailed evaluation below because it offers no protection from exposure to VOC vapors and would not achieve the remedial action objectives. Therefore, the other three (3) alternatives (excavation of on-Site VOC-impacted soil, SSD and SVE) are evaluated in detail as follows.

5.2.1 *Threshold Criteria*

Overall Protection of Public Health and the Environment

The SVE Alternative provides more extensive public health and environmental protection than the SSD Alternative by addressing the contamination by actively removing VOCs from the subsurface, capturing VOCs on-Site, eliminating off-Site VOC vapor migration, and preventing soil vapors from accumulating in basements. Coupling SVE with air sparging would increase VOC mass removal. The Excavation of VOC-impacted Soil Alternative would also actively remove VOC mass from the Site, reduce the source of VOC vapors, and eliminate exposure via direct contact and ingestion to protect public health and the environment.

Ability to Reach RAOs

While the SSD Alternative would achieve compliance with remedial goals for indoor air quality, the SVE Alternative and the Excavation of VOC-impacted Soil Alternative would both go a step further to actively remove contaminants from the subsurface. The extent of source material excavation would be based on the 6 NYCRR 375-6.8(b) SCOs based on the lower value for protection of groundwater or commercial site use, subject to structural and safety limitations.

SCG Compliance

The SSD and SVE Alternatives would effectively reduce indoor air contaminant concentrations below the NYSDOH SVI Guidance matrix threshold levels. The SVE Alternative presents the ability to achieve relevant soil SCGs for commercial use by actively extracting VOCs from the unsaturated zone. Coupling SVE with air sparging to release VOCs from perched groundwater for capture by SVE wells would increase VOC mass removal. The SSD Alternative would not expedite the reduction in soil contamination concentrations that would be achieved by monitored natural attenuation. The Excavation of VOC-impacted Soil Alternative would actively remove contaminants from the subsurface to achieve SCOs based on the lower value for protection of groundwater or commercial site use, subject to structural and safety limitations.

5.2.2 *Balancing Criteria*

Long-term Effectiveness and Permanence

The SSD and SVE Alternatives would mitigate human exposures while the respective systems are in operation, however the SVE Alternative would remove the contaminant source, eliminating the risk of long-term human and environmental health effects after system shutdown. The Excavation of VOC-impacted Soil Alternative would eliminate the potential for exposure to contaminants in this material once it is removed from the Site.

Reduction of Toxicity, Mobility or Volume of Contaminant
The SVE Alternative would more effectively reduce the mobility and volume of contamination in the subsurface by actively capturing and removing VOCs. Coupling SVE with air sparging would increase VOC mass removal. The SSD Alternative would prevent VOC vapors from migrating into the on-Site building but would not reduce the volume of VOCs. The Excavation of VOC-impacted Soil Alternative would remove contaminated material to reduce the volume of VOCs at the Site.

Short-term Effectiveness
All three (3) alternatives would be effective in preventing potential human exposures immediately upon implementation. Excavation of VOC-impacted soil would commence quickly once contractors are retained to perform the work. The SSD and SVE Alternatives would both involve pilot testing, full-scale design, system installation and start-up. Because the remediation work will be performed within the Site boundaries, none of the alternatives would be subject to delays typically encountered when off-Site access and approvals are involved.

Implementation/Feasibility
All three (3) alternatives are feasible and could be implemented at the Site. Excavation of VOC-impacted soil at the Site would be performed in conjunction with the Owner's planned improvements to the rear parking lot. The excavations would be protected according to federal, state and local health and safety regulations to ensure excavation integrity and worker safety. The excavation beneath the building slab would be subject to structural and safety limitations. Impacted soils will be removed to the extent feasible given access constraints in the basement and subsurface conditions.

SSD and SVE systems are widely installed to mitigate VOC impacts. Pilot tests would be completed at the Site to ensure that the SSD and SVE systems are designed effectively in order to achieve the RAOs. All SVE system equipment would be installed within a sound-proof treatment enclosure on-Site.

Cost Effectiveness
The capital costs of implementing the SVE Alternative at the Subject Property would be greater compared to SSD, but the increased effectiveness of SVE in remediating subsurface contamination and removing VOC mass, while protecting against off-Site VOC vapor migration make SVE a cost-effective option for the Site. The Excavation of VOC-impacted Soil Alternative would also be cost-effective since the work would be performed in conjunction with other planned Site improvements; thus, mobilization costs would be controlled.

Anticipated Future Land Use
There is no anticipated change to the land use on-Site; the Site owners intend to continue the commercial use consistent with current zoning.

Community Acceptance
This criterion will be evaluated after public review of the remedy selection process in accordance with the BCP requirements. Public comments will be gathered by the State to document the community acceptance of the proposed remedy to grant final approval for the selected strategy. Public sentiment will be evaluated in accordance with *DER 23 – Citizen Participation Handbook*.

5.3 Proposed Remedy

Based on the Alternatives Analysis, the proposed remedy for the Site will be a combination of all three (3) remedial options that were carried through the detailed evaluation in Section 5.2. This remedy will protect public health and the environment, remove the source of contamination to the extent practicable, provide on-Site containment of VOCs, prevent off-Site VOC vapor migration, and comply with applicable SCGs. Each component of the proposed comprehensive remedy will contribute to achieving the RAOs for the Site as discussed below.

The Volunteer intends to excavate residual VOC-contaminated soils identified at the Site around the rear parking lot dry well (DW-1) and beneath the building at the Site. Excavation will remove VOC mass from the Site, reduce the source of VOC vapors, and eliminate exposure via direct contact and ingestion.

A remedial system will be installed at the Subject Property, employing both SSD and SVE systems to prevent SVI into the on-Site building and to achieve further contaminant source removal by extracting VOC vapors from subsurface while containing VOCs on-Site and preventing off-Site vapor migration. Air sparging will be implemented in conjunction with SVE to enhance VOC removal from perched groundwater beneath the Site. Coupling this enhanced remedy with the targeted removal of contaminated soils from the Site will serve to remove VOCs from the subsurface to the extent practicable.

Section 6 presents a detailed description of the proposed remedy and how it will be implemented at the Site to achieve the RAOs.

6 DETAILED DESCRIPTION OF PROPOSED REMEDY

The components of the comprehensive remedy for the Site are detailed below. The remainder of this *RWP* details how this alternative will be implemented, upon approval by the Departments and following the BCP-required 45-day public comment period.

6.1 Excavation of VOC-Impacted Soil

Excavation of VOC-impacted soil that was identified based on the August – September 2020 on-Site investigation will be completed during the first phase of remediation at the Subject Property. The approximate areas targeted for excavation correspond with the sampling locations shown on **Figure 5**.

The excavation work will be performed in accordance with the following plans which are provided in **Appendices A through C**:

- Quality Assurance Project Plan ("QAPP", **Appendix A**)
- Health and Safety Plan ("HASP", **Appendix B**)
- Community Air Monitoring Plan with Special Requirements ("CAMP", **Appendix C**)

The CAMP will be implemented during on-Site ground intrusive activities. Because the intrusive activities will be performed within and in the vicinity of occupied buildings, the CAMP includes special requirements for monitoring to ensure that building occupants are not exposed to VOCs and particulates released during the on-Site remediation work.

Air monitoring for VOCs and particulates shall take place during intrusive work activities that take place within the on-Site building. The VOC and particulate concentrations shall be collected prior to the start of work each day to obtain a baseline condition of the space for that workday.

Walden will record the VOC and dust concentrations at each monitoring station at regular intervals (minimum every 30 minutes) during the work day to ensure that appropriate actions are implemented when needed based on the CAMP action levels presented below. If the action levels for VOCs or dust are exceeded, exhaust fans or other engineering controls may be used on an as-needed basis to create negative air pressure within the work area during the intrusive construction activities. Dust and particulate control measures, such as water misting, may also be implemented to prevent generation of dust and particulate matter during the work activities as needed.

CAMP air monitoring reports will be submitted to NYSDEC and NYSDOH on a weekly basis during the intrusive remediation work. Daily reports will be prepared if requested by the Departments.

The excavations will be protected according to federal, state and local health and safety regulations to ensure excavation integrity and worker safety. In addition, the work will comply with all applicable requirements of OSHA Section P – Excavation, Trenching, Shoring (29 CFR Part 1926.650-1926.652).

6.1.1 Excavation of Impacted Soils in the Vicinity of DW-1

The Owner will proceed with planned improvements to the rear parking lot, including installation of new drainage structures and pavement. The existing stormwater drywells (DW-1 and DW-2) will be taken out of use as new drainage structures are installed in the parking lot. During the excavation work associated with removing DW-1, Walden will perform oversight to identify and remove VOC-impacted soils remaining in this area. Excavation of impacted soils is expected to focus on the area surrounding the east side of DW-1, beginning in the vicinity of GB-15A, as shown on **Figure 5**. This area will be over-excavated to remove impacted soils based on field observations and screening during the drainage upgrades planned by the Owner. It is estimated that approximately 50 – 60 cubic yards of impacted soil will be excavated and disposed of off-Site, assuming a 10-foot-deep horizon of impacted soil spans the bottom of the dry well and extends approximately 5 feet out from the leaching rings around the eastern half of DW-1.

The soil removal will be guided based on field observations and screening. The limits of remedial excavation in this area will be determined in the field and verified by endpoint sampling; two (2) bottom samples and four (4) sidewall samples will be collected from the excavation and analyzed for VOCs by USEPA Method 5035. The endpoint sampling results will be compared to the 6 NYCRR Part 375-6.8(b) NYSDEC Commercial Use and Protection of Groundwater SCOs to confirm that no VOC-contaminated soils remain in place to the extent practicable. Residual contamination that will remain on-Site after the remedial excavation is completed will be documented accordingly.

Impacted soils identified based on field observations and screening will be stockpiled in the rear parking area and segregated from clean fill material excavated during the work. The impacted material will be placed on plastic sheeting and covered with anchored tarps. The stockpiles will be surrounded with hay bales, silt fencing or other erosion and sedimentation control measures. The stockpiled soils will be sampled and characterized; the waste classification analytical parameters will be established by the disposal facility. The soil sampling results will be compared to the NYCRR Part 375-6.8(b) NYSDEC

Commercial Use SCOs and CP-51 to characterize the excavated soils for off-Site disposal.

Walden will prepare a Soil Remediation Summary Report which details the excavation work, soil removal, sampling activities and analytical results to document the remedial work completed in the vicinity of DW-1.

6.1.2 Excavation of Impacted Soils Beneath the Former Imperial Cleaners Space

A limited portion (approximately 10 ft by 10 ft) of the slab beneath the Former Imperial Cleaners space (in the area of FD-2, GB-17 and GB-18 as shown on **Figure 5**) will be sawcut and removed in order to excavate underlying impacted soils where PCE concentrations exceeded the applicable SCOs based on the September 2020 sampling results. A structural evaluation will be performed to ensure that removing a portion of the slab will not impact the structural integrity of the building. Impacted soils will be removed to the extent feasible given access constraints in the basement and subsurface conditions. It is estimated that approximately 15 cubic yards of impacted soil will be excavated and disposed of off-Site, assuming soils extending to 4 ft below the slab are impacted by VOCs.

The soil removal will be guided based on field observations and screening. The limits of remedial excavation beneath the slab will be determined in the field and verified by endpoint sampling; two (2) bottom samples and four (4) sidewall samples will be collected from the excavation and analyzed for VOCs by USEPA Method 5035. The endpoint sampling results will be compared to the 6 NYCRR Part 375-6.8(b) NYSDEC Commercial Use and Protection of Groundwater SCOs to confirm that no VOC-contaminated soils remain in place to the extent practicable. Residual contamination that will remain on-Site after the remedial excavation is completed will be documented accordingly.

Impacted soils removed from beneath the slab will be stockpiled outdoors in the rear parking area on plastic sheeting and covered with anchored tarps. The stockpiles will be surrounded with hay bales, silt fencing or other erosion and sedimentation control measures. The stockpiled soils will be sampled and characterized; the waste classification analytical parameters will be established by the disposal facility. The soil sampling results will be compared to the 6 NYCRR Part 375-6.8(b) NYSDEC Restricted Use SCOs to characterize the excavated soils for off-Site disposal.

The excavation will be backfilled with clean sand and/or gravel and compacted before reinforced concrete is poured to restore the slab.

Walden will prepare a Soil Remediation Summary Report which details the sub-slab soil removal, sampling activities and analytical results to document the remedial work completed.

6.2 On-Site SSD and SVE Remedial Systems

A remedial system will be installed on-Site to effectively prevent SVI into the on-Site building and to achieve contaminant source removal, contain VOCs on-Site, and prevent off-Site VOC vapor migration. The remedial system will employ an SSD system and an SVE system (with air sparging) to achieve the RAOs for the Site. **Figure 6** presents a schematic plan of the on-Site SSD system and **Figure 7** presents a schematic of the on-Site SVE/air sparging system. Representative remediation system details are provided on **Figure 8**. The actual on-Site remediation system layout and specifications will be determined based on pilot testing and full-scale design.

The SSD system will create a vacuum beneath the on-Site building to prevent contaminated vapors from entering the building, eliminating SVI impacts and the potential for VOC exposure via inhalation. The SSD system will include fans and piping to draw vapors from beneath the building slab to create an adequate vacuum to control the sub-slab VOC vapors and prevent vapors from entering the building to avoid indoor air quality impacts. Sub-slab pressures will be monitored to ensure that the entire building slab is depressurized.

The SVE system will be installed outside the building footprint to effectively contain VOCs on-Site and prevent off-Site VOC vapor migration while also actively removing VOCs from the subsurface. The SVE system will promote VOCs in the subsurface to partition to the vapor phase for capture by the SVE wells, reducing the residual VOC mass. Air sparging will be implemented in conjunction with SVE to enhance VOC removal from perched groundwater beneath the Site. Coupling this enhanced remedy with the targeted excavation and removal of contaminated soils from the Site will serve to remove VOCs from the subsurface to the extent practicable.

Compressed air will be released through air sparging well points installed below the perched water table several feet above the confining clay layer. As the air rises, expands, and passes through the perched groundwater, dissolved VOCs will volatize into the passing air bubbles and migrate to the perched water surface where they will escape into the vadose zone and be captured and removed by the SVE wells.

The SVE system will induce airflow into the unsaturated zone by creating a pressure gradient by withdrawing air from specifically placed wells, or vapor extraction points. The SVE gas flow enhances vaporization of VOCs dissolved in unsaturated pore water, and desorption of VOCs from the surface of soil particles. The SVE wells will be located with overlapping ROIs to create a barrier extending beyond the property boundaries to prevent off-Site migration of VOC vapors. SVE system equipment includes extraction wells, piping, treatment units, vacuum blowers, moisture separator, vapor recovery system (vapor phase granular activated carbon), and electrical controls. Vapor containing contaminants is withdrawn from the unsaturated zone and passed through a vapor recovery system before being discharged to the atmosphere. The vapor recovery system reduces the moisture of the air stream and collects VOCs by passing the air stream through a granular activated carbon (GAC) medium. The spent GAC will be disposed of off-Site by a licensed private firm in compliance with all rules and regulations.

The SSD and SVE (with air sparging) system design specifications will be determined based on pilot testing at the Site as described in Section 6.2.1. The full-scale engineering design plans and specifications will be submitted to NYSDEC/NYSDOH for review and approval. The on-Site remedial system plans and specifications will be sealed and certified by a New York State licensed Professional Engineer.

As discussed in Section 6.2.3, remedial system start-up and performance testing will be conducted to demonstrate that the SSD system effectively depressurizes the entire on-Site building slab as needed to prevent SVI impacts and to verify that indoor air VOC concentrations within the on-Site building tenant spaces are acceptable. In addition, the SVE system start-up testing will ensure that the ROIs of the SVE wells overlap so that vapors are managed on-Site to prevent future off-Site impacts. Testing will also confirm the radius of influence of the air sparging wells to optimize the mass of VOCs released from perched groundwater and captured by the SVE system. Periodic testing of the installed systems will be conducted during regular operations to confirm that the SSD and SVE systems continue to perform effectively.

6.2.1 Remedial System Pilot Testing

Testing will be conducted to determine the effectiveness and the efficiency of the proposed SSD/SVE systems, the optimal system extraction rates, and ROIs to support design. A utility mark-out will be performed to clear the test locations before drilling. It is assumed that once an ROI is recorded for an SSD vacuum extraction point, an SVE well or an air sparge well, it would be typical of subsurface conditions and SSD/SVE performance at the Site. All of the test wells and monitoring points will be incorporated into the full-scale system.

<u>SSD System Pilot Testing</u>

A vacuum extraction well point will be installed in the basement of the on-Site building to test SSD performance. The SSD well point will be constructed of 2-inch slotted PVC pipe connected to a solid PVC riser extending approximately one (1) foot below the bottom of the existing slab. The well point will be set in coarse sand and sealed with bentonite and cement. The bottom of the screened interval will be capped with solid

PVC. Four (4) vacuum pressure monitoring points will also be installed, at distances of 10 ft, 20 ft, 30 ft and 40 ft from the SSD well point. The microwell monitoring points will consist of six-inch long stainless-steel mesh screens set in coarse sand and connected to ¼-inch inert polyethylene tubing.

A regenerative blower will be connected to the SSD extraction well point and set to varying vacuum settings and flow rates. The pressure readings at the microwell monitoring points will be recorded using a micro-manometer. The pressures recorded under the various vacuum settings will be plotted to determine the SSD well ROI.

The pilot testing will be performed in accordance with the NYSDPH SVI Guidance and the United States Environmental Protection Agency Office of Solid Waste and Emergency Response *Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air* (June 2015). These documents do not contain a specific value to define effective sub-slab depressurization. However, based on available industry guidance, achieving a pressure differential of -0.004 inches of water column (WC) across a slab is generally considered sufficient to prevent SVI. Therefore, the objective of the SSD system design will be to achieve and maintain a minimum differential pressure of -0.004 inches of WC across the entire building slab.

<u>SVE System (with Air Sparging) Pilot Testing</u>
SVE and air sparge pilot testing will be conducted to determine the effectiveness and the efficiency of the proposed remedial system, the optimal vapor extraction and air injection rates, and the ROIs. It is assumed that once an ROI is recorded, it would be typical of subsurface conditions at the Site.

A new SVE well will be installed in the rear parking area near the on-Site building. The SVE well point will be constructed of 2-inch slotted PVC pipe connected to a solid PVC riser extending approximately ten (10) feet below the bottom of the existing surface (pavement). The SVE well will be screened in the unsaturated zone from approximately 10-20 feet below grade and the bottom of the screened interval will be capped with solid PVC. The SVE well point will be set in coarse sand and sealed with bentonite and cement.

A new air sparge well will be installed within the perched groundwater in the vicinity of the SVE test well. The air sparge test well will be installed above the confining clay layer to a depth of approximately 40 feet below grade and will consist of a 2-inch diameter well with a 2-foot screen (with a slot size of 0.02 inches) interval from approximately 10-12 feet below the top of the perched water table. The actual test well depth and screen interval will be determined based on field conditions.

In addition, four piezometers (one-inch diameter PVC) screened in coarse sand at depths consistent with the SVE well depth will be installed at approximately 10 feet, 20 feet, 40 feet and 80 feet radial distance away from the SVE well. The locations of the SVE well point, air sparge well and monitoring points for the pilot test will be adjusted as needed based on field conditions.

During the SVE and air sparging test, Walden will record changes in soil vapor pressure (indication of vacuum effect) in the four (4) piezometers utilizing a series of vacuum gauges. In addition, water levels and dissolved oxygen concentrations will also be recorded. Walden will utilize a vacuum extraction blower with fitted fresh air bypass to induce vacuum flow via the SVE well. An air compressor will be utilized to inject air at various pressures. Atmospheric conditions during the test will be recorded along with any observations that may impact interpretation of the test results. Background pressure readings will be collected prior to the testing.

The SVE system will be designed to create a barrier to capture on-Site VOC vapors and prevent off-Site vapor migration. A range of air extraction flow rates will be evaluated during the SVE test as determined by converting vacuum measurements recorded on a pressure gauge to scfm (flow rate) utilizing the specific pilot blower “pump curve”. The test will run until the subsurface vacuums recorded in all piezometers reach steady state conditions. The SVE ROI will be estimated by plotting steady state vacuum at each piezometer versus its radial distance from the SVE well.

The air sparging system will be designed to enhance mass removal by volatilizing VOCs from the dissolved phase into the unsaturated zone for capture by the SVE system. The optimal air injection rate and compressor sizing will be determined based on the pilot test results.

Samples of vapors extracted during the pilot test will be analyzed for VOCs to determine if GAC treatment is required to meet NYSDEC air emission requirements.

6.2.2 Remedial System Full-Scale Design

During full-scale design, the SSD, SVE and air sparge well parameters will be determined based on the testing results and engineering design calculations. The SSD, SVE and air sparge well construction details (i.e., location, number, screen zones, vacuum flow rates, and air injection rates as applicable) will be established based on an evaluation of test well performance and available data on Site geology/soil type/VOC concentrations gathered during previous investigations at the Subject Property.

Based on the ROI observed during the SSD testing, the full-scale SSD system will be designed to depressurize the entire on-Site building slab. The SSD system will utilize fans capable of producing the vacuum required to effectively depressurize the slab and maintain a minimum differential pressure of -0.004 inches of WC across the entire building slab. As shown on **Figure 6**, it is anticipated that the SSD system would utilize two (2) vacuum extraction points, assuming an 80 ft ROI. The number and placement of the SSD extraction points will be modified as needed based on field conditions and the ROI observed during pilot testing. The SSD extraction points will be constructed of 2-inch slotted PVC pipe connected to a solid PVC riser extending approximately one (1) foot below the bottom of the existing slab as shown on **Figure 8**. Additional vacuum pressure monitoring points will be installed if needed to provide sufficient data to evaluate the extent of slab depressurization achieved by the SSD system.

Similarly, the SVE and air sparge test well ROIs and VOC contaminant levels measured during the pilot test will be considered when determining the vapor extraction and air sparge well locations and screen intervals, the required number of wells, appropriate screen intervals, slot size, and pumping rates. As shown on **Figure 7**, it is anticipated that the remedial system would utilize six (6) SVE wells (assuming 50 ft ROI) and six (6) air sparge wells (assuming 30 ft ROI). The SVE wells will be located with overlapping ROIs to create a vacuum barrier extending beyond the Subject Property boundaries to prevent off-Site migration of VOC vapors. The air sparge wells will be installed at on-Site locations where elevated VOC concentrations were detected in perched groundwater samples collected during the May 2019 investigation at the Subject Property (see **Figure 5**).

The SVE wells will be constructed of 2-inch slotted PVC pipe connected to a solid PVC riser extending approximately ten (10) feet below the pavement. The SVE wells will be screened in the unsaturated zone from approximately 10-20 feet below grade and the bottom of the screened interval will be capped with solid PVC. The SVE wells will be set in coarse sand and sealed with bentonite and cement. The air sparge wells will be installed above the confining clay layer to a depth of approximately 40 feet below grade and will consist of a 2-inch diameter well with a 2-foot screen (with a slot size of 0.02 inches) interval from approximately 10-12 feet below the top of the perched water table. Refer to **Figure 8** for the conceptual remedial system details. The actual number, placement and construction details for the SVE and air sparging wells will be modified as needed based on field conditions and the ROIs observed during pilot testing. Additional piezometers will be installed on-Site at appropriate locations determined during design to monitor subsurface pressures and verify effective SVE and air sparging system operation.

Each SVE and air sparge well will be connected to PVC piping to be installed by trenching to a treatment system enclosure to be located based on full-scale design. An extraction blower will be sized based on the optimum SVE flow rate determined from the test results. Similarly, a compressor will be sized based on the optimum air injection rate determined from the sparging test results. A vacuum blower, moisture separator, compressor, flow control gauging and valves, etc. will be housed within the treatment enclosure. Air discharge concentrations will be adjusted to the allowable VOC discharge concentrations as defined in NYSDEC's Toxic Ambient Air Contaminants (DAR-1). GAC units will be specified to treat vapors extracted by the SVE system if necessary and will be sized based on flow and the VOC vapor concentrations recorded during the pilot test. It is anticipated that the new remedial system can tie into the existing PSEG electric service drop which provided power to the former SVE system at the Site.

The test results and full-scale system design details will be submitted to NYSDEC and NYSDOH for review and approval.

6.2.3 Remedial System Installation, Start-up Testing, Operation and Monitoring

Walden will develop the engineering design plans and technical specifications for the full-scale remediation system. Bids will be obtained from qualified construction contractors for the system installation. Based on the bids received and a review of the contractor experience and references, a contractor will be selected to install the remediation system. Walden will perform contractor oversight to ensure that the SSD, SVE and air sparging system components are installed in accordance with the design plans and specifications. The system will be started up once construction is completed. An operations, maintenance and monitoring program will be developed by Walden and implemented upon the SSD, SVE and air sparging system start-up to ensure that the remedial system performs effectively towards meeting the remedial action objectives. Post-installation sampling requirements will include both physical (pressure and ROI) and chemical (indoor air) sampling.

Walden will conduct regular remedial system monitoring (weekly or bi-weekly for the first 3 months after start-up; quarterly thereafter) to verify effective operations and reductions in subsurface VOC concentrations.

7 REMEDIAL ALTERNATIVE IMPLEMENTATION PLANS

All proposed work described in this *RWP* will be conducted on the Subject Property; none of the work will be conducted off-Site. Prior to any on-Site work, Walden will coordinate a private utility mark out to locate all existing utilities and buried structures to ensure they do not interfere with any portion of the proposed excavation or SSD/SVE (with air sparging) testing and full-scale remedial system installation work.

All work associated with implementing the remedial alternative at the Site will be performed in accordance with the Quality Assurance Project Plan (QAPP), Health and Safety Plan (HASP), and Community Air Monitoring Plan with Special Requirements (CAMP) presented in **Appendices A, B and C**, respectively.

Walden will be responsible for its own health and safety program; all subcontractor(s) will be required to work under acknowledgement of the Site-specific HASP or under their own HASP approved by Walden prior to commencement of the work. All Site-related work tasks will be conducted in personnel protective equipment (PPE) Level D as appropriate for the tasks to be completed.

The CAMP will be implemented during on-Site ground intrusive activities. Because the intrusive activities will be performed within and in the vicinity of occupied buildings, the CAMP includes special requirements for monitoring to ensure that building occupants are not exposed to VOCs and particulates released during the on-Site remediation work.

Walden will conduct real time air monitoring during field activities to protect Site workers and the public from airborne hazards. The primary airborne hazard associated with Site work would be volatilization of PCE, TCE, and cis-1,2-DCE from contaminated media. The primary instrument utilized for this task will be a photo ionization detector (PID). The PID air monitoring will be continuous during all field activities that are ground-intrusive. If PID readings are 0.5 ppm or greater above background in the breathing zone for a period of one minute, and the source of the reading is unknown, PPE will be upgraded to Level C. The work will be halted if PID readings exceed 5 ppm above background in the breathing zone for thirty continuous seconds per the HASP and CAMP. If this were to occur, the source would be evaluated and the HASP would be reviewed.

8 SCHEDULE

Upon NYSDEC/NYSDOH approval of this *RWP*, Walden will proceed with scheduling the on-Site soil removal activities detailed in Section 6.1, followed by the testing required to complete the SSD/SVE (with air sparging) remedial system designs for the Site. NYSDEC will be provided at least ten days' written notice prior to the start of any remedial activities as described herein.

Full-scale installation of the remedial systems will begin upon NYSDEC approval of the engineering plans and specifications, and subsequent contractor selection. The on-Site remedial systems will continue operating until the RAOs are achieved, or monitoring data indicates that the SVE and air sparging system has reduced VOC concentrations to the maximum extent possible. In no case will operations of the SVE, air sparging and/or SSD remediation systems be discontinued without prior approval from NYSDEC and NYSDOH.

The following table outlines the tentative work phasing and time of completion for the remedial alternative:

TASK	APPROXIMATE COMPLETION TIME
RWP Approval by NYSDEC and 45-day BCP Public Comment Period	To be Determined
Excavation of On-Site Soils with Residual VOC Impacts and Associated Endpoint Sampling, Data Evaluation and Reporting	Estimated 8 Weeks (Concurrent with Remedial Testing)
SSD/SVE/Air Sparging Testing, Data Evaluation and Reporting	Estimated 6 Weeks (Concurrent with On-Site Soil Excavation)
Prepare Full-Scale Remedial System Design, Plans and Specifications	Estimated 6 Weeks
SSD/SVE/Air Sparging Remedial System Construction	Estimated 6 Weeks
Develop Remedial System O&M Plan; System Startup and Performance Testing	Estimated 8 Weeks

Prepare Final Engineering Report after completion of remediation activities	TBD
Prepare Site Management Plan including Environmental Easements, Institutional and/or Engineering Controls as appropriate	TBD
NYSDEC Issuance of Certificate of Completion	TBD

The above schedule depends on NYSDEC/NYSDOH review periods and does not take into account delays that may be encountered during the work.

9 SITE MANAGEMENT PLAN AND ENVIRONMENTAL EASEMENT

Upon completion of the remedial activities described in this *RWP*, a Final Engineering Report will be prepared documenting the remedial actions performed at the Site as approved by NYSDEC and NYSDOH. In addition, a Site Management Plan will be developed describing how any contamination remaining at the Site will be managed and establishing any engineering controls to be implemented consistent with the proposed Site use. If institutional controls are required to restrict or prohibit certain uses or future development of the Site (based on the Site conditions), environmental easement(s) will be prepared and executed in accordance with the procedures established by NYSDEC.

Reports documenting the completion of all work described in this *RWP* will be submitted to NYSDEC for approval as required to receive a Certificate of Completion (COC) indicating that the remedial action objectives for the BCP Site have been achieved.

FIGURES

FIGURE 1

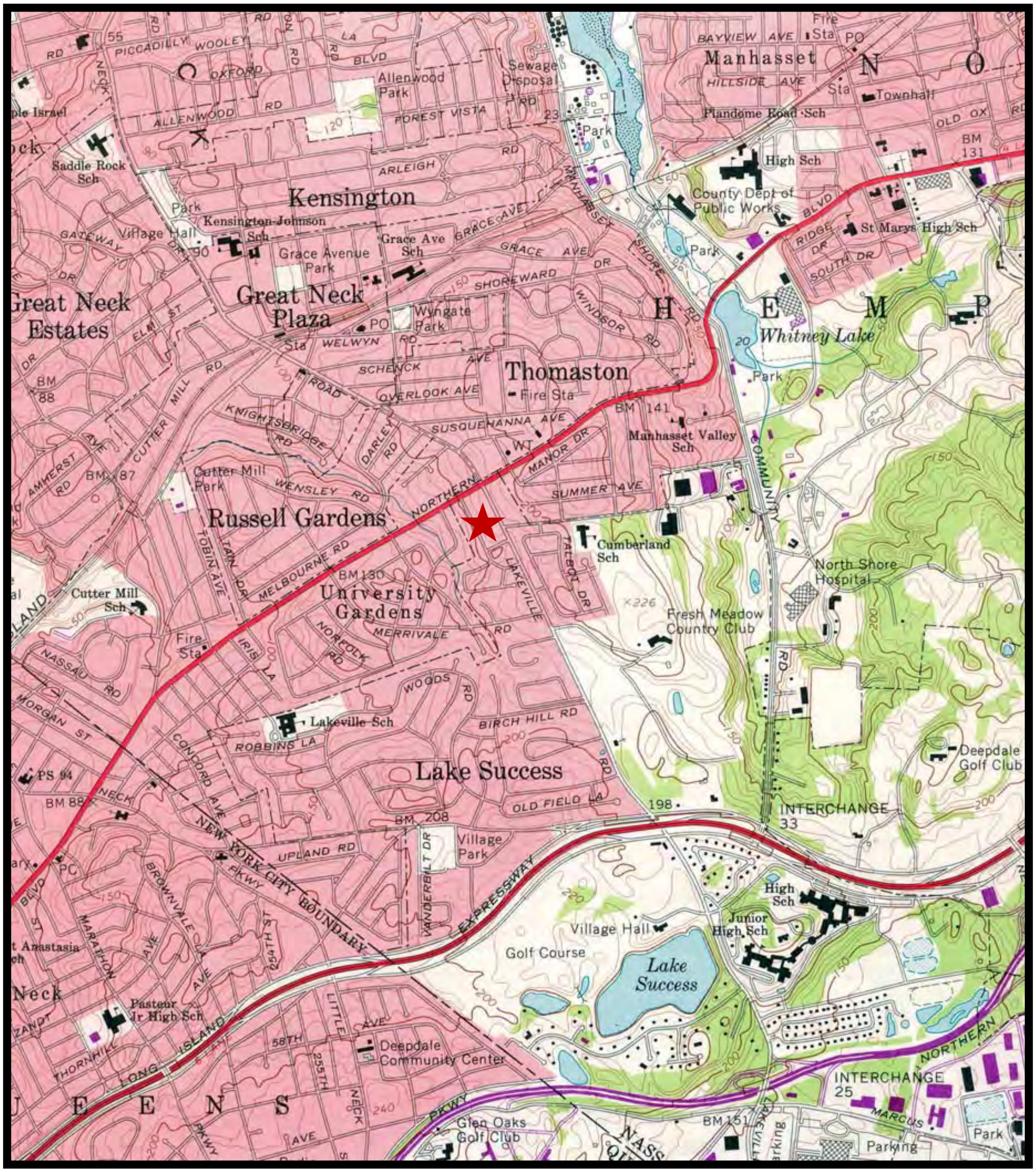
Site Location Map

Former Imperial Cleaners Site
BCP Site #C130225
218 Lakeville Road
Lake Success, New York

FIGURE 1

SITE LOCATION MAP

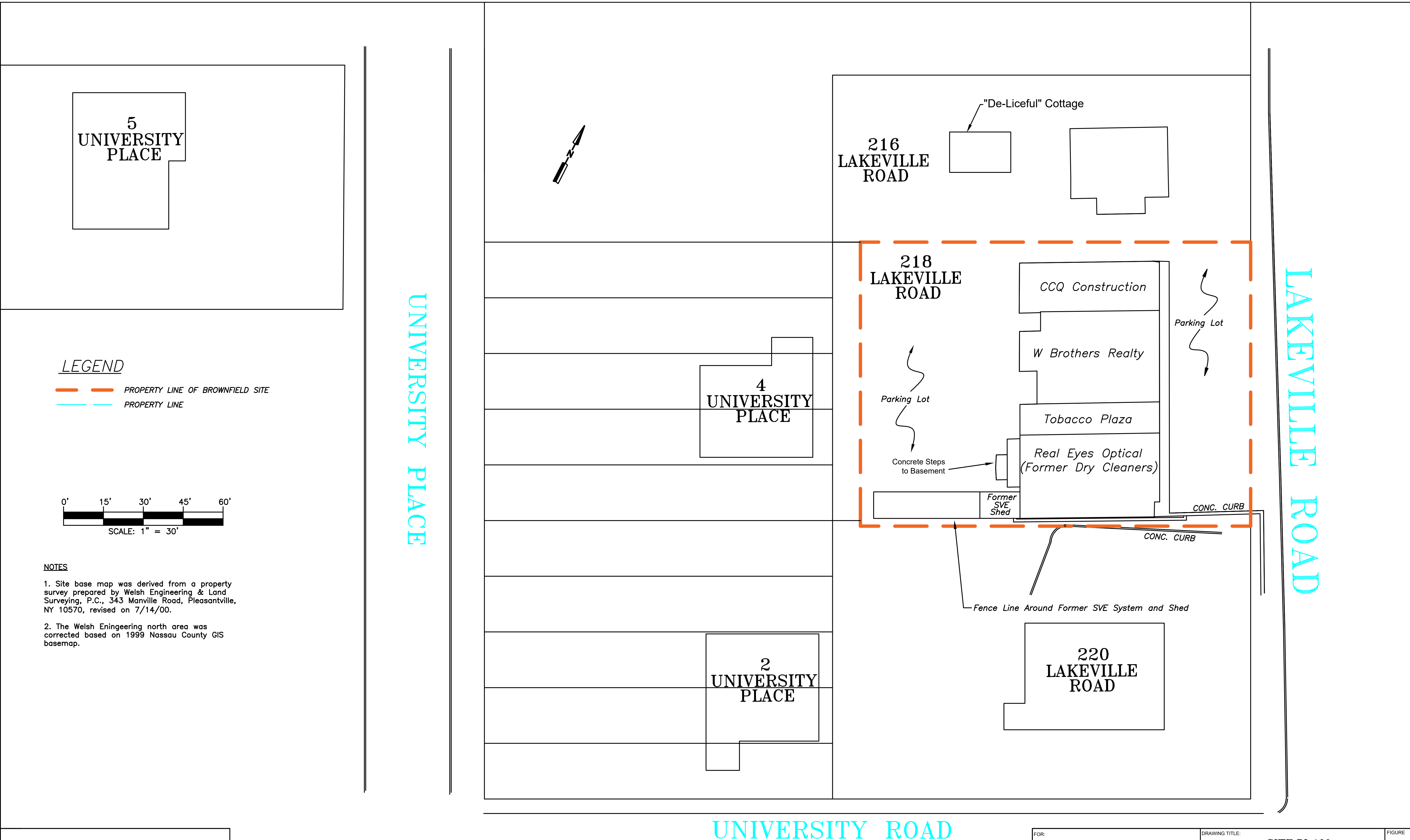
N



(USGS QUAD Sea Cliff, New York) (Scale 1:24000)

FIGURE 2

Site Plan



NOTES

1. Site base map was derived from a property survey prepared by Welsh Engineering & Land Surveying, P.C., 343 Manville Road, Pleasantville, NY 10570, revised on 7/14/00.

2. The Welsh Eningeering north area was corrected based on 1999 Nassau County GIS basemap.

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FOR:

Former Imperial Cleaners Site
Site No. C130225
218 Lakeville Road
Lake Success, New York 11020

DRAWING TITLE:

SITE PLAN
218 LAKEVILLE ROAD,
LAKE SUCCESS, NEW YORK

FIGURE 2

JOB NO: IMPL0115.5

DATE: March 16, 2021

CAD FILE NAME: Z:\IMPL0115 (Imperial Cleaners)\IMPL0115.6 - 2019 Pre-Design Investigation\IMPL0115.6 Figures.dwg

FIGURE 3

Soil Vapor Intrusion Investigation Sampling Results

NOTE:
CONCENTRATIONS INDICATED ARE EXPRESSED IN MICROGRAMS PER CUBIC METER (ug/m ³).

MC = METHYLENE CHLORIDE

LEGEND

- PROPERTY LINE (218 LAKEVILLE ROAD)
- OFF SITE LOT LINE (APPROXIMATE)
- SUB-SLAB AND INDOOR AIR SAMPLE
- AMBIENT AIR SAMPLE
- 999.99 DETECTED INDOOR AIR CONCENTRATION EXCEEDS NYSDOH AIR GUIDELINE VALUE

NOTES

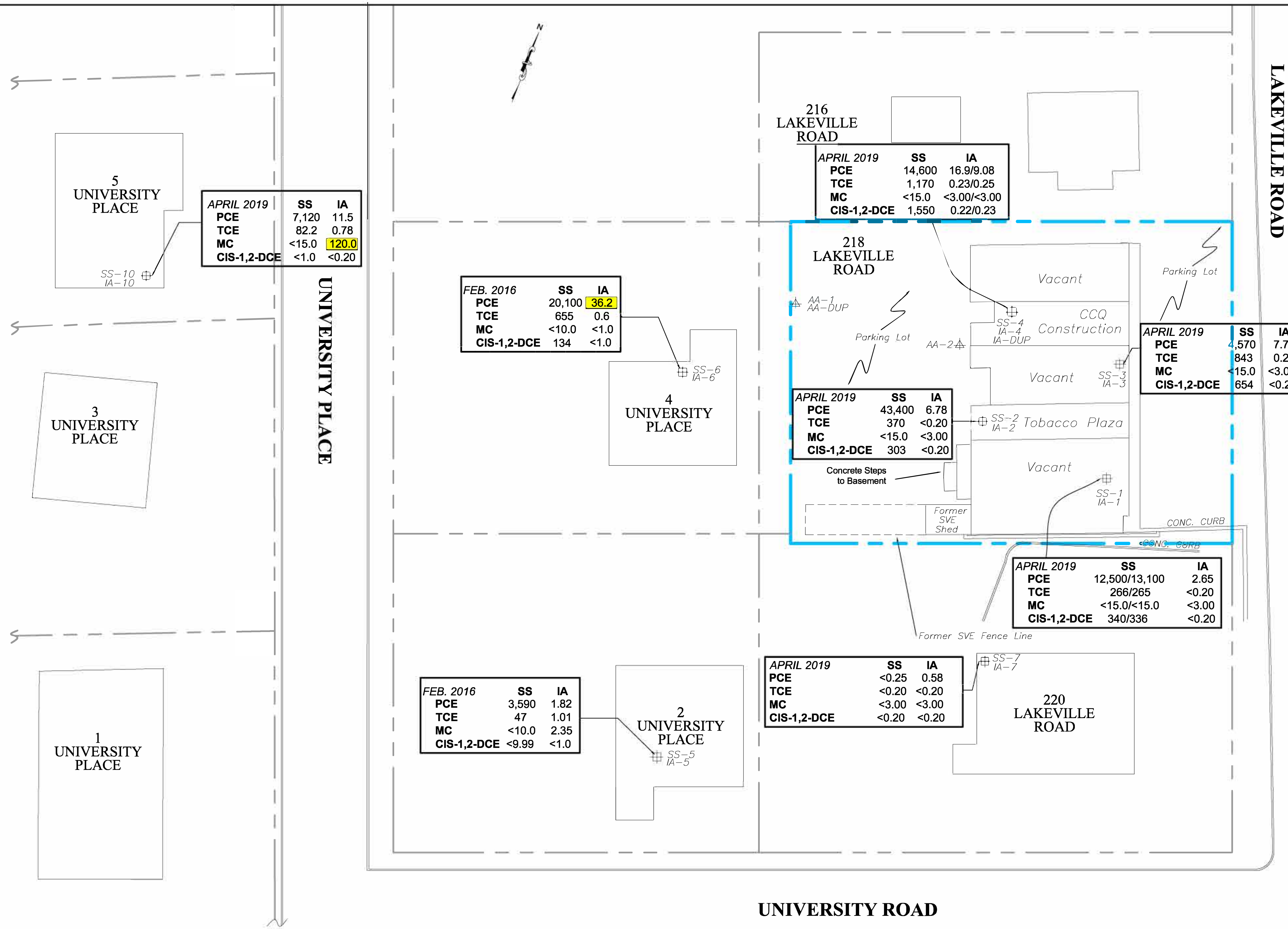
1. SITE BASE MAP WAS DERIVED FROM A PROPERTY SURVEY PREPARED BY WELSH ENGINEERING & LAND SURVEYING, P.C., 343 MANVILLE ROAD, PLEASANTVILLE, NY 10570, REVISED ON 7/14/00.

2. THE WELSH ENINGEERING NORTH AREA WAS CORRECTED BASED ON 1999 NASSAU COUNTY GIS BASEMAP.

3. UPDATES TO THIS MAP WERE MADE BY WALDEN ENVIRONMENTAL ENGINEERING BASED ON THE NASSAU COUNTY LAND RECORDS VIEWER

4. BUILDING OCCUPANCY SHOWN ON THE FIGURE REFLECTS THE BUILDING OCCUPANCY AT THE TIME OF THE APRIL 2019 SAMPLING EVENT

0 ½ 1 2 3
1/32
SCALE: 1/32" = 1'



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REVISIONS

No.	DATE	COMMENTS

FOR: NYSDEC REMEDIAL BUREAU, 625 Broadway, 11th Floor, Albany, New York 12233

DRAWING TITLE: SVI INVESTIGATION SAMPLE RESULTS, 218 LAKEVILLE ROAD, LAKE SUCCESS, NEW YORK

FIGURE NO: 3

ISSUED

REVISION NO: 0

DESIGNED BY: LS | DRAWN BY: LS | CHECKED BY: NB | JOB NO: | DATE: 11/18/21 | 11x17 | SHEET NO: 1 of 1

APPROVED BY: NB | SCALE: AS NOTED | CAD FILE NAME: Z:\IMPL0115 (Imperial Cleaners)\IMPL0115.6 - 2019 Pre-Design Investigation\ACAD\IMPL0115.6_April Sample Locations (10-8-21).dwg

FIGURE 4

May 2019 Pre-Design Investigation Sampling Locations & Results Summary

LEGEND

SUBJECT PROPERTY LINE

DW #1 — STORMWATER DRYWELL

LP — SANITARY LEACHING POOL

FD-1 — FLOOR DRAIN

APPROXIMATE PIPING CONNECTION (SANITARY SYSTEM/STORMWATER/ROOF DRAINAGE)

999.99 — CONCENTRATION DETECTED IN PERCHED GROUNDWATER SAMPLE EXCEEDS RESPECTIVE NYSDEC CLASS GA WATER QUALITY STANDARD

CONCENTRATION EXCEEDS RESPECTIVE NYSDEC PART 375 SOIL CLEANUP OBJECTIVE

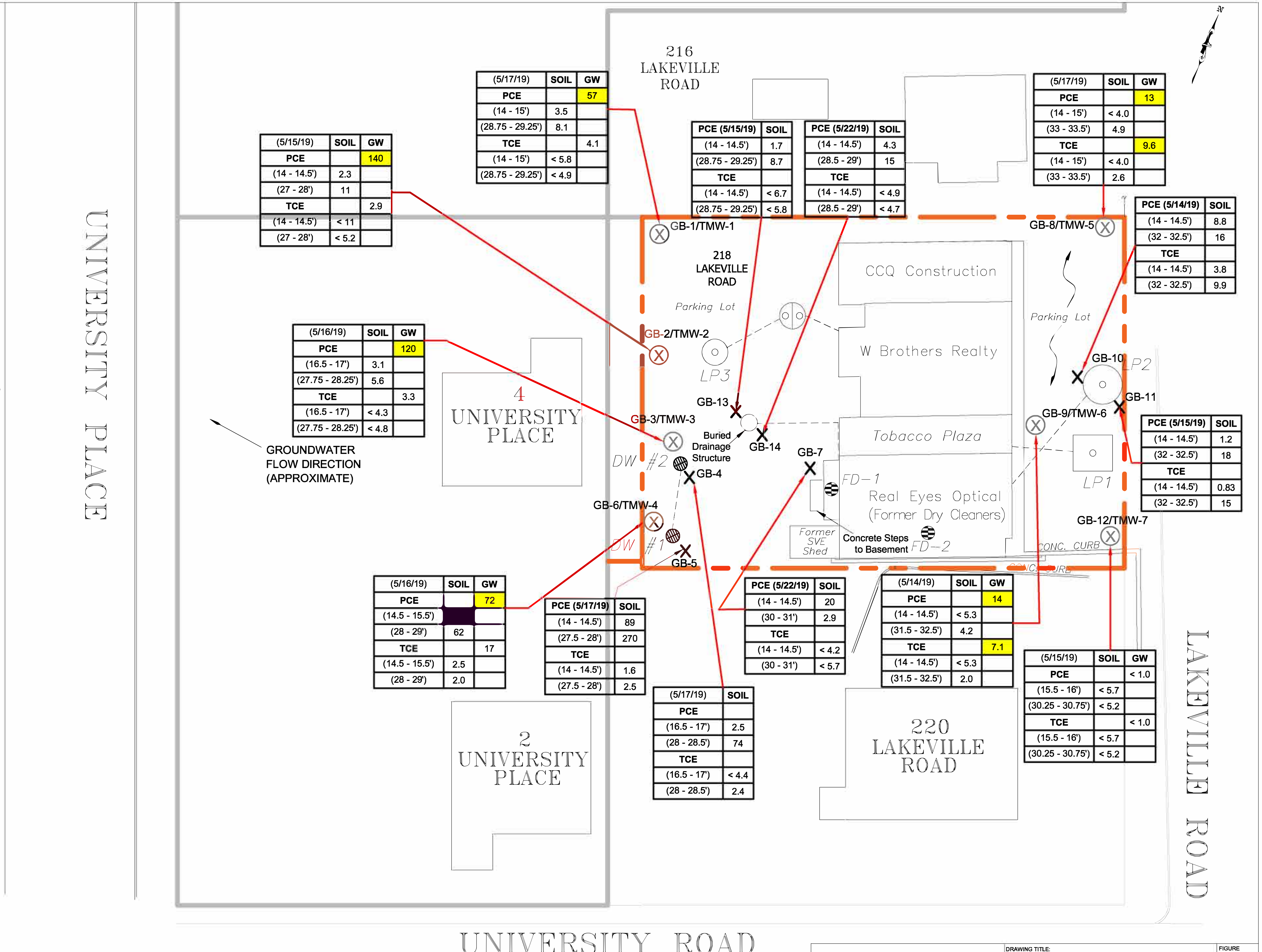
2019 SOIL/ GROUNDWATER SAMPLE LOCATIONS (APPROXIMATE)

GB-5 X - SOIL BORING ONLY

(X) - SOIL BORING/TEMPORARY MONITORING WELL GB-1/TMW-1

0 15 30 60 90

SCALE: 1"=30'-0"



(5/15/19)	SOIL	GW
PCE		140
(14 - 14.5')	2.3	
(27 - 28')	11	
TCE		2.9
(14 - 14.5')	< 11	
(27 - 28')	< 5.2	

(5/17/19)	SOIL	GW
PCE		57
(14 - 15')	3.5	
(28.75 - 29.25')	8.1	
TCE		4.1
(14 - 15')	< 5.8	
(28.75 - 29.25')	< 4.9	

PCE (5/15/19)	SOIL
(14 - 14.5')	1.7
(28.75 - 29.25')	8.7
TCE	
(14 - 14.5')	< 6.7
(28.75 - 29.25')	< 5.8

PCE (5/22/19)	SOIL
(14 - 14.5')	4.3
(28.5 - 29')	15
TCE	
(14 - 14.5')	< 4.9
(28.5 - 29')	< 4.7

(5/17/19)	SOIL	GW
PCE		13
(14 - 15')	< 4.0	
(33 - 33.5')	4.9	
TCE		9.6
(14 - 15')	< 4.0	
(33 - 33.5')	2.6	

PCE (5/14/19)	SOIL
(14 - 14.5')	8.8
(32 - 32.5')	16
TCE	
(14 - 14.5')	3.8
(32 - 32.5')	9.9

(5/16/19)	SOIL	GW
PCE		120
(16.5 - 17')	3.1	
(27.75 - 28.25')	5.6	
TCE		3.3
(16.5 - 17')	< 4.3	
(27.75 - 28.25')	< 4.8	

PCE (5/15/19)	SOIL
(14 - 14.5')	1.2
(32 - 32.5')	18
TCE	
(14 - 14.5')	0.83
(32 - 32.5')	15

(5/16/19)	SOIL	GW
PCE		72
(14.5 - 15.5')	[illegible]	
(28 - 29')	62	
TCE		17
(14.5 - 15.5')	2.5	
(28 - 29')	2.0	

PCE (5/17/19)	SOIL
(14 - 14.5')	89
(27.5 - 28')	270
TCE	
(14 - 14.5')	1.6
(27.5 - 28')	2.5

(5/17/19)	SOIL
PCE	
(16.5 - 17')	2.5
(28 - 28.5')	74
TCE	
(16.5 - 17')	< 4.4
(28 - 28.5')	2.4

PCE (5/22/19)	SOIL
(14 - 14.5')	20
(30 - 31')	2.9
TCE	
(14 - 14.5')	< 4.2
(30 - 31')	< 5.7

(5/14/19)	SOIL	GW
PCE		14
(14 - 14.5')	< 5.3	
(31.5 - 32.5')	4.2	
TCE		7.1
(14 - 14.5')	< 5.3	
(31.5 - 32.5')	2.0	

(5/15/19)	SOIL	GW
PCE		< 1.0
(15.5 - 16')	< 5.7	
(30.25 - 30.75')	< 5.2	
TCE		< 1.0
(15.5 - 16')	< 5.7	
(30.25 - 30.75')	< 5.2	

NOTES

1. Site base map was derived from a property survey prepared by Welsh Engineering & Land Surveying, P.C., 343 Manville Road, Pleasantville, NY 10570, revised on 7/14/00.

2. The Welsh Eningeering north area was corrected based on 1999 Nassau County GIS basemap.

3. Piezometers were installed at each of the 7 groundwater sampling locations (GB-1, GB-2, GB-3, GB-6, GB-8, GB-9 and GB-12) to allow for groundwater collection and water level measurements.

4. Groundwater samples collected from each of the 7 piezometers were analyzed for VOCs by EPA Method 8260.

5. Groundwater samples collected from GB-1, GB-6, GB-8 and GB-12 were also analyzed for emerging contaminants (PFAS and 1,4 - dioxane).

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FORMER IMPERIAL CLEANERS SITE
BCP Site No. C130225
218 Lakeville Road
Lake Success, New York 11020

DRAWING TITLE:
MAY 2019 PRE-DESIGN INVESTIGATION SAMPLING LOCATIONS & RESULTS SUMMARY

FIGURE 4

JOB NO: IMPL0115.6 DATE: November 18, 2021

FIGURE 5

Additional Pre-Design Investigation (2020) Sampling Locations & Results Summary

LEGEND

SUBJECT PROPERTY LINE

DW #1 — STORMWATER DRYWELL

LP — SANITARY LEACHING POOL

FD-1 — FLOOR DRAIN

APPROXIMATE PIPING CONNECTION (SANITARY SYSTEM/STORMWATER/ROOF DRAINAGE)

CONCENTRATION EXCEEDS RESPECTIVE NYSDEC PART 375 SOIL CLEANUP OBJECTIVE

SOIL/ GROUNDWATER SAMPLE LOCATIONS (APPROXIMATE)

GB-# X - SOIL BORING (2020)

PW-1 - OFF-SITE GROUND WATER (PERCHED WATER) SAMPLING LOCATION (2020)

- SOIL BORING/TEMPORARY MONITORING WELL GB-1/TMW-1 (2019)

NOTES

1. SITE BASE MAP WAS DERIVED FROM A PROPERTY SURVEY PREPARED BY WELSH ENGINEERING & LAND SURVEYING, P.C., 343 MANVILLE ROAD, PLEASANTVILLE, NY 10570, REVISED ON 7/14/00.

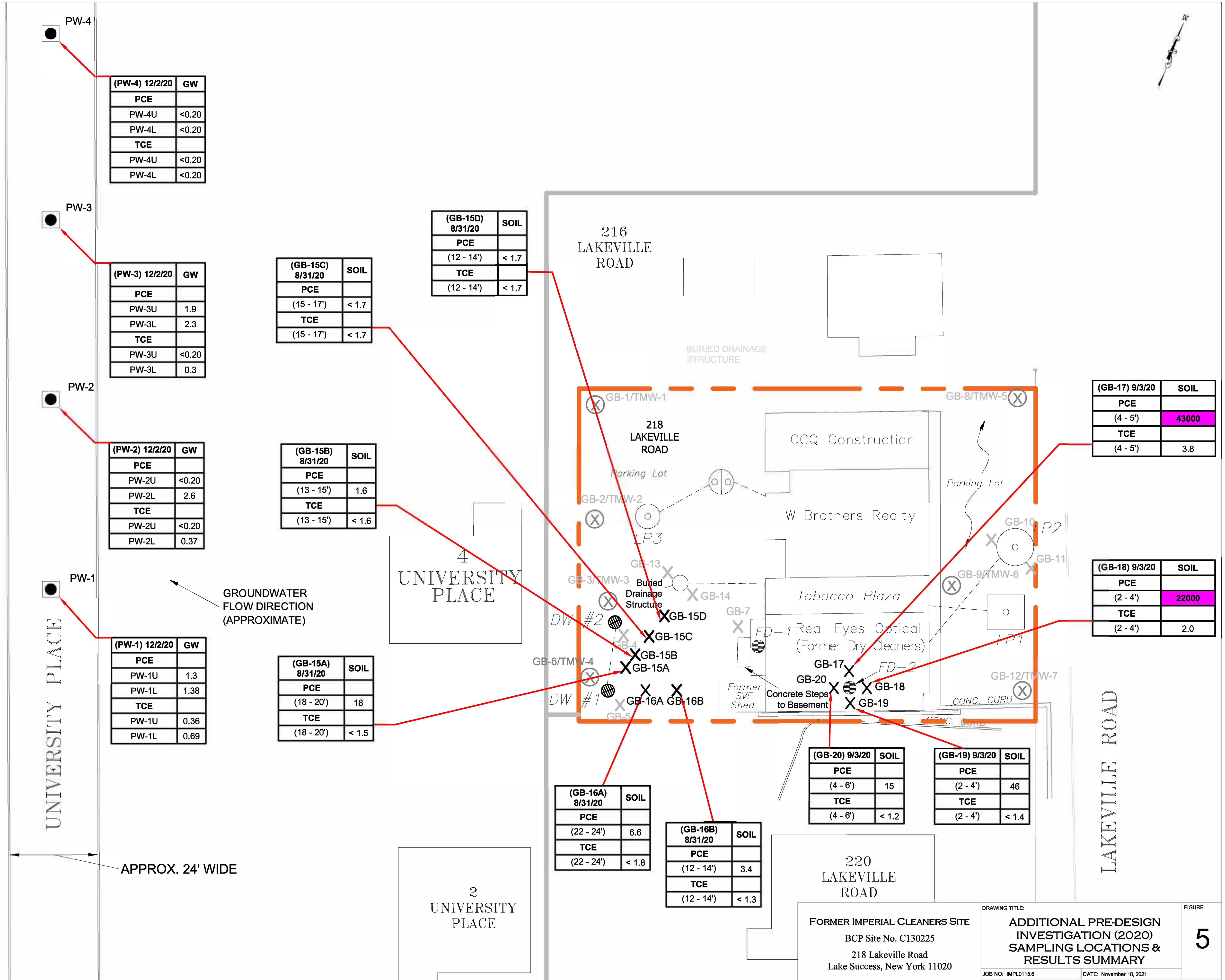
2. THE WELSH ENINGEERING NORTH AREA WAS CORRECTED BASED ON 1999 NASSAU COUNTY GIS BASEMAP.

3. PCE AND TCE CONCENTRATIONS REPORTED BY THE LABORATORY FOR SOIL SAMPLES COLLECTED FROM ON-SITE BORING BORINGS ARE LISTED IN MICROGRAMS PER KILOGRAM (UG/KG). CONCENTRATIONS THAT EXCEED NYSDEC SCOS FOR PROTECTION OF GROUNDWATER ARE INDICATED IN **BOLD**.

4. PCE AND TCE CONCENTRATIONS REPORTED BY THE LABORATORY FOR PERCHED GROUNDWATER SAMPLES COLLECTED FROM THE OFF-SITE TEMPORARY MONITORING WELLS ARE LISTED IN MICROGRAMS PER LITER (UG/L). PERCHED WATER SAMPLES WERE COLLECTED FROM THE TOP OF THE WATER COLUMN ("U" SUFFIX) AND THE BOTTOM OF THE WATER COLUMN ("L" SUFFIX) AT EACH LOCATION.

0' 15' 30' 45' 60'

SCALE: 1" = 30'



(PW-4) 12/2/20	GW
PCE	
PW-4U	<0.20
PW-4L	<0.20
TCE	
PW-4U	<0.20
PW-4L	<0.20

(PW-3) 12/2/20	GW
PCE	
PW-3U	1.9
PW-3L	2.3
TCE	
PW-3U	<0.20
PW-3L	0.3

(PW-2) 12/2/20	GW
PCE	
PW-2U	<0.20
PW-2L	2.6
TCE	
PW-2U	<0.20
PW-2L	0.37

(PW-1) 12/2/20	GW
PCE	
PW-1U	1.3
PW-1L	1.38
TCE	
PW-1U	0.36
PW-1L	0.69

(GB-15D) 8/31/20	SOIL
PCE	
(12 - 14')	< 1.7
TCE	
(12 - 14')	< 1.7

(GB-15C) 8/31/20	SOIL
PCE	
(15 - 17')	< 1.7
TCE	
(15 - 17')	< 1.7

(GB-15B) 8/31/20	SOIL
PCE	
(13 - 15')	1.6
TCE	
(13 - 15')	< 1.6

(GB-15A) 8/31/20	SOIL
PCE	
(18 - 20')	18
TCE	
(18 - 20')	< 1.5

(GB-16A) 8/31/20	SOIL
PCE	
(22 - 24')	6.6
TCE	
(22 - 24')	< 1.8

(GB-16B) 8/31/20	SOIL
PCE	
(12 - 14')	3.4
TCE	
(12 - 14')	< 1.3

(GB-17) 9/3/20	SOIL
PCE	
(4 - 5')	43000
TCE	
(4 - 5')	3.8

(GB-18) 9/3/20	SOIL
PCE	
(2 - 4')	22000
TCE	
(2 - 4')	2.0

(GB-20) 9/3/20	SOIL
PCE	
(4 - 6')	15
TCE	
(4 - 6')	< 1.2

(GB-19) 9/3/20	SOIL
PCE	
(2 - 4')	46
TCE	
(2 - 4')	< 1.4

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Walden Environmental Engineering

FORMER IMPERIAL CLEANERS SITE
BCP Site No. C130225
218 Lakeville Road
Lake Success, New York 11020

DRAWING TITLE:
ADDITIONAL PRE-DESIGN INVESTIGATION (2020) SAMPLING LOCATIONS & RESULTS SUMMARY

FIGURE 5

JOB NO: IMPL0115.6
DATE: November 18, 2021
CAD FILE NAME:

FIGURE 6

On-site Sub-slab Depressurization System Schematic

LEGEND

- SUBJECT PROPERTY LINE
- DW #1 — STORMWATER DRYWELL
- LP — SANITARY LEACHING POOL
- FD–1 — FLOOR DRAIN
- APPROXIMATE PIPING CONNECTION (SANITARY SYSTEM/STORMWATER/ROOF DRAINAGE)
- VAPOR PIN MONITORING POINT
- SUB SLAB DEPRESSURIZATION WELL POINT
- SSDS RADIUS OF INFLUENCE (ASSUMED 80 FT)

THE SSD SYSTEM COMPONENTS AND ROI ARE SHOWN FOR SCHEMATIC PURPOSES ONLY. THE ACTUAL SYSTEM LAYOUT AND SPECIFICATIONS WILL BE DETERMINED BASED ON ON-SITE TESTING RESULTS AND FINAL DESIGN.

2019 SOIL/ GROUNDWATER SAMPLE LOCATIONS (APPROXIMATE)

GB-5 X - *SOIL BORING ONLY*

(X) - *SOIL BORING/TEMPORARY MONITORING WELL GB-1/TMW-1*

THE 2019 ON-SITE SOIL AND PERCHED GROUNDWATER SAMPLING RESULTS ARE SUMMARIZED ON FIGURE 4.

0 15 30 60 90

SCALE: 1"=30'–0"

NOTES

1. Site base map was derived from a property survey prepared by Welsh Engineering & Land Surveying, P.C., 343 Manville Road, Pleasantville, NY 10570, revised on 7/14/00.

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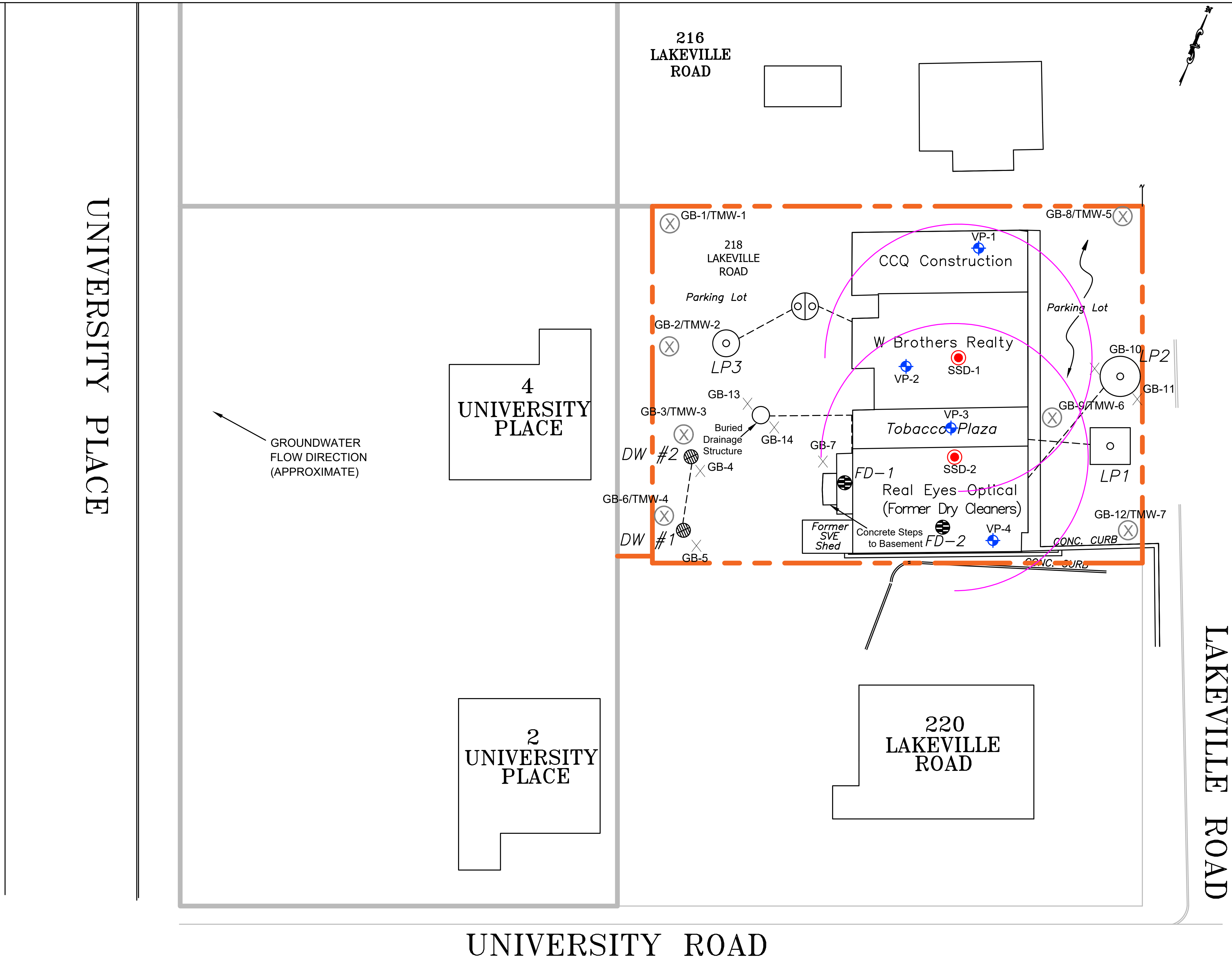

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Former Imperial Cleaners Site
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Lake Success, New York 11020

DRAWING TITLE: ON-SITE SUB SLAB DEPRESSURIZATION SYSTEM SCHEMATIC

FIGURE 6

JOB NO: IMPL0115.6 DATE: February 1, 2022

CAD FILE NAME: Z:\IMPL0115 (Imperial Cleaners)\IMPL0115.6 - 2019 Pre-Design Investigation\September 2020 Investigation\ACAD\IMPL0115.6 Onsite Remediation System (1-28-22) JMS.dwg

FIGURE 7

On-site Soil Vapor Extraction System Schematic

LEGEND

SUBJECT PROPERTY LINE

DW #1 — STORMWATER DRYWELL

LP — SANITARY LEACHING POOL

FD–1 — FLOOR DRAIN

---- APPROXIMATE PIPING CONNECTION (SANITARY SYSTEM/STORMWATER/ROOF DRAINAGE)

SOIL VAPOR EXTRACTION WELL

SVE RADIUS OF INFLUENCE (ASSUMED 50 FT)

AIR SPARGE WELL

AIR SPARGE RADIUS OF INFLUENCE (ASSUMED 30 FT)

THE SVE/AIR SPARGE SYSTEM COMPONENTS AND ROIS ARE SHOWN FOR SCHEMATIC PURPOSES ONLY. THE ACTUAL SYSTEM LAYOUT AND SPECIFICATIONS WILL BE DETERMINED BASED ON ON-SITE TESTING RESULTS AND FINAL DESIGN.

2019 SOIL/ GROUNDWATER SAMPLE LOCATIONS (APPROXIMATE)

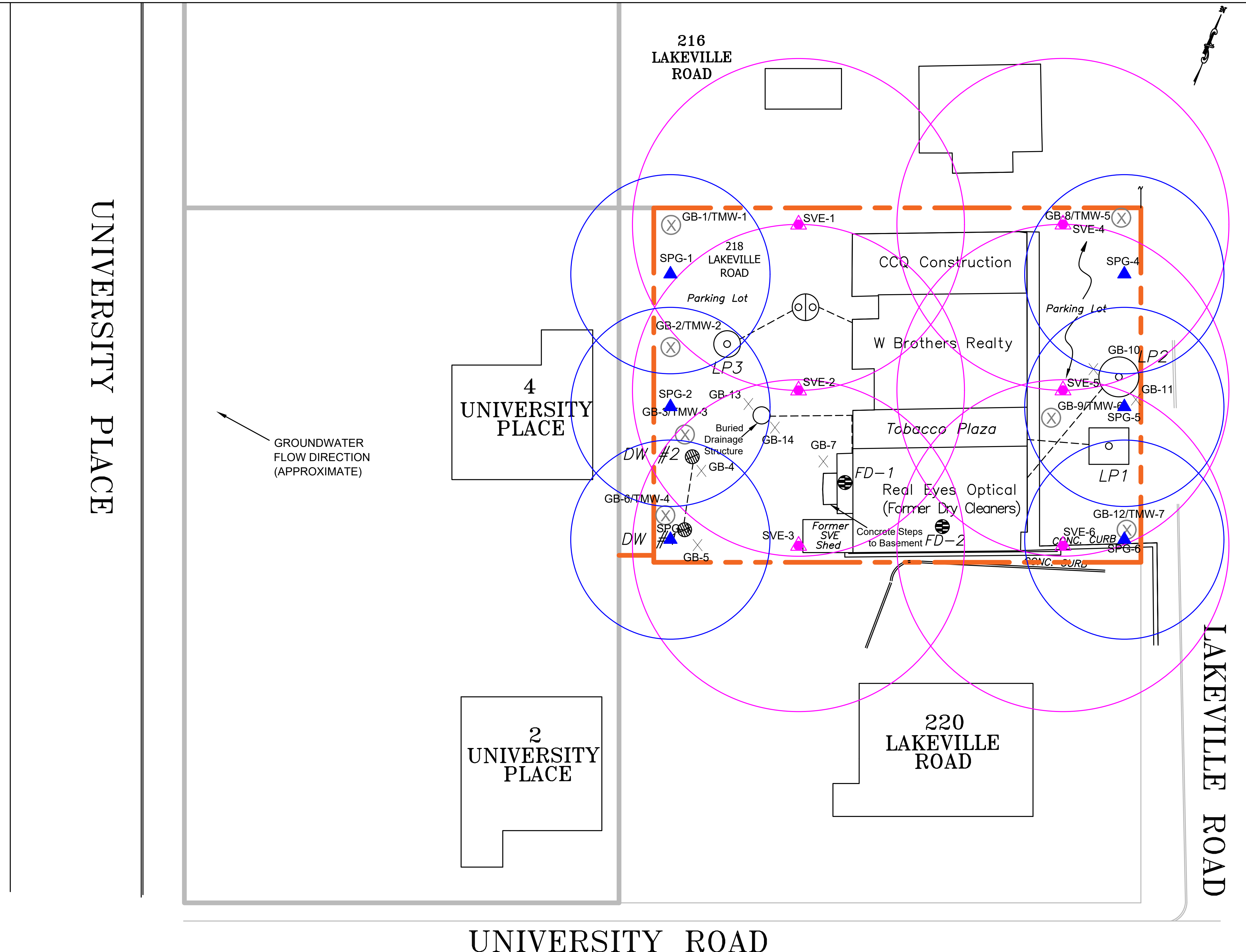
GB-5 X - *SOIL BORING ONLY*

(X) - *SOIL BORING/TEMPORARY MONITORING WELL GB-1/TMW-1*

THE 2019 ON-SITE SOIL AND PERCHED GROUNDWATER SAMPLING RESULTS ARE SUMMARIZED ON FIGURE 4.

0 15 30 60 90

SCALE: 1"=30'–0"



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DRAWING TITLE: ON-SITE SOIL VAPOR EXTRACTION SYSTEM SCHEMATIC

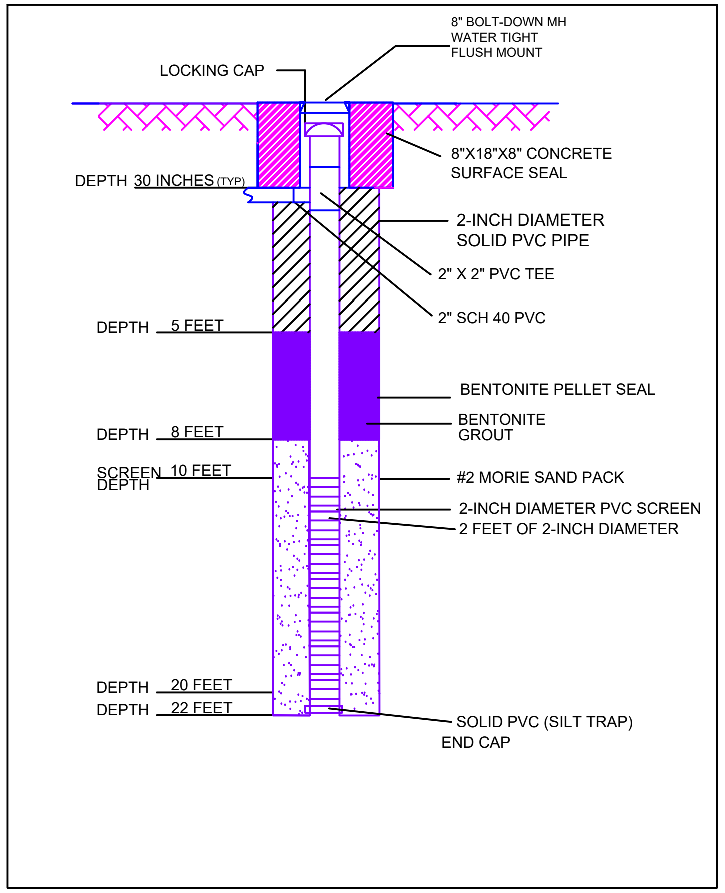
FIGURE 7

JOB NO: IMPL0115.6 | DATE: February 1, 2022

CAD FILE NAME: Z:\IMPL0115 (Imperial Cleaners)\IMPL0115.6 - 2019 Pre-Design Investigation\September 2020 Investigation\ACAD\IMPL0115.6 Onsite Remediation System (1-28-22) JMS.dwg

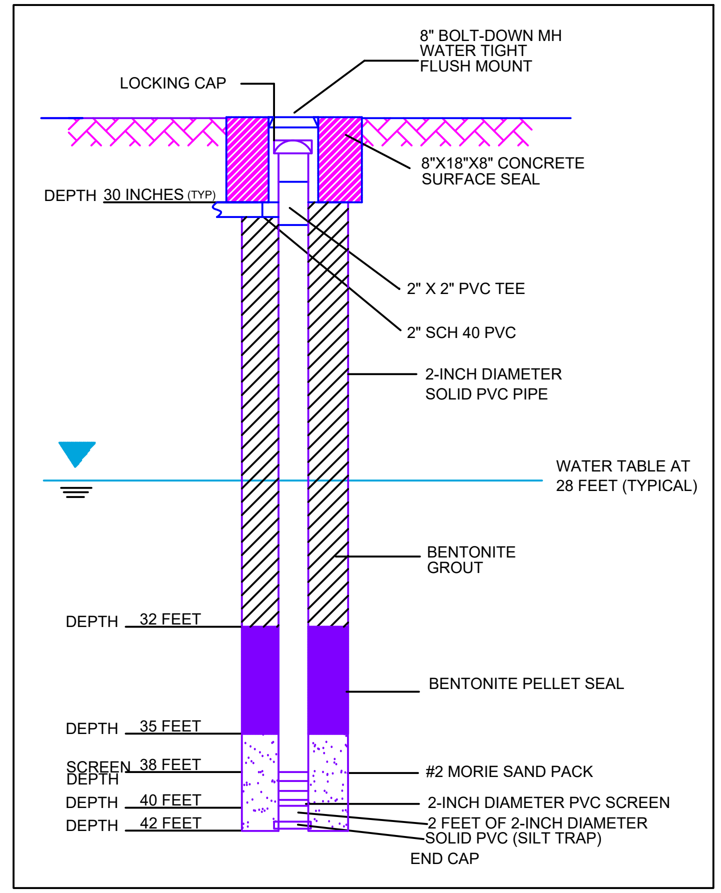
FIGURE 8

On-site Remediation System Details



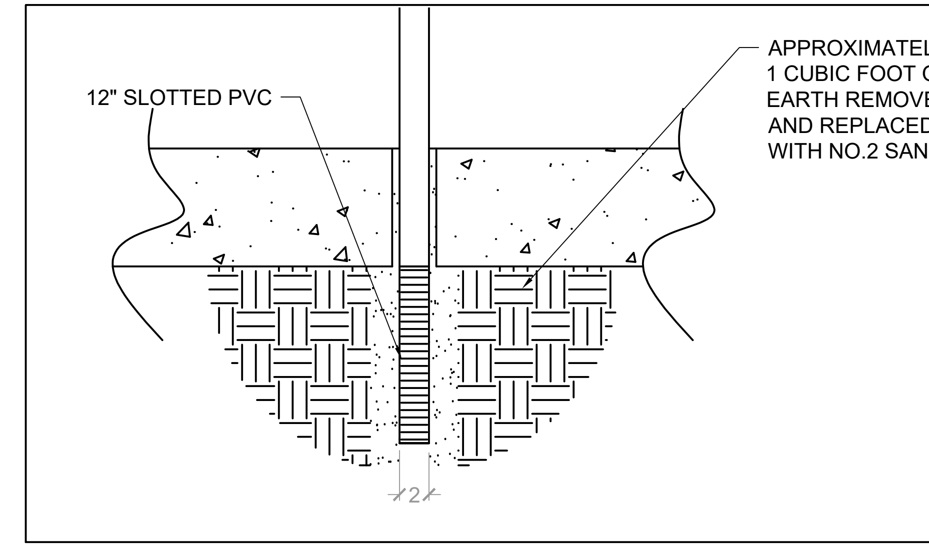
SOIL VAPOR EXTRACTION WELL (TYP.)

N.T.S.



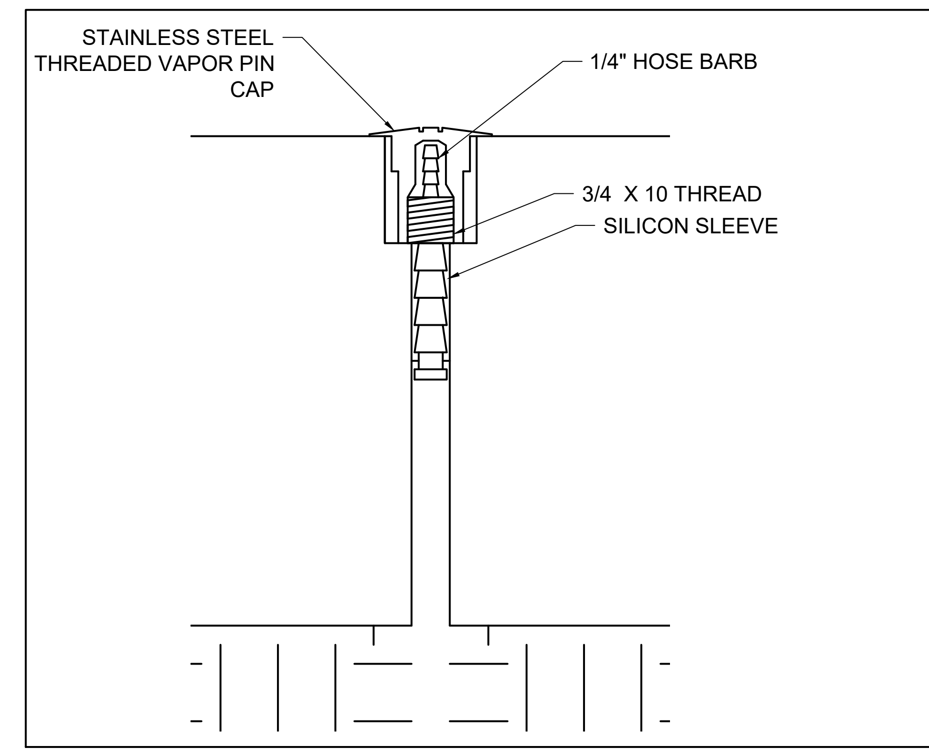
AIR SPARGING WELL (TYP.)

N.T.S.



SSD WELL POINT LAYOUT (TYP.)

N.T.S.



VAPOR PIN LAYOUT (TYP.)

N.T.S.

NOTES

1. PIEZOMETERS WILL BE INSTALLED 10 FT, 20 FT, 40 FT, AND 80 FT AWAY FROM SVE WELLS (4 TOTAL). LOCATIONS TO BE FIELD DETERMINED.

2. ALL DEPTHS ARE MEASURED FROM GROUND SURFACE.

3. CONSTRUCTION DETAIL ASSUMES DEPTH TO WATER AT 28 FEET +-.

4. ACTUAL SSD AND SVE/AIR SPARGE REMEDIAL SYSTEM DETAILS WILL BE DETERMINED BASED ON ACTUAL SITE CONDITIONS AND ON-SITE TESTING RESULTS. THE DETAILS WILL BE REVISED ACCORDINGLY.

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FORMER IMPERIAL CLEANERS SITE
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Lake Success, New York 11020

DRAWING TITLE:
ON-SITE REMEDIATION SYSTEM DETAILS

FIGURE
8

JOB NO: IMPL0115.6
DATE: February 1, 2022
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APPENDICES

APPENDIX A
Quality Assurance Project Plan (QAPP)

Quality Assurance Project Plan

at

Former Imperial Cleaners Site
218 Lakeville Road
Lake Success, New York 11020

NYSDEC BCP Site #C130225

January 2022

Prepared for:

Mr. Joseph Jones
Project Manager
NYS Department of Environmental Conservation
Remedial Bureau A, 11th Floor
625 Broadway
Albany, New York 12233

WALDEN ENVIRONMENTAL ENGINEERING, PLLC
Industry Leader in Environmental Engineering Consulting
PROACTIVE SOLUTIONS SINCE 1995

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1.0 Project Organization and Responsibilities

Walden Environmental Engineering, PLLC (Walden) maintains company policies and procedures to ensure that all sample collection and analyses meet a high degree of quality. These policies and procedures provide confidence that the resulting data provide an accurate representation of the matrix being sampled. Quality Assurance/Quality Control (QA/QC) starts with the design of the sampling program and ends with the summarized analytical data submitted in the final report. This Quality Assurance Project Plan (QAPP) describes these QA/QC policies and procedures which apply to implementation of the remedial alternative for the Former Imperial Cleaners Site ("Site" or "Subject Property") located at 218 Lakeville Road, Lake Success, NY.

The project Quality Assurance Officer (QAO) is responsible for ongoing surveillance of project activities, for ensuring conformance to this QAPP, and for evaluating the effectiveness of its requirements. The QAO has access to any personnel or subcontractors, as necessary, to resolve technical problems and take corrective action as appropriate and has the authority to recommend that work be stopped when there are factors present that may jeopardize quality. The QAO will be available to respond to immediate QA/QC problems.

The primary responsibilities of the QAO are as follows:

- Monitor the correction of QC problems and alert task leaders to where similar problems might occur.
- Develop and maintain project QA files for sampling, monitoring, and field QA records.
- Participate in QA audits.
- Recommend changes to the project manager to improve the effectiveness of the project in reaching its QA objectives for field sampling and monitoring activities.
- Review proposed additions and changes to this QAPP.

The project QA will be maintained under the direction of Ms. Jessica Bluth (see attached resume), who will be assigned as the project's QAO, in accordance with this QAPP. QC for specific tasks will be the responsibility of Walden and its subcontractors, which shall be selected at the time the work is required under the direction of Ms. Bluth.

2.0 Quality Assurance Project Plan Objectives

2.1 Overview

Overall project goals are defined through the development of Data Quality Objectives (DQOs), which are qualitative and quantitative statements that specify the quality of the data required to support decisions. Data quality is measured by how well the data meet the QA/QC goals of the project. In this plan, "Quality Assurance" and "Quality Control" are defined as follows:

- Quality Assurance - The total integrated program for assuring reliability of monitoring and measurement data.
- Quality Control - The routine application of procedures for obtaining prescribed standards of performance in the monitoring and measurement process.

As stated in the Guidance for Data Quality Objectives Process (EPA QA/G-4), DQOs are derived from the outputs of each step of the DQO process that:

- Classify the study objective;
- Define the most appropriate type of data to collect;
- Determine the most appropriate conditions from which to collect the data; and
- Specify acceptable levels of decision errors that will be used as the basis for establishing the quantity and quality of data needed to support the decision (USEPA, 1994).

A non-probabilistic (judgmental) sampling approach will be used to select the specific sampling locations for the areas of concern. A judgmental sampling design consists of directed samples at specific sampling locations to confirm the existence of contamination at these chosen locations based on visual or historical information (i.e., discoloration, staining, and deterioration).

Total study error is the combination of sampling and measurement error. Total study error is directly related to decision error. These decision errors can be controlled through the use of hypothesis testing. For this sampling, the null hypothesis (baseline condition) is that the parameter of interest exceeds the cleanup levels. This decision has the smallest degree of decision error. In addition, measurement error is reduced by analyzing individual samples using more precise laboratory and sampling methods. The sampling conducted as part of the remedial alternative for the Site will be performed with dedicated equipment and following the appropriate standard operating procedures for sample handling.

2.2 QA/QC Requirements

QA elements to be evaluated include accuracy, precision, sensitivity, representativeness and completeness. Reporting of the data must be clear, concise and comprehensive. The data generated by the analytical laboratory for this project is required to be sensitive enough to achieve detection levels low enough to meet Contract Required Quantitation Limits (CRQLs) as specified in NYSDEC Analytical Services Protocol (NYSDEC ASP) for Superfund CLP and EPA SW-846 methods performed in accordance with NYSDEC ASP protocol. The analytical results meeting the CRQLs will provide data sensitive enough to meet the objectives of the work described in the *Remedial Work Plan* (Walden, January 2022). The QC elements that are important to this project are blank contamination, instrument calibration, completeness of field data, sample-holding times, sample preservation and sample chain of custody.

2.3 Initial Instrument Calibration

Calibration curves will be developed for each of the compounds to be analyzed. Standard concentrations and a blank will be used to produce the initial curves. The development of calibration curves and initial calibration response factors must be consistent with method requirements presented in the most recent version of SW-846 and the NYSDEC's Analytical Services Protocol (ASP).

2.4 Continuing Instrument Calibration

The initial calibration curve will be verified every 12 hours by analyzing one calibration standard. The standard concentration will be the midpoint concentration of the initial calibration curve. The calibration check compound must come within 25% relative percent difference (RPD) of the average response factor obtained during initial calibration. If the RPD is greater than 25%, then corrective action must be taken as provided in the specific methodology.

2.5 Method Blanks, Field Blanks and Trip Blanks

Method blank or preparation blank is prepared from an analyze-free matrix, which includes the same reagents, internal standards and surrogate standards as the related samples. It is carried through the entire sample preparation and analytical procedure. A method blank analysis will be performed once for each 12-hour period during the analysis of samples for Volatile Organic Compounds (VOCs). The method blank will be used to demonstrate the level of laboratory background and reagent contamination that might result from the analytical process itself.

Field blanks and trip blanks will also be collected to ensure no contamination arises from sampling equipment or the transportation and handling methods.

2.6 Duplicates

Duplicate samples are two or more samples considered representative sub-samples of the same source. The samples are identically processed throughout the measurement system. For the samples collected to monitor the effectiveness of the SSD system, laboratory duplicate analyses will consist of one (1) sub-slab vapor sample, one (1) indoor air sample, and one (1) outdoor air sample for every batch of field samples. For the soil sampling conducted to determine the extent of VOC-impacted soil removal, one (1) duplicate sample will be collected per day of sampling. For perched groundwater, soil vapor and SVE system influent/effluent sampling conducted to evaluate the effectiveness of the SVE/air sparging system, one (1) duplicate sample of each medium will be collected per sampling event. Duplicate samples will be analyzed as per appropriate methodology. Duplicate analyses for Target Compound List (TCL) compounds will be associated with matrix spike and matrix spike duplicate analyses. The results of the duplicate analyses will be used to assess the precision of the measurement systems.

2.7 Surrogate Spike Analysis

Surrogate standard determinations will be performed on all samples and blanks analyzed by the analytical laboratory. All samples and blanks will be spiked with the appropriate surrogate compounds (as indicated by the methodology) before purging or extraction in order to monitor preparation and analyses of samples. Surrogate spike recoveries shall fall within the advisory limits in accordance with the SW-846 protocols for samples falling within the quantitation limits without dilution.

2.8 Matrix Spike/Matrix Spike Duplicate/Matrix Spike Blank Analysis

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) analyses will be performed to evaluate the matrix effect of the sample upon the analytical methodology along with the precision of the instrument by measuring recoveries. The MS/MSD samples will be analyzed for each group of samples of a similar matrix, at a rate of one for every batch of field samples. The Relative Percent Difference (RPD) will be calculated from the difference between the MS and MSD. Matrix spike blank (MSB) analysis will be performed to indicate the appropriateness of the spiking solution(s) used for the MS/MSD.

2.9 Accuracy

Accuracy is defined as the nearness of a result or the mean (x) of a set of results to the true value. Accuracy is assessed by means of reference samples and percent recoveries. Accuracy includes both precision and recovery, and is expressed as Percent Recovery (% REC). The MS sample is used to determine the percent recovery. The matrix spike % REC is calculated by the following equation:

$$\%REC = \frac{SSR - SR}{SA}$$

where:
SSR = measurement from spiked sample
SR = measurement from un-spiked sample
SA = actual data of spike added

2.10 Precision

Precision is defined as the measurement of agreement of a set of replicate results among themselves without assumption of any prior information as to the true result. Precision is assessed by means of duplicate/replicate sample analyses. Analytical precision is expressed in terms of Relative Percent Difference (RPD) which is calculated using the following equation:

$$RPD = \frac{D_1 - D_2}{(D_1 + D_2)/2}$$

where:
RPD = Relative Percent Difference
D_1 = larger sample value
D_2 = smaller sample value (duplicate)

2.11 Sensitivity

The sensitivity objectives for this plan require that data generated by the analytical laboratory achieve detection levels low enough to meet the CRQLs as specified by SW-846 methods. The Method Detection Limits (MDL) for target compounds and target analyses will be established by the analytical laboratory to be well below the remedial objectives and submit appropriate documentation to Walden as required by the QAO.

2.12 Representativeness

Representativeness is a measure of the relationship of an individual sample taken from a particular site to the remainder of the site and the relationship of a small aliquot of the sample (i.e., the one used in the actual analysis) to the sample remaining on-site. A blind duplicate is used to accomplish this task, as well as assessing the precision of the data. The RPD between the two samples should be less than 50%. The use of standardized techniques and statistical sampling methods influences the representativeness of an aliquot of sample to the sample at the site. The representativeness of samples is assured by adherence to sampling procedures presented in this document, therefore no specific representativeness samples are to be collected.

2.13 Completeness

Completeness is a measure of the quantity of data obtained from a measurement system as compared to the amount of data expected from the measurement system. Completeness is defined as the percentage of all results that are not affected by failing QC qualifiers and should be between 90% and 100% of all analyses performed. The objective of completeness in laboratory reporting is to provide a thorough data support package. The laboratory data package provides documentation of sample analysis and results in the form of summaries, QC data and raw analytical data. The laboratory will be required to submit data packages that follow SW-846 reporting format, which, at a minimum, will include the following components:

1. All sample chain-of custody forms.
2. The case narrative(s) presenting a discussion of any problems and/or procedural changes required during analyses. Also presented in the case narrative are sample summary forms.
3. Documentation demonstrating the laboratory's ability to attain the contract specified detection limits for all target analyses in all required matrices.
4. Tabulated target compound results and tentatively identified compounds.
5. Surrogate spike analysis results (organics).
6. Matrix spike/matrix spike duplicate results.
7. QC checks sample and standard recovery results.
8. Blank method results.
9. Internal standard area and RT summary.

2.14 Comparability

Comparability is the degree to which analytical data generated from an individual laboratory can be compared with those from another laboratory, in terms of use of standardized industry methods and equivalent instrumentation techniques. No laboratory split samples will be taken for this project.

3.0 <u>Calibration and Maintenance Procedures of Field Equipment</u>

Walden follows manufacturer's recommendations and guidelines with regard to field instrument calibration procedures. The calibration of each instrument will be checked prior to each day's use. The date and time of the calibration check, serial number, model number and signature of the calibrating technician will be entered into the field logbook. If the instrument readings are incorrect, the instrument will be either recalibrated by the technician or returned to the Walden's office where it will be further evaluated and/or repaired. If field instruments require major overhauls, the instruments will be returned to the appropriate manufacturer.

Preventive maintenance of field equipment is performed routinely before each sampling event and more extensive maintenance is performed based on hours of use. The Walden equipment coordinator has overall responsibility for the preventive maintenance program. However, certain maintenance programs are overseen by the project manager. Routinely, manually operated sampling equipment is checked to ensure it operates properly and that excessive wear has not occurred. If necessary, equipment is taken out of service for repair or replacement.

Soil and groundwater sampling equipment will be decontaminated with a water and alconox solution before every sample is taken. Any groundwater samples to be analyzed for PFAS and 1,4-dioxane will be collected in accordance with the procedures and requirements outlined in Groundwater Sampling for Emerging Contaminants (February 2018).

4.0 Tracer Gas Monitoring for SVI Sampling

A tracer gas will be used as a quality assurance/quality control (QA/QC) measure to verify the integrity of the soil vapor probe seal. This measure will be used to determine that the soil vapor sample has not been diluted by ambient air. Plastic sheeting will be placed around the sampling probes and sealed around the edges to create an adequate surface seal to prevent outdoor air infiltration. Helium tracer gas will be introduced under the plastic sheeting through a small opening to enrich the atmosphere in the immediate vicinity of the sampling probes with the tracer gas. A portable helium monitoring device will be used to analyze a soil vapor sample for the helium tracer gas to confirm the integrity of the probe seals before vapor samples were collected in Summa® canisters. The helium detector will serve to purge the points of 1 to 3 volumes of air prior to sampling.

5.0 Sample Custody

5.1 Overview

The handling of samples in the field and in the laboratory will conform to the sample custody procedures presented in this section. Field custody procedures involve proper sample identification, chain-of-custody forms, packaging and shipping procedures. Laboratory custody begins with the receipt of samples by the laboratory and continues through sample storage, analysis, data reporting and data archiving. This section provides the procedures that will be followed during the course of the project to ensure proper sample custody.

5.2 Field Custody Procedures for Off-Site Laboratory

The following elements are important for maintaining the field custody of samples:

- Sample identification
- Sample labels
- Custody records
- Shipping records
- Packaging procedures

Sample labels will be attached to all sampling containers before field activities begin. Each label will contain an identifying number and each number will have a suffix that identifies the site and where the sample was collected. Approximate sampling locations will be marked on a map with a description of the sample location. The number, type of sample and sample identification will be entered into the field logbook. A chain-of-custody form will accompany the sampling containers from the laboratory into the field. Upon receipt of the samples and cooler, the sampler will sign and date the first "received" blank space. After each sample is collected and appropriately identified entries will be made on the chain-of-custody form that will include:

- Site name and address
- Samplers' names and signatures
- Names and signatures of persons involved in chain of possession
- Sample number
- Number of containers
- Sampling station identification
- Date and time of collection
- Type of sample and the analyses requested
- Preservatives used (if any)
- Pertinent field data (if any)

After sampling has been completed, the samplers will return/ship the samples to the laboratory. The sampler will sign and date the next "relinquished" blank space. One copy of the custody form will remain with the field personnel and the remaining copies will accompany the samples to the laboratory. The samples will be shipped to the laboratory within 24 hours of collection. Samples will be received by laboratory personnel, who will assume custody of the samples and sign and date the next "received" blank.

5.3 Laboratory Custody Procedures

Upon receipt by the analytical laboratory, samples will proceed through an orderly processing sequence specifically designed to ensure continuous integrity of both the sample and its documentation.

All samples will be received by the laboratory's sample control group and will be carefully checked for label identification and completed accurate chain-of-custody records. The sample will be tracked from storage through the laboratory system until the analytical process is completed and the sample is returned to the custody of the sample control group for disposal. Generally, access to NYSDOH ELAP certified laboratories is restricted to prevent any unauthorized contact with samples, extracts, or documentation.

6.0 Sample Preparation and Analytical Procedures

Containers, preservation and holding times of environmental samples will be applied as detailed in the NYSDEC ASP. The holding time of samples for VOC analysis of air samples will be 30 days from the Verified Time of Sample Receipt (VTSR). Analyses of environmental samples will be performed by the protocol requirements of the SW-846.

The *Remedial Work Plan* (Walden, January 2022) discusses the analyses to be performed on the samples as part of the remedial activities at the Site. An operations, maintenance and monitoring program will be developed for the Site to evaluate the effectiveness of the remedy. In general, samples will be analyzed by the following methods:

- Soil
    - TCL VOCs by USEPA Method 5035

- Groundwater
    - TCL VOCs by USEPA Method 8260

- Soil Vapor and Indoor/Outdoor Air Samples
    - TCL VOCs by USEPA Method TO-15

If any modifications or additions to the standard procedures are anticipated, and if any nonstandard sample preparation or analytical protocol is to be used, the modifications and the nonstandard protocol will be explicitly defined and documented. Prior approval by Walden's QAO is necessary for any nonstandard analytical or sample preparation protocol used by the laboratory.

7.0 Data Reduction, Validation, Review and Reporting

7.1 Overview

The process of data reduction, review, and reporting ensures that assessments or conclusions based on the final data accurately reflect actual site conditions. This plan presents the specific procedures, methods, and format that will be employed for data reduction, review and reporting of each measurement parameter determined in the laboratory and field. Also described in this section is the process by which all data, reports and work plans are proofed and checked for technical and numerical errors prior to final submission.

7.2 Data Reduction

Data reduction is the process by which raw analytical data generated from the laboratory instrument systems are converted into usable mass concentrations. The raw data, which may take the form of summation of areas under the curve instrument responses, or observations is processed by the laboratory and converted into concentrations expressed in micrograms per kilogram for soil samples, micrograms per liter for perched groundwater samples, and in micrograms per cubic meter for soil vapor and air samples. The analytical laboratory will be required to follow SW-846 data reduction procedures.

Data reduction also includes the process by which raw field data is summarized into tables and graphs, from which quantitative or qualitative assessments can be derived by filter integration and evaluation. Field data that is anomalous will be thrown out to create a linear interpretation of the data that depicts a more accurate trend.

Field data obtained during sampling is summarized on appropriate field forms. This information will be used to assess field conditions at the time of sampling and is summarized and analyzed along with the chemistry data in the final report. Occasionally, the reduction of actual field data requires correcting measurement data for the measurement system's baseline value. The data will be adjusted only after the raw data has been submitted to Walden’s QAO and prior to preparation of the final report.

7.3 Walden Data Review

7.3.1 Laboratory Data

The QAO or a designee under the project manager’s supervision, will review each analytical data package for completeness (i.e., have all the analyses requested been performed?) and general protocol compliance, such as holding times, detection limits, spike recoveries and surrogate recoveries. The results of this review will be summarized and submitted to the independent validator with the data package. If information is found to be missing from the data package the analytical laboratory will be contacted and requested to submit any missing information.

7.3.2 Data Usability Report

Walden's QAO will evaluate all of the analytical laboratory data according to the NYSDEC Division of Environmental Remediation (DER) Data Usability Summary Report (DUSR) guidelines to determine if the data presented by the laboratory meets the project specific criteria for data quality and use. Taking into account protocols for sampling, transport, analysis, reduction, and reporting, the QAO will use this information and his/her own experience to establish whether the results of each analysis can be used for the purpose intended. Data deficiencies, analytical protocol deviations, and quality control problems are identified and the effect on the data is evaluated. It will be determined whether the final results can be used as reported, qualified to indicate limitations, or rejected outright.

7.4 Data Validation

Data validation is the systematic process by which data quality is determined with respect to data quality criteria that are defined in project and laboratory QC programs and within the referenced analytical methods. The data validation process consists of an assessment of the acceptability or validity of project data with respect to the stated project goals and the requirements for data usability. Ideally, data validation establishes the data quality in terms of project DQOs. Data validation consists of data editing, screening, checking, auditing, certification, review and interpretation.

The purpose of data validation is to define and document analytical data quality and determine whether the laboratory data quality is sufficient for the intended use(s) of the data. An approved independent data evaluator will not review data prior to its use in reports prepared by Walden unless requested by the NYSDEC. Both the field and laboratory data will be subjected to a level of data validation commensurate with the required data quality level. If required, the data will be validated in accordance with the following document: "Functional Guidelines for Evaluating Inorganic Analyses" and the "Functional Guidelines for Evaluating Organic Analyses" (Technical Directive Document No. HQ-8410-01, USEPA). The validator will evaluate the analytical laboratory's ability to meet the DQOs provided in this QAPP. Noncompliant data will be flagged in accordance with the NYSDEC ASP and corrective action will be undertaken to rectify any problems.

7.5 Reporting

7.5.1 Field Data Reporting

All field real-time measurements and observations will be recorded in project logbooks or field data records. Field measurements may include temperature, wind speed and direction, and PID results, if applicable. All data will be recorded directly and legibly into field logbooks. If entries are changed, the change will not obscure the original entry and the correction will be signed. Field data records will be organized into standard formats whenever possible and retained in permanent files.

7.5.2 Laboratory Data Reporting

All sample data packages submitted by the analytical laboratory will be required to be reported in conformance to the SW-846 deliverable requirements as applicable to the method utilized.

7.6 Data Usage

Soil data will be used to determine the extent of impacted soil excavation as part of the Site remedy. Soil vapor and groundwater data will be used to track the effectiveness of the SVE/air sparging system based on the applicable regulatory levels and project cleanup objectives. The sub-slab and indoor air sampling data will be used to monitor indoor air quality impacts and the effectiveness of the SSD system.

8.0 <u>Internal Quality Control</u>

8.1 Overview

QC checks will be performed to ensure the collection of representative and valid data. Internal QC refers to all data compilation and contaminant measurements. QC checks will be used to monitor project activities to determine whether QA objectives are being met. All specific internal QC checks to be used are identified in this section.

8.2 Laboratory Quality Control

The analytical laboratory is required to exercise internal control in a manner consistent with the requirements of this QAPP. Control checks and internal QC audits are required by the NYSDEC ASP methods. These include reference material analysis, blank analysis, MS/MSD analysis, cleanups, instrument adjustments and calibrations, standards and internal audits. One qualified professional will proof and check all final reports for transcription and/or calculation errors. Twenty percent of all final reports will be subsequently checked again by a qualified professional. All data tables will be checked to ensure no transcription errors have occurred. Data tables will also be checked to see that any criteria cited for comparison purposes is appropriate and correctly referenced. All calculations will be checked to ensure that they will be properly presented and that resulting values are achievable. If any results cannot be duplicated the calculations will be independently checked for accuracy.

9.0 Performance and System Audits

Performance audits, when performed, will be used to monitor project activities to assure compliance with project DQOs. Walden periodically conducts internal audits of field activities. Walden's on-site project manager will routinely monitor all field activities to ensure that work is done correctly. All sampling and analytical work will be reviewed routinely by the project manager. All data sheets obtained in the field will be initialed and dated by project manager after review and acceptance of the services performed. A field audit will include monitoring and evaluation of sample collection, sample holding times, preservation techniques, field QC and equipment calibration. These audit forms will be kept on file with the Walden project manager for a period of at least one (1) year after completion of the project, then will be transferred to storage and held for an additional five (5) years.

10.0 Analytical Corrective Action

10.1 Laboratory Corrective Action

Corrective actions will be implemented if unsatisfactory performance and/or system audit results indicate that problems exist. Corrective action may also be implemented if the result of a data assessment or internal QC check warrants such action.

11.0 Analytical Methods/Quality Assurance Summary Table

Parameter	**Information**
Matrix Type	Soil
Number of Samples to be Collected	TBD during excavation of impacted soil
Number of Field Blanks	1 per day of sampling
Number of Trip Blanks	1 per trip
Analytical Parameters	VOCs
Analytical Methods	USEPA Method 5035
Number of Matrix Spike Samples and Matrix Spike Duplicate to be Collected	To be determined after consultation with selected laboratory
Number and Type of Duplicate Samples to be Collected	1 per day of sampling
Sample Preservation	None
Sample Container Volume and Type	per USEPA Method 5035
Sample Holding Time	per USEPA Method 5035
Parameter	**Information**
Matrix Type	Groundwater
Number of Samples to be Collected	TBD based on remedial system O&M plan
Number of Field Blanks	1 per sampling event
Number of Trip Blanks	1 per trip
Analytical Parameters	VOCs
Analytical Methods	USEPA Method 8260
Number of Matrix Spike Samples and Matrix Spike Duplicate to be Collected	To be determined after consultation with selected laboratory
Number and Type of Duplicate Samples to be Collected	1 per sampling event
Sample Preservation	None
Sample Container Volume and Type	per USEPA Method 8260
Sample Holding Time	per USEPA Method 8260

Parameter	**Information**
Matrix Type	Soil Vapor, Sub-Slab Soil Vapor, Indoor/Outdoor Air, and SVE system Influent/Effluent Vapor
Number of Samples to be Collected	TBD based on remedial system O&M plan
Number of Field Blanks	1 per sampling event per medium
Number of Trip Blanks	1 per trip
Analytical Parameters	VOCs
Analytical Methods	USEPA Method TO-15
Number of Matrix Spike Samples and Matrix Spike Duplicate to be Collected	To be determined after consultation with selected laboratory
Number and Type of Duplicate Samples to be Collected	1 per sampling event per medium
Sample Preservation	None
Sample Container Volume and Type	per USEPA Method TO-15
Sample Holding Time	per USEPA Method TO-15

QUALITY ASSURANCE OFFICER RESUME

Jessica Bluth, P.G.

Project Manager

Ms. Bluth has over 15 years of experience as an Environmental Geologist. She is a licensed Professional Geologist and specializes in subsurface investigations, spill remediation, landfill post-closure and environmental monitoring, soil characterization, compliance inspections, tank removals, permitting, and violation resolution. Ms. Bluth has worked with diverse clientele in commercial, industrial and municipal markets including the Town of Hempstead in Nassau County and the Towns of Islip and East Hampton in Suffolk County, Long Island. She has conducted numerous environmental site assessments, soil/groundwater quality investigations and soil vapor intrusion studies, has executed several landfill post-closure monitoring programs, and has also performed tank-related services at many sites throughout New York State.

EDUCATION

M.S. in Geology
University of Pittsburgh, 2004

B.S. Geology, Cum Laude
State University of New York at Binghamton, Harpur College of Arts and Sciences, 2001

LICENSES/ CERTIFICATIONS

Professional Geologist in New York

Licensed Mold Assessor in New York

Long Island Association of Professional Geologists

American Institute of Professional Geologists (AIPG)

OSHA 40-hour HAZWOPER Health and Safety Training

Current 8-hour HAZWOPER Health and Safety Refresher

OSHA 10-hour Construction Safety Training

Loss Prevention System (LPS) Training

EXPERIENCE

- Coordinates, manages and performs monitoring and remedial activities at New York State Brownfield, Inactive Hazardous Waste Disposal (Superfund) and Solid Waste Management Program sites throughout Long Island and New York City
- Coordinates, manages and performs subsurface investigations including environmental and geotechnical soil boring activities and soil characterization in accordance with applicable standards (e.g. ASTM, Unified Soil Classification System, NYSDEC Part 360 Solid Waste Regulations)
- Coordinates, manages and performs field activities including groundwater, soil/sediment, underground injection control (UIC) and soil vapor intrusion (SVI) investigations and sampling; monitoring/remedial well installations and abandonments; large-scale remedial soil excavations; CAMP monitoring; and waste disposal oversight
- Manages and performs landfill post-closure gas and groundwater monitoring activities
- Manages and performs petroleum and chemical spill investigations and associated remedial activities
- Conducts Phase I and Phase II Environmental Site Assessments as well as on-going monitoring programs
- Conducts UST removals, compliance testing, permitting and violation resolutions for a variety of clients
- Performs analysis, interpretation and reporting of data (utilizing EQuIS and GAMA for data management purposes)
- Prepares technical reports including site investigation reports, remedial action plans, sampling reports, environmental site assessments, tank/spill closure reports, exposure assessments, soil boring logs, work plans, etc.
- Develops Spill Response and Prevention Plans including flow diagrams for possible spill outcomes, first response methods, management responsibilities and instructions for spill reporting

APPENDIX B
Health and Safety Plan (HASP)

Health and Safety Plan

at

Former Imperial Cleaners Site
218 Lakeville Road
Lake Success, New York 11020

NYSDEC BCP Site #C130225

January 2022

Prepared for:

Mr. Joseph Jones
Project Manager
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Appendices

1.0 Statement of Commitment to Worker Health and Safety

Walden Environmental Engineering, PLLC (Walden) employees may be exposed to risks from Site-related hazardous conditions while performing field activities related to the on-site remedial alternative to be implemented at the Former Imperial Cleaners Site located at 218 Lakeville Road, Lake Success, NY. Walden's policy is to minimize the possibility of work-related injury through aware and qualified supervision, health and safety training, medical monitoring and the use of appropriate Personal Protective Equipment (PPE). Walden has established a guidance program to implement this corporate policy in a manner that protects personnel to the maximum reasonable extent.

This Health and Safety Plan (HASP) applies to all Walden personnel, owners' representatives, subcontractors, New York State Department of Environmental Conservation (NYSDEC) and New York State Department of Health (NYSDOH) personnel and/or representatives on the job site where operations involve actual or potential physical and chemical hazards that have been identified by Walden or others during activities including but not limited to the following:

- Sub-slab soil vapor sampling
- Indoor air sampling
- Outdoor air sampling
- Excavation of impacted soils at the Site
- Construction or demolition work related to the on-site remedial action that disturbs surface or subsurface soils during installation of the sub-slab depressurization (SSD) system, soil vapor extraction (SVE) system and air sparging system at the Site

This HASP is also intended to inform and guide all personnel (Walden employees and/or owner representatives and/or NYSDEC/NYSDOH representatives and/or subcontractors) entering the exclusion zone, ensuring that each person sign and acknowledge the site hazards on the acknowledgement form provided in **Appendix I**. Walden and/or the owner's subcontractors are retained as independent contractors and, as such, are responsible for ensuring the safety of their employees.

Walden may require that personnel involved in implementing the on-site remedial alternative take certain precautions in accordance with this HASP, and Walden may request that others protect their personnel in a manner that they deem necessary or sufficient.

This HASP is based on the best available information to date. Should a conflict occur between this document and any other related Health and Safety Plans, Operating Procedures, regulations, etc., workers shall follow the most stringent/protective requirements. HASP Supplements will be generated, as necessary, to address any new information, change in conditions or activities.

While it is not possible to discover, evaluate, and protect in advance against all possible hazards which may be encountered throughout the course of this project, adherence to the requirements of this HASP will significantly reduce the potential for occupational injury.

2.0 General

2.1 Site Information

Owner Name: 218 Lakeville Aquistion LLC
Location: 218 Lakeville Road, Lake Success, New York 11020

2.2 Project Description

The Former Imperial Cleaners Site is located at 218 Lakeville Road, immediately south of Northern Boulevard (New York State Route 25A) and west of Lakeville Road in Lake Success, New York. A release of tetrachloroethylene (PCE) at the Site was first noted in 1995. Site investigations conducted at the Site and neighboring properties have identified PCE and its breakdown products, trichloroethylene (TCE) and cis-1,2-dichloroethylene (cis-1,2-DCE) as the primary constituents of concern in soil and groundwater at the Site.

Remediation will be implemented at the Site to address on-site soil and groundwater contamination and to mitigate on-site soil vapor intrusion (SVI) impacts. The remedy will involve excavation to remove residual VOC-contaminated soils identified at the Site around the rear parking lot dry well (DW-1) and beneath the building at the Site. Excavation will remove VOC mass from the Site, reduce the source of VOC vapors, and eliminate exposure via direct contact and ingestion.

A remedial system will be installed at the Subject Property, employing both SSD and SVE systems to prevent SVI into the on-Site building and to achieve further contaminant source removal by extracting VOC vapors from subsurface while containing VOCs on-Site and preventing off-Site vapor migration. Air sparging will be implemented in conjunction with SVE to enhance VOC removal from perched groundwater beneath the Site. Coupling this enhanced remedy with the targeted removal of contaminated soils from the Site will serve to remove VOCs from the subsurface to the extent practicable.

SVI sampling of sub-slab vapor, indoor air and outdoor air will be conducted to evaluate the effectiveness of the remedy in mitigating SVI impacts at the Site.

3.0 **Organizational Structure**

Primary Consultant: Walden Environmental Engineering, PLLC
16 Spring Street, Oyster Bay, New York 11771
(516) 624-7200 (phone)
(516) 624-3219 (fax)

Project Manager: Nora Brew, P.E.

On-Site Safety Coordinator: Erica Johnston or alternate

On-Site Health and Safety Officer (SSO): Erica Johnston or alternate

3.1 Project Manager

The Project Manager has the responsibility and authority to direct all operations related to this project. The Project Manager is responsible to observe and provide guidance to employees, subcontractors and visitors with regard to safe work behavior and safety training, discuss deviations from the work plan and any safety issues that arise, assist the SSO with the development and implementation of corrective actions for Site safety deficiencies, the implementation of this HASP and ensuring compliance.

3.2 Site Safety Officer

A qualified SSO will be continuously on the jobsite during the period of work and will have the authority to receive and execute any directions given by the owner representative in the absence of the Project Manager. The SSO will establish the necessary controlled work areas. The SSO will ensure that task areas are kept in a clean condition, free of rubbish and all undue accumulations and surplus materials while the work progresses. The SSO and/or Project Manager shall guarantee that all employees are fit for duty and that material and equipment is protected to prevent damage to employees and visitors, as well as, at the end of each work day, all rubbish and unused materials are removed and any damage done is repaired. These individuals will enforce this HASP, ensuring required safety equipment is on-site, clean and operable.

The SSO shall inspect work areas prior to commencement of daily activities. The SSO will take all corrective measures necessary to perform safe work during the remedial action. All inspections and corrective measures will be documented and communicated to Site workers at the initial safety meeting and subsequent safety meetings.

The SSO will coordinate all relevant health and safety issues, and may conduct specialized training and compliance inspections, as required. It will be the duty of the

SSO to provide emergency training to associated personnel and, in the event of an emergency situation, to inform the local authorities as to the nature of the incident. In case of an emergency incident, the SSO will be contacted immediately. The SSO is to work with the Project Manager to develop and implement any corrective actions that may be necessary.

The Project Manager and the SSO are responsible for periodically reviewing the HASP and its Attachments and any Supplements and, as necessary, amending them to keep current with new or changing conditions.

3.3 Employees

Employees are responsible for understanding and abiding by the policies and procedures specified in this HASP and other applicable safety policies, and clarifying those areas where understanding is incomplete; providing feedback to health and safety management relating to omissions and modifications in the HASP or other safety policies; and, notifying the SSO, in writing, of unsafe conditions and acts. Each employee shall sign this HASP in acknowledgement of such.

The health and safety authority of each employee assigned to the project includes the right to refuse to work and/or stop work authority when the employee feels that the work is unsafe (including subcontractors), or where specified safety precautions are not adequate or fully understood; the right to refuse to work on any task where the safety procedures specified in this HASP or other safety policies are not being followed; the right to contact the SSO at any time to discuss potential concerns; the right and duty to stop work when conditions are unsafe, and to assist in correcting these conditions.

3.4 Subcontractors

Subcontractors shall submit to the SSO a copy of their own health and safety plan or shall review and sign this document acknowledging acceptance and understanding of the information contained herein. Subcontractors are responsible for assigning specific work tasks to their employees. Subcontractors shall provide qualified employees equipped with the necessary PPE and training required for the task. Each subcontractor is responsible for compliance with the regulatory requirements that pertain to those services. Each subcontractor is expected to perform operations in accordance with their own unique safety policies and procedures, or those documented herein, in order to ensure that hazards associated with the performance of the work activities are properly controlled. Copies of any required safety documentation/certification for a subcontractor's work activities will be provided to Walden for review prior to the start of on-site activities, if required. Hazards not listed herein but known to any subcontractor must be identified to Walden prior to commencing any on-site activity. The Project

Manager and SSO have the authority to halt any subcontractor operations, and to remove any subcontractor or subcontractor employee for failure to comply with established health and safety procedures or for operating in an unsafe manner.

3.5 Visitors

Authorized visitors requiring entry to any work location on-site shall be briefed by the SSO on the hazards present prior to entry and acknowledge receipt of this briefing by signing this HASP. Visitors shall be escorted at all times within the controlled zones and shall be responsible for compliance with all health and safety policies. All visitors shall hold the appropriate qualifications, training and PPE which are required for entry to any controlled work area. Should a visitor requiring entry to an exclusion zone fail to meet the qualifications for that zone, all work activities within the exclusion zone shall halt while the visitor is within the controlled zone.

3.6 Training

All personnel performing work must be qualified for their assigned project task, as determined by the Project Manager. They must meet the training and medical monitoring requirements necessary for the task and as described herein. If possible exposure above an OSHA permissible exposure limit (PEL) has or is expected to occur, employees must be required to receive supplemental medical testing to document any symptoms that may be specific to the particular materials present.

Training programs instruct employees on the intent of the OSHA standards, health and safety principles and procedures, proper operation of monitoring instruments, use of personal protective equipment, decontamination, and specific emergency plans. All personnel are required to remain current in all of their required training and evaluate their need for additional training when there is a change in work. In addition to the general health and safety training programs, personnel will be required to complete any supplemental task specific training (e.g. OSHA 40 Hour HAZWOPER training) developed for the tasks to be performed. Administration and compliance with the requirements for additional task-specific training will be the responsibility of the Project Manager. Any additional required training that is completed will be documented and tracked in the project files. Additional training will be provided to any employees responsible for responding to emergencies.

A copy of this HASP will also be made available to all personnel for review. All employees on-site will sign the Record of HASP Acknowledgement form (**Appendix I**) to verify they have reviewed this Plan. Any subcontractors involved in implementing the work plan will be required to acknowledge that their employees have received adequate training.

All on-site personnel involved with the project will attend a pre-entry briefing on the contents of this HASP, including hazards. The initial health and safety briefing will consist of the following information:

- Names of personnel and alternates responsible for worker safety and health;
- Injury, illness, and other potential project hazards;
- Safe use of engineering controls and equipment on-site;
- Work practices by which the employee can minimize risks from hazards;
- Selection, use, care, and maintenance of PPE; and
- Standard operation safety procedures.

Documentation of all training, testing and medical monitoring certificates (if applicable) will be maintained by Walden.

All site-related workers entering the exclusion zone must be trained in accordance with 29 CFR 1910.120 E3 and E4, and all others must have at least 29 CFR 1910.120 E3.

Documentation of Walden personnel training is maintained on files and each Walden employee will have copies of his/her applicable 40-Hour OSHA Training, 8-Hour Refresher and Supervision Training Certificates on-site (maintained by the job health and safety officer or designee).

Each subcontractor working on the job must provide the site safety officer with training documentation for its personnel.

3.7 Affidavit

All Walden personnel and subcontractors who enter site-related exclusion zones must sign the attached Safety Plan Acknowledgment form (**Appendix I**). Walden personnel and site-related subcontractors must also read and comply with Walden's generic HASP.

3.8 Alternative Work Practices

Underground utilities must be identified before commencing any subsurface work. Blowers may be employed to reduce and disperse any releases of toxic gases. If items proposed within the work plan are modified based on changes in field conditions, they would be evaluated and an addendum would be prepared to cover these alternative work practices.

4.0 Controlled Work Areas

Controlled work areas will be established prior to and for each work area, depending on the task, and shall float (move around) depending on the tasks being performed on any given day. Each controlled work area will consist of three (3) zones: the exclusion zone, the contaminant reduction zone and the support zone based on the degree of danger present. To the extent possible, the support and contaminant reduction zones will be established outside of the exclusion zone.

4.1 Exclusion Zone

The exclusion zone consists of the primary activity area, as defined by the SSO. Only personnel directly involved with performance of a job task within that area and meeting the required qualifications (40 Hour HAZWOPER trained) may be allowed entry. Before entering the exclusion zone, all personnel must be familiar with emergency response procedures, Site safety locations, first aid and communication equipment, and the locations of the map to the hospital and the list of emergency telephone numbers. Attempts will be made so that equipment and site activities taking place in the exclusion zone are situated so that personnel are upwind of potential contaminant sources. Fans or blowers will be used, if necessary, to disperse gases released during site-related activities.

4.2 Contaminant Reduction Zone

The contaminant reduction zone shall be located between the exclusion zone and the support zone. In this area authorized personnel (those with 40 Hour HAZWOPER training) will don protective equipment, as needed in the exclusion zone. When exiting the restricted area, personnel will remove contaminated PPE.

4.3 Support Zone

The support zone shall extend beyond the exclusion and contaminant reduction zones, where other support activities shall occur, such as first aid, equipment supply, etc., and where vendors, subcontractors and inspectors, and the like, shall be allowed. The support zone shall be established prior to commencement of activities and shall serve as the entry point for controlling access.

Trespassers shall be immediately escorted outside of these established areas and all work within these areas shall halt until the trespasser has been removed.

5.0 Site Access

Access to work areas will be denied to the general public via the SSO or designated personnel, thus establishing the perimeter of controlled work areas, minimizing potential exposure to unauthorized individuals, protecting the public from hazards and preventing vandalism. All equipment and materials will be secured during non-work hours. Continuous communication (via portable radios, hand signals, telephones, etc.) shall be maintained between the SSO and key personnel associated with this project at all times during field operations.

In the event of an emergency, the project personnel and subcontractors should assemble at the predetermined assembly area, designated by the site safety officer.

The predetermined assembly area for the remedial work activities is the sidewalk in front of 218 Lakeville Road. The project manager or on-site health and safety officer may relocate this area, if necessary.

6.0 Hazard Assessment

This section identifies the general and activity-specific hazards associated with the on-site remedial action and what should be implemented to reduce the hazards; identifies general physical hazards that can be expected; and presents a summary of documented or potential chemical hazards that may be encountered during the work. Every effort must be made to reduce or eliminate these hazards. Those which cannot be eliminated must be guarded against by using engineering controls and/or personal protective equipment.

6.1 Chemical Hazards

Hazardous substances are defined as the suspected or known hazardous substances stored, within any media (contaminated), etc.

In soil, perched groundwater and sub-slab soil vapor: The Volatile Organic Compounds (VOCs) PCE, TCE and cis-1,2-DCE have been identified in soil, groundwater and sub-slab soil vapor at the Site. These VOCs have also been identified in soil vapor beneath off-site properties.

Chemical	OSHA Permissible Exposure Limit (PEL), 8-Hour Time-Weighted Average (TWA)	OSHA Short-term Exposure Limit (STEL)
Tetrachloroethylene	25 ppm*	100 ppm
Trichloroethylene	25 ppm	100 ppm
1,2-Dichloroethene	200 ppm	n/a

*ppm = parts per million

SDSs, along with a list of those materials covered by the SDSs, will be available to all personnel (including subcontractors) for all hazardous substances brought on-site. SDS for chemicals/contaminants known to be associated with the Site are provided in **Appendix II**. Any employee or subcontractor intending to bring a hazardous material onto the job-site must first provide a copy of the SDS to the SSO for review and filing. Should an SDS be necessary but not available for the material in question, the material may not be brought into the work area.

The major route of exposure to these contaminants will be respiratory in nature, however dermal exposure is also possible. Inhalation of vapors and contaminated dusts would provide the mechanism for respiratory exposure. Skin contact with soils and groundwater would result in dermal exposure. The work will use engineering controls, work practices, air monitoring and personnel protective equipment to reduce the amount of potential exposure. Restricting access to controlled work areas, staying upwind of potential sources, adhering to personal hygiene practices and wearing proper safety equipment will reduce risk of injuries.

During construction, excavation, sampling and soil management activities, air monitoring shall be performed with a PID and/or multi-gas meter to determine if workers are at risk for chemical exposure. Air monitoring equipment shall be calibrated daily and noted in a log book. Air monitoring shall be performed by trained Walden individuals, only. If concentrations exceed the TWA values listed in the table above, the SSO shall immediately instruct the workers to stop work. Once everyone is removed from the work area, the SSO shall consider the following measures, listed in order from most desirable to least desirable:

- Installation of engineering controls (e.g., ventilation, containment of source);
- Administrative controls; and
- Donning of PPE; upgrading PPE.

The SSO shall decide which of the above options are feasible and make a rational decision based on available resources. Workers shall not be allowed back into the work zone until the chemical hazard is properly mitigated, with no exceptions.

6.2 Hazard Assessment

Defined as toxic effects, including Threshold Limit Values (TLVs), Immediately Dangerous to Life or Health values (IDLHs), reactivity, stability, flammability and operational hazards associated with work activities.

The major route of exposure to potential contaminants will be respiratory; however, dermal exposure may also be possible. Inhalation of vapors and contaminated dusts would provide the mechanism for respiratory exposure. Skin contact with soils and groundwater would result in dermal exposure. PCE is the primary compound of concern. The program will use engineering controls and Personal Protective Equipment (PPE) to reduce the amount of potential exposure. Continuous air monitoring and personal protection devices will serve to prevent exposure to chemicals.

All field personnel, except for the equipment operator, must remain away from the equipment while work is taking place. All field personnel, including the operator, must wear steel-toe boots. All persons unrelated to the project must remain outside the exclusion zone while work is taking place. If persons other than Walden personnel or associated contractors have business in the exclusion area, they must remain at a safe distance away as determined by the site health and safety officer.

During typical work activities, surfaces can be expected to become uneven and slippery, causing unsure footing and requiring additional care by personnel engaged in operations. Additional site hazards are presented by the possibility of airborne and waterborne transport of hazardous materials and the presence of contaminated materials and equipment. Other site hazards include those that exist on all sites where construction type operations take place, e.g., dangers from falling equipment, cuts, abrasions, and contusions.

General Work Hazards

Tasks required for this project may involve exposure to slipping/tripping/falling, manual lifting, noise, heat/cold stress, electrical, hand and power tools, operation of motorized vehicles, and other physical hazards associated with sampling activities, construction, building renovations, etc. Adequate lighting will be provided for indoor work.

Slipping/Falling: Slips, trips and falls are the most common workplace incidents and can result in serious injuries, even death. General housekeeping of the Site, PPE, attention to your surroundings, minimizing distractions and warding off fatigue can all help to minimize risk of slips, trips and falls. Work areas shall be kept free of any materials, obstructions and substances that could cause a hazardous situation. Workers shall ensure clear footing and avoid obstructions, holes, protruding objects or other tripping hazards and look out for uneven, unstable and slippery terrain. Designated routes shall be taken, not shortcuts, and makeshift substitutes of equipment must not be used. Workers are prohibited from horse-play and shall ensure a clear path prior to carrying/moving equipment.

Manual Lifting: Lifting/carrying of equipment and materials may cause strains, particularly back injuries, fatigue and over-exertion. Proper lifting techniques should be exercised; bend at the knees, let your legs do the lifting, do not twist while lifting, bring the load as close to you as possible prior to lifting, be sure there is a clear walking path, use mechanical devices for heavier objects, team lift.

Noise: The operation of certain equipment (e.g., excavators, generators, nearby construction work, etc.) may result in momentary high noise levels which could result in temporary to permanent hearing loss and interference in communication. Hearing protection (e.g. ear plugs, ear muffs) will be used as necessary; as a rule of thumb, if it becomes necessary to shout at someone three (3) feet away, hearing protection should be worn.

Eye Protection: All work activities involving possible eye injury (chemical splash, etc.), must have approved eye wash units readily available. Protective eyewear shall be donned in Level D, when directed by the SSO.

Heat Stress: Monitoring of personnel wearing personal protective clothing should commence when the ambient temperature is 72°F or above. Monitoring frequency should increase as ambient temperature increases or as slow recovery rates are observed. Heat stress monitoring should be performed by the SSO, who shall be able to recognize symptoms of heat stress; refer to **Appendix III**.

Proper training and preventive measures will aid in averting loss of worker productivity and serious illness. Heat stress prevention is particularly important because once a person suffers from heat stroke or heat exhaustion, that person may be predisposed to additional heat-related illness. To avoid heat stress, the following steps should be taken:

- Adjust work schedules;
- Mandate work slowdowns as needed;
- Perform work during cooler hours of the day if possible or at night if adequate lighting can be provided;
- Provide shelter (air conditioned, if possible) or shaded areas to protect personnel during rest periods; and
- Maintain workers' body fluids at normal levels. This is necessary to ensure that the cardiovascular system functions adequately. Daily fluid intake must approximately equal the amount of water lost in sweat, i.e. eight (8) fluid ounces (0.23 liters) of water must be ingested for approximately every eight (8) ounces (0.23 kg) of weight lost. When heavy sweating occurs, encourage workers to drink more. The following strategies may be useful:
  - Maintain water temperature between 50° and 60°F (10° to 16.6°C);
  - Provide small disposal cups that hold about four ounces (0.1 liter);
  - Have workers drink sixteen (16) ounces (0.5 liter) of fluid (preferably water or dilute drinks) before beginning work;
  - Urge workers to drink one (1) or two (2) cups every 15 to 20 minutes, or at each monitoring break. A total of 1 to 1.6 gallons (4 to 6 liters) of fluid per day are recommended, but more may be necessary to maintain body weight; and
  - Train workers to recognize the symptoms of heat-related illness.

Should an employee display signs of heat exhaustion (fatigue, weakness, profuse sweating, normal temperature, pale clammy skin, headache, cramps, vomiting, fainting), they are to be immediately removed from the hot area and lay down with their feet raised. Their clothing should be loosened or removed and cool, wet clothes applied. If the victim is not vomiting, they should be encouraged to take small sips of water.

Should an employee display signs of heat stroke (dizziness, nausea, severe headache, hot and dry skin, confusion, collapse, delirium, coma and death), seek immediate emergency medical attention. Remove the victim from the hot area and remove clothing, lay them down and cool their body (shower, cool wet clothes); do not give stimulants to the victim. Refer to **Appendix III** for further instruction.

Cold Stress: Cold stress is a result of cold, wetness, and wind. A worker's susceptibility to cold stress can vary according to their physical fitness, degree of acclimatization to cold weather, age, and diet. If work on this project occurs during winter months, thermal injury due to cold exposure can become a problem for on-site personnel. A cold-stress monitoring program shall be implemented, as appropriate. Workers should be aware of the local cold exposure hazard (frostbite) and the overall cold exposure hazard (hypothermia). Refer to **Appendix IV** for further information on Cold Stress.

To prevent cold-related illness:

- Educate workers to recognize the symptoms of frostbite and hypothermia;
- Identify and limit known risk factors;
- Assure the availability of enclosed, heated environments on or adjacent to the Site;
- Assure the availability of dry changes of clothing;
- Assure the availability of warm drinks; and
- Start oral temperature recording at the Site:
    - At the SSO or Project Manager's discretion when changes in a worker's performance or mental status are suspected;
    - At a worker's request;
    - As a screening measure, two (2) times per shift, under unusually hazardous conditions (e.g. wind chill less than 20°F or wind chill less than 30°F with precipitation); and
    - As a screening measure whenever any worker develops hypothermia.

Electrical: Hazards associated with electricity include shock, electrocution, burns, fires and explosions, as well as trip and fall hazards from power cords, and including electrical hazards and exposure to carbon monoxide from the use of portable generators. No work is to be performed on electrical equipment or near any part of an electrical circuit unless the worker is protected against shock by guarding or de-energizing and grounding the circuit. Ground Fault Circuit Interrupters (GFCIs) are required for portable tools. Extension cords shall be rated for hard or extra hard use and must be capable of grounding. All cords shall be inspected prior to use for wear and exposed wiring, strain, rips, tears, cuts or burns; defective cords shall be taken out of commission. Generators shall be fueled only after being shut down and allowed to cool, in addition, portable generators shall not be utilized indoors; the exhaust is to pointed downwind from workers.

Hand and Power Tools: The use of hand and power tools can present a variety of hazards, including physical harm from being struck by flying objects, being cut or struck by the tool, sparks, fire, abrasions, contusions and electrocution, or being exposed to harmful dusts, fumes, mists, vapors or gases. Ground Fault Circuit Interrupters are required for portable tools. Workers shall confirm that all tools are in proper operating condition and that they are used in accordance with applicable manufacturers' recommendations. All appropriate PPE must be provided and utilized throughout the duration of applicable tasks.

Operation of Motorized Vehicles: Moving vehicles can be a danger whether one is within or outside of a vehicle. Distracted drivers, drivers under the influence of drugs/alcohol, tired drivers can all lead to injury, damage or death. Only authorized workers may operate motorized vehicles. Site conditions may include off-road surfaces and operation should be performed according to ground conditions. Authorized drivers must comply with all applicable state laws while operating the vehicle and possess the appropriate qualifications. Loads shall be secured and within the appropriate weight limit for the vehicle (including the number of passengers). Vehicles shall be inspected prior to use and taken out of commission if deemed unsafe. The vehicles shall be properly maintained. Operators are not to be distracted, should wear seatbelts anytime a vehicle is in motion and headlights shall be used during operation. Operation by an employee who has recently partaken in consumption of alcoholic beverages and/or illegal drugs is prohibited.

7.0 Personal Protective Equipment

The purpose of Personal Protective Equipment (PPE) is to provide a barrier, which will shield or isolate individuals from the chemical and/or physical hazards that may be encountered during work activities. The level of worker protection can be increased or reduced if determined by an employee exposure assessment. Until an employee exposure assessment is complete, the following procedures and PPE shall be made available:

- Head protection;
- Foot protection;
- Hand protection;
- Eye protection;
- Hearing protection; and
- Respiratory protection.

By signing this HASP, the employee agrees to having been trained in the use, limitations, care and maintenance of the PPE to be used by the employee at this project. If training has not been provided, request same of the SSO for the proper training before signing.

7.1 Head Protection

Workers and individuals within work areas where overhead work is being performed must wear protective helmets. The protective helmets will reduce the potential for permanent injury to the head from falling and/or sharp edged objects. The head protection shall comply with the ANSI and the International Safety Equipment Association (ISEA) latest standard ANSI/ISEA Z89.1-2014, "Industrial Head Protection".

7.2 Foot Protection

All personnel and individuals in the work areas will wear steel-toed or equivalent protective footwear to help prevent foot injuries from falling or rolling objects, objects piercing the footwear sole, and/or exposure to electrical hazards. The footwear will be properly secured to the feet at all times. Protective footwear will comply with the American National Standard for Safety-Toe Footwear, Z41.1-1967.

7.3 Hand Protection

All workers entering the work areas will use hand protection to prevent injuries caused from exposure, abrasions, lacerations, and burns of any type. The performance characteristics of the hand protection will reflect the task(s) of the individual worker. If worn, protective disposable clothing will cover the hand protection as much as possible.

7.4 Eye Protection

All workers and individuals within the work areas will use appropriate eye protection to reduce the potential of damage caused by splashing, falling or flying objects/materials. The eye protection should fit securely on the face so the objects/materials will not enter from any side of the protection (goggles that seal to the face using an elastic headband are recommended). Eye protection will comply with ANSI/ISEA Z87.1-2015 Standards.

7.5 Hearing Protection

All workers and individuals within the work areas will use appropriate hearing protection if operations produce noise levels that exceed permissible noise exposure levels. Exposure to impulsive or impact noise should not exceed 140 dBA peak sound pressure level. Hearing protection will be recommended if either continuous or impact noise levels exceed 90 dBA (slow response) for an 8-hour work shift. If unable to carry out conversation at an arm length or at three (3) feet distance, hearing protection such as ear plugs or muffs will be used. Hearing protection selected must control employee exposures to comply with OSHA permissible noise standards if noise levels exceed OSHA permissible noise levels. Where disposable earplugs are selected, sufficient supplies will be maintained on-site to allow for multiple changeovers per day, per worker. A non-“roll-down” type earplug, such as the E-A-R Pod Plug, should be considered to reduce the potential for ear canal contamination.

7.6 Respiratory Protection

All personnel and individuals in the work areas will wear respiratory protective equipment when needed, to help prevent exposure to any fumes, vapors, dust, and other respiratory hazards that may be encountered during on-site activities. The respirators (if needed) will be properly fitted and employees who wear or may wear respiratory protection will undergo fit-testing. Respiratory protection will comply with applicable National Institute for Occupational Safety and Health (NIOSH) and American Society for Testing and Materials (ASTM) International Standards depending on the type of PPE to be worn.

During work activities including, but not limited to, saw-cutting of concrete and the operation of power tools such as jackhammers, grinders or drills on concrete or cement, personnel will wear protective equipment to prevent the inhalation of dust and silica particles.

7.7 PPE Program

PPE will be required when work activities generate and/or involve known or suspected atmospheric vapors, gases, liquids, or particulates at or above satisfactory health and safety levels or regulatory action limits. Protective equipment shall be ANSI/ISEA/NIOSH-approved.

For the work covered under this HASP, PPE should typically comprise Level D protection. Should air monitoring indicate that Level D fails to meet protection requirements, work shall be stopped and PPE shall be upgraded to Level C. Level D PPE consists of:

- Standard work uniform with coveralls or tyvek, as needed;
- Steel-toe and steel shank work boots;
- Hard hat;
- Gloves, as needed;
- Safety glasses; and
- Hearing protection, as needed.

Level C PPE consists of:
- Full face respirator fitted with appropriate organic vapor cartridge and Level D PPE.

Before use of protective clothing, all personnel shall determine that the clothing material is correct for the specified task at hand. The clothing is to be visually inspected for imperfect seams, non-uniform coatings, tears and malfunctioning closures.

Before using gloves, they are to be checked for pinhole leaks. It is imperative that any equipment found to be defective be replaced immediately.

The following information is to provide on-site personnel with helpful hints that, when applied, make donning and doffing of PPE a safer and more manageable task:

- Have a “buddy” check your ensemble to ensure proper donning before entering controlled work areas. Without mirrors, the most obvious discrepancies can go unnoticed and may result in a potential exposure situation;
- Never perform personal decontamination with a pressure washer;
- Decontamination of equipment with water and a detergent shall be performed while PPE is still worn; and
- PPE will be removed and personnel will thoroughly wash their hands prior to leaving the work area.

All PPE is to be bagged and contained in the proper receptacle prior to proper off-site disposal.

7.8 Task Specific Level of Protection

Personal Protective Equipment Requirements

Location	Level of Protection/Tasks	Description
Support Zone	D	Steel toe boots and work clothes
Exclusion Zone and Contamination Reduction Zone	To be determined by the site safety officer based on contamination present D (modified) C	 Steel toe boots, nitrile or latex gloves, hard hat, safety glasses Full face respirator fitted with organic vapor cartridge and Level D

7.9 Communications

In the event that Level C respiratory protection is used, hand signals will be developed for communication. At this point, all proposed site-related work would be conducted in Level D PPE.

8.0 Monitoring Procedures

Monitoring will be conducted during implementation of the on-site remedial action to identify contaminants and contaminant concentrations in all applicable media.

OSHA Permissible Exposure Limits (PEL) and American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLV) may be exceeded during remedial activities or when contaminated media are exposed or disturbed during other construction activities. These activities will be closely monitored and evaluated to determine potential for exceeding standards and the need to implement control measures to protect personnel and the environment.

8.1 Air Monitoring

Direct reading instruments will be used in active work areas in order to enable rapid field decisions regarding levels of respiratory protection, as well as indicate the need for increased monitoring frequency at the edge of the exclusion zone. Walden staff will conduct air monitoring during all intrusive activities.

A MiniRAE or equivalent PID, which is calibrated daily and adjusted to give maximum sensitivity to the contaminants of concern will be used to monitor the air on a continuous basis while intrusive activities are performed. Should the meter read 0.5 parts per million (ppm) or greater above background in the breathing zone for more than one (1) minute and the source of the reading is unknown, work will be stopped until PPE is upgraded; the same holds true if the meter reads greater than five (5) ppm above background levels in the breathing zone for more than thirty (30) continuous seconds.

PPE requirements and upgrade thresholds are summarized in the tables presented below.

Personal Protective Equipment Requirements Table

Location	Level of Protection/Tasks	Description
Support Zone	**D**	**Steel toe boots and work clothes**
Exclusion Zone and Contaminant Reduction Zone	**To be determined by the site safety officer based on contamination present**	
	D (modified)	**Steel toe boots, nitrile or latex gloves, hard hat, safety glasses**
	C	**Full face respirator fitted with organic vapor cartridge and Level D PPE.**
	B	**Positive pressure, pressure demand self-contained breathing apparatus or positive pressure, pressure demand supplied air and Level C PPE.**

Air Monitoring Action Levels Table

Instrument	Hazard Monitored	Instrument Reading	Action Required
PID	**Organic Vapors**	**0.5 ppm or greater above background in the breathing zone for 1 minute and the source of the reading is unknown.** **5 ppm or greater above background in the breathing zone for 30 continuous seconds**	**PPE will be upgraded to Level C.** **Stop work. Evaluate the source and upgrade Level C to Level B.**
Combustible Gas Indicator	**Explosive Vapors**	**>10% LEL**	**Explosion hazard! Withdraw from the area immediately until LEL <10%.**
Oxygen Meter	**Oxygen**	**<19.5% O_2**	**Stop work and withdraw from area until oxygen levels increase.**

The following are examples of actions that can be implemented in addition to PPE upgrades to reduce the potential for contaminant release and exposure:

- Cover areas of exposed soils;
- Increase ventilation; and
- Install measures to contain areas of contaminant release.

8.2 Calibration

Any exposure monitoring instruments used will be calibrated at the beginning of each work shift, in accordance with the manufacturer's recommendations. If the owner's manual is not available, the personnel operating the equipment will contact the applicable office representative, rental agency or manufacturer for technical guidance for proper calibration. If equipment cannot be pre-calibrated to specifications, operations requiring monitoring for worker exposure will be postponed or temporarily ceased until this requirement is completed.

9.0 Decontamination and Disposal

Decontamination procedures apply to all contaminated personnel, surfaces, materials, instruments, equipment, etc. PPE will be removed prior to removing any respiratory protection. All personnel will thoroughly wash their hands and face before leaving the site. Subsurface tools will be steam-cleaned or washed with Alconox detergent and water, then followed by a deionized water rinse and/or air-drying.

Disposal procedures also apply to all contaminated equipment, supplies, disposable items and wash water. Any PPE will be bagged and contained in a drum designated for PPE disposal. All decontamination water and materials will also be drummed and disposed of off-site.

10.0 <u>Emergency Procedures</u>

Site personnel must be prepared in the event of an emergency. Emergencies can take many forms including: illnesses, injuries, chemical exposure, fires, spills, leaks, releases of harmful contaminants, or sudden changes in the weather. Walden employees shall not participate in any emergency response where there are potential safety or health hazards (i.e., fire, explosion or chemical exposure); their actions will thus be limited to evacuation. Predetermined safe areas shall be determined and relayed by the SSO to all on-site personnel at the start of each shift and will be based on prevailing wind direction. Evacuation routes established by work area locations will be highlighted on a Site map and periodically reviewed.

Free and clear egress from the work areas shall be provided. Preparatory meetings will be held to ensure that procedures for reporting and responding to emergency incidents are compatible with emergency response of local, state, and federal agencies. The emergency response plan will be rehearsed prior to start-up of site activities.

A communication network shall be established prior to commencement of any on-site tasks. At least one (1) on-site person shall have a phone accessible and in good working order at all times. Hand signals shall be used in instances when verbal communication is not feasible. The Project Manager, followed by the SSO, will immediately coordinate any and all emergency situations with the proper local medical/emergency organizations and personnel at the project site. In the event of a fire, use of fire-fighting equipment available on-site may be administered, if appropriate; removing or isolating flammable or other hazardous materials that may contribute to the fire will be performed. The personnel on-site will coordinate evacuation procedures (if necessary) and remain a safe distance away from the area of health and safety concern. Personnel on-site may need to perform basic first aid as warranted by the emergency situation. Personnel with suspected neck or back injuries must not be moved. A detailed written report of the emergency situation will be provided within 24 hours to Walden by the Project Manager or SSO. Site security and control will be enforced by the SSO with consent for undertaken measures from the Project Manager. The SSO is responsible for pre-emergency planning, as well as emergency recognition and prevention.

10.1 <u>Emergency Services</u>

Emergency Medical Facility:	North Shore University Hospital
Location:	300 Community Drive
	Manhasset, NY 11030
Telephone:	(516) 562-0100

Directions to hospital from the Site (Refer to **Appendix V**): Make left onto Lakeville Road and head north to Northern Boulevard (Route 25A). Make right onto Northern

Boulevard heading east. Take Northern Boulevard 0.7 miles and turn right onto Community Drive heading south. Continue 0.3 miles on Community Drive and arrive at North Shore University Hospital (300 Community Drive, Manhasset, NY).

Ambulance Service:	911
Fire Department:	911
Police Department:	911
North Shore University Hospital (Non-emergency):	(516) 562-0100
National Response Center:	(800) 424-8802
Poison Control Center	(800) 222-1222
NYSDEC Spill Hotline	(800) 457-7362

10.2 Personnel Exposure

In event of personnel exposure (skin contact, inhalation, ingestion, specific procedures for specific chemicals):

- Skin Contact: Wash with soap and water.
- Inhalation: Remove to fresh air, monitor for ABCs (Airway, Breathing and Circulation).
- Ingestion: Call Poison Control Center and monitor ABCs.
- Eye Exposure: Repeated eye flush, monitor ABCs and transport to hospital.

Burns

For minor burns (redness or blisters over a small area), flush the wound with cold water and apply a sterile dressing; do not use butter or similar substance on any burn and do not break open blisters.

For major burns (white or charred skin; redness or blisters over a large area; burns on face, hands or genital area), cover the wound with sterile dressing and seek immediate emergency medical attention.

In the event of a chemical burn (spilled liquid or dry chemical on skin), promptly seek medical attention. For a liquid chemical burn, flush the wound with large amounts of water immediately and keep the water at a gentle flow. For dry chemical burns, brush off as much as possible before flushing with water. In both instances, flush the wound for at least five (5) minutes before covering with sterile dressing. Never use anything but water on a burned area and do not break open blisters.

Eye Wounds

Should an individual find/feel they have a foreign object in their eye, do not rub the eye; have them pull their upper eyelid over their lower eyelid or run plain water over the eye. If the object persists, cover both eyes with a gauze dressing and aid them in seeking immediate emergency medical attention.

If the eye is wounded (eyelid or eyeball; pain; history of blow to eye area; discoloration), seek immediate emergency medical attention and apply loose sterile dressing over both eyes. For bruising, a cold compress or ice pack should be used to relieve pain and reduce swelling. Do not try to remove any imbedded object or apply any pressure to an injured eye.

If the eye has sustained a chemical burn, seek immediate emergency medical attention. Flush the open eye (it may be necessary to hold the patient's eyelid open) immediately with water for at least ten (10) minutes, twenty (20) minutes if the substance was alkali. Cover both eyes with sterile dressing. Never put anything but water in the eye.

10.3 First Aid Kit and Medical Emergencies

A basic first aid kit will be maintained and readily available (never locked up) within easy access to work areas (in personnel vehicles on-site). At a minimum, the first aid kit will include the following as per ANSI Z308.1-1978: aspirin, bandage compresses, adhesive/triangular bandages (to keep wounds clean), medical tape, gauze, scissors, tweezers, sterilization lotion/cream, eye dressing, and antibacterial lotion/soap or pads. Items are to be replaced as they are used. Sterile items must be wrapped, sealed and used only once. Reusable items, such as scissors and tape, shall be kept clean. Should plentiful amounts of clean water not be available, eye flush shall be utilized.

10.4 Potential or Actual Fire or Explosion

In event of potential or actual fire or explosion:
If a fire or explosion occurs leave the site and contact the appropriate emergency team (i.e., fire or police).

All personnel shall be notified if a fire occurs; the local fire department shall also be notified. When notifying the local fire department: remain calm and speak clearly and slowly; give the exact location of the fire and describe the situation; give a phone number for the location you are calling from; and, do not hang up until you are told to do so.

10.5 Environmental Accident

In event of environmental accident (spread of contamination outside site):

Stop spread of chemical as best as possible and notify Walden, NYSDEC, associated contractors and Nassau County Health Department at first opportunity.

All environmental spills or releases of hazardous materials are to be immediately reported to the SSO and dealt with according to the chemical manufacturers recommended procedures, which can be found on the SDS. The SDS for chemicals/contaminants identified during historic Site investigations are provided in **Appendix II**.

10.6 Incident Reporting

If an accident, fire, or release of toxic materials occurs during the course of work, the Project Manager shall be telephoned immediately and receive written notification within 24 hours. That notification shall include the following information:

- Name, organization, telephone number, and location of the Contractor;
- Name and title of the person(s) reporting;
- Date and time of the accident/incident;
- Location of the accident/incident (i.e., site location);
- Brief summary of the accident/incident giving pertinent details including type of operation ongoing at the time of the accident/incident;
- Cause of the accident/incident, if known;
- Casualties (fatalities, disabling injuries);
- Details of any existing chemical hazard or contamination;
- Estimated property damage and effect on contract schedule;
- Action taken by Contractor to ensure safety and security; and
- Other damage or injuries sustained, public, or private.

If any employee of a subcontractor is injured, documentation of the incident will be recorded in accordance with the subcontractor's procedures; however, copies of all documentation (which at a minimum must include the OSHA Form 301 or equivalent) must be provided to the SSO within 24 hours after the accident has occurred. All accidents/incidents will be investigated. Copies of all subcontractor accident investigations will be provided to the SSO within five (5) days of the accident/incident.

APPENDICES

Appendix I: Site Safety Plan Acknowledgement Form

I have read and understand the procedures set forth in this Health and Safety Plan for the on-site remedial activities at the Former Imperial Cleaners Site, 218 Lakeville Road, Lake Success, NY.

Printed Name	Signature	Representing	Date

Appendix II: Safety Data Sheets

SAFETY DATA SHEET

Creation Date 22-Sep-2009 **Revision Date** 23-Jan-2018 **Revision Number** 3

1. Identification

Product Name **cis-1,2-Dichloroethylene**

Cat No. : **AC113380000; AC113380025; AC113380100; AC113380500**

Synonyms cis-Acetylene dichloride.

Recommended Use Laboratory chemicals.
Uses advised against Not for food, drug, pesticide or biocidal product use

Details of the supplier of the safety data sheet

Company
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

Emergency Telephone Number
For information **US** call: 001-800-ACROS-01 / **Europe** call: +32 14 57 52 11
Emergency Number **US:**001-201-796-7100 / **Europe:** +32 14 57 52 99
CHEMTREC Tel. No.**US:**001-800-424-9300 / **Europe:**001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids	Category 2
Acute oral toxicity	Category 4
Acute Inhalation Toxicity - Vapors	Category 4
Skin Corrosion/irritation	Category 2
Serious Eye Damage/Eye Irritation	Category 2
Specific target organ toxicity (single exposure)	Category 3
Target Organs - Respiratory system.	

Label Elements

Signal Word
Danger

Hazard Statements
Highly flammable liquid and vapor
Harmful if swallowed
Harmful if inhaled
Causes serious eye irritation
Causes skin irritation
May cause respiratory irritation

Precautionary Statements
Prevention
Wear protective gloves/protective clothing/eye protection/face protection
Use only outdoors or in a well-ventilated area
Avoid breathing dust/fume/gas/mist/vapors/spray
Keep away from heat/sparks/open flames/hot surfaces. - No smoking
Keep container tightly closed
Ground/bond container and receiving equipment
Take precautionary measures against static discharge
Do not eat, drink or smoke when using this product
Response
Call a POISON CENTER or doctor/physician if you feel unwell
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Call a POISON CENTER or doctor/physician if you feel unwell
Skin
IF ON SKIN: Wash with plenty of soap and water
Take off contaminated clothing and wash before reuse
If skin irritation occurs: Get medical advice/attention
Eyes
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
Ingestion
Rinse mouth
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
Fire
Explosion risk in case of fire
Fight fire with normal precautions from a reasonable distance
Evacuate area
Storage
Store in a well-ventilated place. Keep cool
Store in a closed container
Store locked up
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
None identified

3. Composition/Information on Ingredients

Component	CAS-No	Weight %
cis-1,2-Dichloroethylene	156-59-2	97

4. First-aid measures

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. Obtain medical attention.

Inhalation	Move to fresh air. Obtain medical attention. If not breathing, give artificial respiration.
Ingestion	Do not induce vomiting. Obtain medical attention.
Most important symptoms and effects	Breathing difficulties. Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting
Notes to Physician	Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media	Water spray. Carbon dioxide (CO_2). Dry chemical. Use water spray to cool unopened containers. Chemical foam. Cool closed containers exposed to fire with water spray.
Unsuitable Extinguishing Media	No information available
Flash Point	6 °C / 42.8 °F
Method -	No information available
Autoignition Temperature	440 °C / 824 °F

Explosion Limits

Upper	12.80%
Lower	9.70%
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical
Flammable. Vapors may travel to source of ignition and flash back. Containers may explode when heated. Vapors may form explosive mixtures with air.

Hazardous Combustion Products
Hydrogen chloride gas Carbon monoxide (CO) Carbon dioxide (CO_2)
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical hazards
2	3	0	N/A

6. Accidental release measures

Personal Precautions	Ensure adequate ventilation. Use personal protective equipment. Remove all sources of ignition. Take precautionary measures against static discharges. Avoid contact with skin, eyes and clothing.
Environmental Precautions	See Section 12 for additional ecological information. Do not flush into surface water or sanitary sewer system.
Methods for Containment and Clean Up	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

7. Handling and storage

Handling	Ensure adequate ventilation. Wear personal protective equipment. Use explosion-proof equipment. Use only non-sparking tools. Avoid contact with skin, eyes and clothing. Avoid breathing dust/fume/gas/mist/vapors/spray. Avoid ingestion and inhalation. Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharges. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded.

Storage Keep in a dry, cool and well-ventilated place. Keep container tightly closed. Keep away from heat and sources of ignition. Flammables area. Keep container tightly closed in a dry and well-ventilated place.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH	Mexico OEL (TWA)
cis-1,2-Dichloroethylene	TWA: 200 ppm			

Legend

ACGIH - American Conference of Governmental Industrial Hygienists

Engineering Measures Ensure adequate ventilation, especially in confined areas. Use explosion-proof electrical/ventilating/lighting/equipment. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection No protective equipment is needed under normal use conditions.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Liquid
Appearance	Colorless
Odor	aromatic
Odor Threshold	No information available
pH	No information available
Melting Point/Range	-80 °C / -112 °F
Boiling Point/Range	60 °C / 140 °F @ 760 mmHg
Flash Point	6 °C / 42.8 °F
Evaporation Rate	No information available
Flammability (solid,gas)	Not applicable
Flammability or explosive limits	
Upper	12.80%
Lower	9.70%
Vapor Pressure	201 mmHg @ 25 °C
Vapor Density	3.34 (Air = 1.0)
Specific Gravity	1.280
Solubility	No information available
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	440 °C / 824 °F
Decomposition Temperature	No information available
Viscosity	No information available
Molecular Formula	C2 H2 Cl2
Molecular Weight	96.94

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Stable under normal conditions.

Conditions to Avoid Keep away from open flames, hot surfaces and sources of ignition. Exposure to air. Exposure to light. Incompatible products. Exposure to moist air or water.

Incompatible Materials Bases

Hazardous Decomposition Products Hydrogen chloride gas, Carbon monoxide (CO), Carbon dioxide (CO_2)

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information
Component Information
Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation Irritating to eyes, respiratory system and skin

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
cis-1,2-Dichloroethylene	156-59-2	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure Respiratory system
STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects,both acute and delayed Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

Do not empty into drains. Do not flush into surface water or sanitary sewer system. Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment. The product contains following substances which are hazardous for the environment.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea

cis-1,2-Dichloroethylene	Not listed	Not listed	EC50 = 721 mg/L 5 min EC50 = 905 mg/L 30 min	Not listed

Persistence and Degradability Persistence is unlikely based on information available.

Bioaccumulation/ Accumulation No information available.

Mobility Will likely be mobile in the environment due to its volatility.

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT

UN-No	UN1150
Proper Shipping Name	1,2-DICHLOROETHYLENE
Hazard Class	3
Packing Group	II

TDG

UN-No	UN1150
Proper Shipping Name	1,2-DICHLOROETHYLENE
Hazard Class	3
Packing Group	II

IATA

UN-No	1150
Proper Shipping Name	1,2-DICHLOROETHYLENE
Hazard Class	3
Packing Group	II

IMDG/IMO

UN-No	1150
Proper Shipping Name	1,2-DICHLOROETHYLENE
Hazard Class	3
Packing Group	II

15. Regulatory information

International Inventories

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
cis-1,2-Dichloroethylene	X	-	X	205-859-7	-		-	X	X	X	X

Legend:
X - Listed
E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
P - Indicates a commenced PMN substance
R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).
Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b) Not applicable

SARA 313	Not applicable
SARA 311/312 Hazard Categories	See section 2 for more information
CWA (Clean Water Act)	Not applicable
Clean Air Act	Not applicable

OSHA Occupational Safety and Health Administration
Not applicable

CERCLA

California Proposition 65 This product does not contain any Proposition 65 chemicals

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
cis-1,2-Dichloroethylene	X	-	X	-	-

U.S. Department of Transportation

Reportable Quantity (RQ):	N
DOT Marine Pollutant	N
DOT Severe Marine Pollutant	N

U.S. Department of Homeland Security
This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

16. Other information

Prepared By	Regulatory Affairs Thermo Fisher Scientific Email: EMSDS.RA@thermofisher.com
Creation Date	22-Sep-2009
Revision Date	23-Jan-2018
Print Date	23-Jan-2018
Revision Summary	This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

SAFETY DATA SHEET

Creation Date 10-Dec-2009 **Revision Date** 23-Jan-2018 **Revision Number** 5

1. Identification

Product Name	**Tetrachloroethylene**
Cat No. :	**AC445690000; ACR445690010; AC445690025; AC445691000**
CAS-No	127-18-4
Synonyms	Perchloroethylene
Recommended Use	Laboratory chemicals.
Uses advised against	Not for food, drug, pesticide or biocidal product use

Details of the supplier of the safety data sheet

Company
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

Emergency Telephone Number
For information **US** call: 001-800-ACROS-01 / **Europe** call: +32 14 57 52 11
Emergency Number **US:**001-201-796-7100 / **Europe:** +32 14 57 52 99
CHEMTREC Tel. No.**US:**001-800-424-9300 / **Europe:**001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Skin Corrosion/irritation	Category 2
Serious Eye Damage/Eye Irritation	Category 2
Skin Sensitization	Category 1
Carcinogenicity	Category 1B
Specific target organ toxicity (single exposure)	Category 3
Target Organs - Central nervous system (CNS).	
Specific target organ toxicity - (repeated exposure)	Category 2
Target Organs - Kidney, Liver, Blood.	

Label Elements

Signal Word
Danger

Hazard Statements
Causes skin irritation
Causes serious eye irritation
May cause an allergic skin reaction
May cause drowsiness or dizziness
May cause cancer
May cause damage to organs through prolonged or repeated exposure

Precautionary Statements
Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wash face, hands and any exposed skin thoroughly after handling
Contaminated work clothing should not be allowed out of the workplace
Do not breathe dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Wear protective gloves/protective clothing/eye protection/face protection
Response
IF exposed or concerned: Get medical attention/advice
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Skin
IF ON SKIN: Wash with plenty of soap and water
Take off contaminated clothing and wash before reuse
If skin irritation or rash occurs: Get medical advice/attention
Eyes
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
Toxic to aquatic life with long lasting effects
WARNING. Cancer - https://www.p65warnings.ca.gov/.

3. Composition/Information on Ingredients

Component	CAS-No	Weight %
Tetrachloroethylene	127-18-4	>95

4. First-aid measures

General Advice If symptoms persist, call a physician.

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. If skin irritation persists, call a physician.

Inhalation Move to fresh air. If not breathing, give artificial respiration. Get medical attention if symptoms occur.

Ingestion Clean mouth with water and drink afterwards plenty of water.

Most important symptoms and effects	None reasonably foreseeable. May cause allergic skin reaction. Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting: Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing
Notes to Physician	Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Unsuitable Extinguishing Media	No information available
Flash Point	No information available
Method -	No information available
Autoignition Temperature	No information available
Explosion Limits	
Upper	No data available
Lower	No data available
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical
Thermal decomposition can lead to release of irritating gases and vapors. Containers may explode when heated.

Hazardous Combustion Products
Chlorine Hydrogen chloride gas Phosgene
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical hazards
2	0	0	N/A

6. Accidental release measures

Personal Precautions	Use personal protective equipment. Ensure adequate ventilation.
Environmental Precautions	Do not flush into surface water or sanitary sewer system.
Methods for Containment and Clean Up	Soak up with inert absorbent material. Keep in suitable, closed containers for disposal.

7. Handling and storage

Handling	Wear personal protective equipment. Do not get in eyes, on skin, or on clothing. Ensure adequate ventilation. Avoid ingestion and inhalation.
Storage	Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from sunlight.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH	Mexico OEL (TWA)
Tetrachloroethylene	TWA: 25 ppm STEL: 100 ppm	(Vacated) TWA: 25 ppm (Vacated) TWA: 170 mg/m^3 Ceiling: 200 ppm TWA: 100 ppm	IDLH: 150 ppm	TWA: 100 ppm TWA: 670 mg/m^3 TWA: 200 ppm TWA: 1250 mg/m^3 STEL: 200 ppm STEL: 1340 mg/m^3

Legend

ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
NIOSH IDLH: The National Institute for Occupational Safety and Health Immediately Dangerous to Life or Health

Engineering Measures Use only under a chemical fume hood. Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection Long sleeved clothing.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Liquid
Appearance	Colorless
Odor	Characteristic, sweet
Odor Threshold	No information available
pH	No information available
Melting Point/Range	-22 °C / -7.6 °F
Boiling Point/Range	120 - 122 °C / 248 - 251.6 °F @ 760 mmHg
Flash Point	No information available
Evaporation Rate	6.0 (Ether = 1.0)
Flammability (solid,gas)	Not applicable
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	18 mbar @ 20 °C
Vapor Density	No information available
Density	1.619
Specific Gravity	1.625
Solubility	0.15 g/L water (20°C)
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	> 150°C
Viscosity	0.89 mPa s at 20 °C
Molecular Formula	C2 Cl4
Molecular Weight	165.83

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Stable under normal conditions.

Conditions to Avoid Incompatible products. Excess heat. Exposure to moist air or water.

Incompatible Materials Strong acids, Strong oxidizing agents, Strong bases, Metals, Zinc, Amines, Aluminium

Hazardous Decomposition Products Chlorine, Hydrogen chloride gas, Phosgene

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information
Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Tetrachloroethylene	LD50 = 2629 mg/kg (Rat)	LD50 > 10000 mg/kg (Rat)	LC50 = 27.8 mg/L (Rat) 4 h

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation Irritating to eyes and skin

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Tetrachloroethylene	127-18-4	Group 2A	Reasonably Anticipated	A3	X	A3

IARC: (International Agency for Research on Cancer)
IARC: (International Agency for Research on Cancer)
Group 1 - Carcinogenic to Humans
Group 2A - Probably Carcinogenic to Humans
Group 2B - Possibly Carcinogenic to Humans

NTP: (National Toxicity Program)
NTP: (National Toxicity Program)
Known - Known Carcinogen
Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen

ACGIH: (American Conference of Governmental Industrial Hygienists)
A1 - Known Human Carcinogen
A2 - Suspected Human Carcinogen
A3 - Animal Carcinogen
ACGIH: (American Conference of Governmental Industrial Hygienists)

Mexico - Occupational Exposure Limits - Carcinogens
Mexico - Occupational Exposure Limits - Carcinogens
A1 - Confirmed Human Carcinogen
A2 - Suspected Human Carcinogen
A3 - Confirmed Animal Carcinogen
A4 - Not Classifiable as a Human Carcinogen
A5 - Not Suspected as a Human Carcinogen

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure Central nervous system (CNS)

STOT - repeated exposure Kidney Liver Blood

Aspiration hazard No information available

Symptoms / effects,both acute and delayed Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting: Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing

Endocrine Disruptor Information

Component	EU - Endocrine Disrupters Candidate List	EU - Endocrine Disruptors - Evaluated Substances	Japan - Endocrine Disruptor Information
Tetrachloroethylene	Group II Chemical	Not applicable	Not applicable

Other Adverse Effects Tumorigenic effects have been reported in experimental animals.

12. Ecological information

Ecotoxicity

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. The product contains following substances which are hazardous for the environment.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Tetrachloroethylene	EC50: > 500 mg/L, 96h (Pseudokirchneriella subcapitata)	LC50: 4.73 - 5.27 mg/L, 96h flow-through (Oncorhynchus mykiss) LC50: 11.0 - 15.0 mg/L, 96h static (Lepomis macrochirus) LC50: 8.6 - 13.5 mg/L, 96h static (Pimephales promelas) LC50: 12.4 - 14.4 mg/L, 96h flow-through (Pimephales promelas)	EC50 = 100 mg/L 24 h EC50 = 112 mg/L 24 h EC50 = 120.0 mg/L 30 min	EC50: 6.1 - 9.0 mg/L, 48h Static (Daphnia magna)

Persistence and Degradability Insoluble in water Persistence is unlikely based on information available.

Bioaccumulation/ Accumulation No information available.

Mobility . Is not likely mobile in the environment due its low water solubility. Will likely be mobile in the environment due to its volatility.

Component	log Pow
Tetrachloroethylene	2.53 - 2.88

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
Tetrachloroethylene - 127-18-4	U210	-

14. Transport information

DOT

UN-No UN1897
Proper Shipping Name TETRACHLOROETHYLENE
Hazard Class 6.1
Packing Group III

TDG

UN-No UN1897

Proper Shipping Name	TETRACHLOROETHYLENE
Hazard Class	6.1
Packing Group	III

IATA

UN-No	UN1897
Proper Shipping Name	TETRACHLOROETHYLENE
Hazard Class	6.1
Packing Group	III

IMDG/IMO

UN-No	UN1897
Proper Shipping Name	TETRACHLOROETHYLENE
Hazard Class	6.1
Subsidiary Hazard Class	P
Packing Group	III

15. Regulatory information

All of the components in the product are on the following Inventory lists: X = listed

International Inventories

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
Tetrachloroethylene	X	X	-	204-825-9	-		X	X	X	X	X

Legend:
X - Listed
E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
P - Indicates a commenced PMN substance
R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).
Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b) Not applicable

SARA 313

Component	CAS-No	Weight %	SARA 313 - Threshold Values %
Tetrachloroethylene	127-18-4	>95	0.1

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Tetrachloroethylene	-	-	X	X

Clean Air Act

Component	HAPS Data	Class 1 Ozone Depletors	Class 2 Ozone Depletors
Tetrachloroethylene	X		-

OSHA Occupational Safety and Health Administration
Not applicable

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs
Tetrachloroethylene	100 lb 1 lb	-

California Proposition 65

This product contains the following proposition 65 chemicals

Component	CAS-No	California Prop. 65	Prop 65 NSRL	Category
Tetrachloroethylene	127-18-4	Carcinogen	14 µg/day	Carcinogen

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Tetrachloroethylene	X	X	X	X	X

U.S. Department of Transportation

Reportable Quantity (RQ): Y
DOT Marine Pollutant Y
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security

This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

16. Other information

Prepared By

Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date 10-Dec-2009
Revision Date 23-Jan-2018
Print Date 23-Jan-2018
Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

SAFETY DATA SHEET

Creation Date 03-Feb-2010 **Revision Date** 14-Jul-2016 **Revision Number** 2

1. Identification

Product Name	**Trichloroethylene**
Cat No. :	**T340-4; T341-4; T341-20; T341-500; T403-4**
Synonyms	Trichloroethene (Stabilized/Technical/Electronic/Certified ACS)
Recommended Use	Laboratory chemicals.
Uses advised against	

Details of the supplier of the safety data sheet

Company
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Emergency Telephone Number
CHEMTREC®, Inside the USA: 800-424-9300
CHEMTREC®, Outside the USA: 001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Skin Corrosion/irritation	Category 2
Serious Eye Damage/Eye Irritation	Category 2
Skin Sensitization	Category 1
Germ Cell Mutagenicity	Category 2
Carcinogenicity	Category 1A
Specific target organ toxicity (single exposure)	Category 3
Target Organs - Central nervous system (CNS).	
Specific target organ toxicity - (repeated exposure)	Category 2
Target Organs - Kidney, Liver, Heart, spleen, Blood.	

Label Elements

Signal Word
Danger

Hazard Statements
Causes skin irritation
Causes serious eye irritation
May cause an allergic skin reaction
May cause drowsiness or dizziness
Suspected of causing genetic defects
May cause cancer
May cause damage to organs through prolonged or repeated exposure

 

Precautionary Statements
Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wash face, hands and any exposed skin thoroughly after handling
Contaminated work clothing should not be allowed out of the workplace
Do not breathe dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Wear protective gloves/protective clothing/eye protection/face protection
Response
IF exposed or concerned: Get medical attention/advice
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Skin
IF ON SKIN: Wash with plenty of soap and water
Take off contaminated clothing and wash before reuse
If skin irritation or rash occurs: Get medical advice/attention
Eyes
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
Harmful to aquatic life with long lasting effects
WARNING! This product contains a chemical known in the State of California to cause cancer, birth defects or other reproductive harm.

3. Composition / information on ingredients

Component	CAS-No	Weight %
Trichloroethylene	79-01-6	100

4. First-aid measures

General Advice Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.

Inhalation Move to fresh air. If not breathing, give artificial respiration. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a

	pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.
Ingestion	Do not induce vomiting. Call a physician or Poison Control Center immediately.
Most important symptoms/effects	None reasonably foreseeable. May cause allergic skin reaction. Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting: Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing
Notes to Physician	Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Unsuitable Extinguishing Media	No information available
Flash Point	No information available
Method -	No information available
Autoignition Temperature	410 °C / 770 °F
Explosion Limits	
Upper	10.5 vol %
Lower	8 vol %
Oxidizing Properties	Not oxidising
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical
Thermal decomposition can lead to release of irritating gases and vapors. Containers may explode when heated. Keep product and empty container away from heat and sources of ignition.

Hazardous Combustion Products
Hydrogen chloride gas Chlorine Phosgene Carbon monoxide (CO) Carbon dioxide (CO_2)

Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

NFPA

Health	Flammability	Instability	Physical hazards
2	1	0	N/A

6. Accidental release measures

Personal Precautions	Ensure adequate ventilation. Use personal protective equipment. Keep people away from and upwind of spill/leak. Evacuate personnel to safe areas.
Environmental Precautions	Should not be released into the environment. Do not flush into surface water or sanitary sewer system.
Methods for Containment and Clean Up	Soak up with inert absorbent material. Keep in suitable, closed containers for disposal.

7. Handling and storage

Handling	Wear personal protective equipment. Do not get in eyes, on skin, or on clothing. Use only under a chemical fume hood. Do not breathe vapors or spray mist. Do not ingest.
Storage	Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from light. Do not store in aluminum containers.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH	Mexico OEL (TWA)
Trichloroethylene	TWA: 10 ppm STEL: 25 ppm	(Vacated) TWA: 50 ppm (Vacated) TWA: 270 mg/m³ Ceiling: 200 ppm (Vacated) STEL: 200 ppm (Vacated) STEL: 1080 mg/m³ TWA: 100 ppm	IDLH: 1000 ppm	TWA: 100 ppm TWA: 535 mg/m³ STEL: 200 ppm STEL: 1080 mg/m³

Legend

ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
NIOSH IDLH: The National Institute for Occupational Safety and Health Immediately Dangerous to Life or Health

Engineering Measures Use only under a chemical fume hood. Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection Long sleeved clothing.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Liquid
Appearance	Colorless
Odor	Characteristic
Odor Threshold	No information available
pH	No information available
Melting Point/Range	-85 °C / -121 °F
Boiling Point/Range	87 °C / 188.6 °F
Flash Point	No information available
Evaporation Rate	0.69 (Carbon Tetrachloride = 1.0)
Flammability (solid,gas)	Not applicable
Flammability or explosive limits	
Upper	10.5 vol %
Lower	8 vol %
Vapor Pressure	77.3 mbar @ 20 °C
Vapor Density	4.5 (Air = 1.0)
Specific Gravity	1.460
Solubility	Slightly soluble in water
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	410 °C / 770 °F
Decomposition Temperature	> 120°C
Viscosity	0.55 mPa.s (25°C)

Molecular Formula C2 H Cl3
Molecular Weight 131.39

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Light sensitive.

Conditions to Avoid Incompatible products. Excess heat. Exposure to light. Exposure to moist air or water.

Incompatible Materials Strong oxidizing agents, Strong bases, Amines, Alkali metals, Metals,

Hazardous Decomposition Products Hydrogen chloride gas, Chlorine, Phosgene, Carbon monoxide (CO), Carbon dioxide (CO_2)

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information
Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Trichloroethylene	LD50 = 4290 mg/kg (Rat) LD50 = 4920 mg/kg (Rat)	LD50 > 20 g/kg (Rabbit) LD50 = 29000 mg/kg (Rabbit)	LC50 = 26 mg/L (Rat) 4 h

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation Irritating to eyes and skin

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Trichloroethylene	79-01-6	Group 1	Reasonably Anticipated	A2	X	Not listed

IARC: (International Agency for Research on Cancer) — *IARC: (International Agency for Research on Cancer)*
Group 1 - Carcinogenic to Humans
Group 2A - Probably Carcinogenic to Humans
Group 2B - Possibly Carcinogenic to Humans

NTP: (National Toxicity Program) — *NTP: (National Toxicity Program)*
Known - Known Carcinogen
Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen

ACGIH: (American Conference of Governmental Industrial Hygienists) — *A1 - Known Human Carcinogen*
A2 - Suspected Human Carcinogen
A3 - Animal Carcinogen
ACGIH: (American Conference of Governmental Industrial Hygienists)

Mutagenic Effects Mutagenic effects have occurred in humans.

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure Central nervous system (CNS)
STOT - repeated exposure Kidney Liver Heart spleen Blood

Aspiration hazard No information available

Symptoms / effects,both acute and delayed Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting: Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity
Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Do not empty into drains. The product contains following substances which are hazardous for the environment. Contains a substance which is:. Harmful to aquatic organisms. Toxic to aquatic organisms.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Trichloroethylene	EC50: = 175 mg/L, 96h (Pseudokirchneriella subcapitata) EC50: = 450 mg/L, 96h (Desmodesmus subspicatus)	LC50: 39 - 54 mg/L, 96h static (Lepomis macrochirus) LC50: 31.4 - 71.8 mg/L, 96h flow-through (Pimephales promelas)	EC50 = 0.81 mg/L 24 h EC50 = 115 mg/L 10 min EC50 = 190 mg/L 15 min EC50 = 235 mg/L 24 h EC50 = 410 mg/L 24 h EC50 = 975 mg/L 5 min	EC50: = 2.2 mg/L, 48h (Daphnia magna)

Persistence and Degradability Persistence is unlikely based on information available.

Bioaccumulation/ Accumulation No information available.

Mobility Will likely be mobile in the environment due to its volatility.

Component	log Pow
Trichloroethylene	2.4

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
Trichloroethylene - 79-01-6	U228	-

14. Transport information

DOT
UN-No UN1710
Proper Shipping Name TRICHLOROETHYLENE
Hazard Class 6.1
Packing Group III

TDG
UN-No UN1710
Proper Shipping Name TRICHLOROETHYLENE
Hazard Class 6.1
Packing Group III

IATA
UN-No UN1710
Proper Shipping Name TRICHLOROETHYLENE

Hazard Class	6.1
Packing Group	III

IMDG/IMO

UN-No	UN1710
Proper Shipping Name	TRICHLOROETHYLENE
Hazard Class	6.1
Packing Group	III

15. Regulatory information

All of the components in the product are on the following Inventory lists: X = listed

International Inventories

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
Trichloroethylene	X	X	-	201-167-4	-		X	X	X	X	X

Legend:
X - Listed
E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
P - Indicates a commenced PMN substance
R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).
Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b) Not applicable

Component	TSCA 12(b)
Trichloroethylene	Section 5

SARA 313

Component	CAS-No	Weight %	SARA 313 - Threshold Values %
Trichloroethylene	79-01-6	100	0.1

SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
Chronic Health Hazard	Yes
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Trichloroethylene	X	100 lb	X	X

Clean Air Act

Component	HAPS Data	Class 1 Ozone Depletors	Class 2 Ozone Depletors
Trichloroethylene	X		-

OSHA Occupational Safety and Health Administration
Not applicable

CERCLA
This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs
Trichloroethylene	100 lb 1 lb	-

California Proposition 65 This product contains the following proposition 65 chemicals

Component	CAS-No	California Prop. 65	Prop 65 NSRL	Category
Trichloroethylene	79-01-6	Carcinogen Developmental Male Reproductive	14 µg/day 50 µg/day	Developmental Carcinogen

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Trichloroethylene	X	X	X	X	X

U.S. Department of Transportation

Reportable Quantity (RQ): Y
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security
This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

16. Other information

Prepared By Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date 03-Feb-2010
Revision Date 14-Jul-2016
Print Date 14-Jul-2016
Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

TETRACHLOROETHENE or PERCHLOROETHENE (PCE)

Introduction

Tetrachloroethylene is a man-made substance widely used for dry cleaning fabrics and textiles and for metal-degreasing operations. It is also used as a starting material (building block) for the production of other man-made chemicals. Other names that may be used for tetrachloroethylene include perchloroethylene, perc, PCE, perclene, and perchlor. Although tetrachloroethylene is a liquid at room temperature, some of the liquid can be expected to evaporate into the air producing an ether-like odor; evaporation increases as temperature increases.

Exposure Pathways

Humans can be exposed to tetrachloroethylene from environmental, consumer product, and occupational sources. Common environmental levels of tetrachloroethylene (often called background levels) are usually several thousand times lower than levels found in some workplaces. Background levels found in the air we breathe and in the food and water we consume probably result from evaporation from industrial or dry-cleaning operations or from releases from areas where chemical wastes are stored. Tetrachloroethylene has been found in at least 330 of the 1117 National Priorities List (NPL) hazardous waste sites.

In general, tetrachloroethylene levels in air are higher in urban and industrialized areas than in more rural or remote areas. Higher-than-background concentrations of tetrachloroethylene have occasionally been measured in air close to chemical waste sites and in water taken from nearby wells.

Exposure to tetrachloroethylene may also occur from some consumer products. Products that may contain tetrachloroethylene include auto brake noise-reducers and cleaners, suede protectors, water repellants, silicone lubricants, belt lubricants and dressings, specialized aerosol cleaners, ignition wire driers, fabric finishers, spot removers, adhesives and wood cleaners. Although uncommon, small amounts of tetrachloroethylene have been found in food.

The levels of tetrachloroethylene in air in dry-cleaning shops, textile and chemical processing operations and degreasing operations can result in exposures that are much higher than those found in the outside environment. Levels of tetrachloroethylene in the workplace are usually measured in parts of tetrachloroethylene per million parts of air (ppm), while common environmental levels are usually measured in parts per billion (ppb) or parts per trillion (ppt).

Metabolism

Because tetrachloroethylene evaporates quickly, the most common exposure to tetrachloroethylene comes from breathing air containing it. This is certainly true for individuals who work with the chemical, but it is probably also true for those who live in industrial and commercial areas where large amounts of the compound are used or disposed of. Tetrachloroethylene may also enter the body through drinking contaminated water or eating contaminated food. Because tetrachloroethylene does not pass through the skin to any significant extent, entry into the body by this path is of minimal concern, although skin irritation may result from repeated or prolonged contact with the undiluted liquid. Scientific reports indicate that tetrachloroethylene is present (and may in fact be concentrated) in the breast milk of mothers who have been exposed to the chemical.

Health Effects

In high concentrations in air, particularly in closed, poorly ventilated areas, single exposures to tetrachloroethylene can cause central nervous system (CNS) effects leading to dizziness, headache, sleepiness, confusion, nausea, difficulty in speaking and walking and possibly unconsciousness and death. As might be expected, these symptoms occur almost entirely in work (or hobby) environments. The potential long-term health effects that might occur in humans from breathing lower levels of tetrachloroethylene than those that produce CNS effects or from ingesting very low levels of the chemical found in some water supplies have not been identified. The effects of exposing infants to tetrachloroethylene through breast milk are unknown.

Animal studies, conducted with amounts much higher than typical environmental levels, have shown that tetrachloroethylene can cause liver and kidney damage, liver and kidney cancers and leukemia. Developmental effects in fetuses have been observed but only at tetrachloroethylene exposure levels that also produce toxicity in the maternal animal.

The U.S. Department of Health and Human Services has determined that tetrachloroethylene may reasonably be anticipated to be a carcinogen. Based on evidence from animal studies, tetrachloroethylene is thought to be capable of causing cancer in humans. It should be emphasized, however, that currently available information is not sufficient to determine whether tetrachloroethylene causes cancer in humans.

Short-term exposures to air containing more than 100 ppm of tetrachloroethylene have produced harmful effects in both humans and animals and more prolonged exposures to approximately 9 ppm caused harmful liver effects in mice. It should be pointed out that some of the highest environmental levels of tetrachloroethylene ever recorded (at waste disposal sites, for example) were still 150 times smaller than the concentrations shown to produce symptoms of toxicity in animals after repeated exposure. Drinking (or eating) the equivalent of approximately 60 to 80 mg (less than a spoonful) of undiluted tetrachloroethylene per kg; of body weight (I kg = 2.2 pounds) has produced effects similar to drinking alcohol. Tetrachloroethylene was used in the past as a medicine to eliminate worms in humans, but safer and more effective drugs are now available. More prolonged exposures in animals have produced harm to the liver at doses of approximately 100 mg/kg/day. These levels of exposure are more than 1,000 times higher than would be expected even if humans ingested the most contaminated drinking water ever reported.

Cancer: From data in animals, EPA has estimated that if people breathe air containing 1 ppm tetrachloroethylene all day every day for 70 years, there would be an added risk of 66 additional cases of cancer in a population of 10,000 people (or 65,5 00 additional cases in a population of 10,000,000) over the number of cases that would be observed in a population not exposed to tetrachloroethylene. If people consume 1.0 mg tetrachloroethylene/kg/day in food and water every day for 70 years, there would be at the most a risk of 5 10 additional cases of cancer in a population of 10,000, or 5 10,000 additional cases in a population of 10,000,000. It should be noted that these risk values are plausible upper-limit estimates. Actual risk levels are unlikely to be higher and may be lower.

Regulations

The government has made recommendations to limit the exposure of the general public to tetrachloroethylene in drinking water and the exposure of workers to tetrachloroethylene in the workplace.

The Environmental Protection Agency (EPA) has developed the following health advisories to describe concentrations of tetrachloroethylene in drinking water at which no adverse effects are anticipated to occur: 2.0 milligrams per liter of water (mg/L) for short-term exposure of children, 1.4 mg/L for longer term exposure of children, and 5.0 mg/L for long-term exposure of adults. In addition, a drinking water equivalent level (DWEL) of 0.5 mg/L has been established.

The Occupational Safety and Health Administration (OSHA) has a legally enforceable exposure limit of 25 ppm tetrachloroethylene in air for an 8-hour workday, 40-hour workweek based on non-cancer health considerations. The National Institute for Occupational Safety and Health (NIOSH) has classified tetrachloroethylene as a potential occupational carcinogen and recommends that workplace exposure be limited to the lowest possible level.

perchloroethylene. (tetrachloroethylene). CAS: 127-18-4. C12C:CC12.

Properties:
Colorless liquid, ether-like odor, extremely stable, resists hydrolysis, d 1.625 (20/20C), bp 121C, fp -22AC,
bulk d 13.46 lb/gal (26C), refr index 1.5029 (25C), flash p none. Miscible with alcohol, ether, and oils; insoluble in water.
Non-flammable.

Derivation:

(1) By chlorination of hydrocarbons and pyrolysis of the carbon tetrachloride also formed,

(2) from acetylene and chlorine via trichloroethylene.

Method of purification: Distillation.

Grade: Purified, technical, USP, as tetrachloroethylene, spectrophotometric.

Hazard: Irritant to eyes and skin. TLV: 50 ppm in air.

Use: Dry-cleaning solvent, vapor -degreasing solvent, drying agent for metals and certain other solids, vermifuge, heat transfer medium, manufacture of fluorocarbons.

Appendix III: Heat Stress

Heart rate (HR) should be monitored by the radial pulse for 30 seconds as soon as possible in the resting period. If at the beginning of the rest period a worker's radial pulse is measured and his heart rate exceeds 100 beats per minute, the worker's next work period should be reduced by 33%. Therefore, if the original work period was one hour, the following work cycle should be reduced to 40 minutes.

Heat Stroke is a true medical emergency. First aid should be directed toward immediate measures to cool the body quickly, as well as seeing that the victim receives medical attention as soon as possible.

Prior to medical treatment, remove as much clothing as possible and proceed to cool the victim's body, taking care not to overchill the victim once his temperature falls below 102^0F. One of the following cooling measures should be taken:

a) Sponge the bare skin with cool water;
b) Apply cold packs continuously;
c) Wrap the victim in a sheet soaked with water;
d) Immerse the victim in a tub of cold water, while closely monitoring the victim's level of consciousness.

Prior to site activity, the Site Safety Officer may make arrangements for heat stress monitoring (i.e., monitoring heart rate, body temperature and body water loss) during actual site work if conditions warrant these measures. In addition, the Site Safety Officer would want to ensure that the team members have been acclimatized to the particular environmental conditions and that personnel are aware of the signs and symptoms of heat sickness and have been adequately trained in first aid procedures. As Site Safety Officer, one should also make sure that sufficient personnel are on-site, so as to rotate work assignments, schedule work during hours of reduced temperatures, and ensure personnel do not consume alcoholic or caffeinated beverages but rather drink moderate levels of an electrolyte solution and eat well prior to commencing site work.

Workers may experience a condition of heat rash. Allow workers to rest and relieve the itching associated with heat rash rather than return to work too soon. Itching workers may not follow stringent decon procedures or scratch where it itches on-site and risk cross contamination.

Keeping the skin clean and dry will reduce the incidence of heat rash. This can be accomplished by wearing cotton garments (or other materials that absorb perspiration) underneath protective clothing. Upon removing the protective clothing, the worker should wash and dry his skin thoroughly.

The sense of thirst is not an adequate regulator of water replacement during heat exposure. Therefore, as a general rule, the amount of water administered should replace the amount of water lost, and it should be administered at regular intervals throughout the day. For every ½ pound of water loss, 8 ounces of water should be ingested. Water should be replaced by drinking 2-to-4-ounce servings during every rest period. A recommended alternative to water is an electrolyte drink diluted 50/50 with water.

Although there is no specific test given during a baseline physical that would identify a person's intolerance to heat, there are physical factors and personal habits which may indicate possible intolerance to heat, such as whether or not an individual smokes, one's dietary habits, body weight, as well as predisposing physical conditions such as high blood pressure, heart conditions, diabetes, or one's medication, that may influence an individual's ability to tolerate excessive heat.

Heat cramps are caused by profuse perspiration with inadequate fluid intake and salt replacement. Heat cramps most often afflict people in good physical condition who overwork in conditions of high temperature and humidity. Heat cramps usually come on suddenly during vigorous activity. Untreated, heat cramps may progress directly to heat exhaustion or heat stroke. First aid treatment: remove victim to a cool place and give sips of salted water (1 teaspoon of salt to 1 quart of water) - 4 ounces every 15 minutes over a period of one hour. A commercial preparation, e.g., Gatorade, may be used if diluted 50/50 with water.

Salted water or solution should mitigate the cramps. Manual pressure should not be applied to the cramped muscles.

Required Frequency of Heat Stress Monitoring for workers in Impermeable Clothing

Adjusted (2) Temperature (^{0}F)	**Work Time Allowed Before Monitoring Break (min.)**
90 or above	15
87.5-90	30
82.5-87.5	60
77.5-82.5	90
72.5-77.5	120

(1) Adapted from Eastern Research Group and National Institute for Occupational Safety and Health, Occupational Safety and Health Guidance Manual for Super Activities. September 26, 1984, pp. 8-75.

(2) Calculate the adjusted air temperature (Ta adj) by using this equation:

$$\text{Ta adj } ^0\text{F} = \text{Ta } ^0\text{F} + (13 \times \% \text{ sunshine})$$

Measure air temperature (Ta) with a standard thermometer, with the bulb shielded from radiant heat. Then estimate percent sunshine (100 percent sunshine = no cloud cover and a sharp, distinct shadow; 0 percent sunshine = no shadows).

Heat Stress Signs and Symptoms

Heat Stress Indicator	When to Measure	If Exceeds . . .	Action
Heart rate (pulse)	Beginning of rest period	110 beats per minute	Shorten next work period by 33%
Oral temperature	Beginning of rest period	99^0F (after thermometer is under tongue for 3 minutes) or	Shorten next work period by 33%
		100.6 ^{0}F or greater	Prohibit work in impermeable clothing and shorten next work period by 33%
Body weight	1. Before workday begins (a.m.) 2. After workday ends (p.m.)	Decreases more than 5%	Increase fluid intake

Appendix IV: Cold Stress (Hypothermia)

Cold stress is a function of cold, wetness and wind. A worker's susceptibility to cold stress can vary according to his/her physical fitness, degree of acclimatization to cold weather, age and diet.

Prevention

Institute the following steps to prevent overexposure of workers to cold:

1. Maintain body core temperature at 96.8^0F or above by encouraging workers to drink warm liquids during breaks (preferably not coffee) and wear several layers of clothing. Wool is recommended since it can keep the body warm even when the wool is wet.
2. Avoid frostbite by adequately covering hands, feet, and other extremities. Clothing such as insulated gloves or mittens, earmuffs, and hat liners should be worn. To prevent contact frostbite (from touching metal and cold surfaces below 20^0F) workers should wear anti-contact gloves. Tool handles and control bars should be covered with insulating material.
3. Adjust work schedules if necessary, providing adequate rest periods. When feasible, rotate personnel and perform work during the warmer hours of the day.
4. Provide a heated enclosure for workers close to their work area. Workers should remove their outer layer(s) of clothing while in the shelter to allow sweat to evaporate.
5. In the event that wind barriers are constructed around an intrusive operation (such as drilling), the enclosure must be properly vented to prevent the build-up of toxic or explosive gases or vapors. Care must be taken to keep any heat source away from flammable substances.
6. Using a wind chill chart such as the one attached, obtain the equivalent chill temperature (ECT) based on actual wind speed and temperature. Refer to the ECT when setting up work warm-up schedules, planning appropriate clothing, etc. Workers should use warming shelters at regular intervals at or below an ECT or 20^0F. For exposed skin, continuous exposure should not be permitted at or below an ECT of -35 ^{0}F.
7. Workers who become immersed in water or whose clothing becomes wet (from perspiration, rain, etc.) must immediately be provided a change of dry clothing whenever the air temperature is 25.6^0F or below.
8. Maintain an optimal level of worker fitness by encouraging regular exercise, proper diet, etc. If possible, acclimatize workers to site conditions for several days before work begins.

Monitoring

Personnel should be aware of the symptoms of cold stress. If the following symptoms of systemic hypothermia are noticed in any worker, he/she should immediately go the warm shelter:

- Heavy, uncontrollable shivering;
- Excessive fatigue or drowsiness;
- Loss of coordination;
- Difficulty in speaking;
- Frostbite (see below).

Frostbite is the generic term for local injury resulting from cold. The stages of frostbite and their symptoms are as follows:

- Frostbite or incipient frostbite: sudden blanching or whitening of the skin.
- Superficial frostbite: waxy or white skin which is firm to the touch (tissue underneath is still resilient).
- Deep frostbite: tissues are cold, pale and solid.

Wind-chill Chart

Wind Speed (mph)	**Actual thermometer Reading (^{0}F)**									
	50	**40**	**30**	**20**	**10**	**0**	**-10**	**-20**	**-30**	**-40**
	Equivalent Temperature (^{0}F)									
calm	50	40	30	20	10	0	-10	-20	-30	-40
5	48	37	27	16	6	-5	-15	-26	-36	-47
10	40	28	16	4	-9	-21	-33	-46	-58	-70
15	36	22	9	-5	-18	-36	-45	-58	-72	-85
20	32	18	4	-10	-25	-39	-53	-67	-82	-96
25	30	16	0	-15	-29	-44	-59	-74	-88	-104
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109
35	27	11	-4	-20	-35	-49	-67	-82	-98	-113
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116
>40 (Little added effect)	Little Danger (for properly clothed person)				Increasing Danger (Danger from freezing of exposed flesh)			Great Danger		

APPENDIX V
HOSPITAL ROUTE
AND EMERGENCY NUMBERS

Emergency Telephone Numbers

Nassau County Police Department	911
Nassau County Fire Department	911
Emergency Medical System	911
North Shore University Hospital	(516) 562-0100
National Response Center	(800) 424-8802
Poison Control Center	(800) 222-1222
NYSDEC Spill Hotline	(800) 457-7362

Hospital Information

North Shore University Hospital is able to treat chemical exposures and has an emergency room. The address is: 300 Community Drive, Manhasset, New York.

HOSPITAL ROUTE – TAKE LAKEVILLE ROAD NORTH TO NORTHERN BOULEVARD. TURN RIGHT TO TAKE NORTHERN BOULEVARD 0.7 MILES EAST TO COMMUNITY DRIVE. TURN RIGHT – HOSPTIAL IS 0.3 MILES SOUTH ON LEFT OF COMMUNITY DRIVE.

APPENDIX C

Community Air Monitoring Plan with Special Requirements (CAMP)

<u>**APPENDIX C**</u>

New York State Department of Health
Generic Community Air Monitoring Plan

The following discussion is taken from NYSDEC's DER-10 Technical Guidance for Site Investigation and Remediation Appendix 1A (May 2010).

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for volatile organic compounds (VOCs) and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate NYSDEC/NYSDOH staff.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

If ground intrusive activities will include work inside a building or within 20 feet of a receptor (occupied building, place where people could be, etc.), then the following applies:

Special Requirements for Work Within 20 Feet of Potentially Exposed Individuals or Structures
When work areas are within 20 feet of potentially exposed populations or occupied structures, the continuous monitoring locations for VOCs and particulates must reflect the nearest potentially exposed individuals and the location of ventilation system intakes for nearby structures. The use of engineering controls such as vapor/dust barriers, temporary negative pressure enclosures, or special ventilation devices

should be considered to prevent exposures related to work activities and to control dust and odors. Consideration should be given to implementing the planned activities when potentially exposed populations are at a minimum, such as weekends or evening hours, in non-residential settings.

If total VOC concentrations opposite the walls of occupied structures or next to intake vents exceed 1 ppm, monitoring should occur within the occupied structure(s). Depending upon the nature of contamination, chemical-specific colorimetric tubes of sufficient sensitivity may be necessary for comparing the exposure point concentrations with appropriate pre-determined response levels (response actions should also be pre-determined). Background readings in the occupied spaces must be taken prior to commencement of the planned work. Any unusual background readings should be discussed with NYSDOH prior to commencement of the work.

If total particulate concentrations opposite the walls of occupied structures or next to intake vents exceed 150 mcg/m3, work activities should be suspended until controls are implemented and are successful in reducing the total particulate concentration to 150 mcg/m3 or less at the monitoring point.

Depending on the nature of contamination and remedial activities, other parameters (e.g., explosivity, oxygen, hydrogen sulfide, carbon monoxide) may also need to be monitored. Response levels and actions should be pre-determined, as necessary, for each site.

Special Requirements for Indoor Work Within Co-Located Residences or Facilities

Unless a self-contained, negative-pressure enclosure with proper emission controls will encompass the work area, all individuals not directly involved with the planned work must be absent from the room in which the work will occur. Monitoring requirements shall be as stated above under "Special Requirements for Work Within 20 Feet of Potentially Exposed Individuals or Structures" except that in this instance "nearby/occupied structures" would be adjacent occupied rooms. Additionally, the location of all exhaust vents in the room and their discharge points, as well as potential vapor pathways (openings, conduits, etc.) relative to adjoining rooms, should be understood and the monitoring locations established accordingly. In these situations, it is strongly recommended that exhaust fans or other engineering controls be used to create negative air pressure within the work area during remedial activities.

Additionally, it is strongly recommended that the planned work be implemented during hours (e.g., weekends or evenings) when building occupancy is at a minimum.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

All 15-minute readings must be recorded and be available for State (DEC and DOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m3 above the upwind level and provided that no visible dust is migrating from the work area.

- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m3 of the upwind level and in preventing visible dust migration.

All readings must be recorded and be available for State (DEC and DOH) personnel to review.

Summary

As noted above, air monitoring activities for the Former Imperial Cleaners Site (218 Lakeville Road) Site activities described in the *Remedial Work Plan* (Walden, January 2022) will be appropriate for the on-site remedial system installation or any other ground intrusive activities and periodic sub-slab vapor, indoor and outdoor air sampling to be conducted at the Site. Therefore, the CAMP will encompass periodic VOC monitoring using a PID and dust monitoring as appropriate.

ATTACHMENTS

ATTACHMENT 1

Soil Vapor Intrusion Investigation Summary Report (Revised) (Walden, September 2021)

Soil Vapor Intrusion Investigation Summary Report (Revised)

at

Former Imperial Cleaners Site
218 Lakeville Road
Lake Success, New York 11042
NYSDEC BCP Site #C130225

September 2021

Prepared for:

Mr. Joseph Jones
Project Manager
NYS Department of Environmental Conservation
Remedial Bureau A, 11th Floor
625 Broadway
Albany, New York 12233

WALDEN ENVIRONMENTAL ENGINEERING, PLLC

Industry Leader in Environmental Engineering Consulting

PROACTIVE SOLUTIONS SINCE 1995

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Professional Engineer Certification

I certify that I am currently a professional engineer licensed to practice in New York State in accordance with New York State Education Law, Article 145, Section 7200 et seq. I have completed accredited university courses and degrees in engineering and have sufficient training and experience in remediation, groundwater hydrology, and related fields that enable me to make sound professional judgments with regards to engineering design.

I further certify that this submittal, *Soil Vapor Intrusion Investigation Summary Report (Revised)*, dated September 2, 2021, was prepared under my direction.

Nora M Brew

Nora M. Brew, P.E.
Walden Environmental Engineering, PLLC

9/2/2021

Date

1 INTRODUCTION

Walden Environmental Engineering, PLLC (Walden) has prepared this report to summarize the results of the April 2019 soil vapor intrusion (SVI) investigation conducted at the Former Imperial Cleaners site located at 218 Lakeville Road, Lake Success, New York (the "Site"). This report was originally submitted to the New York State Department of Environmental Conservation (NYSDEC) on March 17, 2020) and has been revised in accordance with comments provided in a NYSDEC letter dated July 23, 2021 (see **Appendix A**).

The Site is currently managed under the New York State Brownfield Cleanup Program (BCP, Site #C130225), subject to New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Agreement (BCA) Index No. C130225-01-18. This agreement was fully executed by 218 Lakeville Acquisition LLC (the current Site owner and Volunteer) and the NYSDEC on February 12, 2018. Previously, the Site was managed under the NYSDEC Voluntary Cleanup Program (VCP) as site #V-00244-1.

The April 2019 SVI investigation was conducted to address the potential for vapor intrusion from contaminated soil vapor and potential impacts to indoor air quality at the Site and neighboring off-site properties. The April 2019 investigation findings supplement the results of the SVI investigation conducted in February 2016. The February 2016 SVI sampling results are presented in the *Soil Vapor Intrusion Investigation Summary Report* (Walden, May 2017) which is attached as **Appendix B** and summarized herein. The 2016 and 2019 SVI investigations were completed in accordance with the NYSDEC-approved *Soil Vapor Intrusion Investigation Work Plan* (Work Plan; Walden, December 2015) and *Remedial Work Plan,* (RWP) dated February 2019), which were developed in accordance with the guidelines set forth in NYSDEC *DER-13: Strategy for Evaluating Soil Vapor Intrusion at Remedial Sites in New York* (dated October 18, 2006), *Guidance for Evaluating Soil Vapor Intrusion in the State of New York* (dated October 2006, with updates, referred to herein as "SVI Guidance"), and NYSDEC *DER-10*: *Technical Guidance for Site Investigation and Remediation*. The Work Plan was approved by the NYSDEC by letter dated December 23, 2015 and the RWP was approved by the NYSDEC by letter dated February 12, 2019. The field work for the investigations included the collection of sub-slab vapor, indoor air and outdoor (ambient) air samples.

A brief Site description and the SVI investigation objectives are presented below. **Section 2** describes the SVI investigation field work conducted at the Site and neighboring properties. **Section 3** summarizes the SVI investigation sampling results. **Section 4** presents conclusions and recommendations based on the SVI investigation results.

1.1 Site History and Previous Investigations/Remediation

The Site location is illustrated on **Figure 1**. The Site is a commercial center with a one-story building occupying approximately 4,250 square feet, with four (4) current tenants (CCQ Construction Inc., W Brothers Realty, Tobacco Plaza, Ltd. and Real Eyes Optical) as shown on **Figure 2**. Residential properties are located directly west of the Site and commercial parcels adjoin the Site to the north, northwest and south. The basement of the on-site building has concrete block walls and a poured concrete floor slab. Note that there is a perched water table underlying the site at approximately 30 feet below grade, while the water table is located approximately 150 feet below land surface.

A release of tetrachloroethylene (PCE) at the Site was first noted in 1995. The PCE contamination was suspected to originate from floor drains within the tenant space occupied by a dry cleaner (former Imperial Cleaners) and from a leaching pool and dry well on the property that were associated with the former dry-cleaner operations. A site investigation followed to identify source areas and determine the extent of contaminated soil and groundwater at the Site. The site investigation and remediation work described below was conducted by 218 Lakeville Associates L.P., the owner of the Subject Property at that time, as required by NYSDEC under the VCP.

Contaminated sediments were removed from the source areas (dry well, interior floor drains, and leaching pool associated with the former Imperial Cleaners operations) in 1996 and 2000 to the extent possible without undermining the structures. Post-excavation endpoint soil sampling following the source area removal actions indicated that volatile organic compounds (VOCs) remained in the subsurface at concentrations above the NYSDEC TAGM 4046 Recommended Cleanup Objectives. However, no additional materials were removed because it was determined that further excavation would threaten the integrity of the structures. 218 Lakeville Associates L.P. then installed a soil vapor extraction (SVE) system to remove VOC vapors remaining in the soil in order to address the source areas and improve soil and groundwater quality. The SVE system, which consisted of eight soil vapor extraction wells, began operating in 2001. The SVE system also served to mitigate the potential for SVI impacts affecting on- and off-site structures. A soil, soil gas, groundwater and indoor air monitoring program was implemented to track the reductions in VOC concentrations achieved by operation of the SVE system.

Site closure sampling (soil, soil vapor and indoor air perc badge sampling) was conducted in November 2007 – January 2008 in accordance with a NYSDEC approved work plan. The closure sampling results indicated that the SVE system had successfully reduced soil contaminant concentrations to below the NYSDEC TAGM 4046 Recommended Cleanup Objectives. Permanent shutdown of the SVE system was recommended by 218 Lakeville

Associates L.P. based on the 2007-2008 closure sampling results. 218 Lakeville Associates L.P., the previous Site owner subsequently shut down the SVE system circa 2008 without approval from NYSDEC and NYSDOH. These activities occurred approximately seven (7) years before the current Site owner/Volunteer purchased the site or had any involvement with the Site.

1.1.1 February 2016 SVI Investigation

After the current Site owner/Volunteer, 218 Lakeville Aquisition LLC, purchased the Subject Property from 218 Lakeville Associates L.P. in July 2015, an SVI investigation was conducted to address the potential for vapor intrusion from contaminated soil vapor and potential impacts on indoor air quality at the Site and neighboring off-site properties. The SVI investigation was completed in accordance with the NYSDEC approved *Soil Vapor Intrusion Investigation Work Plan* (Work Plan; Walden, December 2015). The field work was completed in February 2016 (during the 2015-2016 heating season) and consisted of sub-slab vapor, indoor air, and outdoor air sampling and analysis as follows; the sample locations are shown on **Figure 3**. Refer to the *Soil Vapor Intrusion Investigation Summary Report* (Walden, May 2017) presented in **Appendix B** for additional details on the February 2016 SVI investigation and results.

<u>February 2016 On-site Sampling</u>
Sub-slab vapor and indoor air samples were collected in pairs (at each sub-slab sampling location, a corresponding indoor air sample was collected concurrently) from four locations in the basement of the on-site building at 218 Lakeville Road:

- Beneath the former dry cleaners space (SS-1 and IA-1)
- Beneath Tobacco Plaza (in the unfinished area on the west side of the space) (SS-2 and IA-2)
- Two locations beneath the former delicatessen space (this basement area is divided into two sections; one sampling location in each section) (SS-3 and IA-3; SS-4 and IA-4).

Two outdoor air samples (upwind AA-1 and downwind AA-2) were collected outside the on-site building concurrently with the sub-slab and indoor air samples to obtain samples representative of ambient (background) conditions at the site.

<u>February 2016 Off-site Sampling</u>
Off-site sampling was conducted at the same time as the on-site sampling to achieve contemporaneous analytical results. Pairs of sub-slab vapor and indoor air samples were collected per the Work Plan in the lowest level of three off-site properties as follows:

- 2 University Place (SS-5 and IA-5)

- 4 University Place (SS-6 and IA-6)
- 220 Lakeville Road (SS-7 and IA-7)

The owner of 216 Lakeville Road (rear cottage) would not allow a sub-slab vapor sampling probe to be installed inside this building because there was no way to avoid damaging the floors by installing a sub-slab vapor sampling probe as specified in the approved Work Plan. Walden contacted NYSDEC and NYSDOH on February 11, 2016 regarding this issue and the State approved the following modification to the sampling locations at this off-site property:

- A surrogate soil vapor sample (SS-8) was collected outside the 216 Lakeville Road cottage in the asphalt paved area on the west side of the building.
- The indoor air sample (IA-8) was collected inside the 216 Lakeville Road cottage from a location near the outdoor surrogate soil vapor sampling location.

February 2016 Conclusions

Table 1 of this report presents the February 2016 SVI investigation sampling data. The conclusions based on this data are presented in the *Soil Vapor Intrusion Investigation Summary Report* (May 2017) (attached as **Appendix B)** and excerpted below:

> *"The sub-slab sampling results revealed that vapors (mainly PCE and breakdown products TCE and cis-1,2-DCE) attributable to the historic release of VOCs at the Former Imperial Cleaners Site remain in the subsurface. While the SVE remedial system at 218 Lakeville Road removed VOCs and reduced concentrations to levels acceptable to NYSDEC and NYSDOH, the current SVI sampling results show that VOC concentrations have rebounded since the SVE system was shut down. This rebound is likely due to the low permeability clay layer and perched water table located approximately 30 feet below grade in this area, creating subsurface conditions which have trapped VOC vapors in the tight pore spaces and possibly on top of the perched water.*
>
> *Based on a comparison of the target compound concentrations reported for the sub-slab and indoor air samples to the concentration ranges compared in the NYSDOH decision matrices, mitigation is recommended for 218 Lakeville Road, 2 University Place and 4 University Place to address potential soil vapor intrusion impacts and prevent exposure to VOCs in indoor air. The decision matrix comparison indicates that monitoring is recommended to ensure that residual VOCs do not impact indoor air at 220 Lakeville Road; no action is recommended at 216 Lakeville Road."*

Recommendations

The recommendations presented in the *Soil Vapor Intrusion Investigation Summary Report* (May 2017) have been combined with the recommendations based on the April 2019 SVI investigation. The overall recommendations based on the SVI results are presented herein in **Section 4.2**.

1.2 April 2019 SVI Sampling Objectives

After the BCA was fully executed, representatives from the Site owner (218 Lakeville Acquisition LLC), the NYSDEC and NYSDOH met on March 13, 2018 to discuss a remedial action plan for the Site. At that time, the State expressed concern that VOC vapors may have migrated beyond the four (4) off-site properties investigated during the February 2016 SVI sampling event. Therefore, the State requested SVI sampling at an additional seven (7) off-site properties (shown on **Figure 4**) to evaluate the potential for indoor air quality impacts due to VOC vapors from the Site. Sampling at these off-site properties would be contingent upon access/permission procured by the Site owner (with assistance from the NYSDOH as needed), and the State would evaluate all additional SVI data and consequently make recommendations/determinations about any additional actions based on the data.

Representatives from the NYSDEC, 218 Lakeville Acquisition LLC and Walden met in November 2018 to discuss the additional SVI sampling requested by the State and remedial options for the Site. Subsequently, the February 2019 RWP was developed by Walden (and approved by the NYSDEC) which proposed, in part, the completion of additional on-site and off-site SVI sampling as per the State's request in order to evaluate potential indoor air quality impacts related to soil vapor intrusion. This additional SVI sampling (sub-slab soil vapor, indoor air and outdoor air) was performed in April 2019 during the 2018-2019 heating season.

2 APRIL 2019 SVI INVESTIGATION FIELD WORK

Figure 4 shows the locations of the off-site properties targeted for sampling during the 2018-2019 heating season based on the NYSDEC-approved RWP. These properties included the four (4) off-site properties sampled in February 2016 (216 Lakeville Road rear cottage, 220 Lakeville Road, 2 University Place, and 4 University Place) and seven (7) additional off-site properties identified by NYSDEC and NYSDOH (224 Lakeville Road, 216 Lakeville Road main building, 1 University Place, 3 University Place, 5 University Place, 1 University Road, 99 Briarfield Drive).

Walden sent requests for access to each of these off-site property owners via certified mail in February 2019. These requests were followed up throughout March 2019 with phone calls and in-person visits to the properties in an attempt to obtain permission for sampling. Despite repeated attempts by Walden and NYSDOH to obtain access for sampling, permission was granted by only 220 Lakeville Road and 5 University Place; the other off-site property owners either did not respond or refused to grant access. Documentation of Walden's outreach attempts is provided in **Appendix C.**

The April 2019 SVI investigation event consisted of sampling at the Site and the two (2) off-site properties (220 Lakeville Road and 5 University Place) whose owners granted permission for access.

Sub-slab soil vapor sampling points initially installed at the Site and at the adjoining 220 Lakeville Road property during the February 2016 SVI sampling event were utilized again during the April 2019 sampling event. Additionally, one new sub-slab sampling point was installed on April 4, 2019 at the residence located at 5 University Place. Sub-slab vapor, indoor air and outdoor (ambient) air samples were collected over a 24-hour sampling period from April 4-5, 2019. The field work and sampling activities are described below.

2.1 Interior Inspection

Pre-sampling interior inspections were performed to identify potential vapor intrusion pathways and to determine appropriate sampling locations. The Site and off-site properties were inspected to evaluate the physical layout and to identify conditions or materials stored and/or used that may affect or interfere with the sampling or interpretation of the sampling results. Consideration was given to factors such as access for installation/sampling purposes, interior uses at the Site, foundation/floor slab installation and conditions, heating/ventilation/mechanical system operation, and utility layout/breaches.

The indoor air quality questionnaire and building inventory sheet provided in the NYSDOH SVI Guidance was completed prior to sampling. Copies of the completed questionnaire for the on-site building and off-site properties are provided in **Appendix D** of this report.

To reduce the potential for interference and dilution effects of samples, the Site tenants and off-site property owners were notified in advance of sampling to ensure that the occupants avoided the following activities within 24 hours prior to sampling wherever possible (per *Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York*, October 2006, p. 33):

- Opening any windows, fireplace dampers, openings or vents;
- Operating ventilation fans unless special arrangements are made;
- Smoking in the building;
- Painting;
- Using a wood stove, fireplace or other auxiliary heating equipment (e.g., kerosene heater);
- Operating or storing automobiles in an attached garage;
- Allowing containers of gasoline or oil to remain within the house or garage area, except for fuel oil tanks;
- Cleaning, waxing or polishing furniture, floors or other woodwork with petroleum or oil-based products;
- Using air fresheners, scented candles or odor eliminators;
- Engaging in any hobbies that use materials containing volatile chemicals;
- Using cosmetics including hairspray, nail polish, nail polish removers, perfume/cologne, etc.;
- Lawn mowing, paving with asphalt, or snow blowing;
- Applying pesticides;
- Using building repair or maintenance products, such as caulk or roofing tar; and
- Bringing freshly dry-cleaned clothing or furnishings into the building.

2.2 Sampling Locations

The April 2019 SVI investigation samples were collected from the general locations depicted in the NYSDEC-approved RWP. The sub-slab and indoor air sampling locations at 5 University Place were selected on April 4, 2019 following an inspection of the basement space, and were cleared based on a private utility mark-out, physical access and owner approval. As discussed above, sample locations in the on-site building and the adjoining property at 220 Lakeville Road were determined based on the locations of pre-existing sub-slab vapor probes which were installed in February 2016 in association with the previous SVI investigation and were utilized again for the April 2019 investigation. All sample locations for the April 2019 sampling event are illustrated on **Figure 5**.

New and existing sub-slab vapor sampling points were placed in locations with minimal potential for ambient air infiltration from floor penetrations such as cracks, drains, utility perforations, sumps, etc. All observed penetrations were sealed to the extent practicable prior to sample collection. Photographs taken during the April 2019 sampling event are presented in **Appendix E**.

2.2.1 April 2019 On-Site Locations

Sub-slab vapor and indoor air samples were collected in pairs (at each sub-slab sampling location, a corresponding indoor air sample was collected concurrently) from four (4) locations in the basement of the on-site building at 218 Lakeville Road as follows:

- Beneath the former dry cleaners' space (SS-1 and IA-1)
- Beneath Tobacco Plaza, in the unfinished area on the west side of the basement space (SS-2 and IA-2)
- Two locations beneath the former delicatessen space (this basement area is divided into two sections; one sampling location per section)
    - Southern Section, vacant (SS-3 and IA-3)
    - Northern Section, utilized as storage for CCQ Construction (SS-4 and IA-4)

Additionally, a duplicate sub-slab vapor sample (SS-DUP) was collected from the SS-1 sampling location and a duplicate indoor air sample (IA-DUP) was collected from the IA-4 sampling location.

Two outdoor air samples (AA-1 and AA-2) and one duplicate (AA-DUP) were collected outside the on-site building concurrently with the sub-slab and indoor air samples to obtain samples representative of ambient (background) conditions at the Site. The final outdoor air sampling locations were selected in the field and sited upwind (AA-1 and duplicate AA-DUP) and downwind (AA-2) based upon the prevailing wind direction observed at the time of sampling (west-northwest).

2.2.2 April 2019 Off-Site Locations

The off-site sampling was conducted at the same time as the on-site sampling to achieve contemporaneous analytical results. Pairs of sub-slab vapor and indoor air samples were collected as per the RWP in the lowest level (i.e., basement) of two (2) off-site properties as follows:

- 220 Lakeville Road (SS-7 and IA-7)
- 5 University Place (SS-10 and IA-10)

2.3 Sub-Slab Sample Probe Installation

A permanent recessed sub-slab vapor sampling probe (denoted as SS-10) was installed in the basement of 5 University Place in accordance with SVI Guidance and as described in the RWP. A small (approximately one inch diameter) hole was drilled through the concrete floor slab and into sub-slab material approximately three (3) inches below the bottom of the floor slab. Concrete and soil cuttings were removed from the hole and a stainless-steel sampling screen was installed to a depth of three (3) inches into the sub-slab material. The top of the probe was finished with a recessed brass plug and the implant was sealed to the floor with hydraulic cement. For sampling purposes, a threaded fitting connected to polyethylene tubing was inserted into the sampling port for connection to a Summa® canister.

2.3.1 Tracer Gas Monitoring

Walden performed tracer gas monitoring as per the SVI Guidance to verify the integrity of all sub-slab vapor probe seals prior to sample collection. A shroud was placed around each sampling probe and sealed around the edges to create an adequate surface seal to prevent outdoor air infiltration. Helium tracer gas was introduced into the shroud through a small opening to enrich the atmosphere in the immediate vicinity of the sampling probes with the tracer gas. A portable helium monitoring device, MGD-2002 Helium Leak Detector, was used to analyze the implants for helium tracer gas to confirm the integrity of the probe seals before the vapor samples were collected in 6-liter Summa® canisters.

2.4 Sample Collection

Sub-slab vapor, indoor air and outdoor air samples were collected over a 24-hour period in laboratory-provided and individually certified clean 6-liter Summa® canisters with regulators as described in the RWP. The Summa® canisters were placed adjacent to each sub-slab sampling port and at each indoor and outdoor air sampling location. Where sub-slab vapor samples were collected, fittings were used to connect the Summa® canister tubing to the sampling port tubing. The ground surface was sealed in advance to prevent ambient air infiltration during purging and collection of sub-slab vapor samples.

Additionally, weather conditions were noted at the time of sampling (wind speed and direction, precipitation, outdoor temperature, barometric pressure, etc.).

At each sub-slab sampling location, a corresponding indoor air sample was also collected at a height of approximately four to five (4-5) feet above the ground surface to represent typical breathing zones, as per the SVI guidance. Similarly, the outdoor air samples were collected at a height of approximately three (3) feet above the ground surface where possible.

Prior to and immediately after sampling at each point, a pressure gauge was used to check each Summa® canister for vacuum, and the vacuum readings were recorded. A regulator was utilized to maintain flow rates during the 24-hour sampling period below 0.2 liters per minute as specified by the SVI Guidance.

After sampling was completed, the Summa® canisters were labeled with the site name, sample location and identification, date, time, sampler's initials, and the parameter(s) for analysis. The samples were transported to the laboratory in such a manner as to avoid container damage during transportation and to minimize the possibility of cross-contamination. The samples were delivered via courier under appropriate Chain-of-Custody protocols.

2.5 Sample Analysis and Reporting

The Summa® canisters were submitted to Phoenix Environmental Laboratories, Inc. of Manchester, CT, a NYSDOH ELAP certified laboratory, for analysis. The sub-slab soil vapor and air samples were analyzed for VOCs in accordance with U.S. Environmental Protection Agency (EPA) Method TO-15 with the analytical detection limits set forth in the SVI Guidance. All sample data packages submitted by the analytical laboratory were reported in conformance with the NYSDEC ASP Superfund-CLP, Category B deliverable requirements applicable to the method utilized.

3 EVALUATION OF SVI INVESTIGATION SAMPLING RESULTS

Walden reviewed the SVI results in accordance with SVI Guidance. This guidance document lists the air guideline values (AGVs) that NYSDOH has established for methylene chloride, trichloroethylene (TCE) and PCE. (Although AGVs have also been developed for PCBs and dioxin, these compounds are not contaminants of concern at the Site and were not included in the laboratory analyses conducted for this project.) AGVs only apply to concentrations of these VOCs in indoor and outdoor air.

The State of New York does not have any standards, criteria, or guidance values for concentrations of volatile chemicals in subsurface vapors, so the sub-slab vapor concentrations cannot be compared to any regulatory threshold values. However, the sub-slab vapor concentrations factor into the decision matrices contained in the SVI Guidance. The SVI decision matrices consider the concentrations of PCE, TCE, carbon tetrachloride, 1,1,1-trichloroethane (1,1,1-TCA), 1,1-dichloroethene (1,1-DCE), cis-1,2-dichloroethene (cis-1,2-DCE), methylene chloride, and vinyl chloride detected in indoor air samples and sub-slab vapor samples collected concurrently at the same location. The matrices recommend actions intended to address soil vapor intrusion exposures based on the relationship between the sub-slab vapor and corresponding indoor air concentrations at a given sampling location.

For analytes that do not have AGVs and are not considered in the SVI Guidance decision matrices, the SVI Guidance Appendix C (*Volatile Organic Chemicals in Air – Summary of Background Databases*) was referenced for typical background concentrations of these compounds published in USEPA's 2001 Building Assessment and Survey Evaluation (BASE) database. When developing BASE, USEPA collected indoor and outdoor air samples at randomly selected office and commercial buildings using Summa® canisters.

The analytical data from the February 2016 SVI investigation are summarized in **Table 1** for reference. The April 2019 SVI investigation results are summarized in **Table 2**. The April 2019 PCE, TCE and methylene chloride concentrations detected in the sub-slab vapor and indoor air samples at each location are graphically presented on **Figure 5**. **Table 3** and **Table 4** summarize the SVI data decision matrix comparisons and notes the actions recommended based on the decision matrices contained in the SVI Guidance document for the February 2016 investigation and the April 2019 investigation, respectively. Refer to the *Soil Vapor Intrusion Investigation Summary Report* (Walden, May 2017) presented in **Appendix B** for additional details on the February 2016 SVI investigation and results.

A copy of the April 2019 investigation laboratory analytical report is attached as **Appendix F**. A Data Usability Summary Report (DUSR) for the April 2019 data, which was completed in accordance with DER-10, is provided in **Appendix G**.

3.1 Summary of April 2019 SVI Investigation Results

3.1.1 General Discussion of Results

While most of the VOCs detected in the sub-slab and indoor air samples are not included in the SVI Guidance decision matrices and do not have established NYSDOH AGVs, the SVI results for all VOCs are evaluated in this report based on factors including the building-specific product inventories and background databases. These compounds have a number of commercial uses in consumer products, building materials, or furnishings. The majority of the detected concentrations of these compounds fall within or near the range of background concentrations listed in the USEPA BASE database as noted in **Table 2**. For the April 2019 investigation, these analytes were also detected at various concentrations in both the outdoor upwind (AA-1 and duplicate AA-DUP) and downwind (AA-2) air samples.

3.1.2 SVI Guidance Decision Matrix Evaluation

The results discussed below are limited to the compounds included in the SVI Guidance decision matrices. Refer to **Table 4** for the SVI Guidance decision matrix comparison.

<u>Carbon Tetrachloride</u>

- No AGV is established for this compound
- Carbon tetrachloride was not detected at concentrations above laboratory method detection limits (MDLs) in any of the sub-slab vapor samples, and was detected only at low concentrations (less than 0.60 micrograms per cubic meter, or $\mu g/m^3$) in each of the indoor air samples. This compound was also detected at similar concentrations (maximum 0.52 $\mu g/m^3$) in the upwind and downwind ambient air samples, so the carbon tetrachloride reported for the indoor air samples can be considered representative of background conditions.
- All reported concentrations of this compound were at the low end of the typical ranges listed in the BASE database for indoor and outdoor air.
- *Based on the carbon tetrachloride concentrations reported for the sub-slab vapor and indoor air samples collected at all locations, SVI Guidance Decision Matrix A recommends "No further action".*

1,1,1-Trichloroethane (1,1,1-TCA)

- No AGV is established for this compound
- None of the sub-slab vapor, indoor air or outdoor air samples contained detectable concentrations of 1,1,1-TCA.
- *Based on the 1,1,1-TCA concentrations reported for sub-slab vapor and indoor air samples collected at all locations, SVI Guidance Decision Matrix B recommends "No further action".*

Trichloroethene (TCE)

- Low concentrations of TCE were detected in several indoor air samples; however, none of the reported concentrations exceeded the AGV of 2 $\mu g/m^3$.
- TCE was not detected in the outdoor ambient air samples.
- Note that NYSDOH lowered the AGV for TCE in August 2015 from 5 $\mu g/m^3$ to 2 $\mu g/m^3$ and developed a recommended immediate action level of 20 $\mu g/m^3$ for this compound.
- *Based on the TCE concentrations reported for sub-slab vapor and indoor air samples, SVI Guidance Decision Matrix A recommends the following:*
  - *"No further action" at 220 Lakeville Road*
  - *"Mitigate" at 5 University Place and all 218 Lakeville Road spaces*

Tetrachloroethene (PCE)

- None of the indoor air samples contained PCE at concentrations above the AGV of 30 $\mu g/m^3$.
- PCE was not detected in the outdoor ambient air samples at concentrations above laboratory method detection limits.
- Note that NYSDOH lowered the AGV for PCE in September 2013 from 100 $\mu g/m^3$ to 30 $\mu g/m^3$. The recommended immediate action level for PCE was also lowered from 1,000 $\mu g/m^3$ to 300 $\mu g/m^3$ at this time.
- *Based on the PCE concentrations reported for sub-slab vapor and indoor air samples, SVI Guidance Decision Matrix B recommends the following:*
  - *"No further action" at 220 Lakeville Road*
  - *"Mitigate" at 5 University Place and all sampling locations at 218 Lakeville Road*

1,1-Dichloroethene (1,1 DCE)

- No AGV is established for this compound
- *1,1-DCE was not detected in any of the sub-slab vapor, indoor air or outdoor air samples at concentrations above laboratory method detection limits. Therefore, SVI*

Guidance Decision Matrix A recommends "No further action" with respect to this compound.

Cis-1,2-Dichloroethene (cis-1,2 –DCE)

- No AGV is established for this compound
- A low concentration (0.22 $\mu g/m^3$) of cis-1,2-DCE was detected in indoor air sample IA-4, collected from the basement space beneath CCQ Construction Inc. at 218 Lakeville Road.
- Cis-1,2-DCE was not detected at concentrations above laboratory method detection limits in any of the remaining indoor air samples or outdoor air samples.
- *Based on the cis-1,2-DCE concentrations reported for sub-slab vapor and indoor air samples collected at all locations, SVI Guidance Decision Matrix A recommends the following:*
  - *"No further action" at 5 University Place and 220 Lakeville Road*
  - *"Mitigate" at all sampling locations at 218 Lakeville Road*

Vinyl Chloride

- No AGV is established for this compound
- Vinyl chloride was not detected in any of the indoor air or outdoor air samples at concentrations above laboratory method detection limits.
- A low concentration (1.25 $\mu g/m^3$) of vinyl chloride was detected in sub-slab sample SS-4, collected from the basement space beneath CCQ Construction Inc. at 218 Lakeville Road. Vinyl chloride was not detected at concentrations above laboratory method detection limits at any of the other sub-slab soil vapor sample locations.
- *SVI Guidance Decision Matrix C recommends "No further action" with respect to this compound for all sample locations.*

Methylene Chloride

- An AGV of 60 $\mu g/m^3$ is established for this compound.
- Methylene chloride was not detected in any of the sub-slab vapor or outdoor air samples at concentrations above laboratory method detection limits.
- Methylene chloride was not detected in any of the indoor air samples with the exception of IA-10, collected from within the basement at 5 University Place. Methylene chloride was detected at a concentration of 120 $\mu g/m^3$ in this sample, which exceeds the AGV of 60 $\mu g/m^3$. This methylene chloride concentration is attributable to an unknown source within 5 University Place during the sample collection period, as this compound was not detected in the sub-slab vapor or outdoor air samples at this location.

- *Based on the methylene chloride concentrations reported for sub-slab and indoor air samples collected at all locations, SVI Guidance Matrix B recommends the following:*
    - *"Identify sources and resample or mitigate" at 5 University Place*
    - *"No further action" at 218 and 220 Lakeville Road*

3.2 Data Usability Summary Report (DUSR)

A Data Usability Summary Report (DUSR) completed in accordance with DER-10 for the April 2019 data is provided in **Appendix G**.

4 CONCLUSIONS & RECOMMENDATIONS

4.1 Conclusions

The conclusions below are based on the results of the February 2016 and April 2019 SVI sampling investigations.

The SVI sampling results indicate that the indoor air within the basement of 218 Lakeville Road and the lowest levels of the off-site properties located at 216 Lakeville Road (rear cottage), 220 Lakeville Road, 2 University Place, 4 University Place and 5 University Place meets the AGVs established by the NYSDOH as described in **Section 3**, with the following exceptions:

- The methylene chloride concentration detected in indoor air sample IA-10 collected on April 4, 2019 at 5 University Place exceeded the AGV established by the NYSDOH (120 $\mu g/m^3$ vs 60 $\mu g/m^3$ AGV). This methylene chloride concentration within 5 University Place is attributable to an unknown source unrelated to the Site, as this compound was not detected in the sub-slab vapor or outdoor air samples at this location.
- The PCE concentration detected in the indoor air sample (IA-6) collected on February 17, 2016 at 4 University Place exceeded the AGV (36 $\mu g/m^3$ PCE detected in IA-6 vs. 30 $\mu g/m^3$ AGV). Note that access was not granted to sample this property in April 2019.

The sub-slab sampling results from the February 2016 and April 2019 investigations revealed that vapors (mainly PCE and breakdown products TCE and cis-1,2-DCE) attributable to the historic release of VOCs at the Former Imperial Cleaners Site remain in the subsurface. It is likely that the low permeability clay layer and perched water table located approximately 30 feet below grade in this area, create subsurface conditions which have trapped VOC vapors in the tight pore spaces and possibly on top of the perched water.

A pre-design soil and groundwater investigation was conducted at the Site in May 2019 in accordance with the approved RWP. The soil and groundwater sampling results provide further data to characterize remaining VOC sources at the Site and support source removal actions as appropriate. An additional pre-design subsurface investigation was conducted at the Site in September 2020 to supplement the findings of the May 2019 investigation. The pre-design investigation and additional pre-design soil and groundwater investigation results and source removal recommendations have been summarized in separate reports and submitted to NYSDEC and NYSDOH.

Based on a comparison of the target compound concentrations reported for the sub-slab and indoor air samples with the concentration ranges compared in the SVI Guidance decision matrices, mitigation is recommended for 218 Lakeville Road, 2 University Place, 4 University Place and 5 University Place to address potential soil vapor intrusion impacts and prevent exposure to VOCs in indoor air. The decision matrix comparisons indicate that no action is recommended at 220 Lakeville Road (based on April 2019 data) and 216 Lakeville Road (rear cottage sampled in February 2016).

4.2 Recommendations

The following actions are recommended based on the February 2016 and April 2019 SVI investigation results:

- As discussed in the NYSDEC-approved RWP (February 2019), Walden recommends the installation of a soil vapor extraction (SVE) system at 218 Lakeville Road to capture, extract and treat contaminated vapors from the subsurface and prevent off-site vapor migration.

- On-site source removal actions will be performed as appropriate based on the results of the May 2019 pre-design soil and groundwater investigation and the September 2020 additional pre-design soil and investigation. A report summarizing these pre-design investigation results has been submitted to NSYDEC and NYSDOH under separate cover.

- A separate Remedial Work Plan detailing the proposed on-site source removal and vapor mitigation measures will be developed based on all available investigation data. This Remedial Work Plan will be submitted to NYSDEC and NYSDOH for review and approval.
  - Pilot testing will be conducted prior to the design of the SVE system to determine the effectiveness and efficiency of the proposed system, its optimal extraction rate(s) and radius of influence (ROI).
  - Full-scale SVE system design will incorporate the results of the SVE pilot test and include the completion of engineering design calculations to determine the appropriate number of SVE wells to be utilized, well depths and screen intervals, extraction rates and ROIs, in addition to other system parameters.

    - Design plans/specifications and Operation, Monitoring and Maintenance (OM&M) Plans for the SVE and SSD systems will be developed and submitted to the NYSDEC and NYSDOH under separate cover for review and approval.

- Walden also recommends the installation of sub-slab depressurization (SSD) systems at 2 University Place, 4 University Place and 5 University Place to prevent VOC vapor migration into these residences.

- An Interim Remedial Measure (IRM) Work Plan to mitigate the potential for off-site SVI impacts at 2 University Place, 4 University Place, and 5 University Place will be developed and submitted to NYSDEC and NYSDOH for review and approval.
    - The SSD system designs will specify fans and piping required to draw vapors from beneath the basement slabs as such to create adequate vacuum to prevent sub-slab vapors from entering the buildings and avoid indoor air quality impacts.
    - The SSD systems will be designed and installed to minimize construction/ operating impacts to the extent possible.
    - The design and installation; post-mitigation, or confirmation testing; operation, maintenance, and monitoring; and termination of mitigation system operations will be done in accordance with the October 2006, Final NYSDOH CEH BEEI, Soil Vapor Intrusion Guidance, as amended.

- A Supplemental SVI Work Plan will be prepared to detail the proposed additional outreach and SVI sampling to be conducted during the upcoming 2021/2022 heating season.

TABLES

FORMER IMPERIAL CLEANERS SITE
218 LAKEVILLE ROAD
LAKE SUCCESS, NY

VCP SITE #V-00244-1

TABLE 1
SUMMARY OF FEBRUARY 2016 SVI INVESTIGATION SAMPLING RESULTS

					218 Lakeville Road (Former Dry Cleaners Space)						218 Lakeville Road (Tobacco Shop)			
					Indoor Air Concentration (µg/m3)				Sub-slab Vapor Concentration (µg/m3)		Indoor Air Concentration (µg/m3)		Sub-slab Vapor Concentration (µg/m3)	
Analyte	CAS #	NYSDOH Air Guideline Value (µg/m3)	USEPA BASE Indoor Air 90th Percentile Conc (µg/m3)	USEPA BASE Outdoor Air 90th Percentile Conc (µg/m3)	IA-1	Q	IA-9 (Duplicate)	Q	SS-1	Q	IA-2	Q	SS-2	Q
1,1,1,2-Tetrachloroethane	630-20-6				< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
1,1,1-Trichloroethane	71-55-6		20.6	2.6	< 1.00	U	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U
1,1,2,2-Tetrachloroethane	79-34-5				< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
1,1,2-Trichloroethane	79-00-5		<1.5	<1.6	< 1.00	U	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U
1,1-Dichloroethane	75-34-3		<0.7	<0.6	< 1.00	U	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
1,1-Dichloroethene	75-35-4		<1.4	<1.4	< 1.00	U	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
1,2,4-Trichlorobenzene	120-82-1		<6.8	<6.4	< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
1,2,4-Trimethylbenzene	95-63-6		9.5	5.8	< 1.00	U	< 1.00	U	13.1		< 1.00	U	17.7	
1,2-Dibromoethane(EDB)	106-93-4		<1.5	<1.6	< 1.00	U	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U
1,2-Dichlorobenzene	95-50-1		<1.2	<1.2	< 1.00	U	< 1.00	U	< 9.97	U	< 1.00	U	< 9.97	U
1,2-Dichloroethane	107-06-2		<0.9	<0.8	< 1.00	U	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
1,2-Dichloropropane	78-87-5		<1.6	<1.6	< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
1,2-Dichlorotetrafluoroethane	76-14-2				< 1.00	U	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
1,3,5-Trimethylbenzene	108-67-8		3.7	2.7	< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
1,3-Butadiene	106-99-0		<3.0	<3.4	< 1.00	U	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
1,3-Dichlorobenzene	541-73-1		<2.4	<2.2	< 1.00	U	< 1.00	U	< 9.97	U	< 1.00	U	< 9.97	U
1,4-Dichlorobenzene	106-46-7		5.5	1.2	< 1.00	U	< 1.00	U	< 9.97	U	< 1.00	U	< 9.97	U
1,4-Dioxane	123-91-1				< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
2-Hexanone(MBK)	591-78-6				< 1.00	U	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
4-Ethyltoluene	622-96-8		3.6	3	< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
4-Isopropyltoluene	99-87-6				< 1.00	U	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U
4-Methyl-2-pentanone(MIBK)	108-10-1		6	1.9	< 1.00	U	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
Acetone	67-64-1		98.9	43.7	6.65	S	5.6	S	70.3	S	7.24	S	24.9	S
Acrylonitrile	107-13-1				< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Benzene	71-43-2		9.4	6.6	< 1.00	U	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
Benzyl chloride	100-44-7		<6.8	<6.4	< 1.00	U	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
Bromodichloromethane	75-27-4				< 1.00	U	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U
Bromoform	75-25-2				< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Bromomethane	74-83-9		<1.7	<1.6	< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Carbon Disulfide	75-15-0		4.2	3.7	< 1.00	U	< 1.00	U	12.6		< 1.00	U	< 9.99	U
Carbon Tetrachloride	56-23-5		<1.3	0.7	0.5		0.58		< 2.50	U	0.5		< 2.50	U
Chlorobenzene	108-90-7		<0.9	<0.8	< 1.00	U	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U
Chloroethane	75-00-3		<1.1	<1.2	< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Chloroform	67-66-3		1.1	0.6	< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	46.3	
Chloromethane	74-87-3		3.7	3.7	1.21		1.43		< 10.0	U	1.41		< 10.0	U
Cis-1,2-Dichloroethene	156-59-2		<1.9	<1.8	< 1.00	U	< 1.00	U	396		< 1.00	U	244	
cis-1,3-Dichloropropene	10061-01-5		<2.3	<2.2	< 1.00	U	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U
Cyclohexane	110-82-7				< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Dibromochloromethane	124-48-1				< 1.00	U	< 1.00	U	< 9.96	U	< 1.00	U	< 9.96	U
Dichlorodifluoromethane	75-71-8		16.5	8.1	2.36		2.62		< 9.98	U	2.59		< 9.98	U
Ethanol	64-17-5		210	57	69.1		81.5	E	21.5	S	25.4		< 10.0	U
Ethyl acetate	141-78-6		5.4	1.5	< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Ethylbenzene	100-41-4		5.7	3.5	< 1.00	U	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U
Heptane	142-82-5				< 1.00	U	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
Hexachlorobutadiene	87-68-3		<6.8	<6.4	< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Hexane	110-54-3				< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Isopropylalcohol	67-63-0				1.22	S	1.41	S	< 10.0	U	1.96	S	< 10.0	U
Isopropylbenzene	98-82-8				< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
m,p-Xylene	179601-23-1		22.2	12.8	< 1.00	U	< 1.00	U	< 9.98	U	< 1.00	U	14.7	
Methyl Ethyl Ketone	78-93-3		12	11.3	< 1.00	U	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
Methyl tert-butyl ether(MTBE)	1634-04-4		11.5	6.2	< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Methylene Chloride	75-09-2	60	10	6.1	< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
n-Butylbenzene	104-51-8				< 1.00	U	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U
o-Xylene	95-47-6		7.9	4.6	< 1.00	U	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U
Propylene	115-07-1				1.01		< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
sec-Butylbenzene	135-98-8				< 1.00	U	< 1.00	U	< 9.98	U	< 1.00	U	14.9	
Styrene	100-42-5		1.9	1.3	< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Tetrachloroethene	127-18-4	30	15.9	6.5	5.65		5.98		5,090		4.64		18,600	
Tetrahydrofuran	109-99-9				< 1.00	U	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
Toluene	108-88-3		43	33.7	1.05		1.07		< 10.0	U	1.12		12	
Trans-1,2-Dichloroethene	156-60-5				< 1.00	U	< 1.00	U	15.6		< 1.00	U	13.8	
trans-1,3-Dichloropropene	10061-02-6		<1.3	<1.4	< 1.00	U	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U
Trichloroethene	79-01-6	2	4.2	1.3	< 0.25	U	< 0.25	U	168		0.28		191	
Trichlorofluoromethane	75-69-4		18.1	4.3	1.33		1.35		< 9.99	U	1.29		< 9.99	U
Trichlorotrifluoroethane	76-13-1		3.5	1.6	< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Vinyl Chloride	75-01-4		<1.9	<1.8	< 0.25	U	< 0.25	U	< 2.50	U	< 0.25	U	< 2.50	U

Highlighted analytes are included in the NYSDOH Decision Matrices

Qualifiers
U - The compound was anlayzed for but not detected at or above the MDL. The number immediately preceding the "U" represents the PQL reporting level corrected for percent solids, weight and/or volume calculations, and dilution factors.

S - This compound is a solvent that is used in the laboratory. Laboratory contamination is suspected if concentration is less than five times the reporting level.

E - The reported value is estimated because the concentration exceeded the calibration range.

FORMER IMPERIAL CLEANERS SITE
218 LAKEVILLE ROAD
LAKE SUCCESS, NY

VCP SITE #V-00244-1

TABLE 1
SUMMARY OF FEBRUARY 2016 SVI INVESTIGATION SAMPLING RESULTS

					218 Lakeville Road (Deli South)				218 Lakeville Road (Deli North)					
					Indoor Air Concentration (µg/m3)		Sub-slab Vapor Concentration (µg/m3)		Indoor Air Concentration (µg/m3)		Sub-slab Vapor Concentration (µg/m3)			
Analyte	CAS #	NYSDOH Air Guideline Value (µg/m3)	USEPA BASE Indoor Air 90th Percentile Conc (µg/m3)	USEPA BASE Outdoor Air 90th Percentile Conc (µg/m3)	IA-3	Q	SS-3	Q	IA-4	Q	SS-4	Q	SS-9 (Duplicate)	Q
1,1,1,2-Tetrachloroethane	630-20-6				< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U	< 10.0	U
1,1,1-Trichloroethane	71-55-6		20.6	2.6	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U	< 9.98	U
1,1,2,2-Tetrachloroethane	79-34-5				< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U	< 10.0	U
1,1,2-Trichloroethane	79-00-5		<1.5	<1.6	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U	< 9.98	U
1,1-Dichloroethane	75-34-3		<0.7	<0.6	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U	< 9.99	U
1,1-Dichloroethene	75-35-4		<1.4	<1.4	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U	< 9.99	U
1,2,4-Trichlorobenzene	120-82-1		<6.8	<6.4	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U	< 10.0	U
1,2,4-Trimethylbenzene	95-63-6		9.5	5.8	< 1.00	U	< 10.0	U	< 1.00	U	21.1		19.2	
1,2-Dibromoethane(EDB)	106-93-4		<1.5	<1.6	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U	< 9.98	U
1,2-Dichlorobenzene	95-50-1		<1.2	<1.2	< 1.00	U	< 9.97	U	< 1.00	U	< 9.97	U	< 9.97	U
1,2-Dichloroethane	107-06-2		<0.9	<0.8	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U	< 9.99	U
1,2-Dichloropropane	78-87-5		<1.6	<1.6	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U	< 10.0	U
1,2-Dichlorotetrafluoroethane	76-14-2				< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U	< 9.99	U
1,3,5-Trimethylbenzene	108-67-8		3.7	2.7	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U	< 10.0	U
1,3-Butadiene	106-99-0		<3.0	<3.4	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U	< 9.99	U
1,3-Dichlorobenzene	541-73-1		<2.4	<2.2	< 1.00	U	< 9.97	U	< 1.00	U	< 9.97	U	< 9.97	U
1,4-Dichlorobenzene	106-46-7		5.5	1.2	< 1.00	U	< 9.97	U	< 1.00	U	< 9.97	U	< 9.97	U
1,4-Dioxane	123-91-1				< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U	< 10.0	U
2-Hexanone(MBK)	591-78-6				< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U	< 9.99	U
4-Ethyltoluene	622-96-8		3.6	3	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U	< 10.0	U
4-Isopropyltoluene	99-87-6				< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U	< 9.98	U
4-Methyl-2-pentanone(MIBK)	108-10-1		6	1.9	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U	< 9.99	U
Acetone	67-64-1		98.9	43.7	4.06	S	26.1	S	4.75	S	39.4	S	38	S
Acrylonitrile	107-13-1				< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U	< 10.0	U
Benzene	71-43-2		9.4	6.6	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U	< 9.99	U
Benzyl chloride	100-44-7		<6.8	<6.4	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U	< 9.99	U
Bromodichloromethane	75-27-4				< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U	< 9.98	U
Bromoform	75-25-2				< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U	< 10.0	U
Bromomethane	74-83-9		<1.7	<1.6	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U	< 10.0	U
Carbon Disulfide	75-15-0		4.2	3.7	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U	< 9.99	U
Carbon Tetrachloride	56-23-5		<1.3	0.7	0.51		< 2.50	U	0.49		< 2.50	U	< 2.50	U
Chlorobenzene	108-90-7		<0.9	<0.8	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U	< 9.98	U
Chloroethane	75-00-3		<1.1	<1.2	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U	< 10.0	U
Chloroform	67-66-3		1.1	0.6	< 1.00	U	< 10.0	U	< 1.00	U	11.8		12.3	
Chloromethane	74-87-3		3.7	3.7	1.51		< 10.0	U	1.28		< 10.0	U	< 10.0	U
Cis-1,2-Dichloroethene	156-59-2		<1.9	<1.8	< 1.00	U	282		< 1.00	U	630		654	
cis-1,3-Dichloropropene	10061-01-5		<2.3	<2.2	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U	< 9.98	U
Cyclohexane	110-82-7				< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U	< 10.0	U
Dibromochloromethane	124-48-1				< 1.00	U	< 9.96	U	< 1.00	U	< 9.96	U	< 9.96	U
Dichlorodifluoromethane	75-71-8		16.5	8.1	2.68		14.8		2.47		< 9.98	U	< 9.98	U
Ethanol	64-17-5		210	57	9.23	S	< 10.0	U	5.44	S	< 10.0	U	11.8	S
Ethyl acetate	141-78-6		5.4	1.5	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U	< 10.0	U
Ethylbenzene	100-41-4		5.7	3.5	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U	< 9.98	U
Heptane	142-82-5				< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U	< 9.99	U
Hexachlorobutadiene	87-68-3		<6.8	<6.4	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U	< 10.0	U
Hexane	110-54-3				< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U	< 10.0	U
Isopropylalcohol	67-63-0				1.8	S	< 10.0	U	1.27	S	< 10.0	U	< 10.0	U
Isopropylbenzene	98-82-8				< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U	< 10.0	U
m,p-Xylene	179601-23-1		22.2	12.8	< 1.00	U	< 9.98	U	< 1.00	U	15.6		16	
Methyl Ethyl Ketone	78-93-3		12	11.3	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U	< 9.99	U
Methyl tert-butyl ether(MTBE)	1634-04-4		11.5	6.2	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U	< 10.0	U
Methylene Chloride	75-09-2	60	10	6.1	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U	< 10.0	U
n-Butylbenzene	104-51-8				< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U	< 9.98	U
o-Xylene	95-47-6		7.9	4.6	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U	< 9.98	U
Propylene	115-07-1				< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U	< 9.99	U
sec-Butylbenzene	135-98-8				< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U	16.1	
Styrene	100-42-5		1.9	1.3	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U	< 10.0	U
Tetrachloroethene	127-18-4	30	15.9	6.5	1.92		2,760		1.58		3,630		3,550	
Tetrahydrofuran	109-99-9				< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U	< 9.99	U
Toluene	108-88-3		43	33.7	< 1.00	U	< 10.0	U	< 1.00	U	13.3		14.5	
Trans-1,2-Dichloroethene	156-60-5				< 1.00	U	24.8		< 1.00	U	34.9		36.2	
trans-1,3-Dichloropropene	10061-02-6		<1.3	<1.4	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U	< 9.98	U
Trichloroethene	79-01-6	2	4.2	1.3	0.27		459		< 0.25	U	564		607	
Trichlorofluoromethane	75-69-4		18.1	4.3	1.39		< 9.99	U	1.25		< 9.99	U	< 9.99	U
Trichlorotrifluoroethane	76-13-1		3.5	1.6	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U	< 10.0	U
Vinyl Chloride	75-01-4		<1.9	<1.8	< 0.25	U	< 2.50	U	< 0.25	U	< 2.50	U	< 2.50	U

Highlighted analytes are included in the NYSDOH Decision Matrices

Qualifiers
U - The compound was anlayzed for but not detected at or above the MDL. The number immediately preceding the "U" represents the PQL reporting level corrected for percent solids, weight and/or volume calculations, and dilution factors.

S - This compound is a solvent that is used in the laboratory. Laboratory contamination is suspected if concentration is less than five times the reporting level.

E - The reported value is estimated because the concentration exceeded the calibration range.

FORMER IMPERIAL CLEANERS SITE
218 LAKEVILLE ROAD
LAKE SUCCESS, NY

VCP SITE #V-00244-1

TABLE 1
SUMMARY OF FEBRUARY 2016 SVI INVESTIGATION SAMPLING RESULTS

					2 University Place				4 University Place			
Analyte	**CAS #**	**NYSDOH Air Guideline Value (µg/m3)**	**USEPA BASE Indoor Air 90th Percentile Conc (µg/m3)**	**USEPA BASE Outdoor Air 90th Percentile Conc (µg/m3)**	**Indoor Air Concentration (µg/m3)**		**Sub-slab Vapor Concentration (µg/m3)**		**Indoor Air Concentration (µg/m3)**		**Sub-slab Vapor Concentration (µg/m3)**	
					IA-5	**Q**	**SS-5**	**Q**	**IA-6**	**Q**	**SS-6**	**Q**
1,1,1,2-Tetrachloroethane	630-20-6				< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
1,1,1-Trichloroethane	71-55-6		20.6	2.6	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U
1,1,2,2-Tetrachloroethane	79-34-5				< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
1,1,2-Trichloroethane	79-00-5		<1.5	<1.6	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U
1,1-Dichloroethane	75-34-3		<0.7	<0.6	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
1,1-Dichloroethene	75-35-4		<1.4	<1.4	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
1,2,4-Trichlorobenzene	120-82-1		<6.8	<6.4	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
1,2,4-Trimethylbenzene	95-63-6		9.5	5.8	< 1.00	U	76.6		< 1.00	U	53.6	
1,2-Dibromoethane(EDB)	106-93-4		<1.5	<1.6	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U
1,2-Dichlorobenzene	95-50-1		<1.2	<1.2	< 1.00	U	< 9.97	U	< 1.00	U	< 9.97	U
1,2-Dichloroethane	107-06-2		<0.9	<0.8	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
1,2-Dichloropropane	78-87-5		<1.6	<1.6	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
1,2-Dichlorotetrafluoroethane	76-14-2				< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
1,3,5-Trimethylbenzene	108-67-8		3.7	2.7	< 1.00	U	22.7		< 1.00	U	13.8	
1,3-Butadiene	106-99-0		<3.0	<3.4	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
1,3-Dichlorobenzene	541-73-1		<2.4	<2.2	< 1.00	U	< 9.97	U	< 1.00	U	< 9.97	U
1,4-Dichlorobenzene	106-46-7		5.5	1.2	< 1.00	U	< 9.97	U	< 1.00	U	< 9.97	U
1,4-Dioxane	123-91-1				< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
2-Hexanone(MBK)	591-78-6				< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
4-Ethyltoluene	622-96-8		3.6	3	< 1.00	U	12.7		< 1.00	U	< 10.0	U
4-Isopropyltoluene	99-87-6				< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U
4-Methyl-2-pentanone(MIBK)	108-10-1		6	1.9	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
Acetone	67-64-1		98.9	43.7	14.9		82.6	S	48.2		37.3	S
Acrylonitrile	107-13-1				< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Benzene	71-43-2		9.4	6.6	1.56		< 9.99	U	< 1.00	U	< 9.99	U
Benzyl chloride	100-44-7		<6.8	<6.4	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
Bromodichloromethane	75-27-4				< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U
Bromoform	75-25-2				< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Bromomethane	74-83-9		<1.7	<1.6	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Carbon Disulfide	75-15-0		4.2	3.7	< 1.00	U	13.9		< 1.00	U	< 9.99	U
Carbon Tetrachloride	56-23-5		<1.3	0.7	0.57		< 2.50	U	0.55		< 2.50	U
Chlorobenzene	108-90-7		<0.9	<0.8	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U
Chloroethane	75-00-3		<1.1	<1.2	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Chloroform	67-66-3		1.1	0.6	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Chloromethane	74-87-3		3.7	3.7	2.17		< 10.0	U	1.5		< 10.0	U
Cis-1,2-Dichloroethene	156-59-2		<1.9	<1.8	< 1.00	U	< 9.99	U	< 1.00	U	134	
cis-1,3-Dichloropropene	10061-01-5		<2.3	<2.2	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U
Cyclohexane	110-82-7				< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Dibromochloromethane	124-48-1				< 1.00	U	< 9.96	U	< 1.00	U	< 9.96	U
Dichlorodifluoromethane	75-71-8		16.5	8.1	2.71		< 9.98	U	2.61		< 9.98	U
Ethanol	64-17-5		210	57	23.2		23.5	S	57.6		13.6	S
Ethyl acetate	141-78-6		5.4	1.5	1.06		< 10.0	U	< 1.00	U	< 10.0	U
Ethylbenzene	100-41-4		5.7	3.5	1.05		14.5		< 1.00	U	< 9.98	U
Heptane	142-82-5				1.45		13		< 1.00	U	< 9.99	U
Hexachlorobutadiene	87-68-3		<6.8	<6.4	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Hexane	110-54-3				2.03	S	11.1	S	< 1.00	U	< 10.0	U
Isopropylalcohol	67-63-0				1.64	S	< 10.0	U	6.19	S	< 10.0	U
Isopropylbenzene	98-82-8				< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
m,p-Xylene	179601-23-1		22.2	12.8	4.13		57.7		2.2		35.7	
Methyl Ethyl Ketone	78-93-3		12	11.3	1.81		< 9.99	U	1.29		< 9.99	U
Methyl tert-butyl ether(MTBE)	1634-04-4		11.5	6.2	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Methylene Chloride	75-09-2	60	10	6.1	2.35	S	< 10.0	U	< 1.00	U	< 10.0	U
n-Butylbenzene	104-51-8				< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U
o-Xylene	95-47-6		7.9	4.6	1.29		28.3		< 1.00	U	17.3	
Propylene	115-07-1				< 1.00	U	28.6		< 1.00	U	< 9.99	U
sec-Butylbenzene	135-98-8				< 1.00	U	64.7		< 1.00	U	44.9	
Styrene	100-42-5		1.9	1.3	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Tetrachloroethene	127-18-4	30	15.9	6.5	1.82		3,590		36.2		20,100	
Tetrahydrofuran	109-99-9				< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
Toluene	108-88-3		43	33.7	9.83		31.4		3.17		20.4	
Trans-1,2-Dichloroethene	156-60-5				< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
trans-1,3-Dichloropropene	10061-02-6		<1.3	<1.4	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U
Trichloroethene	79-01-6	2	4.2	1.3	1.01		47		0.6		655	
Trichlorofluoromethane	75-69-4		18.1	4.3	1.35		< 9.99	U	1.33		< 9.99	U
Trichlorotrifluoroethane	76-13-1		3.5	1.6	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Vinyl Chloride	75-01-4		<1.9	<1.8	< 0.25	U	< 2.50	U	< 0.25	U	< 2.50	U

Highlighted analytes are included in the NYSDOH Decision Matrices

Qualifiers

U - The compound was anlayzed for but not detected at or above the MDL. The number immediately preceding the "U" represents the PQL reporting level corrected for percent solids, weight and/or volume calculations, and dilution factors.

S - This compound is a solvent that is used in the laboratory. Laboratory contamination is suspected if concentration is less than five times the reporting level.

E - The reported value is estimated because the concentration exceeded the calibration range.

FORMER IMPERIAL CLEANERS SITE
218 LAKEVILLE ROAD
LAKE SUCCESS, NY

VCP SITE #V-00244-1

TABLE 1
SUMMARY OF FEBRUARY 2016 SVI INVESTIGATION SAMPLING RESULTS

					220 Lakeville Road				216 Lakeville Road (Cottage)			
					Indoor Air Concentration (µg/m3)		Sub-slab Vapor Concentration (µg/m3)		Indoor Air Concentration (µg/m3)		Soil Vapor Concentration (µg/m3)	
Analyte	CAS #	NYSDOH Air Guideline Value (µg/m3)	USEPA BASE Indoor Air 90th Percentile Conc (µg/m3)	USEPA BASE Outdoor Air 90th Percentile Conc (µg/m3)	IA-7	Q	SS-7	Q	IA-8	Q	SS-8	Q
1,1,1,2-Tetrachloroethane	630-20-6				< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
1,1,1-Trichloroethane	71-55-6		20.6	2.6	< 1.00	U	< 1.00	U	< 1.00	U	8.34	
1,1,2,2-Tetrachloroethane	79-34-5				< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
1,1,2-Trichloroethane	79-00-5		<1.5	<1.6	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
1,1-Dichloroethane	75-34-3		<0.7	<0.6	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
1,1-Dichloroethene	75-35-4		<1.4	<1.4	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
1,2,4-Trichlorobenzene	120-82-1		<6.8	<6.4	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
1,2,4-Trimethylbenzene	95-63-6		9.5	5.8	< 1.00	U	20.6		< 1.00	U	14.1	
1,2-Dibromoethane(EDB)	106-93-4		<1.5	<1.6	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
1,2-Dichlorobenzene	95-50-1		<1.2	<1.2	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
1,2-Dichloroethane	107-06-2		<0.9	<0.8	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
1,2-Dichloropropane	78-87-5		<1.6	<1.6	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
1,2-Dichlorotetrafluoroethane	76-14-2				< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
1,3,5-Trimethylbenzene	108-67-8		3.7	2.7	< 1.00	U	5.4		< 1.00	U	4.05	
1,3-Butadiene	106-99-0		<3.0	<3.4	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
1,3-Dichlorobenzene	541-73-1		<2.4	<2.2	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
1,4-Dichlorobenzene	106-46-7		5.5	1.2	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
1,4-Dioxane	123-91-1				< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
2-Hexanone(MBK)	591-78-6				< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
4-Ethyltoluene	622-96-8		3.6	3	< 1.00	U	3.23		< 1.00	U	2.37	
4-Isopropyltoluene	99-87-6				< 1.00	U	1.65		< 1.00	U	1.01	
4-Methyl-2-pentanone(MIBK)	108-10-1		6	1.9	< 1.00	U	< 1.00	U	< 1.00	U	1.05	
Acetone	67-64-1		98.9	43.7	6.62	S	143		69.6		98.8	
Acrylonitrile	107-13-1				< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
Benzene	71-43-2		9.4	6.6	< 1.00	U	1.1		< 1.00	U	4.95	
Benzyl chloride	100-44-7		<6.8	<6.4	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
Bromodichloromethane	75-27-4				< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
Bromoform	75-25-2				< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
Bromomethane	74-83-9		<1.7	<1.6	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
Carbon Disulfide	75-15-0		4.2	3.7	< 1.00	U	29.6		< 1.00	U	5.1	
Carbon Tetrachloride	56-23-5		<1.3	0.7	0.58		< 0.25	U	0.46		0.46	
Chlorobenzene	108-90-7		<0.9	<0.8	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
Chloroethane	75-00-3		<1.1	<1.2	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
Chloroform	67-66-3		1.1	0.6	< 1.00	U	4.62		< 1.00	U	< 1.00	U
Chloromethane	74-87-3		3.7	3.7	1.19		< 1.00	U	1.22		1.57	
Cis-1,2-Dichloroethene	156-59-2		<1.9	<1.8	< 1.00	U	3.8		< 1.00	U	< 1.00	U
cis-1,3-Dichloropropene	10061-01-5		<2.3	<2.2	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
Cyclohexane	110-82-7				< 1.00	U	1.42		< 1.00	U	< 1.00	U
Dibromochloromethane	124-48-1				< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
Dichlorodifluoromethane	75-71-8		16.5	8.1	2.81		2.96		2.49		2.92	
Ethanol	64-17-5		210	57	6.76	S	14.9		130	E	29.2	
Ethyl acetate	141-78-6		5.4	1.5	< 1.00	U	< 1.00	U	1.47		< 1.00	U
Ethylbenzene	100-41-4		5.7	3.5	< 1.00	U	3.54		< 1.00	U	3.94	
Heptane	142-82-5				< 1.00	U	3.43		< 1.00	U	6.59	
Hexachlorobutadiene	87-68-3		<6.8	<6.4	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
Hexane	110-54-3				< 1.00	U	7.12	S	< 1.00	U	9.09	S
Isopropylalcohol	67-63-0				1.15	S	1.8	S	35.4		2.85	S
Isopropylbenzene	98-82-8				< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
m,p-Xylene	179601-23-1		22.2	12.8	< 1.00	U	14.3		< 1.00	U	14.1	
Methyl Ethyl Ketone	78-93-3		12	11.3	< 1.00	U	6.69		< 1.00	U	9.84	
Methyl tert-butyl ether(MTBE)	1634-04-4		11.5	6.2	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
Methylene Chloride	75-09-2	60	10	6.1	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
n-Butylbenzene	104-51-8				< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
o-Xylene	95-47-6		7.9	4.6	< 1.00	U	6.94		< 1.00	U	6.77	
Propylene	115-07-1				< 1.00	U	< 1.00	U	< 1.00	U	22.2	
sec-Butylbenzene	135-98-8				< 1.00	U	< 1.00	U	< 1.00	U	11.8	
Styrene	100-42-5		1.9	1.3	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
Tetrachloroethene	127-18-4	30	15.9	6.5	0.67		854		0.79		3.2	
Tetrahydrofuran	109-99-9				< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
Toluene	108-88-3		43	33.7	1.71		9.45		2.05		14.6	
Trans-1,2-Dichloroethene	156-60-5				< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
trans-1,3-Dichloropropene	10061-02-6		<1.3	<1.4	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
Trichloroethene	79-01-6	2	4.2	1.3	< 0.25	U	14.1		< 0.25	U	0.39	
Trichlorofluoromethane	75-69-4		18.1	4.3	1.47		1.52		1.33		1.77	
Trichlorotrifluoroethane	76-13-1		3.5	1.6	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
Vinyl Chloride	75-01-4		<1.9	<1.8	< 0.25	U	< 0.25	U	< 0.25	U	< 0.25	U

Highlighted analytes are included in the NYSDOH Decision Matrices

Qualifiers

U - The compound was anlayzed for but not detected at or above the MDL. The number immediately preceding the "U" represents the PQL reporting level corrected for percent solids, weight and/or volume calculations, and dilution factors.

S - This compound is a solvent that is used in the laboratory. Laboratory contamination is suspected if concentration is less than five times the reporting level.

E - The reported value is estimated because the concentration exceeded the calibration range.

FORMER IMPERIAL CLEANERS SITE
218 LAKEVILLE ROAD
LAKE SUCCESS, NY

VCP SITE #V-00244-1

TABLE 1
SUMMARY OF FEBRUARY 2016 SVI INVESTIGATION SAMPLING RESULTS

Analyte	CAS #	NYSDOH Air Guideline Value (µg/m3)	USEPA BASE Indoor Air 90th Percentile Conc (µg/m3)	USEPA BASE Outdoor Air 90th Percentile Conc (µg/m3)	Outdoor Ambient Air Samples: Upwind Concentration (µg/m3) AA-1	Q	Downwind Concentration (µg/m3) AA-2	Q	AA-3 (Duplicate)	Q
1,1,1,2-Tetrachloroethane	630-20-6				< 1.00	U	< 1.00	U	< 1.00	U
1,1,1-Trichloroethane	71-55-6		20.6	2.6	< 1.00	U	< 1.00	U	< 1.00	U
1,1,2,2-Tetrachloroethane	79-34-5				< 1.00	U	< 1.00	U	< 1.00	U
1,1,2-Trichloroethane	79-00-5		<1.5	<1.6	< 1.00	U	< 1.00	U	< 1.00	U
1,1-Dichloroethane	75-34-3		<0.7	<0.6	< 1.00	U	< 1.00	U	< 1.00	U
1,1-Dichloroethene	75-35-4		<1.4	<1.4	< 1.00	U	< 1.00	U	< 1.00	U
1,2,4-Trichlorobenzene	120-82-1		<6.8	<6.4	< 1.00	U	< 1.00	U	< 1.00	U
1,2,4-Trimethylbenzene	95-63-6		9.5	5.8	11.3		12.6		14.3	
1,2-Dibromoethane(EDB)	106-93-4		<1.5	<1.6	< 1.00	U	< 1.00	U	< 1.00	U
1,2-Dichlorobenzene	95-50-1		<1.2	<1.2	< 1.00	U	< 1.00	U	< 1.00	U
1,2-Dichloroethane	107-06-2		<0.9	<0.8	< 1.00	U	< 1.00	U	< 1.00	U
1,2-Dichloropropane	78-87-5		<1.6	<1.6	< 1.00	U	< 1.00	U	< 1.00	U
1,2-Dichlorotetrafluoroethane	76-14-2				< 1.00	U	< 1.00	U	< 1.00	U
1,3,5-Trimethylbenzene	108-67-8		3.7	2.7	4.31		4.32		4.2	
1,3-Butadiene	106-99-0		<3.0	<3.4	< 1.00	U	< 1.00	U	< 1.00	U
1,3-Dichlorobenzene	541-73-1		<2.4	<2.2	< 1.00	U	< 1.00	U	< 1.00	U
1,4-Dichlorobenzene	106-46-7		5.5	1.2	< 1.00	U	< 1.00	U	< 1.00	U
1,4-Dioxane	123-91-1				< 1.00	U	< 1.00	U	< 1.00	U
2-Hexanone(MBK)	591-78-6				< 1.00	U	< 1.00	U	< 1.00	U
4-Ethyltoluene	622-96-8		3.6	3	2.11		2.84		2.6	
4-Isopropyltoluene	99-87-6				1.03		1.08		1.31	
4-Methyl-2-pentanone(MIBK)	108-10-1		6	1.9	< 1.00	U	< 1.00	U	< 1.00	U
Acetone	67-64-1		98.9	43.7	18.8		28		22.1	
Acrylonitrile	107-13-1				< 1.00	U	< 1.00	U	< 1.00	U
Benzene	71-43-2		9.4	6.6	4.12		3.19		2.96	
Benzyl chloride	100-44-7		<6.8	<6.4	< 1.00	U	< 1.00	U	< 1.00	U
Bromodichloromethane	75-27-4				< 1.00	U	< 1.00	U	< 1.00	U
Bromoform	75-25-2				< 1.00	U	< 1.00	U	< 1.00	U
Bromomethane	74-83-9		<1.7	<1.6	< 1.00	U	< 1.00	U	< 1.00	U
Carbon Disulfide	75-15-0		4.2	3.7	< 1.00	U	< 1.00	U	< 1.00	U
Carbon Tetrachloride	56-23-5		<1.3	0.7	0.38		0.41		0.43	
Chlorobenzene	108-90-7		<0.9	<0.8	< 1.00	U	< 1.00	U	< 1.00	U
Chloroethane	75-00-3		<1.1	<1.2	< 1.00	U	< 1.00	U	< 1.00	U
Chloroform	67-66-3		1.1	0.6	< 1.00	U	< 1.00	U	< 1.00	U
Chloromethane	74-87-3		3.7	3.7	1.53		1.63		< 1.00	U
Cis-1,2-Dichloroethene	156-59-2		<1.9	<1.8	< 1.00	U	< 1.00	U	< 1.00	U
cis-1,3-Dichloropropene	10061-01-5		<2.3	<2.2	< 1.00	U	< 1.00	U	< 1.00	U
Cyclohexane	110-82-7				6.47		4.54		3.96	
Dibromochloromethane	124-48-1				< 1.00	U	< 1.00	U	< 1.00	U
Dichlorodifluoromethane	75-71-8		16.5	8.1	2.51		2.45		2.47	
Ethanol	64-17-5		210	57	17.5		13.6		13.8	
Ethyl acetate	141-78-6		5.4	1.5	< 1.00	U	< 1.00	U	< 1.00	U
Ethylbenzene	100-41-4		5.7	3.5	4.73		4.6		4.69	
Heptane	142-82-5				8.27		6.47		5.73	
Hexachlorobutadiene	87-68-3		<6.8	<6.4	< 1.00	U	< 1.00	U	< 1.00	U
Hexane	110-54-3				10.8		7.82	S	6.76	S
Isopropylalcohol	67-63-0				1.67	S	2.44	S	1.28	S
Isopropylbenzene	98-82-8				1.07		1.11		< 1.00	U
m,p-Xylene	179601-23-1		22.2	12.8	15.9		15.3		15.4	
Methyl Ethyl Ketone	78-93-3		12	11.3	1.71		1.09		1.06	
Methyl tert-butyl ether(MTBE)	1634-04-4		11.5	6.2	< 1.00	U	< 1.00	U	< 1.00	U
Methylene Chloride	75-09-2	60	10	6.1	< 1.00	U	< 1.00	U	< 1.00	U
n-Butylbenzene	104-51-8				< 1.00	U	< 1.00	U	< 1.00	U
o-Xylene	95-47-6		7.9	4.6	7.59		7.38		7.33	
Propylene	115-07-1				< 1.00	U	< 1.00	U	< 1.00	U
sec-Butylbenzene	135-98-8				9.49		< 1.00	U	12.1	
Styrene	100-42-5		1.9	1.3	< 1.00	U	< 1.00	U	< 1.00	U
Tetrachloroethene	127-18-4	30	15.9	6.5	0.33		0.47		0.39	
Tetrahydrofuran	109-99-9				< 1.00	U	< 1.00	U	< 1.00	U
Toluene	108-88-3		43	33.7	21.9		18.8		18.3	
Trans-1,2-Dichloroethene	156-60-5				< 1.00	U	< 1.00	U	< 1.00	U
trans-1,3-Dichloropropene	10061-02-6		<1.3	<1.4	< 1.00	U	< 1.00	U	< 1.00	U
Trichloroethene	79-01-6	2	4.2	1.3	< 0.25	U	< 0.25	U	< 0.25	U
Trichlorofluoromethane	75-69-4		18.1	4.3	2.76		2.3		2.17	
Trichlorotrifluoroethane	76-13-1		3.5	1.6	< 1.00	U	< 1.00	U	< 1.00	U
Vinyl Chloride	75-01-4		<1.9	<1.8	< 0.25	U	< 0.25	U	< 0.25	U

Highlighted analytes are included in the NYSDOH Decision Matrices

Qualifiers

U - The compound was anlayzed for but not detected at or above the MDL. The number immediately preceding the "U" represents the PQL reporting level corrected for percent solids, weight and/or volume calculations, and dilution factors.

S - This compound is a solvent that is used in the laboratory. Laboratory contamination is suspected if concentration is less than five times the reporting level.

E - The reported value is estimated because the concentration exceeded the calibration range.

FORMER IMPERIAL CLEANERS SITE
218 LAKEVILLE ROAD
LAKE SUCCESS, NY
BCP SITE #C130225

TABLE 2
SUMMARY OF APRIL 2019 SVI INVESTIGATION SAMPLING RESULTS

					218 Lakeville Road (Former Dry Cleaners Space)						218 Lakeville Road (Tobacco Shop)			
Analyte	CAS #	NYSDOH Air Guideline Value (μg/m^3)	USEPA BASE Indoor Air 90th Percentile Conc (μg/m^3)	USEPA BASE Outdoor Air 90th Percentile Conc (μg/m^3)	Indoor Air Concentration (μg/m^3)		Sub-Slab Vapor Concentration (μg/m^3)				Indoor Air Concentration (μg/m^3)		Sub-Slab Vapor Concentration (μg/m^3)	
					IA-1		SS-1		SS-DUP (SS-1)		IA-2		SS-2	
					4/4/2019	Q	4/4/2019	Q	4/4/2019	Q	4/4/2019	Q	4/4/2019	Q
1,1,1,2-Tetrachloroethane	630-20-6				< 1.00	U	< 5.00	U	< 5.00	U	< 1.00	U	< 5.00	U
1,1,1-Trichloroethane	71-55-6		20.6	2.6	< 1.00	U	< 5.00	U	< 5.00	U	< 1.00	U	< 5.00	U
1,1,2,2-Tetrachloroethane	79-34-5				< 1.00	U	< 5.00	U	< 5.00	U	< 1.00	U	< 5.00	U
1,1,2-Trichloroethane	79-00-5		<1.5	<1.6	< 1.00	U	< 5.00	U	< 5.00	U	< 1.00	U	< 5.00	U
1,1-Dichloroethane	75-34-3		<0.7	<0.6	< 1.00	U	< 5.02	U	< 5.02	U	< 1.00	U	< 5.02	U
1,1-Dichloroethene	75-35-4		<1.4	<1.4	< 0.20	U	< 1.00	U	< 1.00	U	< 0.20	U	< 1.00	U
1,2,4-Trichlorobenzene	120-82-1		<6.8	<6.4	< 1.00	U	< 5.00	U	< 5.00	U	< 1.00	U	< 5.00	U
1,2,4-Trimethylbenzene	95-63-6		9.5	5.8	< 1.00	U	< 5.01	U	< 5.01	U	**1.72**		< 5.01	U
1,2-Dibromoethane (EDB)	106-93-4		<1.5	<1.6	< 1.00	U	< 5.00	U	< 5.00	U	< 1.00	U	< 5.00	U
1,2-Dichlorobenzene	95-50-1		<1.2	<1.2	< 1.00	U	< 5.00	U	< 5.00	U	< 1.00	U	< 5.00	U
1,2-Dichloroethane	107-06-2		<0.9	<0.8	< 1.00	U	< 5.02	U	< 5.02	U	< 1.00	U	< 5.02	U
1,2-Dichloropropane	78-87-5		<1.6	<1.6	< 1.00	U	< 4.99	U	< 4.99	U	< 1.00	U	< 4.99	U
1,2-Dichlorotetrafluoroethane	76-14-2				< 1.00	U	< 5.00	U	< 5.00	U	< 1.00	U	< 5.00	U
1,3,5-Trimethylbenzene	108-67-8		3.7	2.7	< 1.00	U	< 5.01	U	< 5.01	U	< 1.00	U	< 5.01	U
1,3-Butadiene	106-99-0		<3.0	<3.4	< 1.00	U	< 5.00	U	< 5.00	U	< 1.00	U	< 5.00	U
1,3-Dichlorobenzene	541-73-1		<2.4	<2.2	< 1.00	U	< 5.00	U	< 5.00	U	< 1.00	U	< 5.00	U
1,4-Dichlorobenzene	106-46-7		5.5	1.2	< 1.00	U	< 5.00	U	< 5.00	U	< 1.00	U	< 5.00	U
1,4-Dioxane	123-91-1				< 1.00	U	< 5.01	U	< 5.01	U	< 1.00	U	< 5.01	U
2-Hexanone (MBK)	591-78-6				< 1.00	U	< 4.99	U	< 4.99	U	< 1.00	U	< 4.99	U
4-Ethyltoluene	622-96-8		3.6	3	< 1.00	U	< 5.01	U	< 5.01	U	< 1.00	U	< 5.01	U
4-Isopropyltoluene	99-87-6				< 1.00	U	< 5.00	U	< 5.00	U	< 1.00	U	< 5.00	U
4-Methyl-2-pentanone (MIBK)	108-10-1		6	1.9	< 1.00	U	< 4.99	U	< 4.99	U	< 1.00	U	< 4.99	U
Acetone	67-64-1		98.9	43.7	**5.56**		**8.5**		**8.52**		**8.38**		**5.27**	
Acrylonitrile	107-13-1				< 1.00	U	< 5.01	U	< 5.01	U	< 1.00	U	< 5.01	U
Benzene	71-43-2		9.4	6.6	< 1.00	U	< 5.01	U	< 5.01	U	< 1.00	U	< 5.01	U
Benzyl chloride	100-44-7		<6.8	<6.4	< 1.00	U	< 5.00	U	< 5.00	U	< 1.00	U	< 5.00	U
Bromodichloromethane	75-27-4				< 1.00	U	< 5.00	U	< 5.00	U	< 1.00	U	< 5.00	U
Bromoform	75-25-2				< 1.00	U	< 5.00	U	< 5.00	U	< 1.00	U	< 5.00	U
Bromomethane	74-83-9		<1.7	<1.6	< 1.00	U	< 5.01	U	< 5.01	U	< 1.00	U	< 5.01	U
Carbon Disulfide	75-15-0		4.2	3.7	< 1.00	U	< 5.01	U	< 5.01	U	< 1.00	U	< 5.01	U
Carbon Tetrachloride	56-23-5		<1.3	0.7	**0.53**		< 1.00	U	< 1.00	U	**0.53**		< 1.00	U
Chlorobenzene	108-90-7		<0.9	<0.8	< 1.00	U	< 5.01	U	< 5.01	U	< 1.00	U	< 5.01	U
Chloroethane	75-00-3		<1.1	<1.2	< 1.00	U	< 5.01	U	< 5.01	U	< 1.00	U	< 5.01	U
Chloroform	67-66-3		1.1	0.6	< 1.00	U	**7.81**		**7.76**		< 1.00	U	**83.9**	
Chloromethane	74-87-3		3.7	3.7	**1.25**		< 4.99	U	< 4.99	U	**1.3**		< 4.99	U
Cis-1,2-Dichloroethene	156-59-2		<1.9	<1.8	< 0.20	U	**340**		**336**		< 0.20	U	**303**	
cis-1,3-Dichloropropene	10061-01-5		<2.3	<2.2	< 1.00	U	< 4.99	U	< 4.99	U	< 1.00	U	< 4.99	U
Cyclohexane	110-82-7				< 1.00	U	< 4.99	U	< 4.99	U	< 1.00	U	< 4.99	U
Dibromochloromethane	124-48-1				< 1.00	U	< 5.00	U	< 5.00	U	< 1.00	U	< 5.00	U
Dichlorodifluoromethane	75-71-8		16.5	8.1	**2.38**		< 4.99	U	< 4.99	U	**2.34**		< 4.99	U
Ethanol	64-17-5		210	57	**10.5**		**5.1**		< 5.01	U	**10**		**5.44**	
Ethyl acetate	141-78-6		5.4	1.5	< 1.00	U	< 5.01	U	< 5.01	U	< 1.00	U	< 5.01	U
Ethylbenzene	100-41-4		5.7	3.5	< 1.00	U	< 4.99	U	< 4.99	U	< 1.00	U	< 4.99	U
Heptane	142-82-5				< 1.00	U	< 5.00	U	< 5.00	U	< 1.00	U	< 5.00	U
Hexachlorobutadiene	87-68-3		<6.8	<6.4	< 1.00	U	< 5.00	U	< 5.00	U	< 1.00	U	< 5.00	U
Hexane	110-54-3				< 1.00	U	< 5.00	U	< 5.00	U	< 1.00	U	< 5.00	U
Isopropylalcohol	67-63-0				**2.34**		< 5.01	U	< 5.01	U	**2.83**		< 5.01	U
Isopropylbenzene	98-82-8				< 1.00	U	< 5.01	U	< 5.01	U	< 1.00	U	< 5.01	U
m,p-Xylene	179601-23-1		22.2	12.8	< 1.00	U	**7.51**		**7.81**		< 1.00	U	< 4.99	U
Methyl Ethyl Ketone	78-93-3		12	11.3	< 1.00	U	< 5.01	U	< 5.01	U	< 1.00	U	< 5.01	U
Methyl tert-butyl ether (MTBE)	1634-04-4		11.5	6.2	< 1.00	U	< 5.01	U	< 5.01	U	< 1.00	U	< 5.01	U
Methylene Chloride	75-09-2	60	10	6.1	< 3.00	U	< 15.0	U	< 15.0	U	< 3.00	U	< 15.0	U
n-Butylbenzene	104-51-8				< 1.00	U	< 5.00	U	< 5.00	U	< 1.00	U	< 5.00	U
o-Xylene	95-47-6		7.9	4.6	< 1.00	U	< 4.99	U	< 4.99	U	< 1.00	U	< 4.99	U
Propylene	115-07-1				< 1.00	U	< 5.01	U	< 5.01	U	< 1.00	U	< 5.01	U
sec-Butylbenzene	135-98-8				< 1.00	U	< 5.00	U	< 5.00	U	< 1.00	U	< 5.00	U
Styrene	100-42-5		1.9	1.3	< 1.00	U	< 4.98	U	< 4.98	U	< 1.00	U	< 4.98	U
Tetrachloroethene	127-18-4	30	15.9	6.5	**2.65**		**12,500**		**13,100**		**6.78**		**43,400**	
Tetrahydrofuran	109-99-9				< 1.00	U	< 5.01	U	< 5.01	U	< 1.00	U	< 5.01	U
Toluene	108-88-3		43	33.7	< 1.00	U	**10**		**10.7**		**1.3**		< 5.01	U
Trans-1,2-Dichloroethene	156-60-5				< 1.00	U	**17.1**		**16.5**		< 1.00	U	**17.6**	
trans-1,3-Dichloropropene	10061-02-6		<1.3	<1.4	< 1.00	U	< 4.99	U	< 4.99	U	< 1.00	U	< 4.99	U
Trichloroethene	79-01-6	2	4.2	1.3	< 0.20	U	**266**		**265**		< 0.20	U	**370**	
Trichlorofluoromethane	75-69-4		18.1	4.3	**1.5**		< 5.00	U	< 5.00	U	**1.44**		< 5.00	U
Trichlorotrifluoroethane	76-13-1		3.5	1.6	< 1.00	U	< 5.00	U	< 5.00	U	< 1.00	U	< 5.00	U
Vinyl Chloride	75-01-4		<1.9	<1.8	< 0.20	U	< 1.00	U	< 1.00	U	< 0.20	U	< 1.00	U

Highlighted analytes are included in the SVI Guidance Decision Matrices

Qualifiers

U - The compound was anlayzed for but not detected at or above the MDL. The number immediately preceding the "U" represents the PQL reporting level corrected for percent solids, weight and/or volume calculations, and dilution factors.

E - The reported value is estimated because the concentration exceeded the calibration range.

FORMER IMPERIAL CLEANERS SITE
218 LAKEVILLE ROAD
LAKE SUCCESS, NY
BCP SITE #C130225

TABLE 2
SUMMARY OF APRIL 2019 SVI INVESTIGATION SAMPLING RESULTS

Analyte	CAS #	NYSDOH Air Guideline Value (µg/m³)	USEPA BASE Indoor Air 90th Percentile Conc (µg/m³)	USEPA BASE Outdoor Air 90th Percentile Conc (µg/m³)	218 Lakeville Road (Former Deli, South)				218 Lakeville Road (CCQ Construction Inc.)					
					Indoor Air Concentration (µg/m³)		Sub-Slab Vapor Concentration (µg/m³)		Indoor Air Concentration (µg/m³)				Sub-Slab Vapor Concentration (µg/m³)	
					IA-3		SS-3		IA-4		IA-DUP (IA-4)		SS-4	
					4/4/2019	Q	4/4/2019	Q	4/4/2019	Q	4/4/2019	Q	4/4/2019	Q
1,1,1,2-Tetrachloroethane	630-20-6				< 1.00	U	< 5.00	U	< 1.00	U	< 1.00	U	< 5.00	U
1,1,1-Trichloroethane	71-55-6		20.6	2.6	< 1.00	U	< 5.00	U	< 1.00	U	< 1.00	U	< 5.00	U
1,1,2,2-Tetrachloroethane	79-34-5				< 1.00	U	< 5.00	U	< 1.00	U	< 1.00	U	< 5.00	U
1,1,2-Trichloroethane	79-00-5		<1.5	<1.6	< 1.00	U	< 5.00	U	< 1.00	U	< 1.00	U	< 5.00	U
1,1-Dichloroethane	75-34-3		<0.7	<0.6	< 1.00	U	< 5.02	U	< 1.00	U	< 1.00	U	< 5.02	U
1,1-Dichloroethene	75-35-4		<1.4	<1.4	< 0.20	U	< 1.00	U	< 0.20	U	< 0.20	U	< 1.00	U
1,2,4-Trichlorobenzene	120-82-1		<6.8	<6.4	< 1.00	U	< 5.00	U	< 1.00	U	< 1.00	U	< 5.00	U
1,2,4-Trimethylbenzene	95-63-6		9.5	5.8	**12.8**		< 5.01	U	**18.5**		**16.9**		< 5.01	U
1,2-Dibromoethane (EDB)	106-93-4		<1.5	<1.6	< 1.00	U	< 5.00	U	< 1.00	U	< 1.00	U	< 5.00	U
1,2-Dichlorobenzene	95-50-1		<1.2	<1.2	< 1.00	U	< 5.00	U	< 1.00	U	< 1.00	U	< 5.00	U
1,2-Dichloroethane	107-06-2		<0.9	<0.8	< 1.00	U	< 5.02	U	< 1.00	U	< 1.00	U	< 5.02	U
1,2-Dichloropropane	78-87-5		<1.6	<1.6	< 1.00	U	< 4.99	U	< 1.00	U	< 1.00	U	< 4.99	U
1,2-Dichlorotetrafluoroethane	76-14-2				< 1.00	U	< 5.00	U	< 1.00	U	< 1.00	U	< 5.00	U
1,3,5-Trimethylbenzene	108-67-8		3.7	2.7	**3.69**		< 5.01	U	**5.16**		**4.96**		< 5.01	U
1,3-Butadiene	106-99-0		<3.0	<3.4	< 1.00	U	< 5.00	U	< 1.00	U	< 1.00	U	< 5.00	U
1,3-Dichlorobenzene	541-73-1		<2.4	<2.2	< 1.00	U	< 5.00	U	< 1.00	U	< 1.00	U	< 5.00	U
1,4-Dichlorobenzene	106-46-7		5.5	1.2	< 1.00	U	< 5.00	U	< 1.00	U	< 1.00	U	< 5.00	U
1,4-Dioxane	123-91-1				< 1.00	U	< 5.01	U	< 1.00	U	< 1.00	U	< 5.01	U
2-Hexanone (MBK)	591-78-6				< 1.00	U	< 4.99	U	< 1.00	U	< 1.00	U	< 4.99	U
4-Ethyltoluene	622-96-8		3.6	3	**3.5**		< 5.01	U	**4.96**		**6.34**		< 5.01	U
4-Isopropyltoluene	99-87-6				< 1.00	U	< 5.00	U	< 1.00	U	< 1.00	U	< 5.00	U
4-Methyl-2-pentanone (MIBK)	108-10-1		6	1.9	< 1.00	U	< 4.99	U	< 1.00	U	< 1.00	U	< 4.99	U
Acetone	67-64-1		98.9	43.7	**14.2**		< 5.01	U	**17.6**		**20.2**		**5.67**	
Acrylonitrile	107-13-1				< 1.00	U	< 5.01	U	< 1.00	U	< 1.00	U	< 5.01	U
Benzene	71-43-2		9.4	6.6	< 1.00	U	< 5.01	U	**1.57**		**1.65**		< 5.01	U
Benzyl chloride	100-44-7		<6.8	<6.4	< 1.00	U	< 5.00	U	< 1.00	U	< 1.00	U	< 5.00	U
Bromodichloromethane	75-27-4				< 1.00	U	< 5.00	U	< 1.00	U	< 1.00	U	< 5.00	U
Bromoform	75-25-2				< 1.00	U	< 5.00	U	< 1.00	U	< 1.00	U	< 5.00	U
Bromomethane	74-83-9		<1.7	<1.6	< 1.00	U	< 5.01	U	< 1.00	U	< 1.00	U	< 5.01	U
Carbon Disulfide	75-15-0		4.2	3.7	< 1.00	U	< 5.01	U	< 1.00	U	< 1.00	U	< 5.01	U
Carbon Tetrachloride	56-23-5		<1.3	0.7	**0.48**		< 1.00	U	**0.52**		**0.47**		< 1.00	U
Chlorobenzene	108-90-7		<0.9	<0.8	< 1.00	U	< 5.01	U	< 1.00	U	< 1.00	U	< 5.01	U
Chloroethane	75-00-3		<1.1	<1.2	< 1.00	U	< 5.01	U	< 1.00	U	< 1.00	U	< 5.01	U
Chloroform	67-66-3		1.1	0.6	< 1.00	U	< 4.98	U	< 1.00	U	< 1.00	U	**10.3**	
Chloromethane	74-87-3		3.7	3.7	**1.29**		< 4.99	U	**1.29**		**1.2**		< 4.99	U
Cis-1,2-Dichloroethene	156-59-2		<1.9	<1.8	< 0.20	U	**654**		**0.22**		**0.23**		**1,550**	
cis-1,3-Dichloropropene	10061-01-5		<2.3	<2.2	< 1.00	U	< 4.99	U	< 1.00	U	< 1.00	U	< 4.99	U
Cyclohexane	110-82-7				< 1.00	U	< 4.99	U	**2.17**		**3.1**		< 4.99	U
Dibromochloromethane	124-48-1				< 1.00	U	< 5.00	U	< 1.00	U	< 1.00	U	< 5.00	U
Dichlorodifluoromethane	75-71-8		16.5	8.1	**2.29**		**8.6**		**2.36**		**2.35**		< 4.99	U
Ethanol	64-17-5		210	57	**16.6**		< 5.01	U	**27.5**		**33.7**		< 5.01	U
Ethyl acetate	141-78-6		5.4	1.5	< 1.00	U	< 5.01	U	< 1.00	U	< 1.00	U	< 5.01	U
Ethylbenzene	100-41-4		5.7	3.5	< 1.00	U	< 4.99	U	**2.23**		**2.52**		< 4.99	U
Heptane	142-82-5				**1.37**		< 5.00	U	**3.37**		**4.3**		< 5.00	U
Hexachlorobutadiene	87-68-3		<6.8	<6.4	< 1.00	U	< 5.00	U	< 1.00	U	< 1.00	U	< 5.00	U
Hexane	110-54-3				**2.35**		< 5.00	U	**6.73**		**8.28**		< 5.00	U
Isopropylalcohol	67-63-0				**2.51**		< 5.01	U	**1.88**		**1.84**		< 5.01	U
Isopropylbenzene	98-82-8				< 1.00	U	< 5.01	U	**1.12**		**1.17**		< 5.01	U
m,p-Xylene	179601-23-1		22.2	12.8	**3.78**		**6.25**		**8.94**		**10.2**		**7.59**	
Methyl Ethyl Ketone	78-93-3		12	11.3	**2.02**		< 5.01	U	**3.01**		**2.54**		< 5.01	U
Methyl tert-butyl ether (MTBE)	1634-04-4		11.5	6.2	< 1.00	U	< 5.01	U	< 1.00	U	< 1.00	U	< 5.01	U
Methylene Chloride	75-09-2	60	10	6.1	< 3.00	U	< 15.0	U	< 3.00	U	< 3.00	U	< 15.0	U
n-Butylbenzene	104-51-8				< 1.00	U	< 5.00	U	< 1.00	U	< 1.00	U	< 5.00	U
o-Xylene	95-47-6		7.9	4.6	**1.68**		< 4.99	U	**3.87**		**4.24**		< 4.99	U
Propylene	115-07-1				< 1.00	U	< 5.01	U	< 1.00	U	< 1.00	U	< 5.01	U
sec-Butylbenzene	135-98-8				< 1.00	U	< 5.00	U	< 1.00	U	< 1.00	U	< 5.00	U
Styrene	100-42-5		1.9	1.3	**1.06**		< 4.98	U	< 1.00	U	< 1.00	U	< 4.98	U
Tetrachloroethene	127-18-4	30	15.9	6.5	**7.73**		**4,570**		**16.9**		**9.08**		**14,600**	
Tetrahydrofuran	109-99-9				**3.65**		< 5.01	U	**5.13**		**5.75**		< 5.01	U
Toluene	108-88-3		43	33.7	**3.25**		**5.57**		**9.26**		**10.9**		**10.4**	
Trans-1,2-Dichloroethene	156-60-5				< 1.00	U	**40**		< 1.00	U	< 1.00	U	**80**	
trans-1,3-Dichloropropene	10061-02-6		<1.3	<1.4	< 1.00	U	< 4.99	U	< 1.00	U	< 1.00	U	< 4.99	U
Trichloroethene	79-01-6	2	4.2	1.3	**0.22**		**843**		**0.23**		**0.25**		**1,170**	
Trichlorofluoromethane	75-69-4		18.1	4.3	**1.48**		< 5.00	U	**1.38**		**1.48**		< 5.00	U
Trichlorotrifluoroethane	76-13-1		3.5	1.6	< 1.00	U	< 5.00	U	< 1.00	U	< 1.00	U	< 5.00	U
Vinyl Chloride	75-01-4		<1.9	<1.8	< 0.20	U	< 1.00	U	< 0.20	U	< 0.20	U	**1.25**	

Highlighted analytes are included in the SVI Guidance Decision Matrices

Qualifiers
U - The compound was anlayzed for but not detected at or above the MDL. The number immediately preceding the "U" represents the PQL reporting level corrected for percent solids, weight and/or volume calculations, and dilution factors.

E - The reported value is estimated because the concentration exceeded the calibration range.

FORMER IMPERIAL CLEANERS SITE
218 LAKEVILLE ROAD
LAKE SUCCESS, NY
BCP SITE #C130225

TABLE 2
SUMMARY OF APRIL 2019 SVI INVESTIGATION SAMPLING RESULTS

					220 Lakeville Road				5 University Place			
Analyte	CAS #	NYSDOH Air Guideline Value (µg/m^3)	USEPA BASE Indoor Air 90th Percentile Conc (µg/m^3)	USEPA BASE Outdoor Air 90th Percentile Conc (µg/m^3)	Indoor Air Concentration (µg/m^3)		Sub-slab Vapor Concentration (µg/m^3)		Indoor Air Concentration (µg/m^3)		Sub-slab Vapor Concentration (µg/m^3)	
					IA-7		SS-7		IA-10		SS-10	
					4/4/2019	Q	4/4/2019	Q	4/4/2019	Q	4/4/2019	Q
1,1,1,2-Tetrachloroethane	630-20-6				< 1.00	U	< 1.00	U	< 1.00	U	< 5.00	U
1,1,1-Trichloroethane	71-55-6		20.6	2.6	< 1.00	U	< 1.00	U	< 1.00	U	< 5.00	U
1,1,2,2-Tetrachloroethane	79-34-5				< 1.00	U	< 1.00	U	< 1.00	U	< 5.00	U
1,1,2-Trichloroethane	79-00-5		<1.5	<1.6	< 1.00	U	< 1.00	U	< 1.00	U	< 5.00	U
1,1-Dichloroethane	75-34-3		<0.7	<0.6	< 1.00	U	< 1.00	U	< 1.00	U	< 5.02	U
1,1-Dichloroethene	75-35-4		<1.4	<1.4	< 0.20	U	< 0.20	U	< 0.20	U	< 1.00	U
1,2,4-Trichlorobenzene	120-82-1		<6.8	<6.4	< 1.00	U	< 1.00	U	< 1.00	U	< 5.00	U
1,2,4-Trimethylbenzene	95-63-6		9.5	5.8	**1.06**		**1.98**		**7.76**		**24.4**	
1,2-Dibromoethane (EDB)	106-93-4		<1.5	<1.6	< 1.00	U	< 1.00	U	< 1.00	U	< 5.00	U
1,2-Dichlorobenzene	95-50-1		<1.2	<1.2	< 1.00	U	< 1.00	U	< 1.00	U	< 5.00	U
1,2-Dichloroethane	107-06-2		<0.9	<0.8	< 1.00	U	< 1.00	U	< 1.00	U	< 5.02	U
1,2-Dichloropropane	78-87-5		<1.6	<1.6	< 1.00	U	< 1.00	U	< 1.00	U	< 4.99	U
1,2-Dichlorotetrafluoroethane	76-14-2				< 1.00	U	< 1.00	U	< 1.00	U	< 5.00	U
1,3,5-Trimethylbenzene	108-67-8		3.7	2.7	< 1.00	U	< 1.00	U	**1.84**		**5.45**	
1,3-Butadiene	106-99-0		<3.0	<3.4	< 1.00	U	< 1.00	U	< 1.00	U	< 5.00	U
1,3-Dichlorobenzene	541-73-1		<2.4	<2.2	< 1.00	U	< 1.00	U	< 1.00	U	< 5.00	U
1,4-Dichlorobenzene	106-46-7		5.5	1.2	< 1.00	U	< 1.00	U	< 1.00	U	< 5.00	U
1,4-Dioxane	123-91-1				< 1.00	U	< 1.00	U	< 1.00	U	< 5.01	U
2-Hexanone (MBK)	591-78-6				< 1.00	U	< 1.00	U	< 1.00	U	< 4.99	U
4-Ethyltoluene	622-96-8		3.6	3	< 1.00	U	< 1.00	U	**2.06**		**7.57**	
4-Isopropyltoluene	99-87-6				< 1.00	U	< 1.00	U	< 1.00	U	< 5.00	U
4-Methyl-2-pentanone (MIBK)	108-10-1		6	1.9	**1.24**		< 1.00	U	< 1.00	U	< 4.99	U
Acetone	67-64-1		98.9	43.7	**15.4**		**6.03**		**41.1**		**186**	
Acrylonitrile	107-13-1				< 1.00	U	< 1.00	U	< 1.00	U	< 5.01	U
Benzene	71-43-2		9.4	6.6	**1.18**		< 1.00	U	**3.29**		**6.64**	
Benzyl chloride	100-44-7		<6.8	<6.4	< 1.00	U	< 1.00	U	< 1.00	U	< 5.00	U
Bromodichloromethane	75-27-4				< 1.00	U	< 1.00	U	< 1.00	U	< 5.00	U
Bromoform	75-25-2				< 1.00	U	< 1.00	U	< 1.00	U	< 5.00	U
Bromomethane	74-83-9		<1.7	<1.6	< 1.00	U	< 1.00	U	< 1.00	U	< 5.01	U
Carbon Disulfide	75-15-0		4.2	3.7	< 1.00	U	< 1.00	U	< 1.00	U	**5.17**	
Carbon Tetrachloride	56-23-5		<1.3	0.7	**0.55**		< 0.20	U	**0.46**		< 1.00	U
Chlorobenzene	108-90-7		<0.9	<0.8	< 1.00	U	< 1.00	U	< 1.00	U	< 5.01	U
Chloroethane	75-00-3		<1.1	<1.2	< 1.00	U	< 1.00	U	< 1.00	U	< 5.01	U
Chloroform	67-66-3		1.1	0.6	< 1.00	U	**1.47**		< 1.00	U	**26.6**	
Chloromethane	74-87-3		3.7	3.7	**1.14**		< 1.00	U	**1.35**		< 4.99	U
Cis-1,2-Dichloroethene	156-59-2		<1.9	<1.8	< 0.20	U	< 0.20	U	< 0.20	U	< 1.00	U
cis-1,3-Dichloropropene	10061-01-5		<2.3	<2.2	< 1.00	U	< 1.00	U	< 1.00	U	< 4.99	U
Cyclohexane	110-82-7				< 1.00	U	< 1.00	U	**5.06**		< 4.99	U
Dibromochloromethane	124-48-1				< 1.00	U	< 1.00	U	< 1.00	U	< 5.00	U
Dichlorodifluoromethane	75-71-8		16.5	8.1	**2.38**		**2.34**		**3.04**		< 4.99	U
Ethanol	64-17-5		210	57	**15.2**		**3.99**		**102**	E	**18.8**	
Ethyl acetate	141-78-6		5.4	1.5	< 1.00	U	< 1.00	U	**4.75**		< 5.01	U
Ethylbenzene	100-41-4		5.7	3.5	< 1.00	U	**1.96**		**7.25**		**10.2**	
Heptane	142-82-5				< 1.00	U	**1.18**		**13.1**		**10.6**	
Hexachlorobutadiene	87-68-3		<6.8	<6.4	< 1.00	U	< 1.00	U	< 1.00	U	< 5.00	U
Hexane	110-54-3				**1.68**		< 1.00	U	**16.3**		**6.69**	
Isopropylalcohol	67-63-0				< 1.00	U	< 1.00	U	**4.32**		< 5.01	U
Isopropylbenzene	98-82-8				< 1.00	U	< 1.00	U	< 1.00	U	< 5.01	U
m,p-Xylene	179601-23-1		22.2	12.8	**3.68**		**8.25**		**27.5**		**48.6**	
Methyl Ethyl Ketone	78-93-3		12	11.3	< 1.00	U	**1.16**		**3.86**		**19.8**	
Methyl tert-butyl ether (MTBE)	1634-04-4		11.5	6.2	< 1.00	U	< 1.00	U	< 1.00	U	< 5.01	U
Methylene Chloride	75-09-2	60	10	6.1	< 3.00	U	< 3.00	U	**120**		< 15.0	U
n-Butylbenzene	104-51-8				< 1.00	U	< 1.00	U	< 1.00	U	< 5.00	U
o-Xylene	95-47-6		7.9	4.6	**1.06**		**1.91**		**8.94**		**13.5**	
Propylene	115-07-1				< 1.00	U	< 1.00	U	< 1.00	U	< 5.01	U
sec-Butylbenzene	135-98-8				< 1.00	U	< 1.00	U	< 1.00	U	< 5.00	U
Styrene	100-42-5		1.9	1.3	< 1.00	U	**1.88**		< 1.00	U	< 4.98	U
Tetrachloroethene	127-18-4	30	15.9	6.5	**0.58**		< 0.25	U	**11.5**		**7,120**	
Tetrahydrofuran	109-99-9				< 1.00	U	< 1.00	U	**2.73**		< 5.01	U
Toluene	108-88-3		43	33.7	**7.04**		**10.4**		**38.4**		**35.5**	
Trans-1,2-Dichloroethene	156-60-5				< 1.00	U	< 1.00	U	< 1.00	U	< 4.99	U
trans-1,3-Dichloropropene	10061-02-6		<1.3	<1.4	< 1.00	U	< 1.00	U	< 1.00	U	< 4.99	U
Trichloroethene	79-01-6	2	4.2	1.3	< 0.20	U	< 0.20	U	**0.78**		**82.2**	
Trichlorofluoromethane	75-69-4		18.1	4.3	**1.41**		**1.49**		**1.79**		< 5.00	U
Trichlorotrifluoroethane	76-13-1		3.5	1.6	< 1.00	U	< 1.00	U	< 1.00	U	< 5.00	U
Vinyl Chloride	75-01-4		<1.9	<1.8	< 0.20	U	< 0.20	U	< 0.20	U	< 1.00	U

Highlighted analytes are included in the SVI Guidance Decision Matrices

Qualifiers
U - The compound was anlayzed for but not detected at or above the MDL. The number immediately preceding the "U" represents the PQL reporting level corrected for percent solids, weight and/or volume calculations, and dilution factors.

E - The reported value is estimated because the concentration exceeded the calibration range.

FORMER IMPERIAL CLEANERS SITE
218 LAKEVILLE ROAD
LAKE SUCCESS, NY
BCP SITE #C130225

TABLE 2
SUMMARY OF APRIL 2019 SVI INVESTIGATION SAMPLING RESULTS

Analyte	CAS #	NYSDOH Air Guideline Value (µg/m^3)	USEPA BASE Indoor Air 90th Percentile Conc (µg/m^3)	USEPA BASE Outdoor Air 90th Percentile Conc (µg/m^3)	Outdoor Ambient Air Samples					
					Upwind Concentration (µg/m^3)				Downwind Concentration (µg/m^3)	
					AA-1		AA-DUP (AA-1)		AA-2	
					4/4/2019	Q	4/4/2019	Q	4/4/2019	Q
1,1,1,2-Tetrachloroethane	630-20-6				< 1.00	U	< 1.00	U	< 1.00	U
1,1,1-Trichloroethane	71-55-6		20.6	2.6	< 1.00	U	< 1.00	U	< 1.00	U
1,1,2,2-Tetrachloroethane	79-34-5				< 1.00	U	< 1.00	U	< 1.00	U
1,1,2-Trichloroethane	79-00-5		<1.5	<1.6	< 1.00	U	< 1.00	U	< 1.00	U
1,1-Dichloroethane	75-34-3		<0.7	<0.6	< 1.00	U	< 1.00	U	< 1.00	U
1,1-Dichloroethene	75-35-4		<1.4	<1.4	< 0.20	U	< 0.20	U	< 0.20	U
1,2,4-Trichlorobenzene	120-82-1		<6.8	<6.4	< 1.00	U	< 1.00	U	< 1.00	U
1,2,4-Trimethylbenzene	95-63-6		9.5	5.8	< 1.00	U	< 1.00	U	< 1.00	U
1,2-Dibromoethane (EDB)	106-93-4		<1.5	<1.6	< 1.00	U	< 1.00	U	< 1.00	U
1,2-Dichlorobenzene	95-50-1		<1.2	<1.2	< 1.00	U	< 1.00	U	< 1.00	U
1,2-Dichloroethane	107-06-2		<0.9	<0.8	< 1.00	U	< 1.00	U	< 1.00	U
1,2-Dichloropropane	78-87-5		<1.6	<1.6	< 1.00	U	< 1.00	U	< 1.00	U
1,2-Dichlorotetrafluoroethane	76-14-2				< 1.00	U	< 1.00	U	< 1.00	U
1,3,5-Trimethylbenzene	108-67-8		3.7	2.7	< 1.00	U	< 1.00	U	< 1.00	U
1,3-Butadiene	106-99-0		<3.0	<3.4	< 1.00	U	< 1.00	U	< 1.00	U
1,3-Dichlorobenzene	541-73-1		<2.4	<2.2	< 1.00	U	< 1.00	U	< 1.00	U
1,4-Dichlorobenzene	106-46-7		5.5	1.2	< 1.00	U	< 1.00	U	< 1.00	U
1,4-Dioxane	123-91-1				< 1.00	U	< 1.00	U	< 1.00	U
2-Hexanone (MBK)	591-78-6				< 1.00	U	< 1.00	U	< 1.00	U
4-Ethyltoluene	622-96-8		3.6	3	< 1.00	U	< 1.00	U	< 1.00	U
4-Isopropyltoluene	99-87-6				< 1.00	U	< 1.00	U	< 1.00	U
4-Methyl-2-pentanone (MIBK)	108-10-1		6	1.9	< 1.00	U	< 1.00	U	< 1.00	U
Acetone	67-64-1		98.9	43.7	**4.25**		**6.91**		**3.96**	
Acrylonitrile	107-13-1				< 1.00	U	< 1.00	U	< 1.00	U
Benzene	71-43-2		9.4	6.6	< 1.00	U	< 1.00	U	< 1.00	U
Benzyl chloride	100-44-7		<6.8	<6.4	< 1.00	U	< 1.00	U	< 1.00	U
Bromodichloromethane	75-27-4				< 1.00	U	< 1.00	U	< 1.00	U
Bromoform	75-25-2				< 1.00	U	< 1.00	U	< 1.00	U
Bromomethane	74-83-9		<1.7	<1.6	< 1.00	U	< 1.00	U	< 1.00	U
Carbon Disulfide	75-15-0		4.2	3.7	**1.47**		< 1.00	U	< 1.00	U
Carbon Tetrachloride	56-23-5		<1.3	0.7	**0.52**		**0.5**		**0.5**	
Chlorobenzene	108-90-7		<0.9	<0.8	< 1.00	U	< 1.00	U	< 1.00	U
Chloroethane	75-00-3		<1.1	<1.2	< 1.00	U	< 1.00	U	< 1.00	U
Chloroform	67-66-3		1.1	0.6	< 1.00	U	< 1.00	U	< 1.00	U
Chloromethane	74-87-3		3.7	3.7	**1.32**		**1.32**		**1.23**	
Cis-1,2-Dichloroethene	156-59-2		<1.9	<1.8	< 0.20	U	< 0.20	U	< 0.20	U
cis-1,3-Dichloropropene	10061-01-5		<2.3	<2.2	< 1.00	U	< 1.00	U	< 1.00	U
Cyclohexane	110-82-7				< 1.00	U	< 1.00	U	< 1.00	U
Dibromochloromethane	124-48-1				< 1.00	U	< 1.00	U	< 1.00	U
Dichlorodifluoromethane	75-71-8		16.5	8.1	**2.33**		**2.42**		**2.38**	
Ethanol	64-17-5		210	57	**4.59**		**4.07**		**4.18**	
Ethyl acetate	141-78-6		5.4	1.5	< 1.00	U	< 1.00	U	< 1.00	U
Ethylbenzene	100-41-4		5.7	3.5	< 1.00	U	< 1.00	U	< 1.00	U
Heptane	142-82-5				< 1.00	U	< 1.00	U	< 1.00	U
Hexachlorobutadiene	87-68-3		<6.8	<6.4	< 1.00	U	< 1.00	U	< 1.00	U
Hexane	110-54-3				< 1.00	U	< 1.00	U	< 1.00	U
Isopropylalcohol	67-63-0				**1.41**		**1.27**		**1.66**	
Isopropylbenzene	98-82-8				< 1.00	U	< 1.00	U	< 1.00	U
m,p-Xylene	179601-23-1		22.2	12.8	< 1.00	U	< 1.00	U	< 1.00	U
Methyl Ethyl Ketone	78-93-3		12	11.3	< 1.00	U	< 1.00	U	< 1.00	U
Methyl tert-butyl ether (MTBE)	1634-04-4		11.5	6.2	< 1.00	U	< 1.00	U	< 1.00	U
Methylene Chloride	75-09-2	60	10	6.1	< 3.00	U	< 3.00	U	< 3.00	U
n-Butylbenzene	104-51-8				< 1.00	U	< 1.00	U	< 1.00	U
o-Xylene	95-47-6		7.9	4.6	< 1.00	U	< 1.00	U	< 1.00	U
Propylene	115-07-1				< 1.00	U	< 1.00	U	< 1.00	U
sec-Butylbenzene	135-98-8				< 1.00	U	< 1.00	U	< 1.00	U
Styrene	100-42-5		1.9	1.3	< 1.00	U	< 1.00	U	< 1.00	U
Tetrachloroethene	127-18-4	30	15.9	6.5	< 0.25	U	< 0.25	U	< 0.25	U
Tetrahydrofuran	109-99-9				< 1.00	U	< 1.00	U	< 1.00	U
Toluene	108-88-3		43	33.7	< 1.00	U	< 1.00	U	< 1.00	U
Trans-1,2-Dichloroethene	156-60-5				< 1.00	U	< 1.00	U	< 1.00	U
trans-1,3-Dichloropropene	10061-02-6		<1.3	<1.4	< 1.00	U	< 1.00	U	< 1.00	U
Trichloroethene	79-01-6	2	4.2	1.3	< 0.20	U	< 0.20	U	< 0.20	U
Trichlorofluoromethane	75-69-4		18.1	4.3	**1.42**		**1.48**		**1.4**	
Trichlorotrifluoroethane	76-13-1		3.5	1.6	< 1.00	U	< 1.00	U	< 1.00	U
Vinyl Chloride	75-01-4		<1.9	<1.8	< 0.20	U	< 0.20	U	< 0.20	U

Highlighted analytes are included in the SVI Guidance Decision Matrices

Qualifiers
U - The compound was anlayzed for but not detected at or above the MDL. The number immediately preceding the "U" represents the PQL reporting level corrected for percent solids, weight and/or volume calculations, and dilution factors.

E - The reported value is estimated because the concentration exceeded the calibration range.

FORMER IMPERIAL CLEANERS SITE
218 LAKEVILLE ROAD
LAKE SUCCESS, NY
VCP SITE #V-00244-1

TABLE 3
SVI INVESTIGATION SAMPLING RESULTS (FEBRUARY 17, 2016) NYSDOH DECISION MATRIX COMPARISON

Location	NYSDEC DECISION MATRIX 1			NYSDEC DECISION MATRIX 2			
	Carbon Tetrachloride µg/m³	Trichloroethene µg/m³	Vinyl Chloride µg/m³	1,1-Dichloroethene µg/m³	cis-1,2-Dichloroethene µg/m³	1,1,1-Trichloroethane µg/m³	Tetrachloroethene µg/m³
218 Lakeville Road							
Former Cleaners							
IA-1/Duplicate IA-9 Result	0.5/0.58	<0.25/<0.25	<0.25/<0.25	<1.0/<1.0	<1.0/<1.0	<1.0/<1.0	5.65/5.98
Matrix Range Indoor Air	0.25 to <1	<0.25	<0.25	<3	<3	<3	<3
SS-1 Result	<2.50	168	<2.50	<9.99	396	<9.98	5090
Matrix Range Sub-Slab Vapor	<5	50 to <250	<5	<100	100 to <1000	<100	1,000 and above
Recommended Action	*Take Reasonable/Practical Action*	*Monitor*	*NoFurther Action*	*No Further Action*	*No Further Action*	*No Further Action*	*Mitigate*
Tobacco Shop							
IA-2 Result	0.5	0.28	<0.25	<1.0	<1.0	<1.0	4.64
Matrix Range Indoor Air	0.25 to <1	0.25 to <1	<0.25	<3	<3	<3	3 to <30
SS-2 Result	<2.50	191	<2.50	<9.99	244	<9.98	18600
Matrix Range Sub-Slab Vapor	<5	50 to <250	<5	<100	100 to <1000	<100	1,000 and above
Recommended Action	*Take Reasonable/Practical Action*	*Monitor/Mitigate*	*NoFurther Action*	*No Further Action*	*No Further Action*	*No Further Action*	*Mitigate*
Deli South							
IA-3 Result	0.51	0.27	<0.25	<1.0	<1.0	<1.0	1.92
Matrix Range Indoor Air	0.25 to <1	0.25 to <1	<0.25	<3	<3	<3	<3
SS-3 Result	<2.50	459	<2.50	<9.99	282	<9.98	2760
Matrix Range Sub-Slab Vapor	<5	250 and above	<5	<100	100 to <1000	<100	1,000 and above
Recommended Action	*Take Reasonable/Practical Action*	*Mitigate*	*NoFurther Action*	*No Further Action*	*Monitor*	*No Further Action*	*Mitigate*
Deli North							
IA-4 Result	0.49	<0.25	<0.25	<1.0	<1.0	<1.0	1.58
Matrix Range Indoor Air	0.25 to <1	<0.25	<0.25	<3	<3	<3	<3
SS-4/Duplicate SS-9 Result	<2.50/<2.50	564/607	<2.50/<2.50	<9.99/<9.99	630/654	<9.98/<9.98	3630/3550
Matrix Range Sub-Slab Vapor	<5	250 and above	<5	<100	100 to <1000	<100	1,000 and above
Recommended Action	*Take Reasonable/Practical Action*	*Mitigate*	*NoFurther Action*	*No Further Action*	*Monitor*	*No Further Action*	*Mitigate*
2 University Place							
IA-5 Result	0.57	1.01	<0.25	<1.0	<1.0	<1.0	1.82
Matrix Range Indoor Air	0.25 to <1	1 to <5.0	<0.25	<3	<3	<3	<3
SS-5 Result	<2.50	47	<2.50	<9.99	<9.99	<9.98	3590
Matrix Range Sub-Slab Vapor	<5	5 to <50	<5	<100	<100	<100	1,000 and above
Recommended Action	*Take Reasonable/Practical Action*	*Monitor*	*NoFurther Action*	*No Further Action*	*No Further Action*	*No Further Action*	*Mitigate*
4 University Place							
IA-6 Result	0.55	0.6	<0.25	<1.0	<1.0	<1.0	36.2
Matrix Range Indoor Air	0.25 to <1	0.25 to <1	<0.25	<3	<3	<3	30 to <100
SS-6 Result	<2.50	655	<2.50	<9.99	134	<9.98	20100
Matrix Range Sub-Slab Vapor	<5	250 and above	<5	<100	100 to <1000	<100	1,000 and above
Recommended Action	*Take Reasonable/Practical Action*	*Mitigate*	*NoFurther Action*	*No Further Action*	*Monitor*	*No Further Action*	*Mitigate*
220 Lakeville Road							
IA-7 Result	0.58	<0.25	<0.25	<1.0	<1.0	<1.0	0.67
Matrix Range Indoor Air	0.25 to <1	<0.25	<0.25	<3	<3	<3	<3
SS-7 Result	<2.50	14.1	<0.25	<1.0	3.8	<1.0	854
Matrix Range Sub-Slab Vapor	<5	5 to <50	<5	<100	<100	<100	100 to <1,000
Recommended Action	*Take Reasonable/Practical Action*	*No Further Action*	*NoFurther Action*	*No Further Action*	*No Further Action*	*No Further Action*	*Monitor*
216 Lakeville Road							
IA-8 Result	0.46	<0.25	<0.25	<1.0	<1.0	<1.0	0.79
Matrix Range Indoor Air	0.25 to <1	<0.25	<0.25	<3	<3	<3	<3
SS-8 Result	0.46	0.39	<0.25	<1.0	<1.0	8.34	3.2
Matrix Range Sub-Slab Vapor	<5	<5	<5	<100	<100	<100	<100
Recommended Action	*Take Reasonable/Practical Action*	*No Further Action*	*No Further Action*	*No Further Action*	*No Further Action*	*No Further Action*	*No Further Action*

Decision Matrices in tables referenced from NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York. The recommendations indicated in the decision matrices are described below.

No Further Action: Given that the compound was not detected in the indoor air sample and that the concentration detected in the sub-slab vapor sample is not expected to significantly affect indoor air quality, no additional actions are needed to address human exposures.

TAKE REASONABLE AND PRACTICAL ACTIONS TO IDENTIFY SOURCE(S) AND REDUCE EXPOSURE: The concentration detected in the indoor air sample is likely due to indoor and/or outdoor sources rather than soil vapor intrusion given the concentration detected in the sub-slab vapor sample. Therefore, steps should be taken to identify potential source(s) and to reduce exposure accordingly (e.g., by keeping containers tightly capped or by storing volatile organic compound-containing products in places where people do not spend much time, such as a garage or outdoor shed). Resampling may be recommended to demonstrate the effectiveness of actions taken to reduce exposures.

MITIGATE: Take reasonable and practical actions to identify source(s) and reduce exposure: The concentration detected in the indoor air sample is likely due to indoor and/or outdoor sources rather than soil vapor intrusion given the concentration detected in the sub-slab vapor sample. Therefore, steps should be taken to identify potential source(s) and to reduce exposures accordingly (e.g., by keeping containers tightly capped or by storing volatile chemical-containing products in places where people do not spend much time, such as a garage or shed). Resampling may also be recommended to demonstrate the effectiveness of actions taken to reduce exposures.

MONITOR: Monitoring, including sub-slab vapor, basement air, lowest occupied living space air, and outdoor air sampling, is needed to determine whether concentrations in the indoor air or sub-slab vapor have changed. Monitoring may also be needed 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 on a site-specific and building-specific basis, 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.

MONITOR/MITIGATE: Monitoring or mitigation may be recommended after considering the magnitude of sub-slab vapor and indoor air concentrations along with building and site specific conditions.

FORMER IMPERIAL CLEANERS SITE
218 LAKEVILLE ROAD
LAKE SUCCESS, NY
BCP SITE #C130225

TABLE 4
SVI INVESTIGATION SAMPLING RESULTS (APRIL 4-5, 2019) SVI GUIDANCE DECISION MATRIX COMPARISON

Location	SVI GUIDANCE DECISION MATRIX A				SVI GUIDANCE DECISION MATRIX B			SVI GUIDANCE DECISION MTRX C
	Carbon Tetrachloride μg/m³	**Trichloroethene** μg/m³	**1,1-Dichloroethene** μg/m³	**cis-1,2-Dichloroethene** μg/m³	**Methylene Chloride** μg/m³	**1,1,1-Trichloroethane** μg/m³	**Tetrachloroethene** μg/m³	**Vinyl Chloride** μg/m³
218 Lakeville Road								
Former Cleaners (Vacant)								
IA-1	0.53	<0.20	<0.20	<0.20	< 3.00	<1.00	2.65	<0.20
Matrix Range Indoor Air	0.2 to < 1	< 0.2	< 0.2	< 0.2	< 3	< 3	< 3	< 0.2
SS-1 Result/Duplicate SS-DUP	<1.00/<1.00	266/265	<1.00/<1.00	340/336	< 15.0/< 15.0	<5.00/<5.00	12,500/13,100	<1.00/<1.00
Matrix Range Sub-Slab Vapor	< 6	60 and above	< 6	60 and above	< 100	< 100	1,000 and above	< 6
Recommended Action	*No Further Action*	*Mitigate*	*No Further Action*	*Mitigate*	*No Further Action*	*No Further Action*	*Mitigate*	*No Further Action*
Tobacco Shop								
IA-2 Result	0.53	<0.20	<0.20	<0.20	< 3.00	<1.00	6.78	<0.20
Matrix Range Indoor Air	0.2 to < 1	< 0.2	< 0.2	< 0.2	< 3	< 3	3 to < 10	< 0.2
SS-2 Result	<1.00	370	<1.00	303	< 15.0	<5.00	43,400	<1.00
Matrix Range Sub-Slab Vapor	< 6	60 and above	< 6	60 and above	< 100	< 100	1,000 and above	< 6
Recommended Action	*No Further Action*	*Mitigate*	*No Further Action*	*Mitigate*	*No Further Action*	*No Further Action*	*Mitigate*	*No Further Action*
Former Deli South (Vacant)								
IA-3 Result	0.48	0.22	<0.20	<0.20	< 3.00	<1.00	7.73	<0.20
Matrix Range Indoor Air	0.2 to < 1	0.2 to < 1	< 0.2	< 0.2	< 3	< 3	3 to < 10	< 0.2
SS-3 Result	<1.00	843	<1.00	654	<15.0	<5.00	4,570	<1.00
Matrix Range Sub-Slab Vapor	< 6	60 and above	< 6	60 and above	< 100	< 100	1,000 and above	< 6
Recommended Action	*No Further Action*	*Mitigate*	*No Further Action*	*Mitigate*	*No Further Action*	*No Further Action*	*Mitigate*	*No Further Action*
CCQ Construction Inc.								
IA-4/IA-DUP Result	0.52/0.47	0.23/0.25	<0.20/<0.20	0.22/0.23	< 3.00/<3.00	<1.00/<1.00	16.9/9.08	<0.20/<0.20
Matrix Range Indoor Air	0.2 to < 1	0.2 to < 1	< 0.2	0.2 to < 1	< 3	< 3	10 and above	< 0.2
SS-4	<1.00	1,170	<1.00	1,550	< 15.0	<5.00	14,600	1.25
Matrix Range Sub-Slab Vapor	< 6	60 and above	< 6	60 and above	< 100	< 100	1,000 and above	< 6
Recommended Action	*No Further Action*	*Mitigate*	*No Further Action*	*Mitigate*	*No Further Action*	*No Further Action*	*Mitigate*	*No Further Action*
220 Lakeville Road								
IA-7 Result	0.55	<0.20	<0.20	<0.20	< 3.00	<1.00	0.58	<0.20
Matrix Range Indoor Air	0.2 to < 1	< 0.2	< 0.2	< 0.2	< 3	< 3	< 3	< 0.2
SS-7 Result	<0.20	<0.20	<0.20	<0.20	< 3.00	<1.00	<0.25	<0.20
Matrix Range Sub-Slab Vapor	< 6	< 6	< 6	< 6	< 100	< 100	< 100	< 6
Recommended Action	*No Further Action*	*No Further Action*	*No Further Action*	*No Further Action*	*No Further Action*	*No Further Action*	*No Further Action*	*No Further Action*
5 University Place								
IA-10 Result	0.46	0.78	<0.20	<0.20	120	<1.00	11.5	<0.20
Matrix Range Indoor Air	0.2 to < 1	0.2 to < 1	< 0.2	< 0.2	10 and above	< 3	10 and above	< 0.2
SS-10 Result	<1.00	82.2	<1.00	<1.00	< 15.0	<5.00	7,120	<1.00
Matrix Range Sub-Slab Vapor	< 6	60 and above	< 6	< 6	< 100	< 100	1,000 and above	< 6
Recommended Action	*No Further Action*	*Mitigate*	*No Further Action*	*No Further Action*	*Identify Source, Resample or Mitigate*	*No Further Action*	*Mitigate*	*No Further Action*

Decision Matrices in tables referenced from SVI Guidance. The recommendations indicated in the decision matrices are described below.

No Further Action: Given that the compound was not detected in the indoor air sample and that the concentration detected in the sub-slab vapor sample is not expected to significantly affect indoor air quality, no additional actions are needed to address human exposures.

IDENTIFY SOURCE(S) AND RESAMPLE OR MITIGATE: NYSDOH recommends 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, NYSDOH recommends 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.

MITIGATE: NYSDOH recommends 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.

MONITOR: NYSDOH recommends 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.

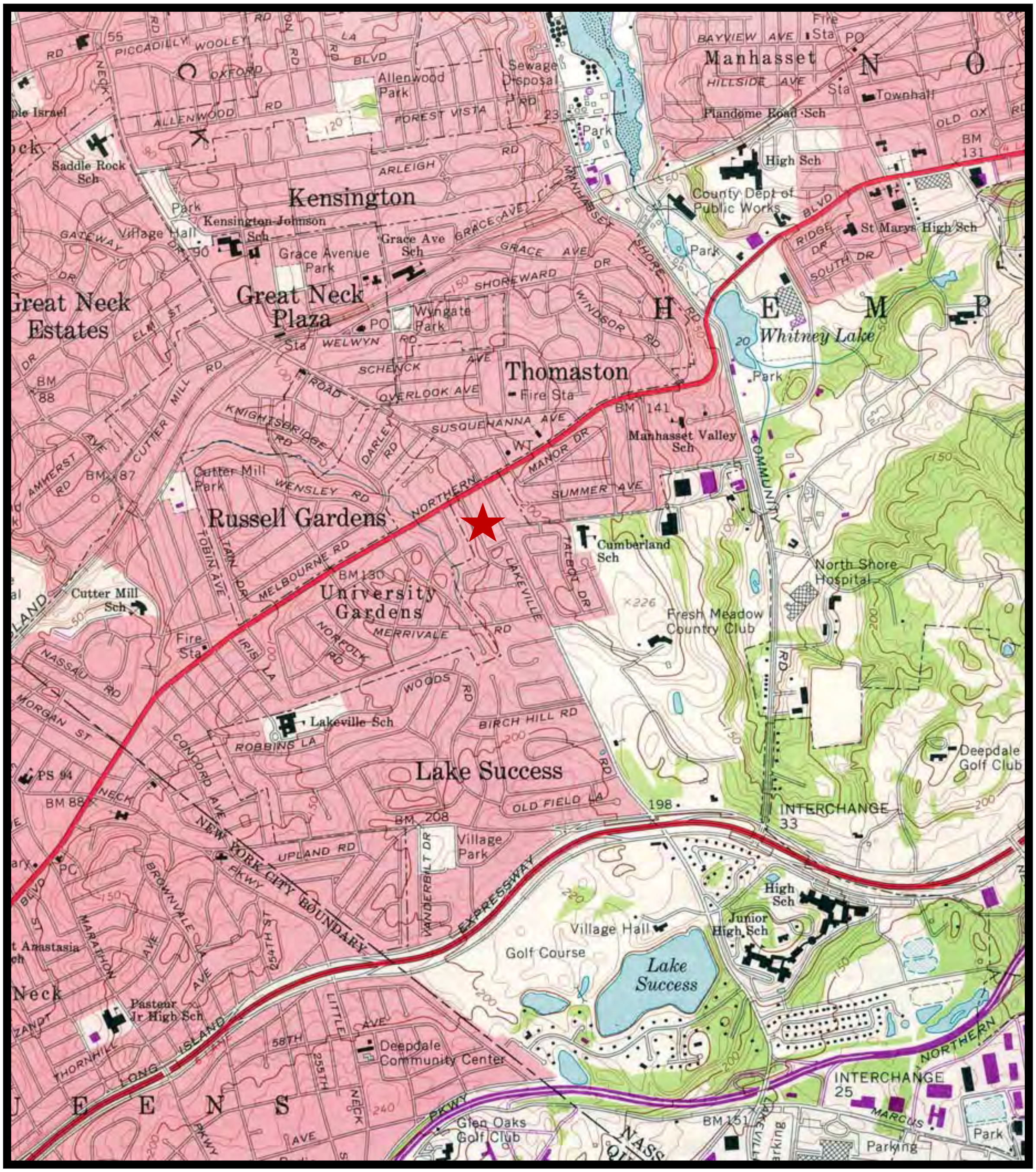
FIGURES

Former Imperial Cleaners Site
BCP Site #C130225
218 Lakeville Road
Lake Success, New York

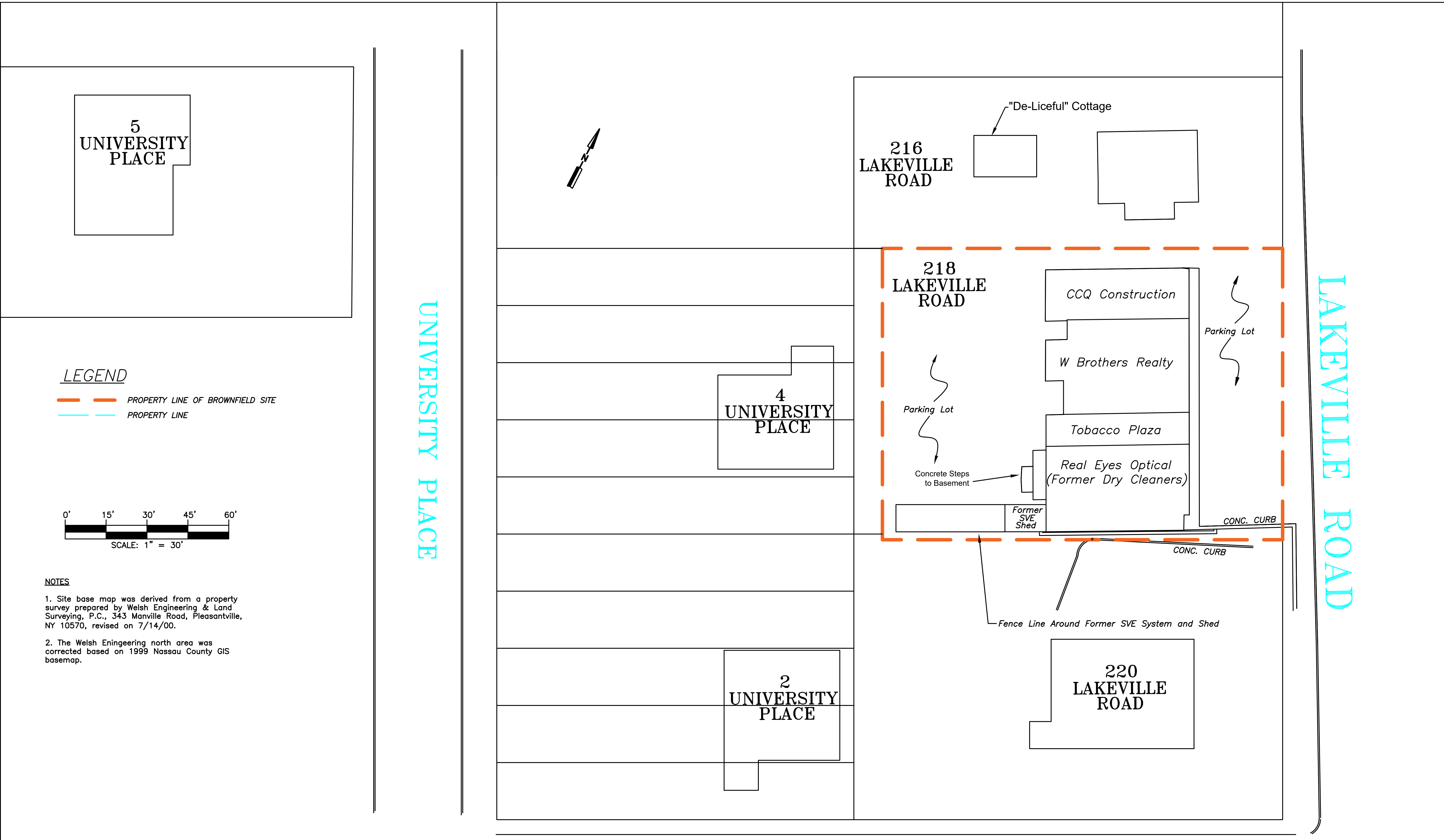
FIGURE 1

SITE LOCATION MAP

N



(USGS QUAD Sea Cliff, New York) (Scale 1:24000)



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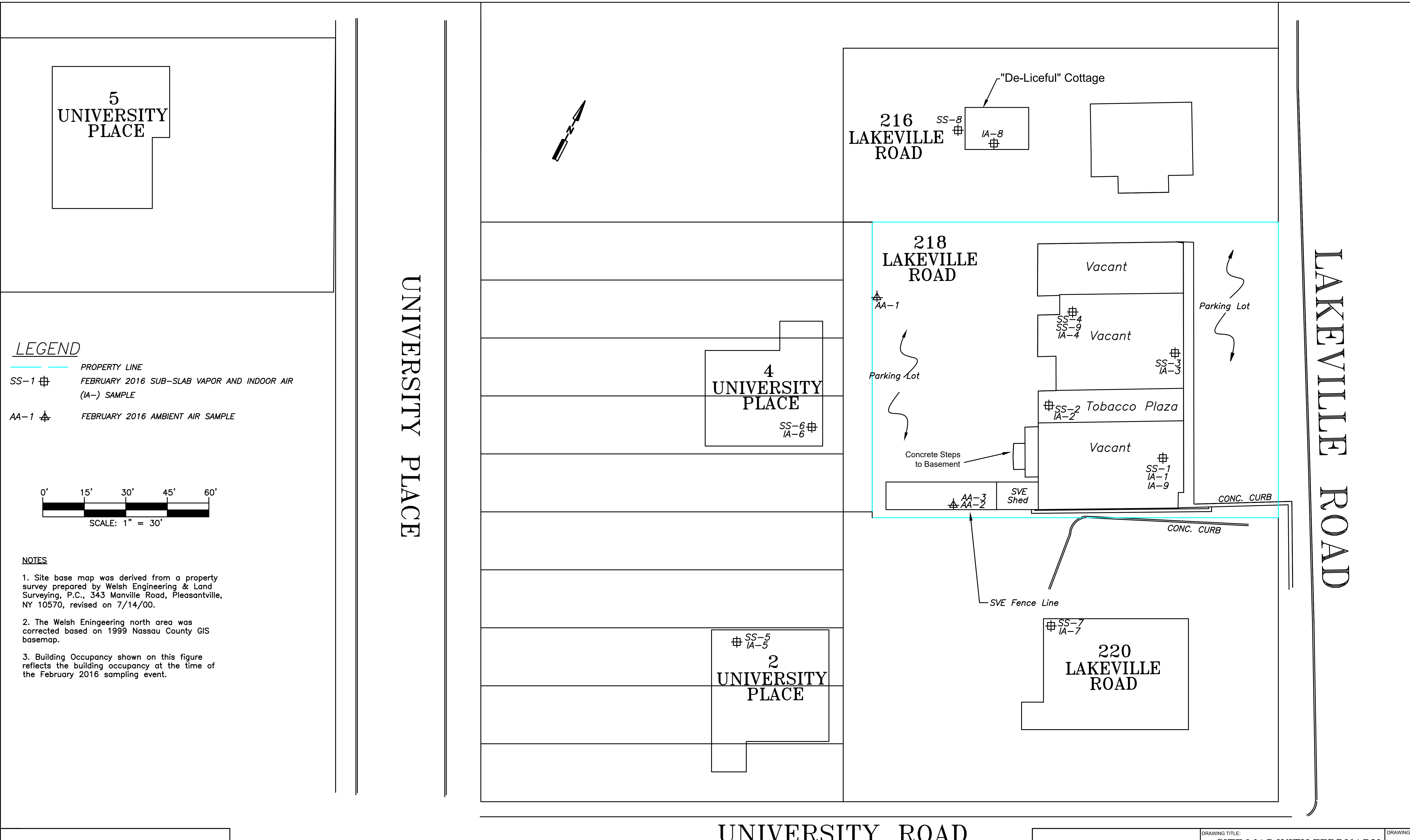
www.waldenenvironmental.com
Walden Associates

FOR:
Former Imperial Cleaners Site
Site No. C130225
218 Lakeville Road
Lake Success, New York 11020

DRAWING TITLE:
SITE PLAN
218 LAKEVILLE ROAD,
LAKE SUCCESS, NEW YORK

FIGURE
2

JOB NO: IMPL0115.5
DATE: March 16, 2021
CAD FILE NAME: Z:\IMPL0115 (Imperial Cleaners)\IMPL0115.6 - 2019 Pre-Design Investigation\IMPL0115.6 Figures.dwg



LEGEND

PROPERTY LINE

SS-1 — FEBRUARY 2016 SUB-SLAB VAPOR AND INDOOR AIR (IA-) SAMPLE

AA-1 — FEBRUARY 2016 AMBIENT AIR SAMPLE

SCALE: 1" = 30'

NOTES

1. Site base map was derived from a property survey prepared by Welsh Engineering & Land Surveying, P.C., 343 Manville Road, Pleasantville, NY 10570, revised on 7/14/00.

2. The Welsh Enineering north area was corrected based on 1999 Nassau County GIS basemap.

3. Building Occupancy shown on this figure reflects the building occupancy at the time of the February 2016 sampling event.

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NYSDEC
625 Broadway, 11th Floor,
Albany, New York 12233

DRAWING TITLE:
SITE MAP WITH FEBRUARY 2016 SAMPLE LOCATIONS
218 LAKEVILLE ROAD,
LAKE SUCCESS, NEW YORK

DRAWING NO: 3

JOB NO: IMPL0115.4 | DATE: March 24, 2016

CAD FILE NAME: Z:\IMPL0115 (Imperial Cleaners)\IMPL0115.6 - 2019 Pre-Design Investigation\IMPL0115.6 Figures.dwg

Notes: Aerial photos obtained from
the New York State GIS Clearinghouse

Creation Date: March 9, 2018	Print Date: April 11, 2018
Author: MCT	Job No: IMPL0115.4

PDF: Z:\IMPL0115 (Imperial Cleaners)\IMPL0115.5 BCP Application\Remedial Work Plan APRIL 2018 \Figures\Figure 4 Proposed Soil Vapour Intrusion Sampling Locations.pdf

Map: Y:\IMPL0115.4\IMPL0115.4 Proposed Soil Vapor Sample Locations 11x17.mxd

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Walden Environmental Engineering

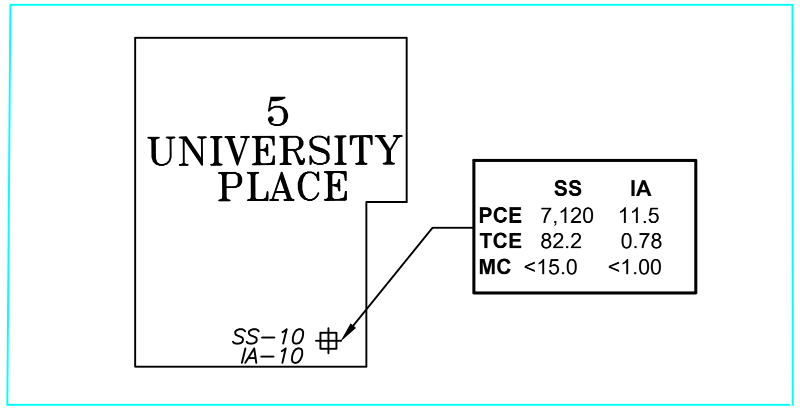
Figure 4
Proposed 2019 Soil Vapor Intrusion Sampling Locations

Former Imperial Cleaners Site
Site No. C130225

218 Lakeville Road
Lake Success, New York 11020

Legend

- Additional Offsite Sampling Location (Not Sampled Previously)
- Offsite Sampling Location (Feb. 2016)
- Onsite Sampling Location (Feb. 2016)
- Onsite Drywell (Suspected Contamination Source)
- Stream



NOTE:
CONCENTRATIONS INDICAED ARE EXPRESSED IN MICROGRAMS PER CUBIC METER (ug/m ³).

LEGEND

PROPERTY LINE
SUB–SLAB AND INDOOR AIR SAMPLE (APRIL 2019)
AMBIENT AIR SAMPLE (APRIL 2019)

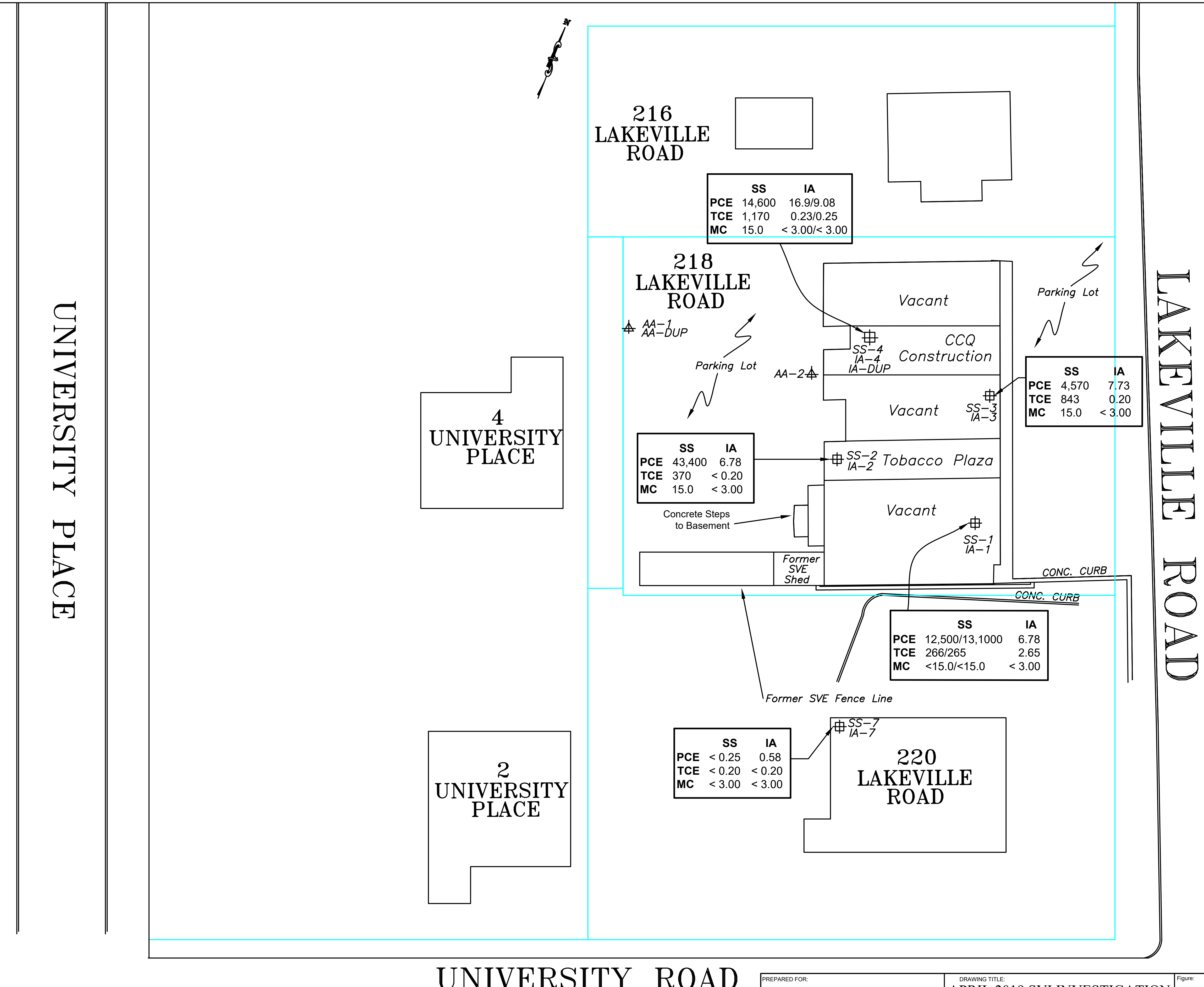
0' 15' 30' 45' 60'
SCALE: 1" = 30'

NOTES
1. SITE BASE MAP WAS DERIVED FROM A PROPERTY SURVEY PREPARED BY WELSH ENGINEERING & LAND SURVEYING, P.C., 343 MANVILLE ROAD, PLEASANTVILLE, NY 10570, REVISED ON 7/14/00.

2. THE WELSH ENINGEERING NORTH AREA WAS CORRECTED BASED ON 1999 NASSAU COUNTY GIS BASEMAP.

3. UPDATES TO THIS MAP WERE MADE BY WALDEN ENVIRONMENTAL ENGINEERING BASED ON THE NASSAU COUNTY LAND RECORDS VIEWER

4. BUILDING OCCUPANCY SHOWN ON THE FIGURE REFLECTS THE BUILDING OCCUPANCY AT THE TIME OF THE APRIL 2019 SAMPLING EVENT



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PREPARED FOR:
NYSDEC
REMEDIAL BUREAU A
625 BROADWAY, 11TH FLOOR
ALBANY, NEW YORK 12233

DRAWING TITLE:
APRIL 2019 SVI INVESTIGATION
SAMPLE LOCATIONS
218 LAKEVILLE ROAD
LAKE SUCCESS, NEW YORK

JOB NO: IMPL0115.6
DATE: May 13, 2019
CAD FILE NAME: [illegible]

Figure: 5

APPENDICES

APPENDIX A

July 23, 2021 NYSDEC Comment Letter

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Remediation, Remedial Bureau A
625 Broadway, 12th Floor, Albany, NY 12233-7015
P: (518) 402-9625 | F: (518) 402-9627
www.dec.ny.gov

July 23, 2021

218 Lakeville Acquisition, LLC
c/o Mr. Norman Weisfeld
112 Windsor Gate
Great Neck NY, 11020

RE: Imperial Cleaners, Site No.: C130225, March 2020 Soil Vapor Intrusion Investigation Report (revised).

Dear Mr. Weisfeld:

The New York State Department of Environmental Conservation (the "Department") and the New York State Department of Health (the "NYSDOH") have reviewed the March 2020 Soil Vapor Intrusion Investigation Report (revised) certified by Nora Brew and submitted by Walden Environmental Engineering on behalf of 218 Lakeville Acquisition.

The Department disapproves the Report and requires the modifications discussed below:

1. Based on the May 2017 *Soil Vapor Intrusion Investigation Summary Report,* mitigation via SSDS was recommended for both 2 University Place and particularly, 4 University Place, due to elevated levels of PCE (and TCE for 4 University Place) in sub-slab vapor. Please update the 2020 Soil Vapor Intrusion Investigation Report to incorporate the May 2017 report data and recommendations, descriptions of the off-site properties sampled in 2016, a figure showing the locations of the off-site properties sampled and the 7 properties targeted for sampling in the 2016 sampling event.

2. Please summarize past SVI data into all future SVI reports.

3. Outreach documentation should be included in this report. Please revise.

4. Section1.2 April 2019 SVI Sampling Objectives: To protect privacy, all addresses of off-site properties (including 5 University Place and 220 Lakeville Road) should be given a generic numbering scheme before this document is placed in a public repository. An identifier key will need to be provided to DEC/DOH. Please revise and confirm.

5. Section 4.2 Recommendations (2nd bullet): The Department accepts the mitigation recommendations for 2 University Place, 4 University Place and 5 University Place and is requesting that this work be expedited as an interim remedial measure (IRM). Please submit a separate IRM work plan for the expedited mitigation of these three structures.

6. Please submit a separate, supplemental SVI workplan, including additional outreach and sampling to evaluate targeted structures not yet sampled and determine if actions are needed to address potential exposure via SVI. This would include 1 University Place, 3 University Place and 2 Rivers Drive. This work should be scheduled to be conducted during the upcoming 2021/2022 heating season. The work plan should include a provision for sampling of additional off-site properties should results warrant

Please notify me within 10 business days of your election to make the required changes in the document and provide the Department with a revised SVI Report within 30 days.

If you have any questions, please call me at 518-402-9621.

Sincerely,

Joseph S Jones

Joseph Jones
Project Manager

ec: A. Tamuno, OGC
R. Corcoran, NYSDEC
A. Martin, NYSDOH
C. Bethoney, NYSDOH
C. Engelhardt, DEC Region 1
G. Bowitch, Bowitch & Coffey LLC
N. Brew, Walden Associates

APPENDIX B

Soil Vapor Intrusion Investigation Summary Report **(Walden, May 2017)**

Soil Vapor Intrusion Investigation Summary Report

at

Former Imperial Cleaners Site
218 Lakeville Road
Lake Success, New York 11042

NYSDEC VCP Site #V-00244-1

May 2017

Prepared for:

Mr. Joseph Jones
Project Manager
NYSDEC
Remedial Bureau A, 11th Floor
625 Broadway
Albany, New York 12233

Walden Environmental Engineering

16 Spring Street
Oyster Bay, NY 11771
Phone: (516) 624-7200
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Walden Environmental Engineering

Professional Engineer Certification

I certify that I am a professional engineer licensed to practice in New York State in accordance with New York State Education Law, Article 145, Section 7200 et seq. I have completed accredited university courses and degrees in engineering and have sufficient training and experience in remediation, groundwater hydrology, and related fields that enable me to make sound professional judgments with regards to engineering design.

I further certify that this submittal, *Soil Vapor Intrusion Investigation Summary Report*, dated May 4, 2017, was prepared under my direction.

5/5/17

Joseph M. Heaney, III, P.E.
Walden Environmental Engineering, PLLC

Date

TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

1 INTRODUCTION

Walden Environmental Engineering, PLLC (Walden) has prepared this report to summarize the results of the February 2016 soil vapor intrusion (SVI) investigation conducted for the Former Imperial Cleaners site located at 218 Lakeville Road, Lake Success, New York (the "Site"). The Site is currently managed under the New York State Voluntary Cleanup Program (VCP) as VCP #V-00244-1 subject to New York State Department of Environmental Conservation (NYSDEC) Voluntary Cleanup Agreement #D1-0001-01-03. This agreement was amended on July 28, 2015 to reflect a change in property ownership, establishing 218 Lakeville Acquisition LLC as the Site Owner and remedial party.

The SVI investigation was conducted to address the potential for vapor intrusion from contaminated soil vapor and potential impacts on indoor air quality at the Site and neighboring off-site properties. The SVI investigation was completed in accordance with the NYSDEC approved *Soil Vapor Intrusion Investigation Work Plan* (Work Plan; Walden, December 2015) which was developed in accordance with the guidelines set forth in NYSDEC *DER-13: Strategy for Evaluating Soil Vapor Intrusion at Remedial Sites in New York* (issued October 18, 2006) and *NYSDOH: Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York* (dated October 2006). The field work included the collection of sub-slab vapor, indoor air, and outdoor air samples.

A brief site description and the objectives of the SVI investigation are presented below. Section 2 describes the SVI investigation field work conducted at the Site and neighboring properties. Section 3 summarizes the SVI investigation sampling results. Section 4 presents conclusions and recommendations based on the SVI investigation results.

1.1 Site History and Previous Investigations/Remediation

The Site location is illustrated on Figure 1. The Site is a commercial center with a one-story building occupying approximately 4,250 square feet, with one active tenant (Tobacco Plaza, Ltd.) and three vacant spaces as shown on Figure 2. The basement of the on-site building has concrete block walls and a poured concrete floor slab. Note that there is a perched water table underlying the site at approximately 30 feet below grade, while the water table is located approximately 150 feet below land surface.

A release of tetrachloroethylene (PCE) at the Site was first noted in 1995. The PCE contamination was suspected to originate from floor drains within the space occupied by a dry cleaner (Imperial Cleaners) at that time and from leaching pools and drywells around the property. The site investigation and remediation work described below was conducted by the previous owners of the Site as required by NYSDEC and NYSDOH under the VCP.

A site investigation was conducted to identify source areas and determine the extent of contaminated soil and groundwater at the Site. Contaminated sediments were removed from the source areas (dry wells, an interior floor drain and leaching pools) to the extent possible without undermining the structures. Post-excavation soil sampling results indicated that volatile organic compounds (VOCs) remained in the subsurface following the source area removal actions. A soil vapor extraction (SVE) system was installed to remove VOC vapors remaining in the soil and improve soil and groundwater quality. The SVE system began operating in 2001(refer to Appendix A for details on the SVE system). A soil, soil gas, groundwater and indoor air monitoring program was implemented to track the reductions in VOC concentrations achieved by operation of the SVE system. The SVE system was shut down several years ago when on-site soil sampling results indicated that the SVE system had successfully reduced soil contaminant concentrations to below the NYSDEC TAGM 4046 Recommended Cleanup Objectives.

1.2 SVI Sampling Objectives

Representatives from NYSDEC, 218 Lakeville Acquisition LLC (the new property owner) and Walden met on-site on September 17, 2015 to evaluate Site conditions and discuss previous sampling investigations, potential redevelopment of the Site and the work required to achieve VCP site closure. Based on this meeting and subsequent discussions, the Work Plan was developed detailing the additional on-site and off-site sampling to be conducted to evaluate potential indoor air quality impacts related to SVI and support development of appropriate site closure/management recommendations for NYSDEC and NYSDOH review and approval.

The SVI sampling was conducted during the 2015-2016 heating season in accordance with the NYSDEC-approved Work Plan as discussed in Section 2.

2 SVI INVESTIGATION FIELD WORK

The SVI sub-slab sampling point installation was conducted on February 16-17, 2016. Sub-slab vapor, indoor air and outdoor air samples were collected over a 24-hour sampling period from February 17-18, 2016. The field work and sampling activities are described below.

2.1 Interior Inspection

Pre-sampling interior inspections were performed to identify potential vapor intrusion pathways and to determine appropriate sub-slab and indoor air sampling locations. The Site and off-site properties were inspected to evaluate the physical layout and to identify conditions or materials stored and/or used that may affect or interfere with the sampling or interpretation of the sampling results. Consideration was given to factors such as access for installation/sampling purposes, interior uses at the Site, foundation/floor slab installation and conditions, heating/ventilation/mechanical system operation, and utility layout/breaches.

The indoor air quality questionnaire and building inventory sheet provided in the NYSDOH SVI guidance was completed prior to sampling. Copies of the completed questionnaire for the on-site building and off-site properties are provided in Appendix B of this report.

To reduce the potential for interference and dilution effects of samples, the Site tenants and off-site property owners were notified in advance of sampling to ensure that the occupants avoided the following activities within 24 hours prior to sampling wherever possible (per NYSDOH *Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York*, October 2006, p. 33):

- Opening any windows, fireplace dampers, openings or vents;
- Operating ventilation fans unless special arrangements are made;
- Smoking in the building;
- Painting;
- Using a wood stove, fireplace or other auxiliary heating equipment (e.g., kerosene heater);
- Operating or storing automobile in an attached garage;
- Allowing containers of gasoline or oil to remain within the house or garage area, except for fuel oil tanks;
- Cleaning, waxing or polishing furniture, floors or other woodwork with petroleum or oil-based products;

- Using air fresheners, scented candles or odor eliminators;
- Engaging in any hobbies that use materials containing volatile chemicals;
- Using cosmetics including hairspray, nail polish, nail polish removers, perfume/cologne, etc.;
- Lawn mowing, paving with asphalt, or snow blowing;
- Applying pesticides;
- Using building repair or maintenance products, such as caulk or roofing tar; and
- Bringing freshly dry-cleaned clothing or furnishings into the building.

2.2 Sampling Locations

The SVI investigation samples were collected from the general locations defined in the NYSDEC-approved work plan. The sampling locations were selected on February 11, 2016 following an inspection of each space and cleared based on a private utility mark-out, physical access and tenant/owner approval. Refer to Figure 2 for the sampling locations.

Sub-slab vapor sampling points were placed in locations with a minimal potential for ambient air infiltration from floor penetrations such as cracks, floor drains, utility perforations, sumps, etc. All penetrations observed were sealed prior to sample collection.

2.2.1 On-site Locations

Sub-slab vapor and indoor air samples were collected in pairs (at each sub-slab sampling location, a corresponding indoor air sample was collected concurrently) from four locations in the basement of the on-site building at 218 Lakeville Road as follows:

- Beneath the former dry cleaners space (SS-1 and IA-1)
- Beneath Tobacco Plaza (in the unfinished area on the west side of the space) (SS-2 and IA-2)
- Two locations beneath the former delicatessen space (this basement area is divided into two sections; one sampling location in each section) (SS-3 and IA-3; SS-4 and IA-4)

A duplicate sub-slab vapor sample (SS-9) was collected from one of the on-site basement sampling locations. Similarly, a duplicate indoor air sample (IA-9) was also collected from an on-site basement location.

Two outdoor air samples (AA-1 and AA-2) and one duplicate (AA-3) were collected outside the on-site building concurrently with the sub-slab and indoor air samples to obtain samples representative of ambient (background) conditions at the site. The final outdoor air sampling locations were selected in the field and sited upwind (AA-1) and downwind (AA-2 and duplicate AA-3) of the on-site sampling locations (dependent upon the wind direction observed at the time of sampling).

2.2.2 Off-site Locations

The off-site sampling was conducted at the same time as the on-site sampling to achieve contemporaneous analytical results. Pairs of sub-slab vapor and indoor air samples were collected per the Work Plan in the lowest level of three off-site properties as follows:

- 2 University Place (SS-5 and IA-5)
- 4 University Place (SS-6 and IA-6)
- 220 Lakeville Road (SS-7 and IA-7)

The owner of 216 Lakeville Road ("De-Liceful" rear cottage) would not allow a sub-slab vapor sampling probe to be installed inside this building because there was no way to avoid damaging the floors by installing a sub-slab vapor sampling probe as specified in the approved Work Plan. Walden contacted NYSDEC and NYSDOH on February 11, 2016 regarding this issue and the State approved the following modification to the sampling locations at this off-site property:

- A surrogate soil vapor sample (SS-8) was collected outside the 216 Lakeville Road cottage in the asphalt paved area on the west side of the building. A hole was drilled through the pavement adjacent to the cottage and a sampling probe was installed to collect a vapor sample from the soil below using the same setup specified in the Work Plan for indoor sub-slab vapor sample collection.

- The indoor air sample (IA-8) was collected inside the 216 Lakeville Road cottage from a location near the outdoor surrogate soil vapor sampling location.

2.3 Sub-slab Sampling Probe Installation

Permanent recessed sub-slab vapor sampling probes were installed in accordance with NYSDOH SVI guidance and as described in the Work Plan. At each location, a small diameter hole (approximately one inch) was drilled through the concrete floor slab and into sub-slab material approximately two (2) inches below the bottom of the floor slab. Concrete and soil cuttings were removed from the hole. A stainless steel sampling probe was installed to no greater than two (2) inches into the sub-slab material. The top of the probe was finished with a recessed brass plug and the implant was sealed with cement. For sampling purposes, a threaded fitting connected to Teflon-lined tubing were inserted into the sampling port for connection to a Summa® canister. The sub-slab sampling probes in the on-site building (SS-1, SS-2, SS-3, SS-4 and SS-9) and the surrogate soil vapor probe outside the 216 Lakeville Road cottage (SS-8) were finished at the surface with 4-inch steel manhole covers. The sub-slab probes in the other three off-site properties (SS-5, SS-6 and SS-7) were finished with brass fittings and sealed to the surface with hydraulic cement.

2.3.1 Tracer Gas Monitoring

Walden performed tracer gas monitoring per the NYSDOH SVI guidance to verify the integrity of the sub-slab vapor probe seals prior to sample collection. Plastic sheeting was placed around the sampling probes and sealed around the edges to create an adequate surface seal to prevent outdoor air infiltration. Helium tracer gas was introduced under the plastic sheeting through a small opening to enrich the atmosphere in the immediate vicinity of the sampling probes with the tracer gas. A portable helium monitoring device, MGD-2002 Helium Leak Detector, was used to analyze a soil vapor sample for the helium tracer gas to confirm the integrity of the probe seals before vapor samples were collected in 6-liter Summa® canisters.

2.4 Sample Collection

Sub-slab vapor, indoor air and outdoor air samples were collected over a 24 hour period in laboratory provided and individually certified clean 6-liter Summa® canisters with regulators as described in the Work Plan. The Summa® canisters were placed adjacent to each sub-slab sampling port and at each indoor and outdoor air sampling location. Where sub-slab vapor samples were collected, tee fittings were used to connect the Summa® canister tubing to the sampling port tubing, with the third leg of the tee connected to a purge pump. In addition, the ground surface was sealed in advance to prevent ambient air infiltration during purging and collection of sub-slab vapor samples. The weather conditions were noted at the time of sampling (wind speed and direction, precipitation, outdoor temperature, barometric pressure, etc.).

At each sub-slab sampling location, a corresponding indoor air sample was also collected. The indoor air samples were collected at approximately the same sampling locations as the sub-slab sampling locations and at a height of approximately three (3) feet above the floor to represent breathing zones, per NYSDOH Guidance. Similarly, the upwind and downwind outdoor air samples were collected at a height of approximately three (3) to five (5) feet above the ground.

Prior to and immediately after sampling at each point, a pressure gauge was used to check each Summa® canister for vacuum, and the vacuum pressure was recorded. A regulator was used to keep flow rates during purging and sampling during the 24-hour sampling period below 0.2 liters per minute as specified by the NYSDOH SVI guidance.

After the sampling was completed, the Summa® canisters were labeled with the site name, the Walden job number, sample location and identification, date, time, sampler's initials, and the parameter(s) for analysis. The samples were transported to the laboratory in such a manner as to avoid container damage during transportation and to minimize the possibility of cross-contamination. The samples were delivered via courier under the appropriate Chain-of-Custody protocol.

2.5 Sample Analysis and Reporting

The Summa® canisters were submitted to Phoenix Environmental Laboratories, Inc. of Manchester, CT, a NYSDOH ELAP certified laboratory, for analysis. The soil vapor and air samples were analyzed for VOCs in accordance with USEPA Method TO-15 with the analytical detection limits set forth in the NYSDOH guidance document. All sample data packages submitted by the analytical laboratory were reported in conformance with the NYSDEC ASP Superfund-CLP, Category B deliverable requirements applicable to the method utilized.

3 EVALUATION OF SVI INVESTIGATION SAMPLING RESULTS

Walden reviewed the SVI results in accordance with the NYSDOH SVI Guidance. This guidance document lists the air guideline values (AGVs) that NYSDOH has established for methylene chloride, trichloroethylene (TCE) and PCE. (Although AGVs have also been developed for PCBs and dioxin, these compounds are not contaminants of concern at the Site and were not included in the laboratory analyses conducted for this project.) AGVs only apply to concentrations of these VOCs in indoor and outdoor air.

The State of New York does not have any standards, criteria or guidance values for concentrations of volatile chemicals in subsurface vapors, so the sub-slab vapor concentrations cannot be compared to any regulatory threshold values. However, the sub-slab vapor concentrations factor into the decision matrices contained in the NYSDOH SVI guidance. The SVI decision matrices consider the concentrations of PCE, TCE, carbon tetrachloride, 1,1,1-trichloroethane (1,1,1-TCA), 1,1-dichloroethene (1,1-DCE), cis-1,2-dichloroethene (cis-1,2-DCE) and vinyl chloride detected in indoor air samples and sub-slab vapor samples collected concurrently at the same location. The matrices recommend actions intended to address soil vapor intrusion exposures based on the relationship between the sub-slab vapor and corresponding indoor air concentrations at a given sampling location.

For analytes that do not have AGVs and are not considered in the NYSDOH SVI decision matrices, the NYSDOH SVI guidance Appendix C (*Volatile Organic Chemicals in Air – Summary of Background Databases*) was referenced for typical background concentrations of these compounds published in USEPA's 2001 Building Assessment and Survey Evaluation (BASE) database. When developing BASE, USEPA collected indoor and outdoor air samples at randomly selected office and commercial buildings using Summa® canisters.

The analytical data from the February 2016 SVI investigation are summarized in Table 1. Table 2 summarizes the SVI data decision matrix comparison and notes the actions recommended based on the decision matrices contained in the NYSDOH SVI guidance document. A copy of the laboratory analytical report is attached as Appendix C. A Data Usability Summary Report (DUSR), which was completed in accordance with DER-10, is provided in Appendix D.

3.1 Summary of Results

3.1.1 General Discussion of Results

Most of the VOCs detected in the sub-slab samples, soil vapor samples, indoor air samples, and outdoor air samples are not considered by the NYSDOH decision matrices and do not have NYSDOH AGVs. These compounds have a number of commercial uses in consumer products, building materials, or furnishings. The majority of the detected concentrations of these compounds fall within or near the range of background concentrations listed in the USEPA BASE database as noted in Table 1. These analytes were also detected at various concentrations in both the outdoor upwind (AA-1) and downwind (AA-2 and duplicate AA-3) air samples. Because there are no health based standards or decision criteria for these VOCs, they are not evaluated further in this report.

3.1.2 NYSDOH Decision Matrix Evaluation

The results discussed below are limited to the compounds included in the NYSDOH SVI decision matrices. Refer to Table 2 for the NYSDOH decision matrix comparison.

<u>Carbon Tetrachloride</u>

- No AGV established for this compound
- Carbon tetrachloride was detected at low concentrations (less than 0.60 $\mu g/m^3$) in each of the indoor air samples and one of the vapor samples (the surrogate sub-slab sample, SS-8 at 216 Lakeville Road). This compound was also detected at similar concentrations in the upwind and downwind ambient air samples, so the carbon tetrachloride reported for the indoor air samples can be considered representative of background conditions.
- All reported concentrations of this compound were the low end of the typical ranges listed in the BASE database for indoor and outdoor air.
- Based on the carbon tetrachloride concentrations reported for the sub-slab vapor and indoor air samples collected at all locations, NYSDOH Decision Matrix 1 recommends *"Take reasonable and practical actions to identify source and reduce exposures."*

<u>1,1,1-Trichloroethane</u>

- No AGV established for this compound
- 1,1,1-TCA was only detected in the surrogate soil vapor sample (SS-8) collected outside the cottage at 216 Lakeville Road.
- None of the other sub-slab vapor, indoor air or outdoor air samples contained detectable concentrations of 1,1,1-TCA.
- Based on the 1,1,1-TCA concentrations reported for sub-slab vapor and indoor air samples collected at all locations, NYSDOH Decision Matrix 2 recommends *"No further action."*

Trichloroethene

- None of the indoor air samples contained TCE concentrations above the 2 µg/m^3 AGV for this compound. Note that NYSDOH lowered the AGV for TCE in August 2015 from 5 µg/m^3 to 2 µg/m^3 and developed a recommended immediate action level of 20 µg/m^3 for this compound.
- TCE was not detected in the outdoor ambient air samples.
- Based on the TCE concentrations reported for sub-slab vapor and indoor air samples, NYSDOH Decision Matrix 1 recommends the following:
    - At 216 Lakeville Road and 220 Lakeville Road: *"No further action"*
    - At 2 University Place and the former dry cleaners space at 218 Lakeville Road: *"Monitor"*
    - At the 218 Lakeville Road tobacco shop: *"Monitor/Mitigate"*
    - At 4 University Place and the former deli at 218 Lakeville Road: *"Mitigate"*

Tetrachloroethene

- Note that NYSDOH lowered the AGV for PCE in September 2013 from 100 µg/m^3 to 30 µg/m^3. The recommended immediate action level for PCE was also lowered from 1,000 µg/m^3 to 300 µg/m^3 at this time.
- None of the indoor air samples contained PCE concentrations above the 300 µg/m^3 recommended immediate action level for this compound. The PCE concentration reported for the indoor air sample collected at 4 University Place (IA-6) was slightly above the AGV for this compound (36 µg/m^3 PCE detected in IA-6 vs. 30 µg/m^3 AGV).
- Minimal concentrations of PCE (less than 0.5 µg/m^3) were detected in the outdoor ambient air samples.
- Based on the PCE concentrations reported for sub-slab vapor and indoor air samples, NYSDOH Decision Matrix 2 recommends the following:
    - At 216 Lakeville Road: *"No further action"*
    - At 220 Lakeville Road: *"Monitor"*
    - At 2 University Place, 4 University Place and all sampling locations at 218 Lakeville Road: *"Mitigate"*

1,1-Dichloroethene

- No AGV established for this compound
- 1,1-DCE was not detected in any of the sub-slab vapor, indoor air or outdoor air samples, therefore NYSDOH Decision Matrix 2 recommends *"No further action"* with respect to this compound.

Cis-1,2-Dichloroethene

- No AGV established for this compound
- Cis-1,2-DCE was not detected in any of the indoor air or outdoor air samples.
- This compound was detected in sub-slab vapor samples collected at 218 Lakeville Road and 4 University Place.
- Based on the cis-1,2-DCE concentrations reported for sub-slab vapor and indoor air samples collected at all locations, NYSDOH Decision Matrix 2 recommends the following:
  - At 2 University Place, 216 Lakeville Road, 220 Lakeville Road and the former dry cleaners space and tobacco shop at 218 Lakeville Road: *"No further action"*
  - At 4 University Place and the former deli at 218 Lakeville Road: *"Monitor"*

Vinyl Chloride

- No AGV established for this compound
- Vinyl chloride was not detected in any of the sub-slab vapor, indoor air or outdoor air samples, therefore NYSDOH Decision Matrix 1 recommends *"No further action"* with respect to this compound.

3.2 Data Usability Summary Report (DUSR)

A Data Usability Summary Report (DUSR) completed in accordance with DER-10 is provided in Appendix D.

4 CONCLUSIONS & RECOMMENDATIONS

4.1 Conclusions

The SVI sampling results show that the indoor air within the basement of 218 Lakeville Road and the lowest levels of the neighboring off-site properties located at 216 Lakeville Road, 220 Lakeville Road, and 2 University Place meets the AGVs established by NYSDOH as described in Section 3. The PCE concentration detected in the indoor air sample (IA-6) at 4 University Place exceeded the lower AGV established in September 2013 (36 µg/m^3 PCE detected in IA-6 vs. 30 µg/m^3 AGV).

The sub-slab sampling results revealed that vapors (mainly PCE and breakdown products TCE and cis-1,2-DCE) attributable to the historic release of VOCs at the Former Imperial Cleaners Site remain in the subsurface. While the SVE remedial system at 218 Lakeville Road removed VOCs and reduced concentrations to levels acceptable to NYSDEC and NYSDOH, the current SVI sampling results show that VOC concentrations have rebounded since the SVE system was shut down. This rebound is likely due to the low permeability clay layer and perched water table located approximately 30 feet below grade in this area, creating subsurface conditions which have trapped VOC vapors in the tight pore spaces and possibly on top of the perched water.

Based on a comparison of the target compound concentrations reported for the sub-slab and indoor air samples to the concentration ranges compared in the NYSDOH decision matrices, mitigation is recommended for 218 Lakeville Road, 2 University Place and 4 University Place to address potential soil vapor intrusion impacts and prevent exposure to VOCs in indoor air. The decision matrix comparison indicates that monitoring is recommended to ensure that residual VOCs do not impact indoor air at 220 Lakeville Road; no action is recommended at 216 Lakeville Road.

4.2 Recommendations

The following actions are recommended based on the SVI investigation results:

- Install sub-slab depressurization (SSD) systems at 218 Lakeville Road, 2 University Place and 4 University Place to prevent VOC vapor migration into the buildings.
  - The SSD system design will specify fans and piping required to draw vapors from beneath the building slabs at each property to create an adequate vacuum to control the sub-slab VOC vapors and prevent vapors from entering the buildings to avoid indoor air quality impacts.

- SSD systems will be designed and installed to minimize construction/operating impacts on off-site properties to the extent possible.
- The design and installation; post-mitigation, or confirmation testing; operation, maintenance, and monitoring; and termination of mitigation system operations will be done in accordance with the October 2006, Final NYSDOH CEH BEEI, Soil Vapor Intrusion Guidance, as amended.

- Monitoring is recommended for 220 Lakeville Road in each subsequent heating season in accordance with the October 2006, Final NYSDOH CEH BEEI, Soil Vapor Intrusion Guidance, as amended.

Design plans/specifications and an operation/monitoring plan for the SSD systems will be developed and submitted to NYSDEC and NYSDOH under separate cover for review and approval if the State concurs with this recommendation.

TABLES

FORMER IMPERIAL CLEANERS SITE
218 LAKEVILLE ROAD
LAKE SUCCESS, NY

VCP SITE #V-00244-1

TABLE 1
SUMMARY OF SVI INVESTIGATION SAMPLING RESULTS

					218 Lakeville Road (Former Dry Cleaners Space)						218 Lakeville Road (Tobacco Shop)			
Analyte	CAS #	NYSDOH Air Guideline Value (µg/m3)	USEPA BASE Indoor Air 90th Percentile Conc (µg/m3)	USEPA BASE Outdoor Air 90th Percentile Conc (µg/m3)	Indoor Air Concentration (µg/m3)				Sub-slab Vapor Concentration (µg/m3)		Indoor Air Concentration (µg/m3)		Sub-slab Vapor Concentration (µg/m3)	
					IA-1	Q	IA-9 (Duplicate)	Q	SS-1	Q	IA-2	Q	SS-2	Q
1,1,1,2-Tetrachloroethane	630-20-6				< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
1,1,1-Trichloroethane	71-55-6		20.6	2.6	< 1.00	U	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U
1,1,2,2-Tetrachloroethane	79-34-5				< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
1,1,2-Trichloroethane	79-00-5		<1.5	<1.6	< 1.00	U	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U
1,1-Dichloroethane	75-34-3		<0.7	<0.6	< 1.00	U	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
1,1-Dichloroethene	75-35-4		<1.4	<1.4	< 1.00	U	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
1,2,4-Trichlorobenzene	120-82-1		<6.8	<6.4	< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
1,2,4-Trimethylbenzene	95-63-6		9.5	5.8	< 1.00	U	< 1.00	U	13.1		< 1.00	U	17.7	
1,2-Dibromoethane(EDB)	106-93-4		<1.5	<1.6	< 1.00	U	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U
1,2-Dichlorobenzene	95-50-1		<1.2	<1.2	< 1.00	U	< 1.00	U	< 9.97	U	< 1.00	U	< 9.97	U
1,2-Dichloroethane	107-06-2		<0.9	<0.8	< 1.00	U	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
1,2-Dichloropropane	78-87-5		<1.6	<1.6	< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
1,2-Dichlorotetrafluoroethane	76-14-2				< 1.00	U	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
1,3,5-Trimethylbenzene	108-67-8		3.7	2.7	< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
1,3-Butadiene	106-99-0		<3.0	<3.4	< 1.00	U	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
1,3-Dichlorobenzene	541-73-1		<2.4	<2.2	< 1.00	U	< 1.00	U	< 9.97	U	< 1.00	U	< 9.97	U
1,4-Dichlorobenzene	106-46-7		5.5	1.2	< 1.00	U	< 1.00	U	< 9.97	U	< 1.00	U	< 9.97	U
1,4-Dioxane	123-91-1				< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
2-Hexanone(MBK)	591-78-6				< 1.00	U	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
4-Ethyltoluene	622-96-8		3.6	3	< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
4-Isopropyltoluene	99-87-6				< 1.00	U	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U
4-Methyl-2-pentanone(MIBK)	108-10-1		6	1.9	< 1.00	U	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
Acetone	67-64-1		98.9	43.7	6.65	S	5.6	S	70.3	S	7.24	S	24.9	S
Acrylonitrile	107-13-1				< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Benzene	71-43-2		9.4	6.6	< 1.00	U	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
Benzyl chloride	100-44-7		<6.8	<6.4	< 1.00	U	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
Bromodichloromethane	75-27-4				< 1.00	U	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U
Bromoform	75-25-2				< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Bromomethane	74-83-9		<1.7	<1.6	< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Carbon Disulfide	75-15-0		4.2	3.7	< 1.00	U	< 1.00	U	12.6		< 1.00	U	< 9.99	U
Carbon Tetrachloride	56-23-5		<1.3	0.7	0.5		0.58		< 2.50	U	0.5		< 2.50	U
Chlorobenzene	108-90-7		<0.9	<0.8	< 1.00	U	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U
Chloroethane	75-00-3		<1.1	<1.2	< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Chloroform	67-66-3		1.1	0.6	< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	46.3	
Chloromethane	74-87-3		3.7	3.7	1.21		1.43		< 10.0	U	1.41		< 10.0	U
Cis-1,2-Dichloroethene	156-59-2		<1.9	<1.8	< 1.00	U	< 1.00	U	396		< 1.00	U	244	
cis-1,3-Dichloropropene	10061-01-5		<2.3	<2.2	< 1.00	U	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U
Cyclohexane	110-82-7				< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Dibromochloromethane	124-48-1				< 1.00	U	< 1.00	U	< 9.96	U	< 1.00	U	< 9.96	U
Dichlorodifluoromethane	75-71-8		16.5	8.1	2.36		2.62		< 9.98	U	2.59		< 9.98	U
Ethanol	64-17-5		210	57	69.1		81.5	E	21.5	S	25.4		< 10.0	U
Ethyl acetate	141-78-6		5.4	1.5	< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Ethylbenzene	100-41-4		5.7	3.5	< 1.00	U	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U
Heptane	142-82-5				< 1.00	U	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
Hexachlorobutadiene	87-68-3		<6.8	<6.4	< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Hexane	110-54-3				< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Isopropylalcohol	67-63-0				1.22	S	1.41	S	< 10.0	U	1.96	S	< 10.0	U
Isopropylbenzene	98-82-8				< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
m,p-Xylene	179601-23-1		22.2	12.8	< 1.00	U	< 1.00	U	< 9.98	U	< 1.00	U	14.7	
Methyl Ethyl Ketone	78-93-3		12	11.3	< 1.00	U	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
Methyl tert-butyl ether(MTBE)	1634-04-4		11.5	6.2	< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Methylene Chloride	75-09-2	60	10	6.1	< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
n-Butylbenzene	104-51-8				< 1.00	U	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U
o-Xylene	95-47-6		7.9	4.6	< 1.00	U	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U
Propylene	115-07-1				1.01		< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
sec-Butylbenzene	135-98-8				< 1.00	U	< 1.00	U	< 9.98	U	< 1.00	U	14.9	
Styrene	100-42-5		1.9	1.3	< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Tetrachloroethene	127-18-4	30	15.9	6.5	5.65		5.98		5,090		4.64		18,600	
Tetrahydrofuran	109-99-9				< 1.00	U	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
Toluene	108-88-3		43	33.7	1.05		1.07		< 10.0	U	1.12		12	
Trans-1,2-Dichloroethene	156-60-5				< 1.00	U	< 1.00	U	15.6		< 1.00	U	13.8	
trans-1,3-Dichloropropene	10061-02-6		<1.3	<1.4	< 1.00	U	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U
Trichloroethene	79-01-6	2	4.2	1.3	< 0.25	U	< 0.25	U	168		0.28		191	
Trichlorofluoromethane	75-69-4		18.1	4.3	1.33		1.35		< 9.99	U	1.29		< 9.99	U
Trichlorotrifluoroethane	76-13-1		3.5	1.6	< 1.00	U	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Vinyl Chloride	75-01-4		<1.9	<1.8	< 0.25	U	< 0.25	U	< 2.50	U	< 0.25	U	< 2.50	U

Highlighted analytes are included in the NYSDOH Decision Matrices

Qualifiers

U - The compound was anlayzed for but not detected at or above the MDL. The number immediately preceding the "U" represents the PQL reporting level corrected for percent solids, weight and/or volume calculations, and dilution factors.

S - This compound is a solvent that is used in the laboratory. Laboratory contamination is suspected if concentration is less than five times the reporting level.

E - The reported value is estimated because the concentration exceeded the calibration range.

FORMER IMPERIAL CLEANERS SITE
218 LAKEVILLE ROAD
LAKE SUCCESS, NY

VCP SITE #V-00244-1

TABLE 1
SUMMARY OF SVI INVESTIGATION SAMPLING RESULTS

Analyte	CAS #	NYSDOH Air Guideline Value (µg/m3)	USEPA BASE Indoor Air 90th Percentile Conc (µg/m3)	USEPA BASE Outdoor Air 90th Percentile Conc (µg/m3)	218 Lakeville Road (Deli South) Indoor Air Concentration (µg/m3) IA-3	Q	218 Lakeville Road (Deli South) Sub-slab Vapor Concentration (µg/m3) SS-3	Q	218 Lakeville Road (Deli North) Indoor Air Concentration (µg/m3) IA-4	Q	218 Lakeville Road (Deli North) Sub-slab Vapor Concentration (µg/m3) SS-4	Q	SS-9 (Duplicate)	Q
1,1,1,2-Tetrachloroethane	630-20-6				< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U	< 10.0	U
1,1,1-Trichloroethane	71-55-6		20.6	2.6	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U	< 9.98	U
1,1,2,2-Tetrachloroethane	79-34-5				< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U	< 10.0	U
1,1,2-Trichloroethane	79-00-5		<1.5	<1.6	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U	< 9.98	U
1,1-Dichloroethane	75-34-3		<0.7	<0.6	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U	< 9.99	U
1,1-Dichloroethene	75-35-4		<1.4	<1.4	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U	< 9.99	U
1,2,4-Trichlorobenzene	120-82-1		<6.8	<6.4	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U	< 10.0	U
1,2,4-Trimethylbenzene	95-63-6		9.5	5.8	< 1.00	U	< 10.0	U	< 1.00	U	21.1		19.2	
1,2-Dibromoethane(EDB)	106-93-4		<1.5	<1.6	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U	< 9.98	U
1,2-Dichlorobenzene	95-50-1		<1.2	<1.2	< 1.00	U	< 9.97	U	< 1.00	U	< 9.97	U	< 9.97	U
1,2-Dichloroethane	107-06-2		<0.9	<0.8	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U	< 9.99	U
1,2-Dichloropropane	78-87-5		<1.6	<1.6	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U	< 10.0	U
1,2-Dichlorotetrafluoroethane	76-14-2				< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U	< 9.99	U
1,3,5-Trimethylbenzene	108-67-8		3.7	2.7	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U	< 10.0	U
1,3-Butadiene	106-99-0		<3.0	<3.4	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U	< 9.99	U
1,3-Dichlorobenzene	541-73-1		<2.4	<2.2	< 1.00	U	< 9.97	U	< 1.00	U	< 9.97	U	< 9.97	U
1,4-Dichlorobenzene	106-46-7		5.5	1.2	< 1.00	U	< 9.97	U	< 1.00	U	< 9.97	U	< 9.97	U
1,4-Dioxane	123-91-1				< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U	< 10.0	U
2-Hexanone(MBK)	591-78-6				< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U	< 9.99	U
4-Ethyltoluene	622-96-8		3.6	3	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U	< 10.0	U
4-Isopropyltoluene	99-87-6				< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U	< 9.98	U
4-Methyl-2-pentanone(MIBK)	108-10-1		6	1.9	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U	< 9.99	U
Acetone	67-64-1		98.9	43.7	4.06	S	26.1	S	4.75	S	39.4	S	38	S
Acrylonitrile	107-13-1				< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U	< 10.0	U
Benzene	71-43-2		9.4	6.6	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U	< 9.99	U
Benzyl chloride	100-44-7		<6.8	<6.4	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U	< 9.99	U
Bromodichloromethane	75-27-4				< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U	< 9.98	U
Bromoform	75-25-2				< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U	< 10.0	U
Bromomethane	74-83-9		<1.7	<1.6	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U	< 10.0	U
Carbon Disulfide	75-15-0		4.2	3.7	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U	< 9.99	U
Carbon Tetrachloride	56-23-5		<1.3	0.7	0.51		< 2.50	U	0.49		< 2.50	U	< 2.50	U
Chlorobenzene	108-90-7		<0.9	<0.8	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U	< 9.98	U
Chloroethane	75-00-3		<1.1	<1.2	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U	< 10.0	U
Chloroform	67-66-3		1.1	0.6	< 1.00	U	< 10.0	U	< 1.00	U	11.8		12.3	
Chloromethane	74-87-3		3.7	3.7	1.51		< 10.0	U	1.28		< 10.0	U	< 10.0	U
Cis-1,2-Dichloroethene	156-59-2		<1.9	<1.8	< 1.00	U	282		< 1.00	U	630		654	
cis-1,3-Dichloropropene	10061-01-5		<2.3	<2.2	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U	< 9.98	U
Cyclohexane	110-82-7				< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U	< 10.0	U
Dibromochloromethane	124-48-1				< 1.00	U	< 9.96	U	< 1.00	U	< 9.96	U	< 9.96	U
Dichlorodifluoromethane	75-71-8		16.5	8.1	2.68		14.8		2.47		< 9.98	U	< 9.98	U
Ethanol	64-17-5		210	57	9.23	S	< 10.0	U	5.44	S	< 10.0	U	11.8	S
Ethyl acetate	141-78-6		5.4	1.5	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U	< 10.0	U
Ethylbenzene	100-41-4		5.7	3.5	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U	< 9.98	U
Heptane	142-82-5				< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U	< 9.99	U
Hexachlorobutadiene	87-68-3		<6.8	<6.4	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U	< 10.0	U
Hexane	110-54-3				< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U	< 10.0	U
Isopropylalcohol	67-63-0				1.8	S	< 10.0	U	1.27	S	< 10.0	U	< 10.0	U
Isopropylbenzene	98-82-8				< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U	< 10.0	U
m,p-Xylene	179601-23-1		22.2	12.8	< 1.00	U	< 9.98	U	< 1.00	U	15.6		16	
Methyl Ethyl Ketone	78-93-3		12	11.3	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U	< 9.99	U
Methyl tert-butyl ether(MTBE)	1634-04-4		11.5	6.2	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U	< 10.0	U
Methylene Chloride	75-09-2	60	10	6.1	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U	< 10.0	U
n-Butylbenzene	104-51-8				< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U	< 9.98	U
o-Xylene	95-47-6		7.9	4.6	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U	< 9.98	U
Propylene	115-07-1				< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U	< 9.99	U
sec-Butylbenzene	135-98-8				< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U	16.1	
Styrene	100-42-5		1.9	1.3	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U	< 10.0	U
Tetrachloroethene	127-18-4	30	15.9	6.5	1.92		2,760		1.58		3,630		3,550	
Tetrahydrofuran	109-99-9				< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U	< 9.99	U
Toluene	108-88-3		43	33.7	< 1.00	U	< 10.0	U	< 1.00	U	13.3		14.5	
Trans-1,2-Dichloroethene	156-60-5				< 1.00	U	24.8		< 1.00	U	34.9		36.2	
trans-1,3-Dichloropropene	10061-02-6		<1.3	<1.4	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U	< 9.98	U
Trichloroethene	79-01-6	2	4.2	1.3	0.27		459		< 0.25	U	564		607	
Trichlorofluoromethane	75-69-4		18.1	4.3	1.39		< 9.99	U	1.25		< 9.99	U	< 9.99	U
Trichlorotrifluoroethane	76-13-1		3.5	1.6	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U	< 10.0	U
Vinyl Chloride	75-01-4		<1.9	<1.8	< 0.25	U	< 2.50	U	< 0.25	U	< 2.50	U	< 2.50	U

Highlighted analytes are included in the NYSDOH Decision Matrices

Qualifiers

U - The compound was anlayzed for but not detected at or above the MDL. The number immediately preceding the "U" represents the PQL reporting level corrected for percent solids, weight and/or volume calculations, and dilution factors.

S - This compound is a solvent that is used in the laboratory. Laboratory contamination is suspected if concentration is less than five times the reporting level.

E - The reported value is estimated because the concentration exceeded the calibration range.

FORMER IMPERIAL CLEANERS SITE
218 LAKEVILLE ROAD
LAKE SUCCESS, NY

VCP SITE #V-00244-1

TABLE 1
SUMMARY OF SVI INVESTIGATION SAMPLING RESULTS

					2 University Place				4 University Place			
					Indoor Air Concentration (µg/m3)		Sub-slab Vapor Concentration (µg/m3)		Indoor Air Concentration (µg/m3)		Sub-slab Vapor Concentration (µg/m3)	
Analyte	CAS #	NYSDOH Air Guideline Value (µg/m3)	USEPA BASE Indoor Air 90th Percentile Conc (µg/m3)	USEPA BASE Outdoor Air 90th Percentile Conc (µg/m3)	IA-5	Q	SS-5	Q	IA-6	Q	SS-6	Q
1,1,1,2-Tetrachloroethane	630-20-6				< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
1,1,1-Trichloroethane	71-55-6		20.6	2.6	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U
1,1,2,2-Tetrachloroethane	79-34-5				< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
1,1,2-Trichloroethane	79-00-5		<1.5	<1.6	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U
1,1-Dichloroethane	75-34-3		<0.7	<0.6	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
1,1-Dichloroethene	75-35-4		<1.4	<1.4	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
1,2,4-Trichlorobenzene	120-82-1		<6.8	<6.4	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
1,2,4-Trimethylbenzene	95-63-6		9.5	5.8	< 1.00	U	76.6		< 1.00	U	53.6	
1,2-Dibromoethane(EDB)	106-93-4		<1.5	<1.6	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U
1,2-Dichlorobenzene	95-50-1		<1.2	<1.2	< 1.00	U	< 9.97	U	< 1.00	U	< 9.97	U
1,2-Dichloroethane	107-06-2		<0.9	<0.8	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
1,2-Dichloropropane	78-87-5		<1.6	<1.6	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
1,2-Dichlorotetrafluoroethane	76-14-2				< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
1,3,5-Trimethylbenzene	108-67-8		3.7	2.7	< 1.00	U	22.7		< 1.00	U	13.8	
1,3-Butadiene	106-99-0		<3.0	<3.4	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
1,3-Dichlorobenzene	541-73-1		<2.4	<2.2	< 1.00	U	< 9.97	U	< 1.00	U	< 9.97	U
1,4-Dichlorobenzene	106-46-7		5.5	1.2	< 1.00	U	< 9.97	U	< 1.00	U	< 9.97	U
1,4-Dioxane	123-91-1				< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
2-Hexanone(MBK)	591-78-6				< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
4-Ethyltoluene	622-96-8		3.6	3	< 1.00	U	12.7		< 1.00	U	< 10.0	U
4-Isopropyltoluene	99-87-6				< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U
4-Methyl-2-pentanone(MIBK)	108-10-1		6	1.9	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
Acetone	67-64-1		98.9	43.7	14.9		82.6	S	48.2		37.3	S
Acrylonitrile	107-13-1				< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Benzene	71-43-2		9.4	6.6	1.56		< 9.99	U	< 1.00	U	< 9.99	U
Benzyl chloride	100-44-7		<6.8	<6.4	< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
Bromodichloromethane	75-27-4				< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U
Bromoform	75-25-2				< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Bromomethane	74-83-9		<1.7	<1.6	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Carbon Disulfide	75-15-0		4.2	3.7	< 1.00	U	13.9		< 1.00	U	< 9.99	U
Carbon Tetrachloride	56-23-5		<1.3	0.7	0.57		< 2.50	U	0.55		< 2.50	U
Chlorobenzene	108-90-7		<0.9	<0.8	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U
Chloroethane	75-00-3		<1.1	<1.2	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Chloroform	67-66-3		1.1	0.6	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Chloromethane	74-87-3		3.7	3.7	2.17		< 10.0	U	1.5		< 10.0	U
Cis-1,2-Dichloroethene	156-59-2		<1.9	<1.8	< 1.00	U	< 9.99	U	< 1.00	U	134	
cis-1,3-Dichloropropene	10061-01-5		<2.3	<2.2	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U
Cyclohexane	110-82-7				< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Dibromochloromethane	124-48-1				< 1.00	U	< 9.96	U	< 1.00	U	< 9.96	U
Dichlorodifluoromethane	75-71-8		16.5	8.1	2.71		< 9.98	U	2.61		< 9.98	U
Ethanol	64-17-5		210	57	23.2		23.5	S	57.6		13.6	S
Ethyl acetate	141-78-6		5.4	1.5	1.06		< 10.0	U	< 1.00	U	< 10.0	U
Ethylbenzene	100-41-4		5.7	3.5	1.05		14.5		< 1.00	U	< 9.98	U
Heptane	142-82-5				1.45		13		< 1.00	U	< 9.99	U
Hexachlorobutadiene	87-68-3		<6.8	<6.4	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Hexane	110-54-3				2.03	S	11.1	S	< 1.00	U	< 10.0	U
Isopropylalcohol	67-63-0				1.64	S	< 10.0	U	6.19	S	< 10.0	U
Isopropylbenzene	98-82-8				< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
m,p-Xylene	179601-23-1		22.2	12.8	4.13		57.7		2.2		35.7	
Methyl Ethyl Ketone	78-93-3		12	11.3	1.81		< 9.99	U	1.29		< 9.99	U
Methyl tert-butyl ether(MTBE)	1634-04-4		11.5	6.2	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Methylene Chloride	75-09-2	60	10	6.1	2.35	S	< 10.0	U	< 1.00	U	< 10.0	U
n-Butylbenzene	104-51-8				< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U
o-Xylene	95-47-6		7.9	4.6	1.29		28.3		< 1.00	U	17.3	
Propylene	115-07-1				< 1.00	U	28.6		< 1.00	U	< 9.99	U
sec-Butylbenzene	135-98-8				< 1.00	U	64.7		< 1.00	U	44.9	
Styrene	100-42-5		1.9	1.3	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Tetrachloroethene	127-18-4	30	15.9	6.5	1.82		3,590		36.2		20,100	
Tetrahydrofuran	109-99-9				< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
Toluene	108-88-3		43	33.7	9.83		31.4		3.17		20.4	
Trans-1,2-Dichloroethene	156-60-5				< 1.00	U	< 9.99	U	< 1.00	U	< 9.99	U
trans-1,3-Dichloropropene	10061-02-6		<1.3	<1.4	< 1.00	U	< 9.98	U	< 1.00	U	< 9.98	U
Trichloroethene	79-01-6	2	4.2	1.3	1.01		47		0.6		655	
Trichlorofluoromethane	75-69-4		18.1	4.3	1.35		< 9.99	U	1.33		< 9.99	U
Trichlorotrifluoroethane	76-13-1		3.5	1.6	< 1.00	U	< 10.0	U	< 1.00	U	< 10.0	U
Vinyl Chloride	75-01-4		<1.9	<1.8	< 0.25	U	< 2.50	U	< 0.25	U	< 2.50	U

Highlighted analytes are included in the NYSDOH Decision Matrices

Qualifiers

U - The compound was anlayzed for but not detected at or above the MDL. The number immediately preceding the "U" represents the PQL reporting level corrected for percent solids, weight and/or volume calculations, and dilution factors.

S - This compound is a solvent that is used in the laboratory. Laboratory contamination is suspected if concentration is less than five times the reporting level.

E - The reported value is estimated because the concentration exceeded the calibration range.

FORMER IMPERIAL CLEANERS SITE
218 LAKEVILLE ROAD
LAKE SUCCESS, NY

VCP SITE #V-00244-1

TABLE 1
SUMMARY OF SVI INVESTIGATION SAMPLING RESULTS

					220 Lakeville Road				216 Lakeville Road (Cottage)			
					Indoor Air Concentration (μg/m3)		Sub-slab Vapor Concentration (μg/m3)		Indoor Air Concentration (μg/m3)		Soil Vapor Concentration (μg/m3)	
Analyte	CAS #	NYSDOH Air Guideline Value (μg/m3)	USEPA BASE Indoor Air 90th Percentile Conc (μg/m3)	USEPA BASE Outdoor Air 90th Percentile Conc (μg/m3)	IA-7	Q	SS-7	Q	IA-8	Q	SS-8	Q
1,1,1,2-Tetrachloroethane	630-20-6				< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
1,1,1-Trichloroethane	71-55-6		20.6	2.6	< 1.00	U	< 1.00	U	< 1.00	U	8.34	
1,1,2,2-Tetrachloroethane	79-34-5				< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
1,1,2-Trichloroethane	79-00-5		<1.5	<1.6	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
1,1-Dichloroethane	75-34-3		<0.7	<0.6	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
1,1-Dichloroethene	75-35-4		<1.4	<1.4	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
1,2,4-Trichlorobenzene	120-82-1		<6.8	<6.4	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
1,2,4-Trimethylbenzene	95-63-6		9.5	5.8	< 1.00	U	20.6		< 1.00	U	14.1	
1,2-Dibromoethane(EDB)	106-93-4		<1.5	<1.6	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
1,2-Dichlorobenzene	95-50-1		<1.2	<1.2	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
1,2-Dichloroethane	107-06-2		<0.9	<0.8	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
1,2-Dichloropropane	78-87-5		<1.6	<1.6	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
1,2-Dichlorotetrafluoroethane	76-14-2				< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
1,3,5-Trimethylbenzene	108-67-8		3.7	2.7	< 1.00	U	5.4		< 1.00	U	4.05	
1,3-Butadiene	106-99-0		<3.0	<3.4	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
1,3-Dichlorobenzene	541-73-1		<2.4	<2.2	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
1,4-Dichlorobenzene	106-46-7		5.5	1.2	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
1,4-Dioxane	123-91-1				< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
2-Hexanone(MBK)	591-78-6				< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
4-Ethyltoluene	622-96-8		3.6	3	< 1.00	U	3.23		< 1.00	U	2.37	
4-Isopropyltoluene	99-87-6				< 1.00	U	1.65		< 1.00	U	1.01	
4-Methyl-2-pentanone(MIBK)	108-10-1		6	1.9	< 1.00	U	< 1.00	U	< 1.00	U	1.05	
Acetone	67-64-1		98.9	43.7	6.62	S	143		69.6		98.8	
Acrylonitrile	107-13-1				< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
Benzene	71-43-2		9.4	6.6	< 1.00	U	1.1		< 1.00	U	4.95	
Benzyl chloride	100-44-7		<6.8	<6.4	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
Bromodichloromethane	75-27-4				< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
Bromoform	75-25-2				< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
Bromomethane	74-83-9		<1.7	<1.6	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
Carbon Disulfide	75-15-0		4.2	3.7	< 1.00	U	29.6		< 1.00	U	5.1	
Carbon Tetrachloride	56-23-5		<1.3	0.7	0.58		< 0.25	U	0.46		0.46	
Chlorobenzene	108-90-7		<0.9	<0.8	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
Chloroethane	75-00-3		<1.1	<1.2	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
Chloroform	67-66-3		1.1	0.6	< 1.00	U	4.62		< 1.00	U	< 1.00	U
Chloromethane	74-87-3		3.7	3.7	1.19		< 1.00	U	1.22		1.57	
Cis-1,2-Dichloroethene	156-59-2		<1.9	<1.8	< 1.00	U	3.8		< 1.00	U	< 1.00	U
cis-1,3-Dichloropropene	10061-01-5		<2.3	<2.2	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
Cyclohexane	110-82-7				< 1.00	U	1.42		< 1.00	U	< 1.00	U
Dibromochloromethane	124-48-1				< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
Dichlorodifluoromethane	75-71-8		16.5	8.1	2.81		2.96		2.49		2.92	
Ethanol	64-17-5		210	57	6.76	S	14.9		130	E	29.2	
Ethyl acetate	141-78-6		5.4	1.5	< 1.00	U	< 1.00	U	1.47		< 1.00	U
Ethylbenzene	100-41-4		5.7	3.5	< 1.00	U	3.54		< 1.00	U	3.94	
Heptane	142-82-5				< 1.00	U	3.43		< 1.00	U	6.59	
Hexachlorobutadiene	87-68-3		<6.8	<6.4	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
Hexane	110-54-3				< 1.00	U	7.12	S	< 1.00	U	9.09	S
Isopropylalcohol	67-63-0				1.15	S	1.8	S	35.4		2.85	S
Isopropylbenzene	98-82-8				< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
m,p-Xylene	179601-23-1		22.2	12.8	< 1.00	U	14.3		< 1.00	U	14.1	
Methyl Ethyl Ketone	78-93-3		12	11.3	< 1.00	U	6.69		< 1.00	U	9.84	
Methyl tert-butyl ether(MTBE)	1634-04-4		11.5	6.2	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
Methylene Chloride	75-09-2	60	10	6.1	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
n-Butylbenzene	104-51-8				< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
o-Xylene	95-47-6		7.9	4.6	< 1.00	U	6.94		< 1.00	U	6.77	
Propylene	115-07-1				< 1.00	U	< 1.00	U	< 1.00	U	22.2	
sec-Butylbenzene	135-98-8				< 1.00	U	< 1.00	U	< 1.00	U	11.8	
Styrene	100-42-5		1.9	1.3	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
Tetrachloroethene	127-18-4	30	15.9	6.5	0.67		854		0.79		3.2	
Tetrahydrofuran	109-99-9				< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
Toluene	108-88-3		43	33.7	1.71		9.45		2.05		14.6	
Trans-1,2-Dichloroethene	156-60-5				< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
trans-1,3-Dichloropropene	10061-02-6		<1.3	<1.4	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
Trichloroethene	79-01-6	2	4.2	1.3	< 0.25	U	14.1		< 0.25	U	0.39	
Trichlorofluoromethane	75-69-4		18.1	4.3	1.47		1.52		1.33		1.77	
Trichlorotrifluoroethane	76-13-1		3.5	1.6	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
Vinyl Chloride	75-01-4		<1.9	<1.8	< 0.25	U	< 0.25	U	< 0.25	U	< 0.25	U

Highlighted analytes are included in the NYSDOH Decision Matrices

Qualifiers

U - The compound was anlayzed for but not detected at or above the MDL. The number immediately preceding the "U" represents the PQL reporting level corrected for percent solids, weight and/or volume calculations, and dilution factors.

S - This compound is a solvent that is used in the laboratory. Laboratory contamination is suspected if concentration is less than five times the reporting level.

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FORMER IMPERIAL CLEANERS SITE
218 LAKEVILLE ROAD
LAKE SUCCESS, NY

VCP SITE #V-00244-1

TABLE 1
SUMMARY OF SVI INVESTIGATION SAMPLING RESULTS

					Outdoor Ambient Air Samples					
					Upwind Concentration (µg/m3)		Downwind Concentration (µg/m3)			
Analyte	CAS #	NYSDOH Air Guideline Value (µg/m3)	USEPA BASE Indoor Air 90th Percentile Conc (µg/m3)	USEPA BASE Outdoor Air 90th Percentile Conc (µg/m3)	AA-1	Q	AA-2	Q	AA-3 (Duplicate)	Q
1,1,1,2-Tetrachloroethane	630-20-6				< 1.00	U	< 1.00	U	< 1.00	U
1,1,1-Trichloroethane	71-55-6		20.6	2.6	< 1.00	U	< 1.00	U	< 1.00	U
1,1,2,2-Tetrachloroethane	79-34-5				< 1.00	U	< 1.00	U	< 1.00	U
1,1,2-Trichloroethane	79-00-5		<1.5	<1.6	< 1.00	U	< 1.00	U	< 1.00	U
1,1-Dichloroethane	75-34-3		<0.7	<0.6	< 1.00	U	< 1.00	U	< 1.00	U
1,1-Dichloroethene	75-35-4		<1.4	<1.4	< 1.00	U	< 1.00	U	< 1.00	U
1,2,4-Trichlorobenzene	120-82-1		<6.8	<6.4	< 1.00	U	< 1.00	U	< 1.00	U
1,2,4-Trimethylbenzene	95-63-6		9.5	5.8	11.3		12.6		14.3	
1,2-Dibromoethane(EDB)	106-93-4		<1.5	<1.6	< 1.00	U	< 1.00	U	< 1.00	U
1,2-Dichlorobenzene	95-50-1		<1.2	<1.2	< 1.00	U	< 1.00	U	< 1.00	U
1,2-Dichloroethane	107-06-2		<0.9	<0.8	< 1.00	U	< 1.00	U	< 1.00	U
1,2-Dichloropropane	78-87-5		<1.6	<1.6	< 1.00	U	< 1.00	U	< 1.00	U
1,2-Dichlorotetrafluoroethane	76-14-2				< 1.00	U	< 1.00	U	< 1.00	U
1,3,5-Trimethylbenzene	108-67-8		3.7	2.7	4.31		4.32		4.2	
1,3-Butadiene	106-99-0		<3.0	<3.4	< 1.00	U	< 1.00	U	< 1.00	U
1,3-Dichlorobenzene	541-73-1		<2.4	<2.2	< 1.00	U	< 1.00	U	< 1.00	U
1,4-Dichlorobenzene	106-46-7		5.5	1.2	< 1.00	U	< 1.00	U	< 1.00	U
1,4-Dioxane	123-91-1				< 1.00	U	< 1.00	U	< 1.00	U
2-Hexanone(MBK)	591-78-6				< 1.00	U	< 1.00	U	< 1.00	U
4-Ethyltoluene	622-96-8		3.6	3	2.11		2.84		2.6	
4-Isopropyltoluene	99-87-6				1.03		1.08		1.31	
4-Methyl-2-pentanone(MIBK)	108-10-1		6	1.9	< 1.00	U	< 1.00	U	< 1.00	U
Acetone	67-64-1		98.9	43.7	18.8		28		22.1	
Acrylonitrile	107-13-1				< 1.00	U	< 1.00	U	< 1.00	U
Benzene	71-43-2		9.4	6.6	4.12		3.19		2.96	
Benzyl chloride	100-44-7		<6.8	<6.4	< 1.00	U	< 1.00	U	< 1.00	U
Bromodichloromethane	75-27-4				< 1.00	U	< 1.00	U	< 1.00	U
Bromoform	75-25-2				< 1.00	U	< 1.00	U	< 1.00	U
Bromomethane	74-83-9		<1.7	<1.6	< 1.00	U	< 1.00	U	< 1.00	U
Carbon Disulfide	75-15-0		4.2	3.7	< 1.00	U	< 1.00	U	< 1.00	U
Carbon Tetrachloride	56-23-5		<1.3	0.7	0.38		0.41		0.43	
Chlorobenzene	108-90-7		<0.9	<0.8	< 1.00	U	< 1.00	U	< 1.00	U
Chloroethane	75-00-3		<1.1	<1.2	< 1.00	U	< 1.00	U	< 1.00	U
Chloroform	67-66-3		1.1	0.6	< 1.00	U	< 1.00	U	< 1.00	U
Chloromethane	74-87-3		3.7	3.7	1.53		1.63		< 1.00	U
Cis-1,2-Dichloroethene	156-59-2		<1.9	<1.8	< 1.00	U	< 1.00	U	< 1.00	U
cis-1,3-Dichloropropene	10061-01-5		<2.3	<2.2	< 1.00	U	< 1.00	U	< 1.00	U
Cyclohexane	110-82-7				6.47		4.54		3.96	
Dibromochloromethane	124-48-1				< 1.00	U	< 1.00	U	< 1.00	U
Dichlorodifluoromethane	75-71-8		16.5	8.1	2.51		2.45		2.47	
Ethanol	64-17-5		210	57	17.5		13.6		13.8	
Ethyl acetate	141-78-6		5.4	1.5	< 1.00	U	< 1.00	U	< 1.00	U
Ethylbenzene	100-41-4		5.7	3.5	4.73		4.6		4.69	
Heptane	142-82-5				8.27		6.47		5.73	
Hexachlorobutadiene	87-68-3		<6.8	<6.4	< 1.00	U	< 1.00	U	< 1.00	U
Hexane	110-54-3				10.8		7.82	S	6.76	S
Isopropylalcohol	67-63-0				1.67	S	2.44	S	1.28	S
Isopropylbenzene	98-82-8				1.07		1.11		< 1.00	U
m,p-Xylene	179601-23-1		22.2	12.8	15.9		15.3		15.4	
Methyl Ethyl Ketone	78-93-3		12	11.3	1.71		1.09		1.06	
Methyl tert-butyl ether(MTBE)	1634-04-4		11.5	6.2	< 1.00	U	< 1.00	U	< 1.00	U
Methylene Chloride	75-09-2	60	10	6.1	< 1.00	U	< 1.00	U	< 1.00	U
n-Butylbenzene	104-51-8				< 1.00	U	< 1.00	U	< 1.00	U
o-Xylene	95-47-6		7.9	4.6	7.59		7.38		7.33	
Propylene	115-07-1				< 1.00	U	< 1.00	U	< 1.00	U
sec-Butylbenzene	135-98-8				9.49		< 1.00	U	12.1	
Styrene	100-42-5		1.9	1.3	< 1.00	U	< 1.00	U	< 1.00	U
Tetrachloroethene	127-18-4	30	15.9	6.5	0.33		0.47		0.39	
Tetrahydrofuran	109-99-9				< 1.00	U	< 1.00	U	< 1.00	U
Toluene	108-88-3		43	33.7	21.9		18.8		18.3	
Trans-1,2-Dichloroethene	156-60-5				< 1.00	U	< 1.00	U	< 1.00	U
trans-1,3-Dichloropropene	10061-02-6		<1.3	<1.4	< 1.00	U	< 1.00	U	< 1.00	U
Trichloroethene	79-01-6	2	4.2	1.3	< 0.25	U	< 0.25	U	< 0.25	U
Trichlorofluoromethane	75-69-4		18.1	4.3	2.76		2.3		2.17	
Trichlorotrifluoroethane	76-13-1		3.5	1.6	< 1.00	U	< 1.00	U	< 1.00	U
Vinyl Chloride	75-01-4		<1.9	<1.8	< 0.25	U	< 0.25	U	< 0.25	U

Highlighted analytes are included in the NYSDOH Decision Matrices

Qualifiers

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FORMER IMPERIAL CLEANERS SITE
218 LAKEVILLE ROAD
LAKE SUCCESS, NY
VCP SITE #V-00244-1

TABLE 2
SVI INVESTIGATION SAMPLING RESULTS NYSDOH DECISION MATRIX COMPARISON

Location	NYSDEC DECISION MATRIX 1			NYSDEC DECISION MATRIX 2			
	Carbon Tetrachloride $\mu g/m^3$	Trichloroethene $\mu g/m^3$	Vinyl Chloride $\mu g/m^3$	1,1-Dichloroethene $\mu g/m^3$	cis-1,2-Dichloroethene $\mu g/m^3$	1,1,1-Trichloroethane $\mu g/m^3$	Tetrachloroethene $\mu g/m^3$
218 Lakeville Road							
Former Cleaners							
IA-1/Duplicate IA-9 Result	0.5/0.58	<0.25/<0.25	<0.25/<0.25	<1.0/<1.0	<1.0/<1.0	<1.0/<1.0	5.65/5.98
Matrix Range Indoor Air	0.25 to <1	<0.25	<0.25	<3	<3	<3	<3
SS-1 Result	<2.50	168	<2.50	<9.99	396	<9.98	5090
Matrix Range Sub-Slab Vapor	<5	50 to <250	<5	<100	100 to <1000	<100	1,000 and above
Recommended Action	*Take Reasonable/Practical Action*	*Monitor*	*NoFurther Action*	*No Further Action*	*No Further Action*	*No Further Action*	*Mitigate*
Tobacco Shop							
IA-2 Result	0.5	0.28	<0.25	<1.0	<1.0	<1.0	4.64
Matrix Range Indoor Air	0.25 to <1	0.25 to <1	<0.25	<3	<3	<3	3 to <30
SS-2 Result	<2.50	191	<2.50	<9.99	244	<9.98	18600
Matrix Range Sub-Slab Vapor	<5	50 to <250	<5	<100	100 to <1000	<100	1,000 and above
Recommended Action	*Take Reasonable/Practical Action*	*Monitor/Mitigate*	*NoFurther Action*	*No Further Action*	*No Further Action*	*No Further Action*	*Mitigate*
Deli South							
IA-3 Result	0.51	0.27	<0.25	<1.0	<1.0	<1.0	1.92
Matrix Range Indoor Air	0.25 to <1	0.25 to <1	<0.25	<3	<3	<3	<3
SS-3 Result	<2.50	459	<2.50	<9.99	282	<9.98	2760
Matrix Range Sub-Slab Vapor	<5	250 and above	<5	<100	100 to <1000	<100	1,000 and above
Recommended Action	*Take Reasonable/Practical Action*	*Mitigate*	*NoFurther Action*	*No Further Action*	*Monitor*	*No Further Action*	*Mitigate*
Deli North							
IA-4 Result	0.49	<0.25	<0.25	<1.0	<1.0	<1.0	1.58
Matrix Range Indoor Air	0.25 to <1	<0.25	<0.25	<3	<3	<3	<3
SS-4/Duplicate SS-9 Result	<2.50/<2.50	564/607	<2.50/<2.50	<9.99/<9.99	630/654	<9.98/<9.98	3630/3550
Matrix Range Sub-Slab Vapor	<5	250 and above	<5	<100	100 to <1000	<100	1,000 and above
Recommended Action	*Take Reasonable/Practical Action*	*Mitigate*	*NoFurther Action*	*No Further Action*	*Monitor*	*No Further Action*	*Mitigate*
2 University Place							
IA-5 Result	0.57	1.01	<0.25	<1.0	<1.0	<1.0	1.82
Matrix Range Indoor Air	0.25 to <1	1 to <5.0	<0.25	<3	<3	<3	<3
SS-5 Result	<2.50	47	<2.50	<9.99	<9.99	<9.98	3590
Matrix Range Sub-Slab Vapor	<5	5 to <50	<5	<100	<100	<100	1,000 and above
Recommended Action	*Take Reasonable/Practical Action*	*Monitor*	*NoFurther Action*	*No Further Action*	*No Further Action*	*No Further Action*	*Mitigate*
4 University Place							
IA-6 Result	0.55	0.6	<0.25	<1.0	<1.0	<1.0	36.2
Matrix Range Indoor Air	0.25 to <1	0.25 to <1	<0.25	<3	<3	<3	30 to <100
SS-6 Result	<2.50	655	<2.50	<9.99	134	<9.98	20100
Matrix Range Sub-Slab Vapor	<5	250 and above	<5	<100	100 to <1000	<100	1,000 and above
Recommended Action	*Take Reasonable/Practical Action*	*Mitigate*	*NoFurther Action*	*No Further Action*	*Monitor*	*No Further Action*	*Mitigate*
220 Lakeville Road							
IA-7 Result	0.58	<0.25	<0.25	<1.0	<1.0	<1.0	0.67
Matrix Range Indoor Air	0.25 to <1	<0.25	<0.25	<3	<3	<3	<3
SS-7 Result	<2.50	14.1	<0.25	<1.0	3.8	<1.0	854
Matrix Range Sub-Slab Vapor	<5	5 to <50	<5	<100	<100	<100	100 to <1,000
Recommended Action	*Take Reasonable/Practical Action*	*No Further Action*	*NoFurther Action*	*No Further Action*	*No Further Action*	*No Further Action*	*Monitor*
216 Lakeville Road							
IA-8 Result	0.46	<0.25	<0.25	<1.0	<1.0	<1.0	0.79
Matrix Range Indoor Air	0.25 to <1	<0.25	<0.25	<3	<3	<3	<3
SS-8 Result	0.46	0.39	<0.25	<1.0	<1.0	8.34	3.2
Matrix Range Sub-Slab Vapor	<5	<5	<5	<100	<100	<100	<100
Recommended Action	*Take Reasonable/Practical Action*	*No Further Action*	*No Further Action*	*No Further Action*	*No Further Action*	*No Further Action*	*No Further Action*

Decision Matrices in tables referenced from NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York. The recommendations indicated in the decision matrices are described below.

No Further Action: Given that the compound was not detected in the indoor air sample and that the concentration detected in the sub-slab vapor sample is not expected to significantly affect indoor air quality, no additional actions are needed to address human exposures.

TAKE REASONABLE AND PRACTICAL ACTIONS TO IDENTIFY SOURCE(S) AND REDUCE EXPOSURE: The concentration detected in the indoor air sample is likely due to indoor and/or outdoor sources rather than soil vapor intrusion given the concentration detected in the sub-slab vapor sample. Therefore, steps should be taken to identify potential source(s) and to reduce exposure accordingly (e.g., by keeping containers tightly capped or by storing volatile organic compound-containing products in places where people do not spend much time, such as a garage or outdoor shed). Resampling may be recommended to demonstrate the effectiveness of actions taken to reduce exposures.

MITIGATE: Take reasonable and practical actions to identify source(s) and reduce exposure: The concentration detected in the indoor air sample is likely due to indoor and/or outdoor sources rather than soil vapor intrusion given the concentration detected in the sub-slab vapor sample. Therefore, steps should be taken to identify potential source(s) and to reduce exposures accordingly (e.g., by keeping containers tightly capped or by storing volatile chemical-containing products in places where people do not spend much time, such as a garage or shed). Resampling may also be recommended to demonstrate the effectiveness of actions taken to reduce exposures.

MONITOR: Monitoring, including sub-slab vapor, basement air, lowest occupied living space air, and outdoor air sampling, is needed to determine whether concentrations in the indoor air or sub-slab vapor have changed. Monitoring may also be needed 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 on a site-specific and building-specific basis, 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.

MONITOR/MITIGATE: Monitoring or mitigation may be recommended after considering the magnitude of sub-slab vapor and indoor air concentrations along with building and site specific conditions.

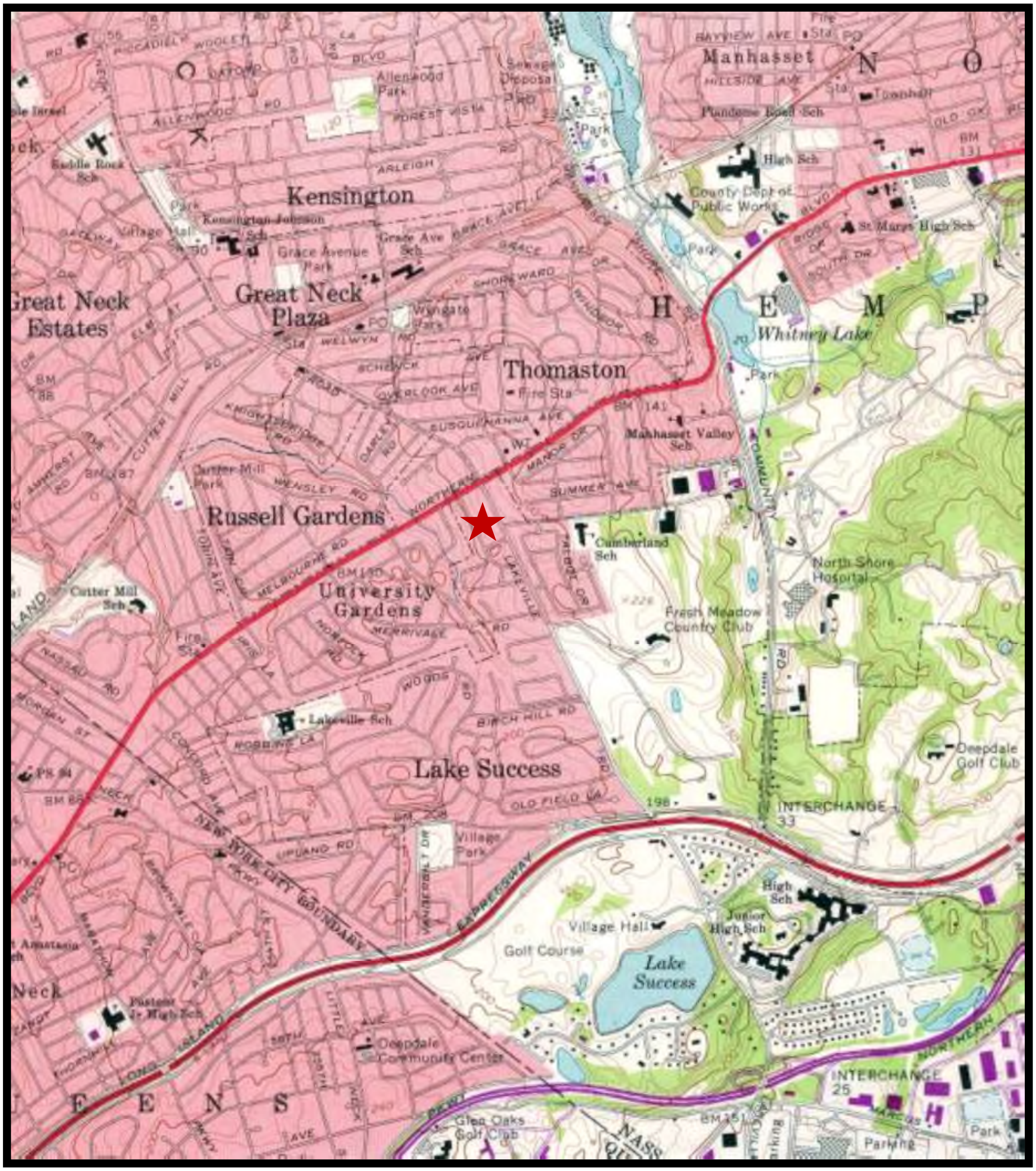
FIGURES

Former Imperial Cleaners Site
(VCP Site #V-00244-1)
218 Lakeville Road
Lake Success, New York

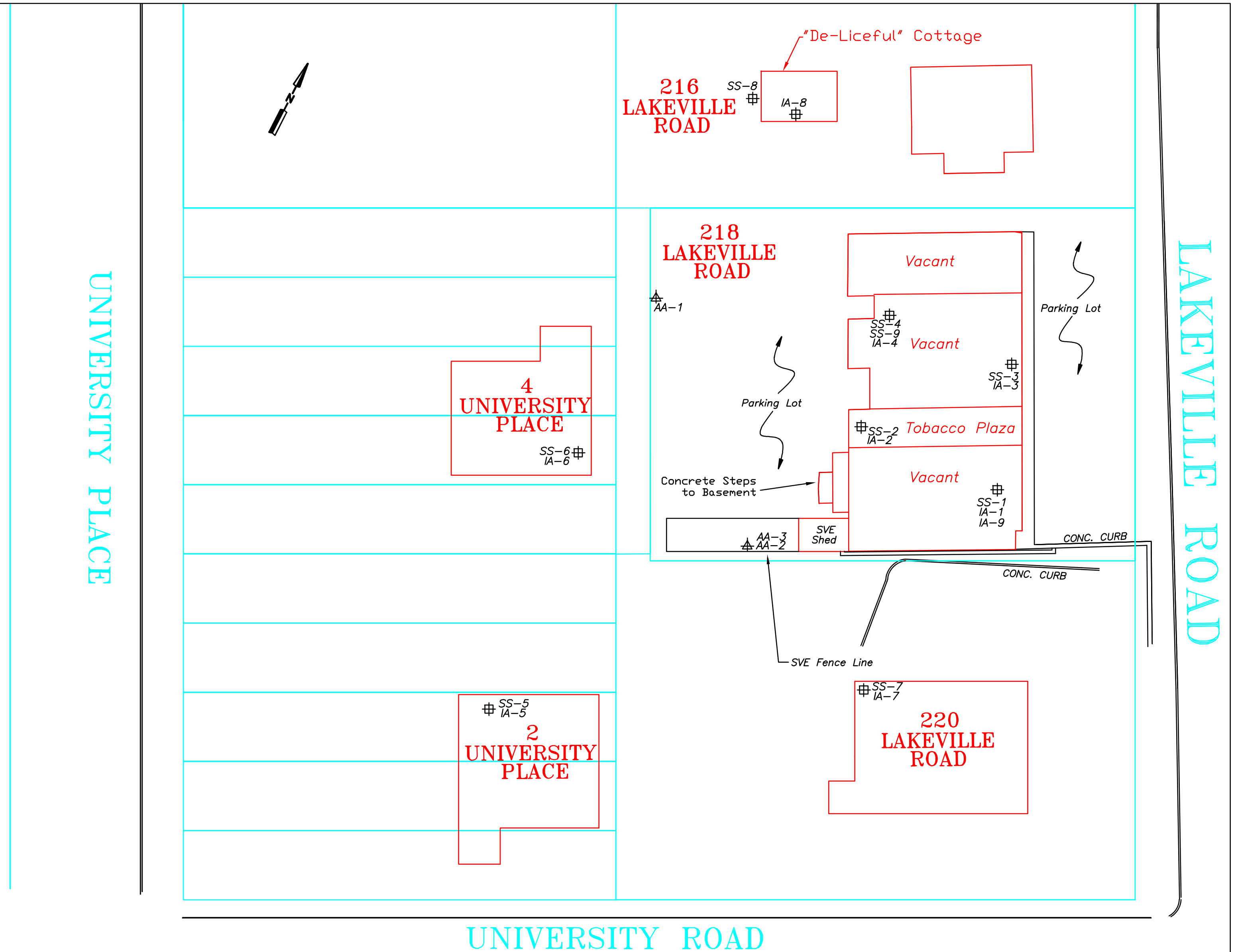
FIGURE 1

SITE LOCATION MAP

N



(USGS QUAD Sea Cliff, New York) (Scale 1:24000)



LEGEND

PROPERTY LINE
SUB-SLAB AND INDOOR AIR SAMPLE
AMBIENT AIR SAMPLE

0' 15' 30' 45' 60'
SCALE: 1" = 30'

NOTES

1. Site base map was derived from a property survey prepared by Welsh Engineering & Land Surveying, P.C., 343 Manville Road, Pleasantville, NY 10570, revised on 7/14/00.

2. The Welsh Enigeering north area was corrected based on 1999 Nassau County GIS basemap.

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FOR:
NYSDEC
625 Broadway, 11th Floor,
Albany, New York 12233

DRAWING TITLE:
SITE MAP WITH SAMPLE LOCATIONS
218 LAKEVILLE ROAD, LAKE SUCCESS, NEW YORK

JOB NO: IMPL0115.4
DATE: March 24, 2016
CAD FILE NAME: [illegible]

DRAWING NO:
1

APPENDICES

APPENDIX A
Existing Soil Vapor Extraction System Details

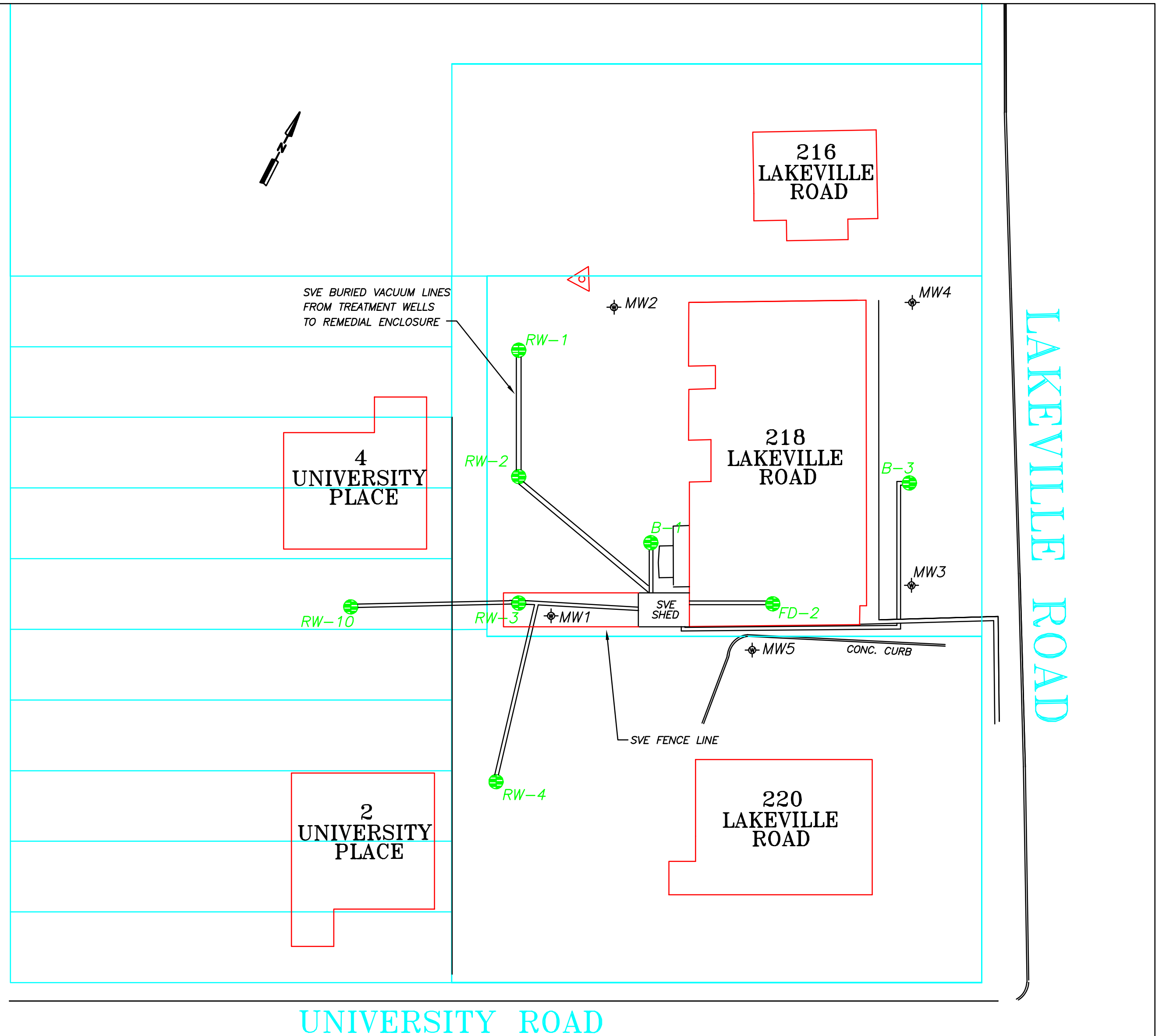
218 Lakeville Road Soil Vapor Extraction System

Based on the investigation and remediation activities previously conducted at the 218 Lakeville Road site, it was determined that installation of an SVE system would be required to remove residual PCE remaining in soils at the site. This work was conducted under the VCP program administered by NYSDEC. A SVE pilot test was conducted in May 1998 to determine the SVE well radius of influence for a full-scale SVE system. The SVE system was designed and installed by the previous Site owner's consultants and started up in January 2001. The complete SVE system consists of eight soil vapor extraction wells, as shown on the attached figure and described below.

RW-1, RW-2, RW-3, RW-4 and RW-10 were installed in November - December 2000. RW-1 and RW-2 are located just east of the property line between 4 University Place and the Former Imperial Cleaners site. RW-3 was installed in the vicinity of former dry well DW-1, at the southwest corner of the Former Imperial Cleaners site. RW-1, RW-2 and RW-3 are 25 feet deep and screened 15 to 25 feet below grade. RW-4 (13 feet deep with 10 feet of slotted pipe) is located along the western boundary of 220 Lakeville Road, adjacent to the residence at 2 University Place, and its designed radius of influence covers portions of these two properties. RW-10 (25 feet deep with 10 feet of slotted pipe) was installed along the south side of the residence at 4 University Place, and its designed radius of influence extends to a portion of the property at 2 University Place.

Existing extraction wells B-1, FD-2 and B-3, which were installed at the Site prior to 1998, were connected to the five SVE wells and piping installed in 2000 to complete the SVE remediation system. Soil boring B-1 was converted to a SVE extraction well and is screened from 10 to 25 feet below grade. Floor drain FD-2 was excavated in 1996 and converted to a SVE extraction well screened 4 to 10 feet below the basement floor. Extraction well B-3 is located in the vicinity of LP-2 and is screened 15 to 30 feet below grade.

Site closure sampling (soil, soil vapor and indoor air perc badge sampling) was conducted in November 2007 – January 2008 in accordance with a NYSDEC approved work plan. The closure sampling results indicated that residual VOC concentrations met applicable NYSDEC and NYSDOH criteria. Permanent shutdown of the SVE system was recommended based on the 2007-2008 closure sampling results. The SVE system was subsequently shut down. All of the remediation system equipment remains in place at the Site.



LEGEND

	SURVEY CONTROL STATION & BASELINE
RW-1	EXISTING SVE EXTRACTION WELL
B-1	EXISTING SOIL BORING SVE EXTRACTION WELL
FD-1	EXISTING FLOOR DRAIN SVE EXTRACTION WELL
MW2	EXISTING MONITORING WELL
	PROPERTY LINE

SCALE

20 10 0 20 FT.

NOTES

1. All extraction wells locations are approximately located based on Anson Environmental's field measurements. No survey was conducted to exactly locate extraction well points.

2. Site base map was derived from a property survey prepared by Welsh Engineering & Land Surveying, P.C., 343 Manville Road, Pleasantville, NY 10570, revised on 7/14/00.

3. The Welsh Eningeering north area was corrected based on 1999 Nassau County GIS basemap.

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FOR:
NYSDEC
625 Broadway, 11th Floor,
Albany, New York 12233

DRAWING TITLE:
SVE SYSTEM LAYOUT
218 LAKEVILLE ROAD,
LAKE SUCCESS, NEW YORK

JOB NO: SPGL200
DATE: 4-15-08

DRAWING NO: 4

APPENDIX B

Completed NYSDOH Indoor Air Quality Questionnaire/Building Inventory Sheets

2 University Place

Appendix B
Indoor air quality questionnaire and building inventory

As discussed in Section 2.11, products in buildings should be inventoried every time indoor air is sampled to provide an accurate assessment of the potential contribution of volatile chemicals. In addition, the type of structure, floor layout and physical conditions of the building being studied should be noted to identify (and minimize) conditions that may interfere with the proposed testing.

Toward this end, a blank copy of the NYSDOH Center for Environmental Health's Indoor Air Quality Questionnaire and Building Inventory is provided in this appendix. Also provided is an example that demonstrates how the form should be completed properly.

2 University Place

NEW YORK STATE DEPARTMENT OF HEALTH
INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY
CENTER FOR ENVIRONMENTAL HEALTH

This form must be completed for each residence involved in indoor air testing.

Preparer's Name Jessica Bluth Date/Time Prepared 2/17/16

Preparer's Affiliation Walden Environmental Engineering Phone No. (516) 624-7200

Purpose of Investigation Soil Vapor Intrusion Investigation Former Imperial Cleaners Site (VCP Site # V-00244-1)

1. OCCUPANT:

Interviewed: Y / N

Last Name: Keeling First Name: Betty

Address: 2 University Place, Great Neck

County: Nassau

Home Phone: (516) 466-3531 Office Phone: ________

Number of Occupants/persons at this location 2 Age of Occupants 45 +

2. OWNER OR LANDLORD: (Check if same as occupant ✓)

Interviewed: Y / N

Last Name: Keeling First Name: Bill

Address: Same as above

County: ________

Home Phone: ________ Office Phone: ________

3. BUILDING CHARACTERISTICS

Type of Building: (Circle appropriate response)

Residential	School	Commercial/Multi-use
Industrial	Church	Other: ________

If the property is residential, type? (Circle appropriate response)

Ranch	2-Family	3-Family
Raised Ranch	Split Level	Colonial
Cape Cod	Contemporary	Mobile Home
Duplex	Apartment House	Townhouses/Condos
Modular	Log Home	Other:_______________

If multiple units, how many? ________

If the property is commercial, type?

Business Type(s) ____________________________________

Does it include residences (i.e., multi-use)? Y / N If yes, how many? ______

Other characteristics:

Number of floors 1 + B

Building age ~ 1929

Is the building insulated? Y / N

How air tight? Tight / Average / Not Tight

4. AIRFLOW

Use air current tubes or tracer smoke to evaluate airflow patterns and qualitatively describe:

Airflow between floors

Airflow near source

Outdoor air infiltration

Infiltration into air ducts

5. **BASEMENT AND CONSTRUCTION CHARACTERISTICS** (Circle all that apply)

a. Above grade construction:	wood frame	concrete	stone	brick
b. Basement type:	full	crawlspace	slab	other ________
c. Basement floor:	concrete	dirt	stone	other ________
d. Basement floor:	uncovered	covered	covered with ________	
		except for boiler room		
e. Concrete floor:	unsealed	sealed	sealed with ________	
	re: exposed floor in boiler room			
f. Foundation walls:	poured	block	stone	other ________
g. Foundation walls:	unsealed	sealed	sealed with ________	
h. The basement is:	wet	damp	dry	moldy
i. The basement is:	finished	unfinished	partially finished	
j. Sump present?	Y N	– 5 gallon bucket installed by homeowner in boiler room; top of bucket is reportedly sealed to concrete slab floor.		
k. Water in sump?	Y N / not applicable			

Basement/Lowest level depth below grade: ________(feet)

Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)

sump in boiler room (5 gallon bucket, described above) and floor drain just outside doorway to room containing sub-slab vapor sample location; both covered with plastic sheeting during sample collection

6. **HEATING, VENTING and AIR CONDITIONING** (Circle all that apply)

Type of heating system(s) used in this building: (circle all that apply – note primary)

Hot air circulation	Heat pump	Hot water baseboard	
Space Heaters	Stream radiation	Radiant floor	
Electric baseboard	Wood stove	Outdoor wood boiler	Other ________

The primary type of fuel used is:

Natural Gas	Fuel Oil	Kerosene
Electric	Propane	Solar
Wood	Coal	

Domestic hot water tank fueled by: natural gas

Boiler/furnace located in: Basement Outdoors Main Floor Other________

Air conditioning: Central Air Window units Open Windows None

Are there air distribution ducts present? Y / N

Describe the supply and cold air return ductwork, and its condition where visible, including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.

___

___

___

___

7. OCCUPANCY

Is basement/lowest level occupied? Full-time Occasionally Seldom Almost Never

Level	General Use of Each Floor (e.g., familyroom, bedroom, laundry, workshop, storage)
Basement	office, spare bedroom
1st Floor	living areas, kitchen
2nd Floor	
3rd Floor	
4th Floor	

8. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY

a. Is there an attached garage? Y / N

b. Does the garage have a separate heating unit? Y / N / NA

c. Are petroleum-powered machines or vehicles stored in the garage (e.g., lawnmower, atv, car) Y / N / NA
Please specify gas snow-blower, multiple paint cans, 2 propane tanks, 2 portable gas cans

d. Has the building ever had a fire? Y / N When? ___

e. Is a kerosene or unvented gas space heater present? Y / N Where? ___

f. Is there a workshop or hobby/craft area? Y / N Where & Type? ___

g. Is there smoking in the building? Y / N How frequently? ___

h. Have cleaning products been used recently? Y / N When & Type? ___

i. Have cosmetic products been used recently? Y / N When & Type? ___

j. Has painting/staining been done in the last 6 months? Y / N Where & When? ______________

k. Is there new carpet, drapes or other textiles? Y / N Where & When? ______________

l. Have air fresheners been used recently? Y / N When & Type? ______________

m. Is there a kitchen exhaust fan? Y / N If yes, where vented?____________

n. Is there a bathroom exhaust fan? Y / N If yes, where vented?____________

o. Is there a clothes dryer? Y / N If yes, is it vented outside? Y / N

p. Has there been a pesticide application? Y / N When & Type?______________

Are there odors in the building? Y / N
If yes, please describe: ____

Do any of the building occupants use solvents at work? Y / N
(e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist

If yes, what types of solvents are used? ____

If yes, are their clothes washed at work? Y / N

Do any of the building occupants regularly use or work at a dry-cleaning service? (Circle appropriate response)

Yes, use dry-cleaning regularly (weekly) No
Yes, use dry-cleaning infrequently (monthly or less) Unknown
Yes, work at a dry-cleaning service

Is there a radon mitigation system for the building/structure? Y / N Date of Installation: ___________
Is the system active or passive? Active/Passive

9. WATER AND SEWAGE

Water Supply: Public Water Drilled Well Driven Well Dug Well Other: ______

Sewage Disposal: Public Sewer Septic Tank Leach Field Dry Well Other: ______
?

10. RELOCATION INFORMATION (for oil spill residential emergency)

a. Provide reasons why relocation is recommended: N/A

b. Residents choose to: remain in home relocate to friends/family relocate to hotel/motel

c. Responsibility for costs associated with reimbursement explained? Y / N

d. Relocation package provided and explained to residents? Y / N

11. FLOOR PLANS

Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.

Basement:

First Floor:

12. OUTDOOR PLOT

Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.

Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.

13. PRODUCT INVENTORY FORM

Make & Model of field instrument used: ______________________________

List specific products found in the residence that have the potential to affect indoor air quality.

Location	Product Description	Size (units)	Condition*	Chemical Ingredients	Field Instrument Reading (units)	Photo** Y / N
	Pledge Multi-Surface Cleaner	9.7 oz	U	Basement bedroom		
	Leather care foam (M. Benz)	5.07 oz	U	Basement computer room		
	Great Stuff Foam Sealant	16 oz.	U	" "		
	Febreeze	27 fl. oz.	U	" "		
	3M Super 77 Multi-Purpose Adhesive	16.75 oz	U	Basement entry way		
	Resolve Carpet Cleaner Foam	22 oz	UO	" " "		
	Rust-Oleum Protective Enamel	32 fl. oz	U	Basement laundry room		
	Tide (powder)	7.12 lb	U	" " "		
	Behr Interior Satin Enamel	32 oz	U	" " "		
	Lysol Disinfectant Spray	19 oz	U	" " "		
	Xtra Laundry Detergent	2.68 gal	U	" " " (2 containers total)		
	Goof Off Spot Remover	1 fl. oz	U	" " "		
	Pledge Furniture Polish	12.5 oz	U	" " "		
	Quartet Dry-Erase Cleaner	1.68 fl. oz	U	Basement office		
	Quartet Dry-Erase Markers (5)		U	" "		
	Zep Coconut Verbana Air Freshener	7 oz	U	" "		
	Wet Gel Lubricant	3.5 oz	U	Basement bedroom		

* Describe the condition of the product containers as **Unopened (UO), Used (U),** or **Deteriorated (D)**
** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

4 University Place

Appendix B
Indoor air quality questionnaire and building inventory

As discussed in Section 2.11, products in buildings should be inventoried every time indoor air is sampled to provide an accurate assessment of the potential contribution of volatile chemicals. In addition, the type of structure, floor layout and physical conditions of the building being studied should be noted to identify (and minimize) conditions that may interfere with the proposed testing.

Toward this end, a blank copy of the NYSDOH Center for Environmental Health's Indoor Air Quality Questionnaire and Building Inventory is provided in this appendix. Also provided is an example that demonstrates how the form should be completed properly.

4 University Place

NEW YORK STATE DEPARTMENT OF HEALTH
INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY
CENTER FOR ENVIRONMENTAL HEALTH

This form must be completed for each residence involved in indoor air testing.

Preparer's Name Jessica Bluth Date/Time Prepared 2/17/2016

Preparer's Affiliation Walden Environmental Engineering Phone No. (516) 624-7200

Purpose of Investigation Soil Vapor Intrusion Investigation Former Imperial Cleaners Site (VCP Site # V-00244-1)

1. OCCUPANT:

Interviewed: Y / N

Last Name: ____ First Name: Aby

Address: 4 University Place, Great Neck NY 11020

County: Nassau

Home Phone: (718) 813-2980 Office Phone: ____

Number of Occupants/persons at this location 2 Age of Occupants 45+

2. OWNER OR LANDLORD: (Check if same as occupant ✓)

Interviewed: Y / N

Last Name: ____ First Name: ____

Address: ____

County: ____

Home Phone: ____ Office Phone: ____

3. BUILDING CHARACTERISTICS

Type of Building: (Circle appropriate response)

Residential School Commercial/Multi-use
Industrial Church Other: ____

If the property is residential, type? (Circle appropriate response)

Ranch	2-Family	3-Family
Raised Ranch	Split Level	Colonial
Cape Cod	Contemporary	Mobile Home
Duplex	Apartment House	Townhouses/Condos
Modular	Log Home	Other:______________

If multiple units, how many? N/A

If the property is commercial, type? N/A

Business Type(s) ______________________________

Does it include residences (i.e., multi-use)? Y / N If yes, how many? ______

Other characteristics:

Number of floors 2+B Building age ~1929

Is the building insulated? Y / N How air tight? Tight / Average / Not Tight

4. AIRFLOW

Use air current tubes or tracer smoke to evaluate airflow patterns and qualitatively describe:

Airflow between floors

____

____

____

Airflow near source

____

____

____

Outdoor air infiltration

____

____

____

Infiltration into air ducts

____

____

____

5. **BASEMENT AND CONSTRUCTION CHARACTERISTICS** (Circle all that apply)

a. Above grade construction: wood frame concrete stone brick

b. Basement type: full crawlspace slab other ________

c. Basement floor: concrete dirt stone other ________

d. Basement floor: uncovered covered covered with ____________ except for laundry room

e. Concrete floor: unsealed sealed sealed with ____________ re: exposed floor in laundry room

f. Foundation walls: poured block stone other brick

g. Foundation walls: unsealed sealed partially sealed with paint

h. The basement is: wet damp dry moldy

i. The basement is: finished unfinished partially finished except for laundry room

j. Sump present? Y / N

k. Water in sump? Y / N / not applicable – capped; contains sump pump for discharge to sewer

Basement/Lowest level depth below grade: ________(feet)

Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)

small (~3"ϕ) hole in laundry room concrete slab floor proximal to sub-slab vapor sample location, used as a condensation drain for boiler/furnace equipment; homeowner stated that he installed the drain himself and it extends ~2-3' laterally beneath the floor.

6. **HEATING, VENTING and AIR CONDITIONING** (Circle all that apply)

Type of heating system(s) used in this building: (circle all that apply – note primary)

Hot air circulation ?	Heat pump	Hot water baseboard
Space Heaters	Stream radiation	Radiant floor
Electric baseboard	Wood stove	Outdoor wood boiler Other ________

The primary type of fuel used is:

Natural Gas	Fuel Oil	Kerosene
Electric	Propane	Solar
Wood	Coal	

Domestic hot water tank fueled by: natural gas

Boiler/furnace located in: Basement Outdoors Main Floor Other ________

Air conditioning: Central Air Window units Open Windows None

Are there air distribution ducts present? Y / N

Describe the supply and cold air return ductwork, and its condition where visible, including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.

____

____

____

____

7. OCCUPANCY

Is basement/lowest level occupied? Full-time Occasionally Seldom Almost Never

Level	**General Use of Each Floor (e.g., familyroom, bedroom, laundry, workshop, storage)**
Basement	recreation, laundry, storage
1st Floor	kitchen, living areas, dining room
2nd Floor	bedrooms
3rd Floor	
4th Floor	

8. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY

a. Is there an attached garage? Y / N

b. Does the garage have a separate heating unit? Y / N / NA

c. Are petroleum-powered machines or vehicles stored in the garage (e.g., lawnmower, atv, car) Y / N / NA
Please specify__________

d. Has the building ever had a fire? Y / N When?__________

e. Is a kerosene or unvented gas space heater present? Y / N Where?__________

f. Is there a workshop or hobby/craft area? Y / N Where & Type?__________

g. Is there smoking in the building? Y / N How frequently?__________

h. Have cleaning products been used recently? Y / N When & Type?__________

i. Have cosmetic products been used recently? Y / N When & Type?__________

j. Has painting/staining been done in the last 6 months? Y / N Where & When? ______________

k. Is there new carpet, drapes or other textiles? Y / N Where & When? ______________

l. Have air fresheners been used recently? Y / N When & Type? ______________

m. Is there a kitchen exhaust fan? Y / N If yes, where vented? ____________

n. Is there a bathroom exhaust fan? Y / N If yes, where vented? ____________

o. Is there a clothes dryer? Y / N If yes, is it vented outside? Y / N

p. Has there been a pesticide application? Y / N When & Type? ______________

Are there odors in the building? Y / N
If yes, please describe: ____

Do any of the building occupants use solvents at work? Y / N
(e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist

If yes, what types of solvents are used? ____

If yes, are their clothes washed at work? Y / N

Do any of the building occupants regularly use or work at a dry-cleaning service? (Circle appropriate response)

Yes, use dry-cleaning regularly (weekly)	No
Yes, use dry-cleaning infrequently (monthly or less)	Unknown
Yes, work at a dry-cleaning service	

Is there a radon mitigation system for the building/structure? Y / N Date of Installation: ___________
Is the system active or passive? Active/Passive

9. WATER AND SEWAGE

Water Supply:	Public Water	Drilled Well	Driven Well	Dug Well	Other: _______
Sewage Disposal:	Public Sewer	Septic Tank	Leach Field	Dry Well	Other: _______

10. RELOCATION INFORMATION (for oil spill residential emergency)

a. Provide reasons why relocation is recommended: N/A

b. Residents choose to: remain in home relocate to friends/family relocate to hotel/motel

c. Responsibility for costs associated with reimbursement explained? Y / N

d. Relocation package provided and explained to residents? Y / N

11. FLOOR PLANS

Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.

Basement:

First Floor:

12. OUTDOOR PLOT

Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.

Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.

13. PRODUCT INVENTORY FORM

Make & Model of field instrument used: ______________________________

List specific products found in the residence that have the potential to affect indoor air quality.

Sprayway Fast Open 32 (Screen opener for water-based inks) | 19 oz. spray can | U | Basement bathroom

Location	Product Description	Size (units)	Condition*	Chemical Ingredients	Field Instrument Reading (units)	Photo ** Y / N
	Tide Laundry Detergent	25 oz.	U	Basement Laundry Rm.		
	Kirkland Ultra Clean Laundry Det.	1.51 gal	U	" " "		
	Ultra Snuggle Fabric Softener	1.23 gal	U	" " "		
	Spray N' Wash Stain Remover	650 mL	U	" " "		
	Febreeze Fabric Refresher	33.81 fl.oz	U	" " "		
	Ultra Downey Fabric Softener	34 fl.oz	U	" " "		
	Clorox Disinfecting Wipes (wet)	78 wipes	U	" " "		
	Kirkland Fabric Softener Sheets	250 sheets	U	" " "		
	Clorox 2 Laundry Detergent - Stain	3.52 Qt	U	" " "		
	Remover & Color Booster					
	Febreze Extra Strength	16.9 fl. oz	U	" " "		
	Krasdale All-Purpose Ammonia	64 fl. oz	U	" " "		
	Turtle Wax Concentrated Car Wash	1 gal	U	" " "		
MARKED "OIL"	Eater Cleaner/ Degreaser	1 gal	U	" " "		
	Bonide Household Insect Control	128 fl. oz	U	" " "		
	Raid Max Bug Barrier (2) gA	~~128~~ ← 156 fl. oz	U	" " "		
(x4)	Behr Interior Semi-Gloss Enamel	480 fl. oz	U	" " "		
	Klean Strip Paint Thinner	1 Qt	U	Basement bathroom		
	Glade Carpet & Room Deoderizer	32 oz	U	" "		

* Describe the condition of the product containers as **Unopened (UO), Used (U),** or **Deteriorated (D)**
** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

- Clorox Toilet Bowl Cleaner | 24 fl.oz | Empty | Basement bathroom

- Fantastik Oxy Power | 26 fl.oz | " | " | "
- Epsom Salt | 4 lbs | U | " | "

220 Lakeville Rd.

Appendix B
Indoor air quality questionnaire and building inventory

As discussed in Section 2.11, products in buildings should be inventoried every time indoor air is sampled to provide an accurate assessment of the potential contribution of volatile chemicals. In addition, the type of structure, floor layout and physical conditions of the building being studied should be noted to identify (and minimize) conditions that may interfere with the proposed testing.

Toward this end, a blank copy of the NYSDOH Center for Environmental Health's Indoor Air Quality Questionnaire and Building Inventory is provided in this appendix. Also provided is an example that demonstrates how the form should be completed properly.

220 Lakeville Road

NEW YORK STATE DEPARTMENT OF HEALTH
INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY
CENTER FOR ENVIRONMENTAL HEALTH

This form must be completed for each residence involved in indoor air testing.

Preparer's Name Jessica Bluth Date/Time Prepared 2/17/2016

Preparer's Affiliation Walden Environmental Engineering Phone No. (516) 624-7200

Purpose of Investigation Soil Vapor Intrusion Investigation Former Imperial Cleaners Site (VCP Site # V-00244-1)

1. OCCUPANT:

Interviewed: Y / N

Last Name: Goodstein Development Corporation First Name: ______

Address: 220 Lakeville Road, Great Neck NY 11020

County: Nassau

Home Phone: ______ Office Phone: (516) 482-8222

Number of Occupants/persons at this location < 10 Age of Occupants 25+

2. OWNER OR LANDLORD: (Check if same as occupant ___)

Interviewed: Y / N

Last Name: ______ First Name: ______

Address: ______

County: ______

Home Phone: ______ Office Phone: ______

3. BUILDING CHARACTERISTICS

Type of Building: (Circle appropriate response)

Residential	School	Commercial/Multi-use
Industrial	Church	Other: ______

If the property is residential, type? (Circle appropriate response) N/A – Converted Residence

Ranch	2-Family	3-Family
Raised Ranch	Split Level	Colonial
Cape Cod	Contemporary	Mobile Home
Duplex	Apartment House	Townhouses/Condos
Modular	Log Home	Other:______________

If multiple units, how many? ________

If the property is commercial, type?

Business Type(s) development corp. office

Does it include residences (i.e., multi-use)? Y / N   If yes, how many? ______

Other characteristics:

Number of floors 2 + B   Building age ~1932

Is the building insulated? Y / N   How air tight? Tight / Average / Not Tight

4. AIRFLOW

Use air current tubes or tracer smoke to evaluate airflow patterns and qualitatively describe:

Airflow between floors

____

____

____

Airflow near source

____

____

____

Outdoor air infiltration

____

____

____

Infiltration into air ducts

____

____

____

5. BASEMENT AND CONSTRUCTION CHARACTERISTICS (Circle all that apply)

a. Above grade construction:	wood frame	concrete	stone	brick
b. Basement type:	full	crawlspace	slab	other ________
c. Basement floor:	concrete	dirt	stone	other ________
d. Basement floor:	uncovered	covered	covered with ________	
e. Concrete floor:	unsealed	sealed	sealed with ________	
f. Foundation walls:	poured	block	stone	other brick
g. Foundation walls:	unsealed	partially sealed	sealed with paint	
h. The basement is:	wet	damp	dry	moldy
i. The basement is:	finished	unfinished	partially finished	
j. Sump present?	Y / N			
k. Water in sump?	Y / N / not applicable			

Basement/Lowest level depth below grade: ________(feet)

Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)

crack traversing basement concrete slab floor in same portion of room as sub-slab vapor sample location; appears to coincide with location of underground sewer pipe. Crack sealed with hydraulic cement prior to sampling.

6. HEATING, VENTING and AIR CONDITIONING (Circle all that apply)

Type of heating system(s) used in this building: (circle all that apply – note primary)

Hot air circulation ?	Heat pump	Hot water baseboard	
Space Heaters	Stream radiation	Radiant floor	
Electric baseboard	Wood stove	Outdoor wood boiler	Other ________

The primary type of fuel used is:

Natural Gas	Fuel Oil	Kerosene	* formerly fuel oil
Electric	Propane	Solar	
Wood	Coal		

Domestic hot water tank fueled by: natural gas

Boiler/furnace located in: Basement   Outdoors   Main Floor   Other________

Air conditioning: Central Air   Window units   Open Windows   None

Are there air distribution ducts present? Y / N

Describe the supply and cold air return ductwork, and its condition where visible, including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.

____

____

____

____

7. OCCUPANCY

Is basement/lowest level occupied? Full-time Occasionally Seldom Almost Never

Level	**General Use of Each Floor (e.g., familyroom, bedroom, laundry, workshop, storage)**
Basement	document storage
1st Floor	offices
2nd Floor	
3rd Floor	
4th Floor	

8. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY

- **a. Is there an attached garage?** Y / N
- **b. Does the garage have a separate heating unit?** Y / N / NA
- **c. Are petroleum-powered machines or vehicles stored in the garage** (e.g., lawnmower, atv, car) Y / N / NA Please specify________
- **d. Has the building ever had a fire?** Y / N When?________
- **e. Is a kerosene or unvented gas space heater present?** Y / N Where?________
- **f. Is there a workshop or hobby/craft area?** Y / N Where & Type?________
- **g. Is there smoking in the building?** Y / N How frequently?________
- **h. Have cleaning products been used recently?** Y / N When & Type?________
- **i. Have cosmetic products been used recently?** Y / N When & Type?________

j. Has painting/staining been done in the last 6 months? Y / N Where & When? ______________

k. Is there new carpet, drapes or other textiles? Y / N Where & When? ______________

l. Have air fresheners been used recently? Y / N When & Type? ______________

m. Is there a kitchen exhaust fan? Y / N If yes, where vented?__________

n. Is there a bathroom exhaust fan? Y / N If yes, where vented?__________

o. Is there a clothes dryer? Y / N If yes, is it vented outside? Y / N

p. Has there been a pesticide application? Y / N When & Type?______________

Are there odors in the building? Y / N
If yes, please describe: ____

Do any of the building occupants use solvents at work? Y / N
(e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist

If yes, what types of solvents are used? ______________________________________

If yes, are their clothes washed at work? Y / N

Do any of the building occupants regularly use or work at a dry-cleaning service? (Circle appropriate response)

Yes, use dry-cleaning regularly (weekly) No
Yes, use dry-cleaning infrequently (monthly or less) Unknown
Yes, work at a dry-cleaning service

Is there a radon mitigation system for the building/structure? Y / N Date of Installation: __________
Is the system active or passive? Active/Passive

9. WATER AND SEWAGE

Water Supply: Public Water Drilled Well Driven Well Dug Well Other: ______

Sewage Disposal: Public Sewer Septic Tank Leach Field Dry Well Other: ______
?

10. RELOCATION INFORMATION (for oil spill residential emergency)

a. Provide reasons why relocation is recommended: N/A

b. Residents choose to: remain in home relocate to friends/family relocate to hotel/motel

c. Responsibility for costs associated with reimbursement explained? Y / N

d. Relocation package provided and explained to residents? Y / N

11. FLOOR PLANS

Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.

Basement:

First Floor:

12. OUTDOOR PLOT

Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.

Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.

13. PRODUCT INVENTORY FORM

Make & Model of field instrument used: ____________________

List specific products found in the residence that have the potential to affect indoor air quality.

Location	Product Description	Size (units)	Condition*	Location ~~Chemical Ingredients~~	Field Instrument Reading (units)	Photo** Y / N
	Klean-Strip Lacquer Thinner	1 Qt	U	West basement room		
Gaps & Cracks	Great Stuff Insulating Foam Sealant	16 oz	U	" " "		
	" " Window & Door	16 oz	UO	" " "		
	Klean-Strip Acetone	1 Qt	U	" " "		
	Klean-Strip S-L-X Denatured Alcohol	1 Qt	U	" " " rust on bottom of can		
	Flood Penetrol (Oil-Based Paint Additive)	1 Qt	U	" " " rust on bottom of can		
	Klean-Strip Japan Drier	16 fl.oz	U	" " "		
	Minwax Polyurethane (2)	16 oz. total	U	" " "		
	Minwax Pre-Stain Wood Conditioner	1 Qt	U	" " "		
	Klean-Strip Mineral Spirits	1 gal	U/D	" " " rust on bottom of can		
	DAP Plaster of Paris	4 lbs	U	" " "		
	Acryl Pro Ceramic Tile Adhesive	1 gal	U	" " "		
	Simple Set Thin-Set Mortar	1 gal	U	" " " (for stone, porcelain & ceramic tile)		
	Sheetrock All Purpose Joint Compound	61.7 lbs	U	" " "		
	Comet Spray Gel Mildew Remover	32 fl.oz	U	East basement (file) room		
	Mr. Clean with Febreze Cleaner	1 gal	U	" " "		
	America's Choice White Distilled Vinegar	1 gal	U	" " "		
	Konica Minolta Toner Cartridges	5	U/UO	Central basement room		

* Describe the condition of the product containers as **Unopened (UO), Used (U),** or **Deteriorated (D)**

** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

APPENDIX C
Laboratory Analytical Report

AVAILABLE UPON REQUEST

APPENDIX D
Data Usability Summary Report

Data Usability Summary Report

Soil Vapor Intrusion Investigation
Former Imperial Cleaners Site
218 Lakeville Road, Lake Success, NY
VCP Site #V-00244-1

This Data Usability Summary Report (DUSR) has been prepared in accordance with the NYSDEC Draft DER-10 Appendix 2B Guidance for the Development of Data Usability Summary Reports. The DUSR provides a thorough evaluation of analytical data without using the services of an independent third party data validator. The primary objective of the DUSR is to determine whether or not the data presented meets project specific criteria for data quality and use.

The analytical data were evaluated by Ms. Jessica Bluth (Walden), whose experience and qualifications to prepare the DUSR for this project are presented in the attached resume. The samples collected for laboratory analysis as part of the soil vapor intrusion investigation were submitted to Phoenix Environmental Laboratories, Inc. (Phoenix) of Manchester, NH, a NYSDOH ELAP certified laboratory, and analyzed for VOCs using USEPA Method TO-15 with the analytical detection limits set forth in the NYSDOH SVI guidance document. The DUSR process consisted of evaluating the analytical data package produced by Phoenix and answering the following questions.

1. Were there any deviations in the sampling protocol which deviated from established sampling procedures?

The regulators attached to the 6-liter Summa® canisters were set for 24 hours by the laboratory. The samples were collected over an average of approximately 26 hours, with a sampling flow rate well below the required maximum rate of 0.2 liters (200 mls) per minute.

2. Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?

The sampling and analytical program outlined in the *Soil Vapor Intrusion Investigation Work Plan* (Work Plan; Walden, December 2015) was designed to conform to the NYSDEC ASP Category B and USEPA CLP deliverables criteria. Both field sampling and laboratory analytical activities were performed with built-in QA/QC programs. Duplicate samples were collected at a minimum of one sample per ten samples collected with a minimum of one of each type of sample (i.e. one sub-slab, one indoor air, and one outdoor air). The analytical laboratory (Phoenix) included method blanks and batch QA/QC samples as part of their standard QA/QC program. Additionally, the samples were handled in compliance with the holding time allowances.

3. Have all holding times been met?

Times of sample receipt, extraction, and analysis have been inspected to determine whether the holding time specifications have been met. All of the samples were analyzed within the specified holding times.

4. Do all QC data: blanks, instrument tunings, calibration standards, calibration verifications, surrogate recoveries, spike recoveries, replicate analyses, laboratory controls, and sample data fall within the protocol-required limits and specifications?

All of the primary sample data and QC data were reviewed. Duplicate sample analyses amongst the primary samples (sub-slab soil vapor, indoor air and ambient air) demonstrated a reasonable level of accuracy in the analytical results, and all of the data met the protocol-required criteria with only a few exceptions as noted below.

Batch QA/QC samples were run by the laboratory as part of their standard QA/QC program. Evaluation of the QA/QC data indicated that all laboratory control sample (LCS) recovery and relative percent difference (RPD) values were within required limits with the following exceptions:

- RPDs slightly above the designated limit of 20 were reported for 4-methyl-2-pentanone, acetone and chloromethane in one batch QA/QC sample. These values indicate the potential for slight variability (i.e. reduced precision) in the primary sample results for these analytes. For 4-methyl-2-pentanone and chloromethane, the QC sample results were very close to the reporting limit of 1.00 $\mu g/m^3$; according to a laboratory representative, high RPDs are commonly reported under such circumstances. The RPD exceedances were minor and these compounds are not primary NYSDOH-specified contaminants of concern; therefore, this data does not present an issue.
- The LCS recovery for acetone slightly exceeded criteria in one QA/QC sample, indicating that the acetone results reported for the primary samples may be slightly biased high. Measurable concentrations of acetone were detected in all of the primary environmental samples; however, the concentrations were less than 150 $\mu g/m^3$ and acetone is not a NYSDOH-specified contaminant of concern. Therefore, this LCS exceedance does not present an issue.

- An elevated RPD was reported for tetrachlorothene in one batch QA/QC sample, indicating potential variability in the primary tetrachloroethene sample results. Both the primary and duplicate QA/QC sample results were less than five times the reporting limit of 0.25 $\mu g/m^3$; according to a laboratory representative, as per EPA guidance there is no criteria for RPD under such circumstances. Therefore, the reported RPD value does not present an issue for the relevance of the data.

In summary, although some of the QA/QC sample data did not meet required laboratory criteria, the reliability of the laboratory results should not be affected.

5. Have all the data been generated using established and agreed upon analytical protocols?

Laboratory analytical protocols have been developed by the USEPA and are published in USEPA Compendium Method TO-15 (Determination of Volatile Organic Compounds in Air Collected in Specially Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry). The review of the laboratory deliverables indicated that the analytical data for this project was generated following these standard protocols.

6. Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?

An evaluation of the raw data confirmed the accuracy of the results provided in the data summary sheets and the quality control verification forms included in the analytical data package prepared by the laboratory.

7. Have the correct data qualifiers been used?

The laboratory provided a list of qualifiers used in their data reporting. QC failures such as potential sample contamination by laboratory solvents or estimation of sample result values due to analyte concentrations detected above calibration ranges were checked back to the reported data to determine whether the qualifiers were properly used. The evaluation indicated that the laboratory flagged the data using the correct data qualifiers when necessary. The data qualifiers comply with the NYSDEC ASP 95 revised guidelines.

8. Have the minimum reporting limits been met?

The required reporting limits are 0.25 µg/m^3 for TCE and 1.0 µg/m^3 for all other reportable VOCs. The laboratory utilized reporting limits of 0.25 µg/m^3 for PCE, TCE, vinyl chloride, and carbon tetrachloride, and 1.0 µg/m^3 for all other reportable VOCs.

The required reporting limits were met for all samples with the exception of the sub-slab soil vapor samples (SS-1 through SS-9). According to a laboratory representative, these reporting limits could not be obtained for the sub-slab soil vapor samples due to the concentrations of PCE and other VOCs detected in these samples which were present at concentrations above the calibration range(s) for the laboratory instrumentation. Therefore, these samples were run at dilution factors greater than one (1), resulting in higher reporting limits for all reportable VOCs.

In summary, analytical data package review conducted when preparing this DUSR found no data deficiencies, analytical protocol deviations, or quality control problems that impact the quality of the data. No QC exceedances were identified and it was determined that none of the data should be rejected. Therefore, there is no need for resampling or reanalysis based on the evaluation presented herein.

Prepared by:
Jessica Bluth, M.S.

WALDEN ASSOCIATES

Jessica Bluth
Project Geologist

Ms. Bluth is one of Walden Associates' highly knowledgeable project geologists. She specializes in compliance inspections, tank removal, permitting and violation resolution. She has worked with a diverse clientele, including municipal, commercial, industrial and state markets. Ms. Bluth has conducted numerous soil/groundwater quality and sub-surface investigations and has also performed UST-related services for many commercial and industrial petroleum distribution sites throughout New York state.

EDUCATION

M.S. in Geology
University of Pittsburgh, 2004

B.S. Geology
State University of New York at Binghamton, Harpur College of Arts and Sciences, 2001
cum laude

LICENSE/ CERTIFICATIONS

American Institute of Professional Geologists (AIPG)

Certified Professional Geologist (CPG) certification in progress

OSHA 40-hour HAZWOPER Health and Safety Training

Current Loss Prevention System (LPS) Training

Long Island Association of Professional Geologists

SELECTED RELEVANT EXPERIENCE

Retail Petroleum Spill Sites, Long Island and New York City
Managed activities at 17 spill sites. Coordinated and performed field activities including groundwater and soil sampling, soil boring/well installations, well abandonments, subsurface utility markouts and waste disposal oversight. Prepared technical hydrogeologic reports (Subsurface Investigation Reports, Site Conceptual Models, Exposure Assessments, Well Abandonment Reports, etc.) and associated materials including hydrographs, geologic cross-sections, soil boring/ well construction logs, groundwater potentiometric surface and flow direction maps, and contaminant concentration isocontour maps. Responsibilities included the analysis, interpretation and reporting of data (utilizing EQuIS and GAMA for data management purposes); procurement and review of subcontractor proposals; compliance of project-related work with regulatory protocols and deadlines; third-party correspondence; providing direction to contractors and field technicians; and adherence to health and safety requirements.

Multi-Media Sampling Investigations, Long Island, New York City and Westchester County
Performed groundwater, soil/sediment, sub-slab/soil vapor, indoor air) sampling activities at developed and undeveloped residential, commercial, industrial and municipal sites in accordance with Phase II and other investigations as well as ongoing monitoring programs. Coordinated and directed subcontractors performing excavation and remedial activities, soil boring and well installation activities, utility markouts and ground-penetrating radar surveys. Performed and managed monitoring and remedial activities at New York State Brownfield, Inactive Hazardous Waste Disposal (Superfund), Voluntary Cleanup and Solid Waste Management Program sites throughout Long Island and New York City.

Department of Parks and Recreation, Village of East Hills, East Hills, NY
Conducted a 5-year compliance inspection on a 2,625 gallon AST for the Village's public pool. Developed a detailed Spill Response and Prevention Plan including flow diagrams for possible spill outcomes, first response methods, management responsibilities, instructions in case of fire, effects of the spill inside and outside of the secondary containment facility and instructions for spill reporting.

Department of Highways, Town of Hempstead, Inwood, NY
Performed "dry-as-a-bone" tightness tests on the facility's 2,500-gallon gasoline UST and 4,000-gallon diesel UST in accordance with Nassau County Fire Marhsal's (NCFM) office. Worked with the Department of Highways to address several violations under the Nassau County Health Department (NCHD) and notified NCHD upon completion.

Various Retail Petroleum Sites
Worked with various industrial and commercial petroleum distribution sites throughout New York. Conducted UST removals, compliance testing, permitting and violation resolutions for a variety of clients.

APPENDIX C

2019 Off-site Property Access Outreach Documentation

From:	Nora Brew
To:	"Jones, Joseph (DEC)"; "McLaughlin, Scarlett E (HEALTH)"
Cc:	"Corcoran, Bob (DEC)"; "Erica Johnston"; bowitch@bcalbany.com; "Norman Weisfeld"; "Madeleine Tierney"; "Jessica Bluth"; "Joseph Heaney WALDEN"; "Bethoney, Charlotte M (HEALTH)"
Subject:	RE: Former Imperial Cleaners Site - Template for Letter Requesting Access to Properties for Sampling - C130225
Date:	Thursday, April 4, 2019 4:20:48 PM

Good afternoon – here is an update on the SVI sampling activity -

Walden's field team is now completing the sampling canisters set up in 5 University Place and the 24-hour sample collection has started at 218 Lakeville Road and 220 Lakeville Road. The owners of 3 University Place did not contact us to coordinate the sampling and did not answer the door when we attempted to make contact in person on Tuesday and today. The owners of 216 Lakeville Road did not respond to our letter, phone and in-person requests for access to perform the sampling. The NYSDOH's attempts to get in touch with 3 University Place and 216 Lakeville Road were also unsuccessful.

We will be on-site tomorrow to retrieve the Summa canisters at the end of the 24-hour sampling period. The data will be evaluated and summarized in a report upon receipt from the laboratory.

Please contact me if you have any questions.

Nora

Nora M. Brew, P.E.
Project Manager

Walden Environmental Engineering
16 Spring Street, Oyster Bay, New York 11771(HQ)
Office: (516) 624-7200 (x30) Fax: (516) 624-3219
www.WaldenEnvironmentalEngineering.com

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---

From: Nora Brew <nbrew@Walden-Associates.com>
Sent: Tuesday, April 2, 2019 3:24 PM
To: 'Jones, Joseph (DEC)' <joseph.jones@dec.ny.gov>; 'McLaughlin, Scarlett E (HEALTH)' <scarlett.mclaughlin@health.ny.gov>
Cc: 'Corcoran, Bob (DEC)' <bob.corcoran@dec.ny.gov>; 'Erica Johnston' <ejohnston@walden-associates.com>; 'bowitch@bcalbany.com' <bowitch@bcalbany.com>; 'Norman Weisfeld' <norman@wbrothers.com>; 'Madeleine Tierney' <mtierney@walden-associates.com>; 'Jessica Bluth' <jbluth@walden-associates.com>
Subject: RE: Former Imperial Cleaners Site - Template for Letter Requesting Access to Properties for Sampling - C130225

Good afternoon all,

Here is the latest update on the sampling coordination. This morning, Walden visited the 218 Lakeville Road site as well as 220 Lakeville Road and 5 University Place, which have granted access for sampling. We scoped out the sampling locations and discussed logistics with the property owners. We are coordinating the sampling to start up Thursday and collect the Summa canisters on Friday after 24 hours of sampling.

We also stopped by the law office at 216 Lakeville Road and discussed our plans with the office manager; the owners were out at court appearances. She was aware of our request to perform sampling and said one of the owners was expected back this afternoon so we will call to request confirmation that we can get access to the 216 Lakeville office for sampling on Thursday. The owner of 216 Lakeville will also have to check with his tenant in the rear cottage building to see if the tenant will grant access. I will send an update as soon as we hear back.

We also rang the bell at 3 University Place before and after visiting 5 University Place and no one came to the door. I left a large envelope in the mailbox containing our previous correspondence with a note on the front indicating that we are coordinating the sampling for this Thursday-Friday and requesting that they call Walden. I will let you know if we hear from them.

As it stands now, the sampling will proceed on Thursday (April 4th) as follows (not necessarily in the sequence presented below):

- 218 Lakeville Road – Set up sub-slab vapor and indoor air sampling Summa canisters at the 4 locations previously sampled in the basement (total of 4 sub-slab and 4 indoor air samples, plus one duplicate for each). Note that the sub-slab vapor collection probes previously installed for the Feb. 2016 sampling will be used. Set up outdoor ambient sample canisters (upwind, downwind and duplicate – total of 3 ambient air samples).

- 220 Lakeville Road - Set up sub-slab vapor and indoor air sampling Summa canisters at the location previously sampled in the basement; the sub-slab probe previously installed for the Feb. 2016 sampling will be used (total of 1 sub-slab and 1 indoor air sample).

- 5 University Place – Install sub-slab vapor sampling probe in the basement (location selected during today's visit). Set up sub-slab vapor and indoor air sampling Summa canisters in the basement (total of 1 sub-slab and 1 indoor air sample).

- 3 University Place (**if the owner contacts Walden before Thursday) – Same as described for 5 University Place

- 216 Lakeville Road Law Office (**if the owner grants access) – Same as described for 5 University Place

- 216 Lakeville Road Rear Cottage (**if the owner and tenant both grant access) – Same as described for 5 University Place

The work will be performed in accordance with the December 2015 SVI Investigation Work Plan approved by the State and referenced in the February 2019 Remedial Work Plan approved by the State. Walden will return to each location on Friday to collect the Summa canisters after the 24-hour sampling period.

The weather.gov forecast for Thursday is 56 F daytime high/38 F nighttime low and for Friday is daytime high is 47 F. Please confirm that the State will accept the results of the sampling described above as valid and representative of heating season conditions per the NYSDOH SVI guidance (with updates).

Thank you,
Nora

NORA M. BREW, P.E.
PROJECT MANAGER

WALDEN ENVIRONMENTAL ENGINEERING
16 SPRING STREET, OYSTER BAY, NEW YORK 11771 (HQ)
OFFICE: (516) 624-7200 (X30) FAX: (516) 624-3219
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From: Jones, Joseph (DEC) <joseph.jones@dec.ny.gov>
Sent: Friday, March 29, 2019 1:25 PM
To: Nora Brew <nbrew@Walden-Associates.com>; McLaughlin, Scarlett E (HEALTH) <scarlett.mclaughlin@health.ny.gov>
Cc: Corcoran, Bob (DEC) <bob.corcoran@dec.ny.gov>; 'Erica Johnston' <ejohnston@walden-associates.com>; bowitch@bcalbany.com; 'Norman Weisfeld' <norman@wbrothers.com>; 'Madeleine Tierney' <mtierney@walden-associates.com>
Subject: RE: Former Imperial Cleaners Site - Template for Letter Requesting Access to Properties for Sampling - C130225

Well…..I think that the NYSDOH is best able to answer that question.

Joe J.

From: Nora Brew <nbrew@Walden-Associates.com>
Sent: Friday, March 29, 2019 1:21 PM
To: Jones, Joseph (DEC) <joseph.jones@dec.ny.gov>; McLaughlin, Scarlett E (HEALTH) <scarlett.mclaughlin@health.ny.gov>
Cc: Corcoran, Bob (DEC) <bob.corcoran@dec.ny.gov>; 'Erica Johnston' <ejohnston@walden-associates.com>; bowitch@bcalbany.com; 'Norman Weisfeld' <norman@wbrothers.com>; 'Madeleine Tierney' <mtierney@walden-associates.com>
Subject: RE: Former Imperial Cleaners Site - Template for Letter Requesting Access to Properties for Sampling - C130225

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Joe,

We will reach out to three who granted access (we only have a mailing address for 3 University Place and have not received a response to our request for a phone # or email address) try to make arrangements. The forecast for next shows temperatures in the high 50's. Would the State consider that to be warm weather?

Nora M. Brew, P.E.
Project Manager

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From: Jones, Joseph (DEC) <joseph.jones@dec.ny.gov>
Sent: Friday, March 29, 2019 11:13 AM
To: Nora Brew <nbrew@Walden-Associates.com>; McLaughlin, Scarlett E (HEALTH) <scarlett.mclaughlin@health.ny.gov>
Cc: Corcoran, Bob (DEC) <bob.corcoran@dec.ny.gov>; 'Erica Johnston' <ejohnston@walden-associates.com>; bowitch@bcalbany.com; Norman Weisfeld <norman@wbrothers.com>; 'Madeleine Tierney' <mtierney@walden-associates.com>
Subject: RE: Former Imperial Cleaners Site - Template for Letter Requesting Access to Properties for Sampling - C130225

Nora,

I believe the best approach (which I approve) would be to sample those residences for which you have permission ASAP. If you do this, try to avoid warm weather as much as possible.

Joe J.

From: Nora Brew <nbrew@Walden-Associates.com>
Sent: Friday, March 29, 2019 9:46 AM
To: McLaughlin, Scarlett E (HEALTH) <scarlett.mclaughlin@health.ny.gov>
Cc: Corcoran, Bob (DEC) <bob.corcoran@dec.ny.gov>; Jones, Joseph (DEC) <joseph.jones@dec.ny.gov>; 'Erica Johnston' <ejohnston@walden-associates.com>; bowitch@bcalbany.com; Norman Weisfeld <norman@wbrothers.com>; 'Madeleine Tierney' <mtierney@walden-associates.com>
Subject: RE: Former Imperial Cleaners Site - Template for Letter Requesting Access to Properties for Sampling - C130225

Scarlett,

Please let me know if you have any updates with respect to the sampling. We have had no further contact with any of the properties.

Nora

Nora M. Brew, P.E.
Project Manager

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From: Nora Brew <nbrew@Walden-Associates.com>
Sent: Tuesday, March 26, 2019 11:29 AM
To: 'McLaughlin, Scarlett E (HEALTH)' <scarlett.mclaughlin@health.ny.gov>
Cc: 'Corcoran, Bob (DEC)' <bob.corcoran@dec.ny.gov>; 'Jones, Joseph (DEC)' <joseph.jones@dec.ny.gov>; 'Erica Johnston' <ejohnston@walden-associates.com>; 'bowitch@bcalbany.com' <bowitch@bcalbany.com>; Norman Weisfeld (norman@wbrothers.com) <norman@wbrothers.com>; 'Madeleine Tierney' <mtierney@walden-associates.com>
Subject: RE: Former Imperial Cleaners Site - Template for Letter Requesting Access to Properties for Sampling - C130225

Scarlett,

We have no further information on a contact phone number for 4 (now 6) University Place; I assume you've had no luck either despite your DOH reps speaking to a teenager who lives in that house last week and leaving your contact info. We sent a certified letter to 3 University Place requesting a phone # or email address so we can coordinate the sampling schedule and hope to get a response today since the letter would have been delivered by yesterday.

We have a contractor on standby and at this point, we cannot coordinate with the property owners and schedule the sampling until the State advises us of the next steps. Please get back to us as soon as possible so we can move forward with coordinating the work. I anticipate it taking a few days of back and forth with the various property owners to schedule two consecutive days that work for all parties. 220 Lakeville Road will only provide access during Monday – Friday business hours, so we plan to work within that window.

What is the maximum outdoor temperature DOH will consider for the heating season? Next week takes us into April and the current 10-day forecast for Great Neck shows temperatures in the 50's. Please confirm that the State will consider the SVI sampling, if conducted next week, representative of heating season conditions and sufficient to support the remedial design.

Thanks,
Nora

Nora M. Brew, P.E.
Project Manager

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From: McLaughlin, Scarlett E (HEALTH) <scarlett.mclaughlin@health.ny.gov>
Sent: Tuesday, March 26, 2019 10:55 AM
To: Nora Brew <nbrew@Walden-Associates.com>
Cc: Corcoran, Bob (DEC) <bob.corcoran@dec.ny.gov>; Jones, Joseph (DEC) <joseph.jones@dec.ny.gov>
Subject: RE: Former Imperial Cleaners Site - Template for Letter Requesting Access to Properties for Sampling - C130225

Nora-

I am sorry that I have been swamped and did not call you back yesterday. Today is a very full day as well but I wanted to update you so you know where we are in the process. We are still awaiting call backs (telephone tag with 216 Lakeville) and discussing the next steps internally. Did you ever get a phone number for 6 University Place (previously 4)?

Bob or Joe will get back to you after we have made our determination. Is there something else that you wished to discuss?

Scarlett McLaughlin, P.G.
Public Health Specialist
New York State Department of Health
Bureau of Environmental Exposure Investigation
Empire State Plaza - Corning Tower Room 1787
Albany, NY 12237
Phone: (518) 402-7860
Fax: (518) 402-7859
Email: *Scarlett.McLaughlin@health.ny.gov*

From: Nora Brew <nbrew@Walden-Associates.com>
Sent: Tuesday, March 26, 2019 9:26 AM
To: McLaughlin, Scarlett E (HEALTH) <scarlett.mclaughlin@health.ny.gov>
Subject: RE: Former Imperial Cleaners Site - Template for Letter Requesting Access to Properties for Sampling - C130225

Scarlett,

Good morning – please call me.

Thank you,

Nora

Nora M. Brew, P.E.
Project Manager

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From: Nora Brew <nbrew@Walden-Associates.com>
Sent: Monday, March 25, 2019 4:34 PM
To: 'McLaughlin, Scarlett E (HEALTH)' <scarlett.mclaughlin@health.ny.gov>
Cc: 'Erica M Johnston' <ejohnston@walden-associates.com>; 'Jones, Joseph (DEC)' <joseph.jones@dec.ny.gov>; 'Corcoran, Bob (DEC)' <bob.corcoran@dec.ny.gov>; 'Bethoney, Charlotte M (HEALTH)' <charlotte.bethoney@health.ny.gov>; 'bowitch@bcalbany.com' <bowitch@bcalbany.com>; 'norman@wbrothers.com' <norman@wbrothers.com>
Subject: RE: Former Imperial Cleaners Site - Template for Letter Requesting Access to Properties for Sampling - C130225

Scarlett,

Please provide an update on the DOH's efforts to coordinate sampling with the off-site property owners. We have had no further contact with any of the property owners since our last update a week ago.

Nora

Nora M. Brew, P.E.
Project Manager

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From: Nora Brew <nbrew@Walden-Associates.com>
Sent: Monday, March 18, 2019 1:09 PM
To: 'McLaughlin, Scarlett E (HEALTH)' <scarlett.mclaughlin@health.ny.gov>
Cc: 'Erica M Johnston' <ejohnston@walden-associates.com>; 'Jones, Joseph (DEC)' <joseph.jones@dec.ny.gov>; 'Corcoran, Bob (DEC)' <bob.corcoran@dec.ny.gov>; 'Bethoney, Charlotte M (HEALTH)' <charlotte.bethoney@health.ny.gov>; 'bowitch@bcalbany.com' <bowitch@bcalbany.com>; 'norman@wbrothers.com' <norman@wbrothers.com>
Subject: RE: Former Imperial Cleaners Site - Template for Letter Requesting Access to Properties for

Sampling - C130225

Scarlett,

No details, they just returned the last page of the letter and indicated access denied.

Nora

Nora M. Brew, P.E.
Project Manager

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From: McLaughlin, Scarlett E (HEALTH) <scarlett.mclaughlin@health.ny.gov>
Sent: Monday, March 18, 2019 1:02 PM
To: Nora Brew <nbrew@Walden-Associates.com>
Cc: 'Erica M Johnston' <ejohnston@walden-associates.com>; Jones, Joseph (DEC) <joseph.jones@dec.ny.gov>; Corcoran, Bob (DEC) <bob.corcoran@dec.ny.gov>; Bethoney, Charlotte M (HEALTH) <charlotte.bethoney@health.ny.gov>; bowitch@bcalbany.com; norman@wbrothers.com
Subject: RE: Former Imperial Cleaners Site - Template for Letter Requesting Access to Properties for Sampling - C130225

Hi Nora,

Is there any additional information as to why access was denied? Thanks.

Scarlett McLaughlin, P.G.
Public Health Specialist
New York State Department of Health
Bureau of Environmental Exposure Investigation
Empire State Plaza - Corning Tower Room 1787
Albany, NY 12237
Phone: (518) 402-7860
Fax: (518) 402-7859
Email: *Scarlett.McLaughlin@health.ny.gov*

From: Nora Brew <nbrew@Walden-Associates.com>
Sent: Monday, March 18, 2019 1:00 PM
To: McLaughlin, Scarlett E (HEALTH) <scarlett.mclaughlin@health.ny.gov>
Cc: 'Erica M Johnston' <ejohnston@walden-associates.com>; Jones, Joseph (DEC) <joseph.jones@dec.ny.gov>; Corcoran, Bob (DEC) <bob.corcoran@dec.ny.gov>; Bethoney, Charlotte

M (HEALTH) <charlotte.bethoney@health.ny.gov>; bowitch@bcalbany.com; norman@wbrothers.com
Subject: RE: Former Imperial Cleaners Site - Template for Letter Requesting Access to Properties for Sampling - C130225

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Scarlett,

We received two responses this morning denying access to 1 University Place and 99 Briarfield Drive. I've updated the attached table accordingly. Thus far, the owners of 3 University Place, 5 University Place and 220 Lakeville Road have granted access.

Nora

Nora M. Brew, P.E.
Project Manager

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From: Nora Brew <nbrew@Walden-Associates.com>
Sent: Thursday, March 14, 2019 10:22 AM
To: 'scarlett.mclaughlin@health.ny.gov' <scarlett.mclaughlin@health.ny.gov>
Cc: 'Erica M Johnston' <ejohnston@walden-associates.com>; 'joseph.jones@dec.ny.gov' <joseph.jones@dec.ny.gov>; 'bob.corcoran@dec.ny.gov' <bob.corcoran@dec.ny.gov>; 'charlotte.bethoney@health.ny.gov' <charlotte.bethoney@health.ny.gov>; 'bowitch@bcalbany.com' <bowitch@bcalbany.com>; 'norman@wbrothers.com' <norman@wbrothers.com>
Subject: RE: Former Imperial Cleaners Site - Template for Letter Requesting Access to Properties for Sampling - C130225

Scarlett,

Based on our conversation earlier this morning, I'm attaching a spreadsheet with a summary of the contacts we have made to date.

Thanks,
Nora

Nora M. Brew, P.E.
Project Manager

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From: Erica M Johnston <ejohnston@walden-associates.com>
Sent: Friday, March 8, 2019 2:40 PM
To: scarlett.mclaughlin@health.ny.gov; joseph.jones@dec.ny.gov; bob.corcoran@dec.ny.gov; charlotte.bethoney@health.ny.gov; bowitch@bcalbany.com; norman@wbrothers.com
Cc: 'Nora Brew' <nbrew@Walden-Associates.com>
Subject: RE: Former Imperial Cleaners Site - Template for Letter Requesting Access to Properties for Sampling - C130225

Hi Scarlett,

We sent out the letters on 2/19/19 via certified mail and I've been following up with phone calls (for those I have the numbers for). Here is a breakdown of the responses/non responses we have gotten so far:

1 University Place: Did not receive a receipt for certified mail, unable to contact via phone.

99 Briarfield Drive: Did not receive a receipt for certified mail, unable to contact via phone.

1 University Road: Did not receive a receipt for certified mail, unable to contact via phone.

4 University Place: Did not receive a receipt for certified mail. I spoke to the old owner, Ms. Inna Zade, who indicated she is no longer the owner of the property but would try to get me an updated contact number for the current owner.

2 University Place: Received via certified mail. I spoke with Ms. Betty Keeling today. She does not want us to enter the property. Access denied.

216 Lakeville Road: Received via certified mail. I left a voice mail and message for Gary Rosen, but have not received a written response/phone call back.

220 Lakeville Road: Received via certified mail. Access granted via letter.

3 University Place: Received via certified mail. Access granted via letter.

5 University Place: Received via certified mail. Access granted via letter.

224 Lakeville Road: Received via certified mail. No response.

Let me know if you have any other questions. Thanks!

Erica Johnston
Environmental Scientist

Walden Environmental Engineering

16 Spring Street, Oyster Bay, New York 11771(HQ)
Office: (516) 624-7200, Fax: (516) 624-3219
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From: McLaughlin, Scarlett E (HEALTH) <scarlett.mclaughlin@health.ny.gov>
Sent: Wednesday, March 6, 2019 2:39 PM
To: Nora Brew <nbrew@Walden-Associates.com>; Jones, Joseph (DEC) <joseph.jones@dec.ny.gov>; Corcoran, Bob (DEC) <bob.corcoran@dec.ny.gov>; Bethoney, Charlotte M (HEALTH) <charlotte.bethoney@health.ny.gov>
Cc: 'Gary Bowitch' <bowitch@bcalbany.com>; Norman Weisfeld <norman@wbrothers.com>; 'Erica M Johnston' <ejohnston@walden-associates.com>
Subject: RE: Former Imperial Cleaners Site - Template for Letter Requesting Access to Properties for Sampling - C130225

Hi Nora,

I hope all is well. I am checking in to see if you have received any responses from the surrounding community regarding the SVI sampling. Please let us know, thanks.

Scarlett McLaughlin, P.G.
Public Health Specialist
New York State Department of Health
Bureau of Environmental Exposure Investigation
Empire State Plaza - Corning Tower Room 1787
Albany, NY 12237
Phone: (518) 402-7860
Fax: (518) 402-7859
Email: *Scarlett.McLaughlin@health.ny.gov*

From: Nora Brew <nbrew@Walden-Associates.com>
Sent: Wednesday, February 20, 2019 1:13 PM
To: Jones, Joseph (DEC) <joseph.jones@dec.ny.gov>; Corcoran, Bob (DEC) <bob.corcoran@dec.ny.gov>; McLaughlin, Scarlett E (HEALTH) <scarlett.mclaughlin@health.ny.gov>; Bethoney, Charlotte M (HEALTH) <charlotte.bethoney@health.ny.gov>; Vooris, Christine N (HEALTH) <Christine.Vooris@health.ny.gov>
Cc: 'Gary Bowitch' <bowitch@bcalbany.com>; Norman Weisfeld <norman@wbrothers.com>; 'Erica M Johnston' <ejohnston@walden-associates.com>
Subject: RE: Former Imperial Cleaners Site - Template for Letter Requesting Access to Properties for Sampling

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Good afternoon,

The attached letters were sent yesterday by certified mail to the off-site property owners requesting access for sampling. We will let you know of the response as we hear back. Note that the photo page presented after the first letter in the pdf file was included with each letter. Please call me if you have any questions.

Nora

Nora M. Brew, P.E.
Project Manager

Walden Environmental Engineering
16 Spring Street, Oyster Bay, New York 11771 (HQ)
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From: Nora Brew <nbrew@Walden-Associates.com>
Sent: Friday, February 15, 2019 12:58 PM
To: 'Jones, Joseph (DEC)' <joseph.jones@dec.ny.gov>; 'Corcoran, Bob (DEC)' <bob.corcoran@dec.ny.gov>; 'McLaughlin, Scarlett E (HEALTH)' <scarlett.mclaughlin@health.ny.gov>; 'Bethoney, Charlotte M (HEALTH)' <charlotte.bethoney@health.ny.gov>; 'Vooris, Christine N (HEALTH)' <Christine.Vooris@health.ny.gov>
Cc: 'Gary Bowitch' <bowitch@bcalbany.com>; Norman Weisfeld (norman@wbrothers.com) <norman@wbrothers.com>; 'Joseph Heaney' <jheaney@walden-associates.com>; 'Erica M Johnston' <ejohnston@walden-associates.com>
Subject: Former Imperial Cleaners Site - Template for Letter Requesting Access to Properties for Sampling

Good afternoon,

On Tuesday afternoon (February 19th), Walden will send out the attached letter to off-site property owners requesting access to perform the soil vapor intrusion sampling detailed in the February 2019 Remedial Work Plan approved by DEC and DOH earlier this week. Please call me if you have any questions or comments.

Thank you,
Nora

Nora M. Brew, P.E.
Project Manager

Walden Environmental Engineering

16 Spring Street, Oyster Bay, New York 11771(HQ)
Office: (516) 624-7200 (x30), Fax: (516) 624-3219
https://protect2.fireeye.com/url?k=68d94ad2-34fc46b1-68dbb3e7-0cc47aa88e08-899d1ffc11b38ff6&u=https://protect2.fireeye.com/url?k=ddc82455-81ec251c-ddcadd60-0cc47aa8d394-8b2dcfc9e00f7c97&u=https://protect2.fireeye.com/url?k=d169491e-8d4d4857-d16bb02b-0cc47aa8d394-4f973900a7600be2&u=https://protect2.fireeye.com/url?k=8ac9aa7a-d6ef9e21-8acb534f-000babd905ee-33aca8f3f625910b&u=http://www.waldenenvironmentalengineering.com/

Additional Locations
Capital District * Hudson Valley

Providing environmental consulting, civil/environmental engineering, and Geographic Information Systems services since 1995.

Walden continues to grow through referrals from clients and friends like you

WALDEN ENVIRONMENTAL ENGINEERING

Sent by Certified Mail # 70170530000089406804

February 19, 2019

PROPERTY OWNER
1 UNIVERSITY PLACE
LAKE SUCCESS, NY 11020

Re: Permission for Property Access
1 UNIVERSITY PLACE
LAKE SUCCESS, NEW YORK

To Whom it May Concern:

Walden Environmental Engineering, PLLC ("Walden") is the environmental consulting engineer for 218 Lakeville Aquisition LLC, the owner of property located at 218 Lakeville Road, Lake Success, New York (the "Site") and has been engaged to investigate and remediate historic environmental impacts on the Property. Walden is in the process of collecting data to finalize the cleanup plan for the Site which was formerly occupied by Imperial Cleaners.

The investigation and cleanup of the Site is being overseen by the New York State Department of Environmental Conservation ("NYSDEC") under the Brownfield Cleanup Program ("BCP"). The NYSDEC designated the Former Imperial Cleaners Site BCP Site #C130225. In accordance with the Citizen Participation Plan, project documents can be accessed at Station Library located at 26 Great Neck Road, Great Neck, New York 11021. The Site owner is working with the NYSDEC and the New York State Department of Health ("NYSDOH") to investigate and remediate the Site so that this matter can be closed pursuant to BCP site closure requirements.

Access to your property, located at 1 UNIVERSITY PLACE, LAKE SUCCESS, NEW YORK is requested to perform indoor air and sub-slab soil vapor sampling to determine if Site contamination is affecting your indoor air quality. The sampling results will be used to finalize design of the Site remedial program and develop a post-cleanup management plan for the Site. All of the work will be performed in accordance with a work plan reviewed and approved by both the NYSDEC and NYSDOH, consistent with procedures and guidelines established by New York State. All sampling

will be coordinated by Walden, which will oversee the work of qualified subcontractors who will be retained to conduct the actual drilling and sampling efforts.

The work to be conducted at 1 UNIVERSITY PLACE, LAKE SUCCESS, NEW YORK is detailed below with a tentative sequence of events. Please note your presence is required during the times that Walden and the subcontractors are to be on your property. Refer to the attached photographs for additional information.

First Day (Walden, Utility Mark-out Subcontractor and Drilling Subcontractor)

- Walden will inspect the basement/lowest level of your property to inventory chemicals stored on-site (such as cleaning products, paints, etc.) and select an appropriate location for sampling. The sampling location will be selected in an area with an unfinished floor if possible.
- A utility mark-out contractor will perform a Ground Penetrating Radar (GPR) survey to mark out the proposed sampling location and to ensure that no sub-surface structures and/or utility lines will be impacted by the investigation.
- After an appropriate sampling location has been selected based on Walden's inspection and the GPR survey (and approved by the property owner), the drilling contractor will drill through the basement/lowest level floor slab and install a temporary sub-slab sampling port below the concrete slab. (Note that the floor surface will be restored with cement immediately after the sample is collected.) A small diameter hole (approximately one inch) will be drilled through the concrete floor slab and into sub-slab material approximately two (2) inches below the bottom of the floor slab. A temporary probe constructed from inert tubing (e.g. polyethylene, stainless steel, nylon, Teflon®, etc.) will be installed and sealed to the floor. Testing will be performed to ensure that the seal is tight.
- Walden will set up air sampling canisters to collect one sub-slab vapor sample and one indoor air sample from the basement/lowest level of the property.
- The sub-slab vapor sample will be collected from the temporary sub-slab sampling port installed below the concrete slab.
- The indoor air sample will be collected concurrently with the sub-slab vapor sample, at approximately the same location as the sub-slab vapor sample.
- A sampling canister will be placed adjacent to the sub-slab sampling port and the indoor air sampling location. The sub-slab and indoor air samples will be collected using laboratory-provided sampling canisters over a 24-hour period.
- The sampling probe, canisters and all sampling equipment must not be disturbed during the sampling period.

- The total anticipated time within your residence for this portion of the work would be approximately two (2) to three (3) hours.

Second Day (Walden)

- Walden will return at the end of the 24-hour sampling period to remove the sampling canisters. The tubing used to connect the sub-slab vapor sampling canister to the probe will be removed. The sub-slab vapor probe will then be removed and the floor surface will be restored in kind.
- The total anticipated time within your residence for this portion of the work would be approximately 30 minutes.

The Site owner and Walden will comply with the following conditions of access to the 1 UNIVERSITY PLACE, LAKE SUCCESS, NEW YORK property:

- The property owner will be notified at least 10 days prior to the scheduled sampling date. This sampling is required by the NYSDOH and NYSDEC under an approved work plan that states the sampling is to take place during the heating season, which will end on or about March 31, 2019. Please indicate below any dates when you are unavailable to provide Walden entry to the property, so the sampling can be scheduled accordingly.
- The procedures set forth in the sampling work plan approved by the NYSDEC and NYSDOH will be followed. A copy of this work plan will be made available to you upon request. Walden will strive to schedule the work and subcontractors so that access to the property is required only two (2) times: once to install the sampling location, and set the canister(s) for sampling; and once after the canisters are set (approximately 24 hours after the sampling begins) to retrieve them. Note that this sampling is being coordinated with approximately ten (10) other properties with the goal of sampling all locations concurrently. Walden will attempt to accommodate your scheduling preferences to the extent feasible.
- The work will be performed in a clean and orderly fashion.

Please sign below to indicate your permission (or denial of permission) to allow the Site Owner and Walden to access the 1 UNIVERSITY PLACE, LAKE SUCCESS, NY property for the sampling described herein, and return to Walden by mail (stamped envelope enclosed), fax to 516-624-3219, or email to nbrew@walden-associates.com. Kindly respond to this letter with your permission or denial of permission within five (5) business days of receipt so that sampling may begin.

If you have any questions, please contact Scarlett McLaughlin at the New York State Department of Health at 518-402-7860, Joseph Jones at the New York State Department of Environmental Conservation at 518-402-9621, or Nora Brew at Walden Environmental Engineering at (516) 624-7200.

Thank you for your courtesy and cooperation.

Very truly yours,
Walden Environmental Engineering, PLLC.

Nora M. Brew, P.E.
Project Manager

ACCESS AUTHORIZED BY OWNER OF PROPERTY LOCATED AT
1 UNIVERSITY PLACE, LAKE SUCCESS, NEW YORK:

___________________________ ___________________________
Signature Date

____
Print Name

-OR-

ACCESS DENIED BY OWNER OF PROPERTY LOCATED AT
1 UNIVERSITY PALCE, LAKE SUCCESS, NEW YORK:

___________________________ ___________________________
Signature Date

____
Print Name

Please list any dates when access to your property is not available: ______________________

Example Photographs of Indoor Air Quality Investigation Sampling

1. Performance of a Ground Penetrating Radar (GPR) survey to select safe location for sub slab drilling.

2. View of drilling equipment into a building slab.

3. Alternate view of drilling equipment into a building slab.

4. View of sub slab vapor sampling probe to be installed in a hole drilled through a building slab.

5. View of Summa canisters collecting indoor air and sub slab vapor samples (to be performed over a 24-hour time frame).

WALDEN ENVIRONMENTAL ENGINEERING

Sent by Certified Mail # 70170530000089406873

February 19, 2019

PROPERTY OWNER
1 UNIVERSITY ROAD
LAKE SUCCESS, NY 11020

Re: Permission for Property Access
1 UNIVERSITY ROAD
LAKE SUCCESS, NEW YORK

To Whom it May Concern:

Walden Environmental Engineering, PLLC ("Walden") is the environmental consulting engineer for 218 Lakeville Aquisition LLC, the owner of property located at 218 Lakeville Road, Lake Success, New York (the "Site") and has been engaged to investigate and remediate historic environmental impacts on the Property. Walden is in the process of collecting data to finalize the cleanup plan for the Site which was formerly occupied by Imperial Cleaners.

The investigation and cleanup of the Site is being overseen by the New York State Department of Environmental Conservation ("NYSDEC") under the Brownfield Cleanup Program ("BCP"). The NYSDEC designated the Former Imperial Cleaners Site BCP Site #C130225. In accordance with the Citizen Participation Plan, project documents can be accessed at Station Library located at 26 Great Neck Road, Great Neck, New York 11021. The Site owner is working with the NYSDEC and the New York State Department of Health ("NYSDOH") to investigate and remediate the Site so that this matter can be closed pursuant to BCP site closure requirements.

Access to your property, located at 1 UNIVERSITY ROAD, LAKE SUCCESS, NEW YORK is requested to perform indoor air and sub-slab soil vapor sampling to determine if Site contamination is affecting your indoor air quality. The sampling results will be used to finalize design of the Site remedial program and develop a post-cleanup management plan for the Site. All of the work will be performed in accordance with a work plan reviewed and approved by both the NYSDEC and NYSDOH, consistent with procedures and guidelines established by New York State. All sampling

will be coordinated by Walden, which will oversee the work of qualified subcontractors who will be retained to conduct the actual drilling and sampling efforts.

The work to be conducted at 1 UNIVERSITY ROAD, LAKE SUCCESS, NEW YORK is detailed below with a tentative sequence of events. Please note your presence is required during the times that Walden and the subcontractors are to be on your property. Refer to the attached photographs for additional information.

First Day (Walden, Utility Mark-out Subcontractor and Drilling Subcontractor)

- Walden will inspect the basement/lowest level of your property to inventory chemicals stored on-site (such as cleaning products, paints, etc.) and select an appropriate location for sampling. The sampling location will be selected in an area with an unfinished floor if possible.
- A utility mark-out contractor will perform a Ground Penetrating Radar (GPR) survey to mark out the proposed sampling location and to ensure that no sub-surface structures and/or utility lines will be impacted by the investigation.
- After an appropriate sampling location has been selected based on Walden's inspection and the GPR survey (and approved by the property owner), the drilling contractor will drill through the basement/lowest level floor slab and install a temporary sub-slab sampling port below the concrete slab. (Note that the floor surface will be restored with cement immediately after the sample is collected.) A small diameter hole (approximately one inch) will be drilled through the concrete floor slab and into sub-slab material approximately two (2) inches below the bottom of the floor slab. A temporary probe constructed from inert tubing (e.g. polyethylene, stainless steel, nylon, Teflon®, etc.) will be installed and sealed to the floor. Testing will be performed to ensure that the seal is tight.
- Walden will set up air sampling canisters to collect one sub-slab vapor sample and one indoor air sample from the basement/lowest level of the property.
- The sub-slab vapor sample will be collected from the temporary sub-slab sampling port installed below the concrete slab.
- The indoor air sample will be collected concurrently with the sub-slab vapor sample, at approximately the same location as the sub-slab vapor sample.
- A sampling canister will be placed adjacent to the sub-slab sampling port and the indoor air sampling location. The sub-slab and indoor air samples will be collected using laboratory-provided sampling canisters over a 24-hour period.
- The sampling probe, canisters and all sampling equipment must not be disturbed during the sampling period.

- The total anticipated time within your residence for this portion of the work would be approximately two (2) to three (3) hours.

Second Day (Walden)

- Walden will return at the end of the 24-hour sampling period to remove the sampling canisters. The tubing used to connect the sub-slab vapor sampling canister to the probe will be removed. The sub-slab vapor probe will then be removed and the floor surface will be restored in kind.
- The total anticipated time within your residence for this portion of the work would be approximately 30 minutes.

The Site owner and Walden will comply with the following conditions of access to the 1 UNIVERSITY ROAD, LAKE SUCCESS, NEW YORK property:

- The property owner will be notified at least 10 days prior to the scheduled sampling date. This sampling is required by the NYSDOH and NYSDEC under an approved work plan that states the sampling is to take place during the heating season, which will end on or about March 31, 2019. Please indicate below any dates when you are unavailable to provide Walden entry to the property, so the sampling can be scheduled accordingly.
- The procedures set forth in the sampling work plan approved by the NYSDEC and NYSDOH will be followed. A copy of this work plan will be made available to you upon request. Walden will strive to schedule the work and subcontractors so that access to the property is required only two (2) times: once to install the sampling location, and set the canister(s) for sampling; and once after the canisters are set (approximately 24 hours after the sampling begins) to retrieve them. Note that this sampling is being coordinated with approximately ten (10) other properties with the goal of sampling all locations concurrently. Walden will attempt to accommodate your scheduling preferences to the extent feasible.
- The work will be performed in a clean and orderly fashion.

Please sign below to indicate your permission (or denial of permission) to allow the Site Owner and Walden to access the 1 UNIVERSITY ROAD, LAKE SUCCESS, NY property for the sampling described herein, and return to Walden by mail (stamped envelope enclosed), fax to 516-624-3219, or email to nbrew@walden-associates.com. Kindly respond to this letter with your permission or denial of permission within five (5) business days of receipt so that sampling may begin.

If you have any questions, please contact Scarlett McLaughlin at the New York State Department of Health at 518-402-7860, Joseph Jones at the New York State Department of Environmental Conservation at 518-402-9621, or Nora Brew at Walden Environmental Engineering at (516) 624-7200.

Thank you for your courtesy and cooperation.

Very truly yours,
Walden Environmental Engineering, PLLC.

Nora M. Brew, P.E.
Project Manager

ACCESS AUTHORIZED BY OWNER OF PROPERTY LOCATED AT
1 UNIVERSITY ROAD, LAKE SUCCESS, NEW YORK:

___________________________ ___________________________
Signature Date

____
Print Name

-OR-

ACCESS DENIED BY OWNER OF PROPERTY LOCATED AT
1 UNIVERSITY ROAD, LAKE SUCCESS, NEW YORK:

___________________________ ___________________________
Signature Date

____
Print Name

Please list any dates when access to your property is not available: ______________________

WALDEN ENVIRONMENTAL ENGINEERING

Sent by Certified Mail # 70170530000089406798

February 19, 2019

PROPERTY OWNER
2 UNIVERSITY PLACE
LAKE SUCCESS, NY 11020

Re: Permission for Property Access
2 UNIVERSITY PLACE
LAKE SUCCESS, NEW YORK

To Whom it May Concern:

Walden Environmental Engineering, PLLC ("Walden") is the environmental consulting engineer for 218 Lakeville Aquisition LLC, the owner of property located at 218 Lakeville Road, Lake Success, New York (the "Site") and has been engaged to investigate and remediate historic environmental impacts on the Property. Walden is in the process of collecting data to finalize the cleanup plan for the Site which was formerly occupied by Imperial Cleaners.

The investigation and cleanup of the Site is being overseen by the New York State Department of Environmental Conservation ("NYSDEC") under the Brownfield Cleanup Program ("BCP"). The NYSDEC designated the Former Imperial Cleaners Site BCP Site #C130225. In accordance with the Citizen Participation Plan, project documents can be accessed at Station Library located at 26 Great Neck Road, Great Neck, New York 11021. The Site owner is working with the NYSDEC and the New York State Department of Health ("NYSDOH") to investigate and remediate the Site so that this matter can be closed pursuant to BCP site closure requirements.

Access to your property, located at 2 UNIVERSITY PLACE, LAKE SUCCESS, NEW YORK is requested to perform indoor air and sub-slab soil vapor sampling to determine if Site contamination is affecting your indoor air quality. The sampling results will be used to finalize design of the Site remedial program and develop a post-cleanup management plan for the Site. All of the work will be performed in accordance with a work plan reviewed and approved by both the NYSDEC and NYSDOH, consistent with procedures and guidelines established by New York State. All sampling

will be coordinated by Walden, which will oversee the work of qualified subcontractors who will be retained to conduct the actual drilling and sampling efforts.

The work to be conducted at 2 UNIVERSITY PLACE, LAKE SUCCESS, NEW YORK is detailed below with a tentative sequence of events. Please note your presence is required during the times that Walden and the subcontractors are to be on your property. Refer to the attached photographs for additional information.

First Day (Walden, Utility Mark-out Subcontractor and Drilling Subcontractor)

- Walden will inspect the basement/lowest level of your property to inventory chemicals stored on-site (such as cleaning products, paints, etc.) and select an appropriate location for sampling. The sampling location will be selected in an area with an unfinished floor if possible.
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- After an appropriate sampling location has been selected based on Walden's inspection and the GPR survey (and approved by the property owner), the drilling contractor will drill through the basement/lowest level floor slab and install a temporary sub-slab sampling port below the concrete slab. (Note that the floor surface will be restored with cement immediately after the sample is collected.) A small diameter hole (approximately one inch) will be drilled through the concrete floor slab and into sub-slab material approximately two (2) inches below the bottom of the floor slab. A temporary probe constructed from inert tubing (e.g. polyethylene, stainless steel, nylon, Teflon®, etc.) will be installed and sealed to the floor. Testing will be performed to ensure that the seal is tight.
- Walden will set up air sampling canisters to collect one sub-slab vapor sample and one indoor air sample from the basement/lowest level of the property.
- The sub-slab vapor sample will be collected from the temporary sub-slab sampling port installed below the concrete slab.
- The indoor air sample will be collected concurrently with the sub-slab vapor sample, at approximately the same location as the sub-slab vapor sample.
- A sampling canister will be placed adjacent to the sub-slab sampling port and the indoor air sampling location. The sub-slab and indoor air samples will be collected using laboratory-provided sampling canisters over a 24-hour period.
- The sampling probe, canisters and all sampling equipment must not be disturbed during the sampling period.

- The total anticipated time within your residence for this portion of the work would be approximately two (2) to three (3) hours.

Second Day (Walden)

- Walden will return at the end of the 24-hour sampling period to remove the sampling canisters. The tubing used to connect the sub-slab vapor sampling canister to the probe will be removed. The sub-slab vapor probe will then be removed and the floor surface will be restored in kind.
- The total anticipated time within your residence for this portion of the work would be approximately 30 minutes.

The Site owner and Walden will comply with the following conditions of access to the 2 UNIVERSITY PLACE, LAKE SUCCESS, NEW YORK property:

- The property owner will be notified at least 10 days prior to the scheduled sampling date. This sampling is required by the NYSDOH and NYSDEC under an approved work plan that states the sampling is to take place during the heating season, which will end on or about March 31, 2019. Please indicate below any dates when you are unavailable to provide Walden entry to the property, so the sampling can be scheduled accordingly.
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- The work will be performed in a clean and orderly fashion.

Please sign below to indicate your permission (or denial of permission) to allow the Site Owner and Walden to access the 2 UNIVERSITY PLACE, LAKE SUCCESS, NY property for the sampling described herein, and return to Walden by mail (stamped envelope enclosed), fax to 516-624-3219, or email to nbrew@walden-associates.com. Kindly respond to this letter with your permission or denial of permission within five (5) business days of receipt so that sampling may begin.

If you have any questions, please contact Scarlett McLaughlin at the New York State Department of Health at 518-402-7860, Joseph Jones at the New York State Department of Environmental Conservation at 518-402-9621, or Nora Brew at Walden Environmental Engineering at (516) 624-7200.

Thank you for your courtesy and cooperation.

Very truly yours,
Walden Environmental Engineering, PLLC.

Nora M. Brew, P.E.
Project Manager

ACCESS AUTHORIZED BY OWNER OF PROPERTY LOCATED AT
2 UNIVERSITY PLACE, LAKE SUCCESS, NEW YORK:

__________________________ __________________________
Signature Date

____
Print Name

-OR-

ACCESS DENIED BY OWNER OF PROPERTY LOCATED AT
2 UNIVERSITY PLACE, LAKE SUCCESS, NEW YORK:

__________________________ __________________________
Signature Date

____
Print Name

Please list any dates when access to your property is not available: ______________________

WALDEN ENVIRONMENTAL ENGINEERING

Sent by Certified Mail # 70170530000089406651

February 19, 2019

PROPERTY OWNER
3 UNIVERSITY PLACE
LAKE SUCCESS, NY 11020

Re: Permission for Property Access
3 UNIVERSITY PLACE
LAKE SUCCESS, NEW YORK

To Whom it May Concern:

Walden Environmental Engineering, PLLC ("Walden") is the environmental consulting engineer for 218 Lakeville Aquisition LLC, the owner of property located at 218 Lakeville Road, Lake Success, New York (the "Site") and has been engaged to investigate and remediate historic environmental impacts on the Property. Walden is in the process of collecting data to finalize the cleanup plan for the Site which was formerly occupied by Imperial Cleaners.

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Access to your property, located at 3 UNIVERSITY PLACE, LAKE SUCCESS, NEW YORK is requested to perform indoor air and sub-slab soil vapor sampling to determine if Site contamination is affecting your indoor air quality. The sampling results will be used to finalize design of the Site remedial program and develop a post-cleanup management plan for the Site. All of the work will be performed in accordance with a work plan reviewed and approved by both the NYSDEC and NYSDOH, consistent with procedures and guidelines established by New York State. All sampling

will be coordinated by Walden, which will oversee the work of qualified subcontractors who will be retained to conduct the actual drilling and sampling efforts.

The work to be conducted at 3 UNIVERSITY PLACE, LAKE SUCCESS, NEW YORK is detailed below with a tentative sequence of events. Please note your presence is required during the times that Walden and the subcontractors are to be on your property. Refer to the attached photographs for additional information.

First Day (Walden, Utility Mark-out Subcontractor and Drilling Subcontractor)

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- The sampling probe, canisters and all sampling equipment must not be disturbed during the sampling period.

- The total anticipated time within your residence for this portion of the work would be approximately two (2) to three (3) hours.

Second Day (Walden)

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Thank you for your courtesy and cooperation.

Very truly yours,
Walden Environmental Engineering, PLLC.

Nora M. Brew, P.E.
Project Manager

ACCESS AUTHORIZED BY OWNER OF PROPERTY LOCATED AT
3 UNIVERSITY PLACE, LAKE SUCCESS, NEW YORK:

__________________________ __________________________

Signature Date

____

Print Name

-OR-

ACCESS DENIED BY OWNER OF PROPERTY LOCATED AT
3 UNIVERSITY PLACE, LAKE SUCCESS, NEW YORK:

__________________________ __________________________

Signature Date

____

Print Name

Please list any dates when access to your property is not available: ______________________

WALDEN ENVIRONMENTAL ENGINEERING

Sent by Certified Mail # 70170530000089406934

February 19, 2019

PROPERTY OWNER
4 UNIVERSITY PLACE
LAKE SUCCESS, NY 11020

Re: Permission for Property Access
4 UNIVERSITY PLACE
LAKE SUCCESS, NEW YORK

To Whom it May Concern:

Walden Environmental Engineering, PLLC ("Walden") is the environmental consulting engineer for 218 Lakeville Aquisition LLC, the owner of property located at 218 Lakeville Road, Lake Success, New York (the "Site") and has been engaged to investigate and remediate historic environmental impacts on the Property. Walden is in the process of collecting data to finalize the cleanup plan for the Site which was formerly occupied by Imperial Cleaners.

The investigation and cleanup of the Site is being overseen by the New York State Department of Environmental Conservation ("NYSDEC") under the Brownfield Cleanup Program ("BCP"). The NYSDEC designated the Former Imperial Cleaners Site BCP Site #C130225. In accordance with the Citizen Participation Plan, project documents can be accessed at Station Library located at 26 Great Neck Road, Great Neck, New York 11021. The Site owner is working with the NYSDEC and the New York State Department of Health ("NYSDOH") to investigate and remediate the Site so that this matter can be closed pursuant to BCP site closure requirements.

Access to your property, located at 4 UNIVERSITY PLACE, LAKE SUCCESS, NEW YORK is requested to perform indoor air and sub-slab soil vapor sampling to determine if Site contamination is affecting your indoor air quality. The sampling results will be used to finalize design of the Site remedial program and develop a post-cleanup management plan for the Site. All of the work will be performed in accordance with a work plan reviewed and approved by both the NYSDEC and NYSDOH, consistent with procedures and guidelines established by New York State. All sampling

will be coordinated by Walden, which will oversee the work of qualified subcontractors who will be retained to conduct the actual drilling and sampling efforts.

The work to be conducted at 4 UNIVERSITY PLACE, LAKE SUCCESS, NEW YORK is detailed below with a tentative sequence of events. Please note your presence is required during the times that Walden and the subcontractors are to be on your property. Refer to the attached photographs for additional information.

First Day (Walden, Utility Mark-out Subcontractor and Drilling Subcontractor)

- Walden will inspect the basement/lowest level of your property to inventory chemicals stored on-site (such as cleaning products, paints, etc.) and select an appropriate location for sampling. The sampling location will be selected in an area with an unfinished floor if possible.
- A utility mark-out contractor will perform a Ground Penetrating Radar (GPR) survey to mark out the proposed sampling location and to ensure that no sub-surface structures and/or utility lines will be impacted by the investigation.
- After an appropriate sampling location has been selected based on Walden's inspection and the GPR survey (and approved by the property owner), the drilling contractor will drill through the basement/lowest level floor slab and install a temporary sub-slab sampling port below the concrete slab. (Note that the floor surface will be restored with cement immediately after the sample is collected.) A small diameter hole (approximately one inch) will be drilled through the concrete floor slab and into sub-slab material approximately two (2) inches below the bottom of the floor slab. A temporary probe constructed from inert tubing (e.g. polyethylene, stainless steel, nylon, Teflon®, etc.) will be installed and sealed to the floor. Testing will be performed to ensure that the seal is tight.
- Walden will set up air sampling canisters to collect one sub-slab vapor sample and one indoor air sample from the basement/lowest level of the property.
- The sub-slab vapor sample will be collected from the temporary sub-slab sampling port installed below the concrete slab.
- The indoor air sample will be collected concurrently with the sub-slab vapor sample, at approximately the same location as the sub-slab vapor sample.
- A sampling canister will be placed adjacent to the sub-slab sampling port and the indoor air sampling location. The sub-slab and indoor air samples will be collected using laboratory-provided sampling canisters over a 24-hour period.
- The sampling probe, canisters and all sampling equipment must not be disturbed during the sampling period.

- The total anticipated time within your residence for this portion of the work would be approximately two (2) to three (3) hours.

Second Day (Walden)

- Walden will return at the end of the 24-hour sampling period to remove the sampling canisters. The tubing used to connect the sub-slab vapor sampling canister to the probe will be removed. The sub-slab vapor probe will then be removed and the floor surface will be restored in kind.
- The total anticipated time within your residence for this portion of the work would be approximately 30 minutes.

The Site owner and Walden will comply with the following conditions of access to the 4 UNIVERSITY PLACE, LAKE SUCCESS, NEW YORK property:

- The property owner will be notified at least 10 days prior to the scheduled sampling date. This sampling is required by the NYSDOH and NYSDEC under an approved work plan that states the sampling is to take place during the heating season, which will end on or about March 31, 2019. Please indicate below any dates when you are unavailable to provide Walden entry to the property, so the sampling can be scheduled accordingly.
- The procedures set forth in the sampling work plan approved by the NYSDEC and NYSDOH will be followed. A copy of this work plan will be made available to you upon request. Walden will strive to schedule the work and subcontractors so that access to the property is required only two (2) times: once to install the sampling location, and set the canister(s) for sampling; and once after the canisters are set (approximately 24 hours after the sampling begins) to retrieve them. Note that this sampling is being coordinated with approximately ten (10) other properties with the goal of sampling all locations concurrently. Walden will attempt to accommodate your scheduling preferences to the extent feasible.
- The work will be performed in a clean and orderly fashion.

Please sign below to indicate your permission (or denial of permission) to allow the Site Owner and Walden to access the 4 UNIVERSITY PLACE, LAKE SUCCESS, NY property for the sampling described herein, and return to Walden by mail (stamped envelope enclosed), fax to 516-624-3219, or email to nbrew@walden-associates.com. Kindly respond to this letter with your permission or denial of permission within five (5) business days of receipt so that sampling may begin.

If you have any questions, please contact Scarlett McLaughlin at the New York State Department of Health at 518-402-7860, Joseph Jones at the New York State Department of Environmental Conservation at 518-402-9621, or Nora Brew at Walden Environmental Engineering at (516) 624-7200.

Thank you for your courtesy and cooperation.

Very truly yours,
Walden Environmental Engineering, PLLC.

Nora M. Brew, P.E.
Project Manager

ACCESS AUTHORIZED BY OWNER OF PROPERTY LOCATED AT
4 UNIVERSITY PLACE, LAKE SUCCESS, NEW YORK:

__________________________ __________________________

Signature Date

____

Print Name

-OR-

ACCESS DENIED BY OWNER OF PROPERTY LOCATED AT
4 UNIVERSITY PLACE, LAKE SUCCESS, NEW YORK:

__________________________ __________________________

Signature Date

____

Print Name

Please list any dates when access to your property is not available: ______________________

WALDEN ENVIRONMENTAL
ENGINEERING

Sent by Certified Mail # 70170530000089406668

February 19, 2019

PROPERTY OWNER
5 UNIVERSITY PLACE
LAKE SUCCESS, NY 11020

Re: Permission for Property Access
5 UNIVERSITY PLACE
LAKE SUCCESS, NEW YORK

To Whom it May Concern:

Walden Environmental Engineering, PLLC ("Walden") is the environmental consulting engineer for 218 Lakeville Aquisition LLC, the owner of property located at 218 Lakeville Road, Lake Success, New York (the "Site") and has been engaged to investigate and remediate historic environmental impacts on the Property. Walden is in the process of collecting data to finalize the cleanup plan for the Site which was formerly occupied by Imperial Cleaners.

The investigation and cleanup of the Site is being overseen by the New York State Department of Environmental Conservation ("NYSDEC") under the Brownfield Cleanup Program ("BCP"). The NYSDEC designated the Former Imperial Cleaners Site BCP Site #C130225. In accordance with the Citizen Participation Plan, project documents can be accessed at Station Library located at 26 Great Neck Road, Great Neck, New York 11021. The Site owner is working with the NYSDEC and the New York State Department of Health ("NYSDOH") to investigate and remediate the Site so that this matter can be closed pursuant to BCP site closure requirements.

Access to your property, located at 5 UNIVERSITY PLACE, LAKE SUCCESS, NEW YORK is requested to perform indoor air and sub-slab soil vapor sampling to determine if Site contamination is affecting your indoor air quality. The sampling results will be used to finalize design of the Site remedial program and develop a post-cleanup management plan for the Site. All of the work will be performed in accordance with a work plan reviewed and approved by both the NYSDEC and NYSDOH, consistent with procedures and guidelines established by New York State. All sampling

will be coordinated by Walden, which will oversee the work of qualified subcontractors who will be retained to conduct the actual drilling and sampling efforts.

The work to be conducted at 5 UNIVERSITY PLACE, LAKE SUCCESS, NEW YORK is detailed below with a tentative sequence of events. Please note your presence is required during the times that Walden and the subcontractors are to be on your property. Refer to the attached photographs for additional information.

First Day (Walden, Utility Mark-out Subcontractor and Drilling Subcontractor)

- Walden will inspect the basement/lowest level of your property to inventory chemicals stored on-site (such as cleaning products, paints, etc.) and select an appropriate location for sampling. The sampling location will be selected in an area with an unfinished floor if possible.
- A utility mark-out contractor will perform a Ground Penetrating Radar (GPR) survey to mark out the proposed sampling location and to ensure that no sub-surface structures and/or utility lines will be impacted by the investigation.
- After an appropriate sampling location has been selected based on Walden's inspection and the GPR survey (and approved by the property owner), the drilling contractor will drill through the basement/lowest level floor slab and install a temporary sub-slab sampling port below the concrete slab. (Note that the floor surface will be restored with cement immediately after the sample is collected.) A small diameter hole (approximately one inch) will be drilled through the concrete floor slab and into sub-slab material approximately two (2) inches below the bottom of the floor slab. A temporary probe constructed from inert tubing (e.g. polyethylene, stainless steel, nylon, Teflon®, etc.) will be installed and sealed to the floor. Testing will be performed to ensure that the seal is tight.
- Walden will set up air sampling canisters to collect one sub-slab vapor sample and one indoor air sample from the basement/lowest level of the property.
- The sub-slab vapor sample will be collected from the temporary sub-slab sampling port installed below the concrete slab.
- The indoor air sample will be collected concurrently with the sub-slab vapor sample, at approximately the same location as the sub-slab vapor sample.
- A sampling canister will be placed adjacent to the sub-slab sampling port and the indoor air sampling location. The sub-slab and indoor air samples will be collected using laboratory-provided sampling canisters over a 24-hour period.
- The sampling probe, canisters and all sampling equipment must not be disturbed during the sampling period.

- The total anticipated time within your residence for this portion of the work would be approximately two (2) to three (3) hours.

Second Day (Walden)

- Walden will return at the end of the 24-hour sampling period to remove the sampling canisters. The tubing used to connect the sub-slab vapor sampling canister to the probe will be removed. The sub-slab vapor probe will then be removed and the floor surface will be restored in kind.
- The total anticipated time within your residence for this portion of the work would be approximately 30 minutes.

The Site owner and Walden will comply with the following conditions of access to the 5 UNIVERSITY PLACE, LAKE SUCCESS, NEW YORK property:

- The property owner will be notified at least 10 days prior to the scheduled sampling date. This sampling is required by the NYSDOH and NYSDEC under an approved work plan that states the sampling is to take place during the heating season, which will end on or about March 31, 2019. Please indicate below any dates when you are unavailable to provide Walden entry to the property, so the sampling can be scheduled accordingly.
- The procedures set forth in the sampling work plan approved by the NYSDEC and NYSDOH will be followed. A copy of this work plan will be made available to you upon request. Walden will strive to schedule the work and subcontractors so that access to the property is required only two (2) times: once to install the sampling location, and set the canister(s) for sampling; and once after the canisters are set (approximately 24 hours after the sampling begins) to retrieve them. Note that this sampling is being coordinated with approximately ten (10) other properties with the goal of sampling all locations concurrently. Walden will attempt to accommodate your scheduling preferences to the extent feasible.
- The work will be performed in a clean and orderly fashion.

Please sign below to indicate your permission (or denial of permission) to allow the Site Owner and Walden to access the 5 UNIVERSITY PLACE, LAKE SUCCESS, NY property for the sampling described herein, and return to Walden by mail (stamped envelope enclosed), fax to 516-624-3219, or email to nbrew@walden-associates.com. Kindly respond to this letter with your permission or denial of permission within five (5) business days of receipt so that sampling may begin.

If you have any questions, please contact Scarlett McLaughlin at the New York State Department of Health at 518-402-7860, Joseph Jones at the New York State Department of Environmental Conservation at 518-402-9621, or Nora Brew at Walden Environmental Engineering at (516) 624-7200.

Thank you for your courtesy and cooperation.

Very truly yours,
Walden Environmental Engineering, PLLC.

Nora M. Brew, P.E.
Project Manager

ACCESS AUTHORIZED BY OWNER OF PROPERTY LOCATED AT
5 UNIVERSITY PLACE, LAKE SUCCESS, NEW YORK:

__________________________ __________________________

Signature Date

____

Print Name

-OR-

ACCESS DENIED BY OWNER OF PROPERTY LOCATED AT
5 UNIVERSITY PLACE, LAKE SUCCESS, NEW YORK:

__________________________ __________________________

Signature Date

____

Print Name

Please list any dates when access to your property is not available: ______________________

WALDEN ENVIRONMENTAL ENGINEERING

Sent by Certified Mail # 70170530000089406675

February 19, 2019

PROPERTY OWNER
99 BRIARFIELD DRIVE
LAKE SUCCESS, NY 11020

Re: Permission for Property Access
99 BRIARFIELD DRIVE
LAKE SUCCESS, NEW YORK

To Whom it May Concern:

Walden Environmental Engineering, PLLC ("Walden") is the environmental consulting engineer for 218 Lakeville Aquisition LLC, the owner of property located at 218 Lakeville Road, Lake Success, New York (the "Site") and has been engaged to investigate and remediate historic environmental impacts on the Property. Walden is in the process of collecting data to finalize the cleanup plan for the Site which was formerly occupied by Imperial Cleaners.

The investigation and cleanup of the Site is being overseen by the New York State Department of Environmental Conservation ("NYSDEC") under the Brownfield Cleanup Program ("BCP"). The NYSDEC designated the Former Imperial Cleaners Site BCP Site #C130225. In accordance with the Citizen Participation Plan, project documents can be accessed at Station Library located at 26 Great Neck Road, Great Neck, New York 11021. The Site owner is working with the NYSDEC and the New York State Department of Health ("NYSDOH") to investigate and remediate the Site so that this matter can be closed pursuant to BCP site closure requirements.

Access to your property, located at 99 BRIARFIELD DRIVE, LAKE SUCCESS, NEW YORK is requested to perform indoor air and sub-slab soil vapor sampling to determine if Site contamination is affecting your indoor air quality. The sampling results will be used to finalize design of the Site remedial program and develop a post-cleanup management plan for the Site. All of the work will be performed in accordance with a work plan reviewed and approved by both the NYSDEC and NYSDOH, consistent with procedures and guidelines established by New York State. All sampling

will be coordinated by Walden, which will oversee the work of qualified subcontractors who will be retained to conduct the actual drilling and sampling efforts.

The work to be conducted at 99 BRIARFIELD DRIVE, LAKE SUCCESS, NEW YORK is detailed below with a tentative sequence of events. Please note your presence is required during the times that Walden and the subcontractors are to be on your property. Refer to the attached photographs for additional information.

First Day (Walden, Utility Mark-out Subcontractor and Drilling Subcontractor)

- Walden will inspect the basement/lowest level of your property to inventory chemicals stored on-site (such as cleaning products, paints, etc.) and select an appropriate location for sampling. The sampling location will be selected in an area with an unfinished floor if possible.
- A utility mark-out contractor will perform a Ground Penetrating Radar (GPR) survey to mark out the proposed sampling location and to ensure that no sub-surface structures and/or utility lines will be impacted by the investigation.
- After an appropriate sampling location has been selected based on Walden's inspection and the GPR survey (and approved by the property owner), the drilling contractor will drill through the basement/lowest level floor slab and install a temporary sub-slab sampling port below the concrete slab. (Note that the floor surface will be restored with cement immediately after the sample is collected.) A small diameter hole (approximately one inch) will be drilled through the concrete floor slab and into sub-slab material approximately two (2) inches below the bottom of the floor slab. A temporary probe constructed from inert tubing (e.g. polyethylene, stainless steel, nylon, Teflon®, etc.) will be installed and sealed to the floor. Testing will be performed to ensure that the seal is tight.
- Walden will set up air sampling canisters to collect one sub-slab vapor sample and one indoor air sample from the basement/lowest level of the property.
- The sub-slab vapor sample will be collected from the temporary sub-slab sampling port installed below the concrete slab.
- The indoor air sample will be collected concurrently with the sub-slab vapor sample, at approximately the same location as the sub-slab vapor sample.
- A sampling canister will be placed adjacent to the sub-slab sampling port and the indoor air sampling location. The sub-slab and indoor air samples will be collected using laboratory-provided sampling canisters over a 24-hour period.
- The sampling probe, canisters and all sampling equipment must not be disturbed during the sampling period.

- The total anticipated time within your residence for this portion of the work would be approximately two (2) to three (3) hours.

Second Day (Walden)

- Walden will return at the end of the 24-hour sampling period to remove the sampling canisters. The tubing used to connect the sub-slab vapor sampling canister to the probe will be removed. The sub-slab vapor probe will then be removed and the floor surface will be restored in kind.
- The total anticipated time within your residence for this portion of the work would be approximately 30 minutes.

The Site owner and Walden will comply with the following conditions of access to the 99 BRIARFIELD DRIVE, LAKE SUCCESS, NEW YORK property:

- The property owner will be notified at least 10 days prior to the scheduled sampling date. This sampling is required by the NYSDOH and NYSDEC under an approved work plan that states the sampling is to take place during the heating season, which will end on or about March 31, 2019. Please indicate below any dates when you are unavailable to provide Walden entry to the property, so the sampling can be scheduled accordingly.
- The procedures set forth in the sampling work plan approved by the NYSDEC and NYSDOH will be followed. A copy of this work plan will be made available to you upon request. Walden will strive to schedule the work and subcontractors so that access to the property is required only two (2) times: once to install the sampling location, and set the canister(s) for sampling; and once after the canisters are set (approximately 24 hours after the sampling begins) to retrieve them. Note that this sampling is being coordinated with approximately ten (10) other properties with the goal of sampling all locations concurrently. Walden will attempt to accommodate your scheduling preferences to the extent feasible.
- The work will be performed in a clean and orderly fashion.

Please sign below to indicate your permission (or denial of permission) to allow the Site Owner and Walden to access the 99 BRIARFIELD DRIVE, LAKE SUCCESS, NY property for the sampling described herein, and return to Walden by mail (stamped envelope enclosed), fax to 516-624-3219, or email to nbrew@walden-associates.com. Kindly respond to this letter with your permission or denial of permission within five (5) business days of receipt so that sampling may begin.

If you have any questions, please contact Scarlett McLaughlin at the New York State Department of Health at 518-402-7860, Joseph Jones at the New York State Department of Environmental Conservation at 518-402-9621, or Nora Brew at Walden Environmental Engineering at (516) 624-7200.

Thank you for your courtesy and cooperation.

Very truly yours,
Walden Environmental Engineering, PLLC.

Nora M. Brew, P.E.
Project Manager

ACCESS AUTHORIZED BY OWNER OF PROPERTY LOCATED AT
99 BRIARFIELD DRIVE, LAKE SUCCESS, NEW YORK:

__________________________ __________________________
Signature Date

____
Print Name

-OR-

ACCESS DENIED BY OWNER OF PROPERTY LOCATED AT
99 BRIARFIELD DRIVE, LAKE SUCCESS, NEW YORK:

__________________________ __________________________
Signature Date

____
Print Name

Please list any dates when access to your property is not available: ______________________

Sent by Certified Mail # 70170530000089406682

February 19, 2019

PROPERTY OWNER
216 LAKEVILLE ROAD
LAKE SUCCESS, NY 11020

Re: Permission for Property Access
216 LAKEVILLE ROAD
LAKE SUCCESS, NEW YORK

To Whom it May Concern:

Walden Environmental Engineering, PLLC ("Walden") is the environmental consulting engineer for 218 Lakeville Aquisition LLC, the owner of property located at 218 Lakeville Road, Lake Success, New York (the "Site") and has been engaged to investigate and remediate historic environmental impacts on the Property. Walden is in the process of collecting data to finalize the cleanup plan for the Site which was formerly occupied by Imperial Cleaners.

The investigation and cleanup of the Site is being overseen by the New York State Department of Environmental Conservation ("NYSDEC") under the Brownfield Cleanup Program ("BCP"). The NYSDEC designated the Former Imperial Cleaners Site BCP Site #C130225. In accordance with the Citizen Participation Plan, project documents can be accessed at Station Library located at 26 Great Neck Road, Great Neck, New York 11021. The Site owner is working with the NYSDEC and the New York State Department of Health ("NYSDOH") to investigate and remediate the Site so that this matter can be closed pursuant to BCP site closure requirements.

Access to your property, located at 216 LAKEVILLE ROAD, LAKE SUCCESS, NEW YORK is requested to perform indoor air and sub-slab soil vapor sampling to determine if Site contamination is affecting your indoor air quality. **Note that access to both buildings (the front office and rear cottage) is requested.** The sampling results will be used to finalize design of the Site remedial program and develop a post-cleanup management plan for the Site. All of the work will be performed in accordance with a work plan reviewed and approved by both the NYSDEC and

LONG ISLAND: 16 SPRING STREET •OYSTER BAY, NEW YORK 11771 • P: (516) 624-7200 • F: (516) 624-3219
HUDSON VALLEY: 2070 NY ROUTE 52 • HOPEWELL JUNCTION, NEW YORK, 12533 • P: (845) 745-0888
CAPITAL DISTRICT: 11 HERBERT DRIVE • LATHAM, NEW YORK, 12110 • P: (518) 698-3012
WWW.WALDENENVIRONMENTALENGINEERING.COM

NYSDOH, consistent with procedures and guidelines established by New York State. All sampling will be coordinated by Walden, which will oversee the work of qualified subcontractors who will be retained to conduct the actual drilling and sampling efforts.

The work to be conducted at 216 LAKEVILLE ROAD, LAKE SUCCESS, NEW YORK is detailed below with a tentative sequence of events. Please note your presence is required during the times that Walden and the subcontractors are to be on your property. Refer to the attached photographs for additional information.

First Day (Walden, Utility Mark-out Subcontractor and Drilling Subcontractor)

- Walden will inspect the basement/lowest level of your property to inventory chemicals stored on-site (such as cleaning products, paints, etc.) and select an appropriate location for sampling. The sampling location will be selected in an area with an unfinished floor if possible.
- A utility mark-out contractor will perform a Ground Penetrating Radar (GPR) survey to mark out the proposed sampling location and to ensure that no sub-surface structures and/or utility lines will be impacted by the investigation.
- After an appropriate sampling location has been selected based on Walden's inspection and the GPR survey (and approved by the property owner), the drilling contractor will drill through the basement/lowest level floor slab and install a temporary sub-slab sampling port below the concrete slab. (Note that the floor surface will be restored with cement immediately after the sample is collected.) A small diameter hole (approximately one inch) will be drilled through the concrete floor slab and into sub-slab material approximately two (2) inches below the bottom of the floor slab. A temporary probe constructed from inert tubing (e.g. polyethylene, stainless steel, nylon, Teflon®, etc.) will be installed and sealed to the floor. Testing will be performed to ensure that the seal is tight.
- Walden will set up air sampling canisters to collect one sub-slab vapor sample and one indoor air sample from the basement/lowest level of the property.
- The sub-slab vapor sample will be collected from the temporary sub-slab sampling port installed below the concrete slab.
- The indoor air sample will be collected concurrently with the sub-slab vapor sample, at approximately the same location as the sub-slab vapor sample.
- A sampling canister will be placed adjacent to the sub-slab sampling port and the indoor air sampling location. The sub-slab and indoor air samples will be collected using laboratory-provided sampling canisters over a 24-hour period.

- The sampling probe, canisters and all sampling equipment must not be disturbed during the sampling period.
- The total anticipated time within your residence for this portion of the work would be approximately two (2) to three (3) hours.

Second Day (Walden)

- Walden will return at the end of the 24-hour sampling period to remove the sampling canisters. The tubing used to connect the sub-slab vapor sampling canister to the probe will be removed. The sub-slab vapor probe will then be removed and the floor surface will be restored in kind.
- The total anticipated time within your residence for this portion of the work would be approximately 30 minutes.

The Site owner and Walden will comply with the following conditions of access to the 216 LAKEVILLE ROAD, LAKE SUCCESS, NEW YORK property:

- The property owner will be notified at least 10 days prior to the scheduled sampling date. This sampling is required by the NYSDOH and NYSDEC under an approved work plan that states the sampling is to take place during the heating season, which will end on or about March 31, 2019. Please indicate below any dates when you are unavailable to provide Walden entry to the property, so the sampling can be scheduled accordingly.
- The procedures set forth in the sampling work plan approved by the NYSDEC and NYSDOH will be followed. A copy of this work plan will be made available to you upon request. Walden will strive to schedule the work and subcontractors so that access to the property is required only two (2) times: once to install the sampling location, and set the canister(s) for sampling; and once after the canisters are set (approximately 24 hours after the sampling begins) to retrieve them. Note that this sampling is being coordinated with approximately ten (10) other properties with the goal of sampling all locations concurrently. Walden will attempt to accommodate your scheduling preferences to the extent feasible.
- The work will be performed in a clean and orderly fashion.

Please sign below to indicate your permission (or denial of permission) to allow the Site Owner and Walden to access the 216 LAKEVILLE ROAD, LAKE SUCCESS, NY property for the sampling described herein, and return to Walden by mail (stamped envelope enclosed), fax to 516-624-3219, or email to nbrew@walden-associates.com. Kindly respond to this letter with your permission or denial of permission within five (5) business days of receipt so that sampling may begin.

If you have any questions, please contact Scarlett McLaughlin at the New York State Department of Health at 518-402-7860, Joseph Jones at the New York State Department of Environmental Conservation at 518-402-9621, or Nora Brew at Walden Environmental Engineering at (516) 624-7200.

Thank you for your courtesy and cooperation.

Very truly yours,
Walden Environmental Engineering, PLLC.

Nora M. Brew, P.E.
Project Manager

ACCESS AUTHORIZED BY OWNER OF PROPERTY (FRONT OFFICE AND REAR COTTAGE LOCATED AT 216 LAKEVILLE ROAD, LAKE SUCCESS, NEW YORK:

___________________________ ___________________________
Signature Date

____
Print Name

-OR-

ACCESS DENIED BY OWNER OF PROPERTY (FRONT OFFICE AND REAR COTTAGE LOCATED AT 216 LAKEVILLE ROAD, LAKE SUCCESS, NEW YORK:

___________________________ ___________________________
Signature Date

____
Print Name

Please list any dates when access to your property is not available: ______________________

WALDEN ENVIRONMENTAL ENGINEERING

Sent by Certified Mail # 70170530000089406941

February 19, 2019

PROPERTY OWNER
220 LAKEVILLE ROAD
LAKE SUCCESS, NY 11020

Re: Permission for Property Access
220 LAKEVILLE ROAD
LAKE SUCCESS, NEW YORK

To Whom it May Concern:

Walden Environmental Engineering, PLLC (“Walden”) is the environmental consulting engineer for 218 Lakeville Aquisition LLC, the owner of property located at 218 Lakeville Road, Lake Success, New York (the “Site”) and has been engaged to investigate and remediate historic environmental impacts on the Property. Walden is in the process of collecting data to finalize the cleanup plan for the Site which was formerly occupied by Imperial Cleaners.

The investigation and cleanup of the Site is being overseen by the New York State Department of Environmental Conservation (“NYSDEC”) under the Brownfield Cleanup Program (“BCP”). The NYSDEC designated the Former Imperial Cleaners Site BCP Site #C130225. In accordance with the Citizen Participation Plan, project documents can be accessed at Station Library located at 26 Great Neck Road, Great Neck, New York 11021. The Site owner is working with the NYSDEC and the New York State Department of Health (“NYSDOH”) to investigate and remediate the Site so that this matter can be closed pursuant to BCP site closure requirements.

Access to your property, located at 220 LAKEVILLE ROAD, LAKE SUCCESS, NEW YORK is requested to perform indoor air and sub-slab soil vapor sampling to determine if Site contamination is affecting your indoor air quality. The sampling results will be used to finalize design of the Site remedial program and develop a post-cleanup management plan for the Site. All of the work will be performed in accordance with a work plan reviewed and approved by both the NYSDEC and NYSDOH, consistent with procedures and guidelines established by New York State. All sampling

will be coordinated by Walden, which will oversee the work of qualified subcontractors who will be retained to conduct the actual drilling and sampling efforts.

The work to be conducted at 220 LAKEVILLE ROAD, LAKE SUCCESS, NEW YORK is detailed below with a tentative sequence of events. Please note your presence is required during the times that Walden and the subcontractors are to be on your property. Refer to the attached photographs for additional information.

<u>First Day (Walden, Utility Mark-out Subcontractor and Drilling Subcontractor)</u>

- Walden will inspect the basement/lowest level of your property to inventory chemicals stored on-site (such as cleaning products, paints, etc.) and select an appropriate location for sampling. The sampling location will be selected in an area with an unfinished floor if possible.
- A utility mark-out contractor will perform a Ground Penetrating Radar (GPR) survey to mark out the proposed sampling location and to ensure that no sub-surface structures and/or utility lines will be impacted by the investigation.
- After an appropriate sampling location has been selected based on Walden's inspection and the GPR survey (and approved by the property owner), the drilling contractor will drill through the basement/lowest level floor slab and install a temporary sub-slab sampling port below the concrete slab. (Note that the floor surface will be restored with cement immediately after the sample is collected.) A small diameter hole (approximately one inch) will be drilled through the concrete floor slab and into sub-slab material approximately two (2) inches below the bottom of the floor slab. A temporary probe constructed from inert tubing (e.g. polyethylene, stainless steel, nylon, Teflon®, etc.) will be installed and sealed to the floor. Testing will be performed to ensure that the seal is tight.
- Walden will set up air sampling canisters to collect one sub-slab vapor sample and one indoor air sample from the basement/lowest level of the property.
- The sub-slab vapor sample will be collected from the temporary sub-slab sampling port installed below the concrete slab.
- The indoor air sample will be collected concurrently with the sub-slab vapor sample, at approximately the same location as the sub-slab vapor sample.
- A sampling canister will be placed adjacent to the sub-slab sampling port and the indoor air sampling location. The sub-slab and indoor air samples will be collected using laboratory-provided sampling canisters over a 24-hour period.
- The sampling probe, canisters and all sampling equipment must not be disturbed during the sampling period.

- The total anticipated time within your residence for this portion of the work would be approximately two (2) to three (3) hours.

Second Day (Walden)

- Walden will return at the end of the 24-hour sampling period to remove the sampling canisters. The tubing used to connect the sub-slab vapor sampling canister to the probe will be removed. The sub-slab vapor probe will then be removed and the floor surface will be restored in kind.
- The total anticipated time within your residence for this portion of the work would be approximately 30 minutes.

The Site owner and Walden will comply with the following conditions of access to the 220 LAKEVILLE ROAD, LAKE SUCCESS, NEW YORK property:

- The property owner will be notified at least 10 days prior to the scheduled sampling date. This sampling is required by the NYSDOH and NYSDEC under an approved work plan that states the sampling is to take place during the heating season, which will end on or about March 31, 2019. Please indicate below any dates when you are unavailable to provide Walden entry to the property, so the sampling can be scheduled accordingly.
- The procedures set forth in the sampling work plan approved by the NYSDEC and NYSDOH will be followed. A copy of this work plan will be made available to you upon request. Walden will strive to schedule the work and subcontractors so that access to the property is required only two (2) times: once to install the sampling location, and set the canister(s) for sampling; and once after the canisters are set (approximately 24 hours after the sampling begins) to retrieve them. Note that this sampling is being coordinated with approximately ten (10) other properties with the goal of sampling all locations concurrently. Walden will attempt to accommodate your scheduling preferences to the extent feasible.
- The work will be performed in a clean and orderly fashion.

Please sign below to indicate your permission (or denial of permission) to allow the Site Owner and Walden to access the 220 LAKEVILLE ROAD, LAKE SUCCESS, NY property for the sampling described herein, and return to Walden by mail (stamped envelope enclosed), fax to 516-624-3219, or email to nbrew@walden-associates.com. Kindly respond to this letter with your permission or denial of permission within five (5) business days of receipt so that sampling may begin.

If you have any questions, please contact Scarlett McLaughlin at the New York State Department of Health at 518-402-7860, Joseph Jones at the New York State Department of Environmental Conservation at 518-402-9621, or Nora Brew at Walden Environmental Engineering at (516) 624-7200.

Thank you for your courtesy and cooperation.

Very truly yours,
Walden Environmental Engineering, PLLC.

Nora M. Brew, P.E.
Project Manager

ACCESS AUTHORIZED BY OWNER OF PROPERTY LOCATED AT
220 LAKEVILLE ROAD, LAKE SUCCESS, NEW YORK:

__________________________ __________________________
Signature Date

____
Print Name

-OR-

ACCESS DENIED BY OWNER OF PROPERTY LOCATED AT
220 LAKEVILLE ROAD, LAKE SUCCESS, NEW YORK:

__________________________ __________________________
Signature Date

____
Print Name

Please list any dates when access to your property is not available: ______________________

WALDEN ENVIRONMENTAL ENGINEERING

Sent by Certified Mail # 70170530000089406699

February 19, 2019

PROPERTY OWNER
224 LAKEVILLE ROAD
LAKE SUCCESS, NY 11020

Re: Permission for Property Access
224 LAKEVILLE ROAD
LAKE SUCCESS, NEW YORK

To Whom it May Concern:

Walden Environmental Engineering, PLLC ("Walden") is the environmental consulting engineer for 218 Lakeville Aquisition LLC, the owner of property located at 218 Lakeville Road, Lake Success, New York (the "Site") and has been engaged to investigate and remediate historic environmental impacts on the Property. Walden is in the process of collecting data to finalize the cleanup plan for the Site which was formerly occupied by Imperial Cleaners.

The investigation and cleanup of the Site is being overseen by the New York State Department of Environmental Conservation ("NYSDEC") under the Brownfield Cleanup Program ("BCP"). The NYSDEC designated the Former Imperial Cleaners Site BCP Site #C130225. In accordance with the Citizen Participation Plan, project documents can be accessed at Station Library located at 26 Great Neck Road, Great Neck, New York 11021. The Site owner is working with the NYSDEC and the New York State Department of Health ("NYSDOH") to investigate and remediate the Site so that this matter can be closed pursuant to BCP site closure requirements.

Access to your property, located at 224 LAKEVILLE ROAD, LAKE SUCCESS, NEW YORK is requested to perform indoor air and sub-slab soil vapor sampling to determine if Site contamination is affecting your indoor air quality. The sampling results will be used to finalize design of the Site remedial program and develop a post-cleanup management plan for the Site. All of the work will be performed in accordance with a work plan reviewed and approved by both the NYSDEC and NYSDOH, consistent with procedures and guidelines established by New York State. All sampling

will be coordinated by Walden, which will oversee the work of qualified subcontractors who will be retained to conduct the actual drilling and sampling efforts.

The work to be conducted at 224 LAKEVILLE ROAD, LAKE SUCCESS, NEW YORK is detailed below with a tentative sequence of events. Please note your presence is required during the times that Walden and the subcontractors are to be on your property. Refer to the attached photographs for additional information.

<u>First Day (Walden, Utility Mark-out Subcontractor and Drilling Subcontractor)</u>

- Walden will inspect the basement/lowest level of your property to inventory chemicals stored on-site (such as cleaning products, paints, etc.) and select an appropriate location for sampling. The sampling location will be selected in an area with an unfinished floor if possible.
- A utility mark-out contractor will perform a Ground Penetrating Radar (GPR) survey to mark out the proposed sampling location and to ensure that no sub-surface structures and/or utility lines will be impacted by the investigation.
- After an appropriate sampling location has been selected based on Walden's inspection and the GPR survey (and approved by the property owner), the drilling contractor will drill through the basement/lowest level floor slab and install a temporary sub-slab sampling port below the concrete slab. (Note that the floor surface will be restored with cement immediately after the sample is collected.) A small diameter hole (approximately one inch) will be drilled through the concrete floor slab and into sub-slab material approximately two (2) inches below the bottom of the floor slab. A temporary probe constructed from inert tubing (e.g. polyethylene, stainless steel, nylon, Teflon®, etc.) will be installed and sealed to the floor. Testing will be performed to ensure that the seal is tight.
- Walden will set up air sampling canisters to collect one sub-slab vapor sample and one indoor air sample from the basement/lowest level of the property.
- The sub-slab vapor sample will be collected from the temporary sub-slab sampling port installed below the concrete slab.
- The indoor air sample will be collected concurrently with the sub-slab vapor sample, at approximately the same location as the sub-slab vapor sample.
- A sampling canister will be placed adjacent to the sub-slab sampling port and the indoor air sampling location. The sub-slab and indoor air samples will be collected using laboratory-provided sampling canisters over a 24-hour period.
- The sampling probe, canisters and all sampling equipment must not be disturbed during the sampling period.

- The total anticipated time within your residence for this portion of the work would be approximately two (2) to three (3) hours.

Second Day (Walden)

- Walden will return at the end of the 24-hour sampling period to remove the sampling canisters. The tubing used to connect the sub-slab vapor sampling canister to the probe will be removed. The sub-slab vapor probe will then be removed and the floor surface will be restored in kind.
- The total anticipated time within your residence for this portion of the work would be approximately 30 minutes.

The Site owner and Walden will comply with the following conditions of access to the 224 LAKEVILLE ROAD, LAKE SUCCESS, NEW YORK property:

- The property owner will be notified at least 10 days prior to the scheduled sampling date. This sampling is required by the NYSDOH and NYSDEC under an approved work plan that states the sampling is to take place during the heating season, which will end on or about March 31, 2019. Please indicate below any dates when you are unavailable to provide Walden entry to the property, so the sampling can be scheduled accordingly.
- The procedures set forth in the sampling work plan approved by the NYSDEC and NYSDOH will be followed. A copy of this work plan will be made available to you upon request. Walden will strive to schedule the work and subcontractors so that access to the property is required only two (2) times: once to install the sampling location, and set the canister(s) for sampling; and once after the canisters are set (approximately 24 hours after the sampling begins) to retrieve them. Note that this sampling is being coordinated with approximately ten (10) other properties with the goal of sampling all locations concurrently. Walden will attempt to accommodate your scheduling preferences to the extent feasible.
- The work will be performed in a clean and orderly fashion.

Please sign below to indicate your permission (or denial of permission) to allow the Site Owner and Walden to access the 224 LAKEVILLE ROAD, LAKE SUCCESS, NY property for the sampling described herein, and return to Walden by mail (stamped envelope enclosed), fax to 516-624-3219, or email to nbrew@walden-associates.com. Kindly respond to this letter with your permission or denial of permission within five (5) business days of receipt so that sampling may begin.

If you have any questions, please contact Scarlett McLaughlin at the New York State Department of Health at 518-402-7860, Joseph Jones at the New York State Department of Environmental Conservation at 518-402-9621, or Nora Brew at Walden Environmental Engineering at (516) 624-7200.

Thank you for your courtesy and cooperation.

Very truly yours,
Walden Environmental Engineering, PLLC.

Nora M. Brew, P.E.
Project Manager

ACCESS AUTHORIZED BY OWNER OF PROPERTY LOCATED AT
224 LAKEVILLE ROAD, LAKE SUCCESS, NEW YORK:

__________________________ __________________________

Signature Date

____

Print Name

-OR-

ACCESS DENIED BY OWNER OF PROPERTY LOCATED AT
224 LAKEVILLE ROAD, LAKE SUCCESS, NEW YORK:

__________________________ __________________________

Signature Date

____

Print Name

Please list any dates when access to your property is not available: ______________________

APPENDIX D

April 2019 Completed SVI Guidance Indoor Air Quality Questionnaire/ Building Inventory Sheets

OSR – 3

218 Lakeville Road

NEW YORK STATE DEPARTMENT OF HEALTH
INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY
CENTER FOR ENVIRONMENTAL HEALTH

This form must be completed for each residence involved in indoor air testing.

Preparer's Name Madeleine Tierney Date/Time Prepared 4/5/19 1430

Preparer's Affiliation Walden Environmental Eng. Phone No. (516) 824-7200

Purpose of Investigation Soil vapor intrusion Investigation Former Imperial Cleaners site VCP site # V-00244-1

1. OCCUPANT:

Interviewed: Y / N

Last Name: ______ First Name: ______

Address: ______

County: ______

Home Phone: ______ Office Phone: ______

Number of Occupants/persons at this location ______ Age of Occupants ______

2. OWNER OR LANDLORD: (Check if same as occupant ___)

Interviewed: Y / N

Last Name: ______ First Name: ______

Address: ______

County: ______

Home Phone: ______ Office Phone: ______

3. BUILDING CHARACTERISTICS

Type of Building: (Circle appropriate response)

Residential	School	Commercial/Multi-use
Industrial	Church	Other: ______

If the property is residential, type? (Circle appropriate response) N/A

Ranch	2-Family	3-Family
Raised Ranch	Split Level	Colonial
Cape Cod	Contemporary	Mobile Home
Duplex	Apartment House	Townhouses/Condos
Modular	Log Home	Other:______________

If multiple units, how many? ~~4~~ EMS

If the property is commercial, type?

Business Type(s) vacant dry cleaner, vacant deli, contractor + tobacco shop

Does it include residences (i.e., multi-use)? Y / N   If yes, how many? ______

Other characteristics:

Number of floors 1 story + full basement   Building age______

Is the building insulated? Y / N basement   How air tight? Tight / Average / Not Tight

4. AIRFLOW

Use air current tubes or tracer smoke to evaluate airflow patterns and qualitatively describe:

Airflow between floors

____

____

____

Airflow near source

____

____

____

Outdoor air infiltration

____

____

____

Infiltration into air ducts

____

____

____

5. BASEMENT AND CONSTRUCTION CHARACTERISTICS (Circle all that apply)

a. Above grade construction:	wood frame	concrete	stone	brick
b. Basement type:	full	crawlspace	slab	other ________
c. Basement floor:	concrete	dirt	stone	other ________
d. Basement floor:	uncovered	covered	covered with ________	
e. Concrete floor:	unsealed	sealed	sealed with ________	
f. Foundation walls:	poured	block	stone	other ________
g. Foundation walls:	unsealed	sealed	sealed with ________	
h. The basement is:	wet	damp	dry	moldy
i. The basement is:	finished	unfinished	partially finished	
j. Sump present?	* Y / N	*No sump present. Floor Drain		
k. Water in sump?	Y / N / not applicable			

Basement/Lowest level depth below grade: ~12 (feet)

Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)

Floor Drains x 3 in Contractor space

6. HEATING, VENTING and AIR CONDITIONING (Circle all that apply)

Type of heating system(s) used in this building: (circle all that apply – note primary)

Hot air circulation	Heat pump	Hot water baseboard	
Space Heaters	Stream radiation	Radiant floor	
Electric baseboard	Wood stove	Outdoor wood boiler	Other ________

The primary type of fuel used is:

Natural Gas	Fuel Oil	Kerosene
Electric	Propane	Solar
Wood	Coal	

Domestic hot water tank fueled by: Natural gas

Boiler/furnace located in:	Basement	Outdoors	Main Floor	Other________
Air conditioning:	Central Air	Window units	Open Windows	None

Are there air distribution ducts present? Y / N

Describe the supply and cold air return ductwork, and its condition where visible, including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.

____

____

____

____

7. OCCUPANCY

Is basement/lowest level occupied? Full-time Occasionally Seldom Almost Never - except for tobacco Shop (occasional)

Level	**General Use of Each Floor (e.g., familyroom, bedroom, laundry, workshop, storage)**
Basement	Storage
1st Floor	Vacant / Contractor office / tobacco Shop
2nd Floor	
3rd Floor	
4th Floor	

8. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY

a. Is there an attached garage? Y / N

b. Does the garage have a separate heating unit? Y / N / NA

c. Are petroleum-powered machines or vehicles stored in the garage (e.g., lawnmower, atv, car) Y / N / NA
Please specify______________

d. Has the building ever had a fire? Y / N When?______________

e. Is a kerosene or unvented gas space heater present? Y / N Where?______________

f. Is there a workshop or hobby/craft area? Y / N Where & Type?______________

g. Is there smoking in the building? Y / N How frequently? Full-time (Tobacco Shop)

h. Have cleaning products been used recently? Y / N When & Type?______________

i. Have cosmetic products been used recently? Y / N When & Type?______________

j. Has painting/staining been done in the last 6 months? Y / N Where & When? ______________

k. Is there new carpet, drapes or other textiles? Y / N Where & When? ______________

l. Have air fresheners been used recently? Y / N When & Type? ______________

m. Is there a kitchen exhaust fan? Y / N If yes, where vented? ___________

n. Is there a bathroom exhaust fan? Y / N If yes, where vented? ___________

o. Is there a clothes dryer? Y / N If yes, is it vented outside? Y / N

p. Has there been a pesticide application? Y / N When & Type? ______________

Are there odors in the building? Y / N *
If yes, please describe: Tobacco shop has cigar smoke odors

Do any of the building occupants use solvents at work? Y / N
(e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist

If yes, what types of solvents are used? ______________________________________

If yes, are their clothes washed at work? Y / N

Do any of the building occupants regularly use or work at a dry-cleaning service? (Circle appropriate response)

Yes, use dry-cleaning regularly (weekly) No
Yes, use dry-cleaning infrequently (monthly or less) Unknown
Yes, work at a dry-cleaning service

Is there a radon mitigation system for the building/structure? Y / N Date of Installation: ___________
Is the system active or passive? Active/Passive

- off-line SVE system shed/ components present

9. WATER AND SEWAGE

Water Supply: Public Water Drilled Well Driven Well Dug Well Other: ______

Sewage Disposal: Public Sewer Septic Tank Leach Field Dry Well Other: ______

10. RELOCATION INFORMATION (for oil spill residential emergency) N/A

a. Provide reasons why relocation is recommended: ______________________________

b. Residents choose to: remain in home relocate to friends/family relocate to hotel/motel

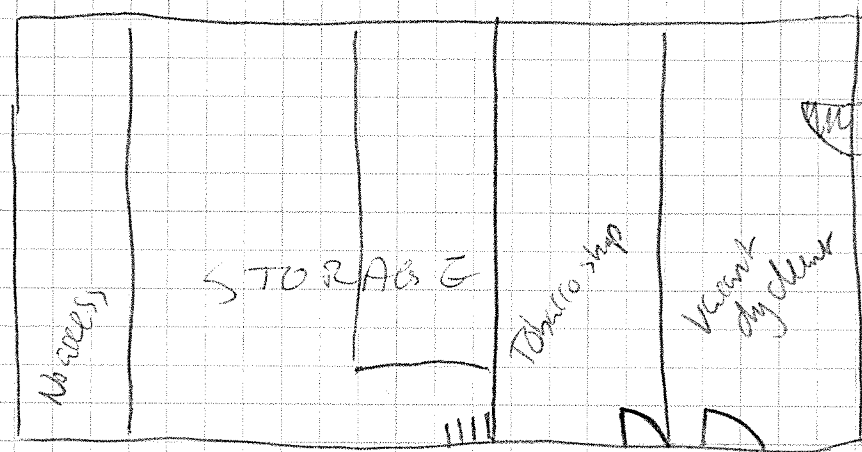
c. Responsibility for costs associated with reimbursement explained? Y / N

d. Relocation package provided and explained to residents? Y / N

11. FLOOR PLANS

Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.

Basement:



First Floor:

12. OUTDOOR PLOT

Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.

Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.

13. PRODUCT INVENTORY FORM

Make & Model of field instrument used: ______________________

List specific products found in the residence that have the potential to affect indoor air quality.

Location	Product Description	Size (units)	Condition*	Chemical Ingredients	Field Instrument Reading (units)	Photo ** Y / N
Contractor storage/north	Floor paint Benjamin Moore	5gal	U	5 gal x 4		
	Roberts Flooring adhesive	4gal	U	x 2		
	various color paint	32oz	U	x 6		
	Roberts Floor adhesive	1gal	U			
	various paints/primers	1gal	U	x ~~[illegible]~~ 45		
	Roman wall paper adhesive	2gal	U			
	Windex	1gal + 32oz	U	1 gal, 2-32oz		
	Great Stuff foam sealant	12oz + 16oz	U/O	x3		
	Leslie's swimming pool dry acid	1gal	U/O			
	[illegible] #19 roof cement	10oz	U	x 6		
	various sealants	10oz	U	x 3		
	die hard car battery					
	Gold dust chlorinating concentrate	8lbs	U/O			
	HTH super chlorinating tablets	21 lbs	U/O			
	Hydrochloric acid sunny side	1 gal	U/O			
	Rustoleum	12oz	1 U/O 3U	x 4		
	RX11-Flush Non-[illegible] system flush 1gal	29.4oz	U			
	Dynamic paint thinner	1qt	U/O			
	USG Sheet Rock joint compound	4.5gal	U	x 3		

* Describe the condition of the product containers as **Unopened (UO), Used (U),** or **Deteriorated (D)**
** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

No chemicals found

13. PRODUCT INVENTORY FORM

Make & Model of field instrument used: ______________________________

List specific products found in the residence that have the potential to affect indoor air quality.

Location	Product Description	Size (units)	Condition*	Chemical Ingredients	Field Instrument Reading (units)	Photo ** Y / N
Contractor storage north	Hybrid super	9.8oz	U/O	x 12		
	Fire extinguishers		U/O	x 3		
	Oatey x-15 shower pan liner adhesive	16floz	U			
	Shell motor oil	5qt	U			
	Concrobium house & deckwash	2L	U			
	3M FireBlock Foam	12floz	U			
	Klean strip turpentine	1G	U			
	Thomasville wood floor cleaner	32oz	U			
	Woodstain	32oz	U	x10		
	Karnak sealant	5gal	U	x6		
Contractor storage south	66-mod bit Karnak adhesive for roofing	5gal	U	x2		
	Bostik flooring adhesive	4gal	U	x2		
	Sure Klean 600 masonry cleaner	5gal	U			
	Weldcrete concrete sealant	1gal	U			
	Benjamin Moore paint	1gal	U	x 7		
	Bondo wood filler	1.9lb	U/O	x 2		
	Bondo cream hardener	2.5floz	U/O			
	Benzomatic mapp gas	14.1oz	U			
	Great Stuff foam sealant	16oz	U			

* Describe the condition of the product containers as **Unopened (UO), Used (U),** or **Deteriorated (D)**
** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

13. PRODUCT INVENTORY FORM

Make & Model of field instrument used: ____________________

List specific products found in the residence that have the potential to affect indoor air quality.

Location	Product Description	Size (units)	Condition*	Chemical Ingredients	Field Instrument Reading (units)	Photo ** Y / N
contractor storage supply	3M Fire barrier sealant	10 oz	U/O	x 2		
	Rustoleum protective enamel	8 oz	U			
	Paver Renew super gloss	5 gal	U/O			
	Mapei Flex cover	1 gal	U			
	USG all purpose joint compound	5 gal	U			
	Fire extinguisher		U/O			
Tobacco shop	Various Paints	1 gal	U	x 4		
	Various Wood Stains	1 Qt	U	x 4		
	DAP Crack shot spackling paste	1 Qt	U/O			
	Rustoleum Spray Enamel	12 oz	U			
	Sheetrock Joint Compound	12 lb	U			
	Great Stuff foam sealer	net 16 oz	U			

* Describe the condition of the product containers as **Unopened (UO), Used (U)**, or **Deteriorated (D)**
** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

Indoor Air Quality Questionnaire and Building Inventory
Product Inventory Photographs
218 Lakeville Road, Lake Success, NY

Benjamin Moore Paint

Roberts Flooring Adhesive

Benjamin Moore Paint (Typical)

Wallpaper Adhesive

Benjamin Moore Paint

Windex Glass Cleaner

Pool pH Adjuster

Great Stuff Sealant

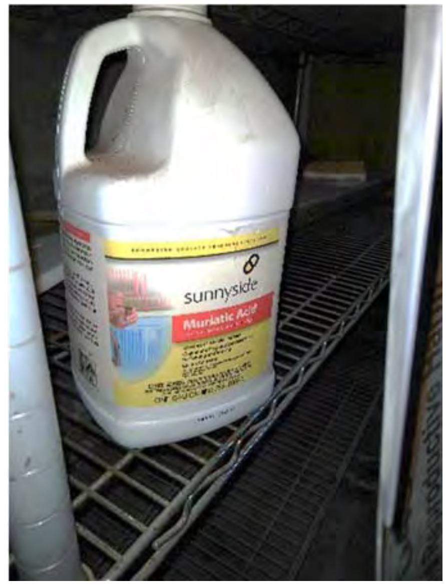
Karnak Flashing Roof Cement

DAP Sealant

DieHard Car Battery

Gold Dust Chlorinating Compound

HTH Chlorinating Tablets



Sunnyside Muriatic Acid

Rust-oleum Spray Paint

Rx11-flush Air Conditioning & Refrigeration System Flush

Dynamic Paint Thinner

USG Sheetrock Joint Compound

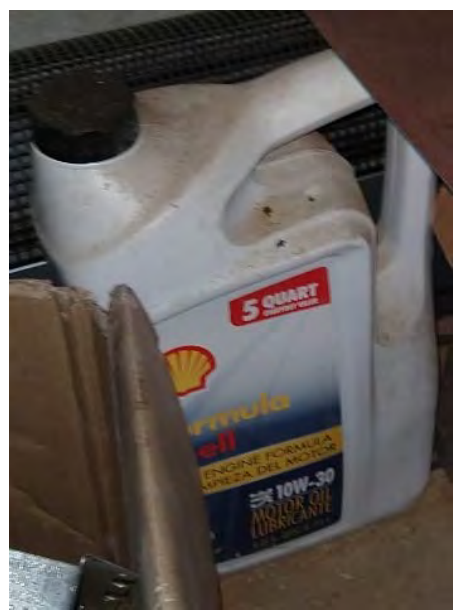
Rust-oleum Spray Paint

Rust-oleum Spray Paint

Hybrifix Super 7 Adhesive Sealant

Fire Extinguisher

Oatey Shower Pan Liner Adhesive



Shell Motor Oil

Concrobium House & Deck Wash

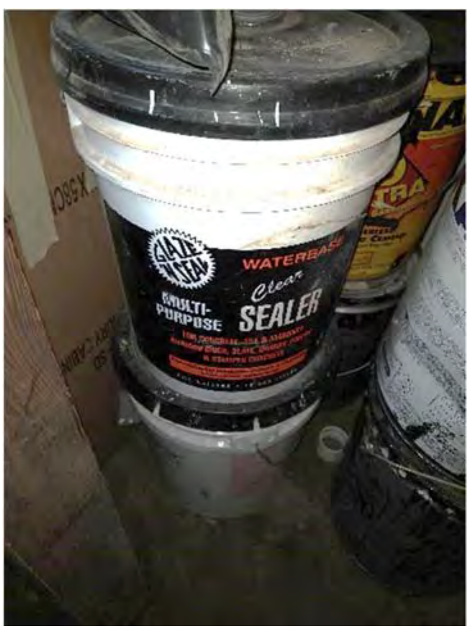
3M Fire Block Foam

Klean Strip Turpentine

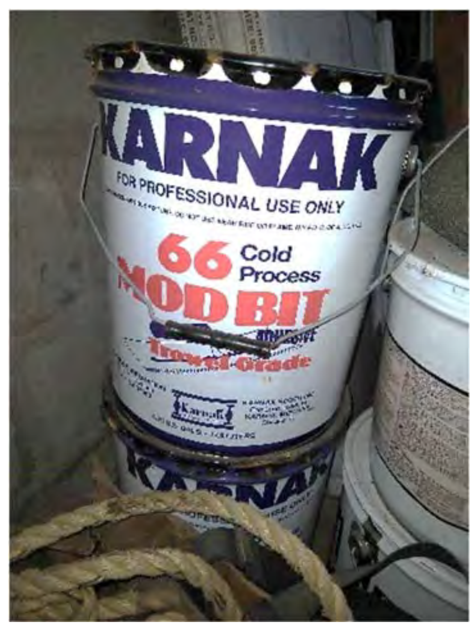
Thomasville Wood Floor Cleaner

Various Wood Stains

Redi Shine Glass Cleaner



Glaze N' Seal Multi-Purpose Sealer



Karnak 66 Mod Bit Adhesive

Bostik BST Wood Flooring Adhesive

Prosoco Sure Klean Masonry Cleaner

Weld-Crete Concrete Adhesive

Benjamin Moore Paint

Various Spackling Formulas

Bondo Wood Filler

Bondo White Crème Hardener

Benzomatic Map/Pro

Great Stuff Sealant

3M Fire Barrier Sealant

Rust-oleum Enamel

Paver Reneu Gloss

Mapei Flexcolor CQ

PPG Speedhide Paint

Benjamin Moore Paint (Typical)

Benjamin Moore Paint (Typical)

Dap CrackShot Spackling Paste

Rust-oleum Spray Paint

Sheet Rock Joint Compound

Great Stuff Window and Door Sealant

220 Lakeville Road

NEW YORK STATE DEPARTMENT OF HEALTH
INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY
CENTER FOR ENVIRONMENTAL HEALTH

This form must be completed for each residence involved in indoor air testing.

Preparer's Name Erica Johnston Date/Time Prepared 4/5/19 @ 13:00

Preparer's Affiliation Envi. Consultant Phone No. 516-624-7200

Purpose of Investigation SVI Investigation for 218 Lakeville Road

1. OCCUPANT:

Interviewed: Y / N Goodstein Development Corporation

Last Name: Noce First Name: Jennifer

Address: 220 Lakeville Road

County: Nassau

Home Phone: ______ Office Phone: 516-482-8222

Number of Occupants/persons at this location <10 Age of Occupants 25+

2. OWNER OR LANDLORD: (Check if same as occupant ___)

Interviewed: Y / N

Last Name: ______ First Name: ______

Address: ______

County: ______

Home Phone: ______ Office Phone: ______

3. BUILDING CHARACTERISTICS

Type of Building: (Circle appropriate response)

Residential	School	Commercial/Multi-use
Industrial	Church	Other: office building

If the property is residential, type? (Circle appropriate response)

Ranch	2-Family	3-Family
Raised Ranch	Split Level	Colonial
Cape Cod	Contemporary	Mobile Home
Duplex	Apartment House	Townhouses/Condos
Modular	Log Home	Other:________

N/A

If multiple units, how many? N/A

If the property is commercial, type?

Business Type(s) Goodstein Development

Does it include residences (i.e., multi-use)? Y / N

If yes, how many? ______

Other characteristics:

Number of floors 2 + Basement

Building age ~1932

Is the building insulated? Y / N

How air tight? Tight / Average / Not Tight

4. AIRFLOW

Use air current tubes or tracer smoke to evaluate airflow patterns and qualitatively describe:

Airflow between floors

Staircases

Airflow near source

Window, doorways + garage door

Outdoor air infiltration

Opening of doors / windows

Infiltration into air ducts

5. **BASEMENT AND CONSTRUCTION CHARACTERISTICS** (Circle all that apply)

a. Above grade construction:	wood frame	concrete	stone	brick
b. Basement type:	full	crawlspace	slab	other ________
c. Basement floor:	concrete	dirt	stone	other ________
d. Basement floor:	uncovered	covered	covered with Paint	
e. Concrete floor:	unsealed	sealed	sealed with epoxy/paint	
f. Foundation walls:	poured	partially block	stone	other ________
g. Foundation walls:	unsealed	partially sealed	sealed with Paint	
h. The basement is:	wet	damp	dry	moldy
i. The basement is:	finished	unfinished	partially finished	
j. Sump present?	Y / N			
k. Water in sump?	Y / N / not applicable			

Basement/Lowest level depth below grade: ________(feet)

Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)

Minor cracks ~2" long in the eastern portion of basement

sewer utility & plumbing pipes/caps present IVO sample

6. **HEATING, VENTING and AIR CONDITIONING** (Circle all that apply)

Type of heating system(s) used in this building: (circle all that apply – note primary)

Hot air circulation	Heat pump	Hot water baseboard	
~~Space Heaters~~	Stream radiation	Radiant floor	
Electric baseboard	Wood stove	Outdoor wood boiler	Other ____________

The primary type of fuel used is:

Natural Gas	~~Fuel Oil~~ ems	Kerosene
~~Electric~~	Propane	Solar
Wood	Coal	

perimeter present, seems to be old/disconnected

Domestic hot water tank fueled by: GAS

Hot water tank

Boiler/furnace located in:	Basement	Outdoors	Main Floor	Other___________
Air conditioning:	Central Air	Window units	Open Windows	None

Are there air distribution ducts present? Y / N - on 1st floor, not basement

Describe the supply and cold air return ductwork, and its condition where visible, including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.

____

____

____

____

7. OCCUPANCY

Is basement/lowest level occupied? Full-time Occasionally Seldom Almost Never

Level	**General Use of Each Floor (e.g., familyroom, bedroom, laundry, workshop, storage)**
Basement	storage/garage/utilities
1st Floor	offices
2nd Floor	↓
3rd Floor	
4th Floor	

8. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY

a. Is there an attached garage? Y / N

b. Does the garage have a separate heating unit? Y / N / NA

c. Are petroleum-powered machines or vehicles stored in the garage (e.g., lawnmower, atv, car) Y / N / NA Please specify car

d. Has the building ever had a fire? Y / N When?________

e. Is a kerosene or unvented gas space heater present? Y / N Where?________

f. Is there a workshop or hobby/craft area? Y / N Where & Type?________

g. Is there smoking in the building? Y / N How frequently?________

h. Have cleaning products been used recently? Y / N When & Type?________

i. Have cosmetic products been used recently? Y / N When & Type?________

j. Has painting/staining been done in the last 6 months? Y / N Where & When? ______________

k. Is there new carpet, drapes or other textiles? Y / N Where & When? ______________

l. Have air fresheners been used recently? Y / N When & Type? ______________

m. Is there a kitchen exhaust fan? Y / N If yes, where vented?___________

n. Is there a bathroom exhaust fan? Y / N If yes, where vented?___________

o. Is there a clothes dryer? Y / N If yes, is it vented outside? Y / N

p. Has there been a pesticide application? Y / N When & Type?_______________

Are there odors in the building? Y / N
If yes, please describe: ____

Do any of the building occupants use solvents at work? Y / N
(e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist

If yes, what types of solvents are used? ____________________________________

If yes, are their clothes washed at work? Y / N

Do any of the building occupants regularly use or work at a dry-cleaning service? (Circle appropriate response)

Yes, use dry-cleaning regularly (weekly) No
Yes, use dry-cleaning infrequently (monthly or less) Unknown
Yes, work at a dry-cleaning service

Is there a radon mitigation system for the building/structure? Y / N Date of Installation: ___________
Is the system active or passive? Active/Passive

9. WATER AND SEWAGE

Water Supply: Public Water Drilled Well Driven Well Dug Well Other: _______

Sewage Disposal: Public Sewer Septic Tank Leach Field Dry Well Other: _______

10. RELOCATION INFORMATION (for oil spill residential emergency) N/A

a. Provide reasons why relocation is recommended: ______________________________

b. Residents choose to: remain in home relocate to friends/family relocate to hotel/motel

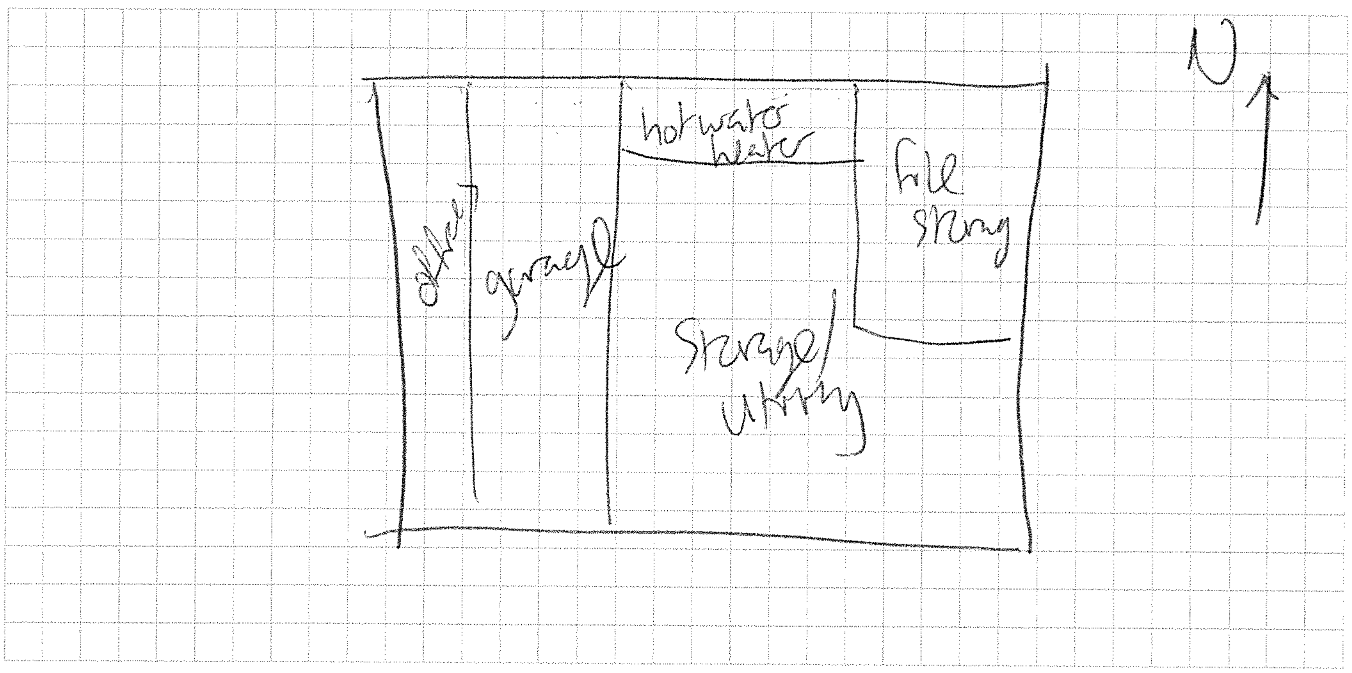
c. Responsibility for costs associated with reimbursement explained? Y / N

d. Relocation package provided and explained to residents? Y / N

11. FLOOR PLANS

Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.

Basement:



First Floor:

12. OUTDOOR PLOT

Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.

Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.

13. PRODUCT INVENTORY FORM

Make & Model of field instrument used: ______________________

List specific products found in the residence that have the potential to affect indoor air quality.

Location	Product Description	Size (units)	Condition*	Chemical Ingredients	Field Instrument Reading (units)	Photo** Y / N
utility/storage	Kleen Strip Lacquer thinner	1qt	U			
	Flood paint solvent penetrol	1qt	U			
	Titebond wood glue	16floz	U			
	Blaster silicone lubricant	11oz	U			
	WD-40	14.4oz	U			
	Bondo all purpose resin	32floz	U/O			
	Comet spray gel	32fl	U			
	Mr. Clean multi surface	1gal	U			
	Minwax Poly.	8floz	U	x2		
	Great Stuff foam sealant	16oz	U/O			
	Minwax pre-stain conditioner	32floz	U			
	Kleen Strip six denatured alcohol	1qt	U			
	Kleen Strip japandryer	1qt	U			
	Kleen Strip acetone	1qt	U			
	Kleen strip odorless mineral spirits	1gal	U			
	Bondo all purpose putty	11.5floz	U/O			
	Bernzomatic propylene	5.75oz	1U 3U/O	x4		
	BEHR - paint	1gal	2U/O 4U	x6		
	Cat pumps premium pump oil	21floz	U/O			

* Describe the condition of the product containers as **Unopened (UO), Used (U),** or **Deteriorated (D)**
** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

Ridgid engine lube 12oz - U
power care engine lube 32Fl oz - U/O

metal wax polishing gel - 16oz x2 1U 1U/O

STIHL engine oil 5.2floz - U/O x4

metal wax metal cleaner - 24oz U/O

Indoor Air Quality Questionnaire and Building Inventory
Product Inventory Photographs
220 Lakeville Road, Lake Success, NY

Klean Strip Lacquer Thinner

Flood Penetrol

Titebond III Ultimate Wood Glue

B’Laster Silicone Lubricant

WD-40 Lubricant

Bondo Fiberglass Resin

Comet Mildew Stain Remover

Mr. Clean Multi-Surface Cleaner

MINWAX Polyurethane

GREAT STUFF Foam Sealant

MINWAX Wood Conditioner

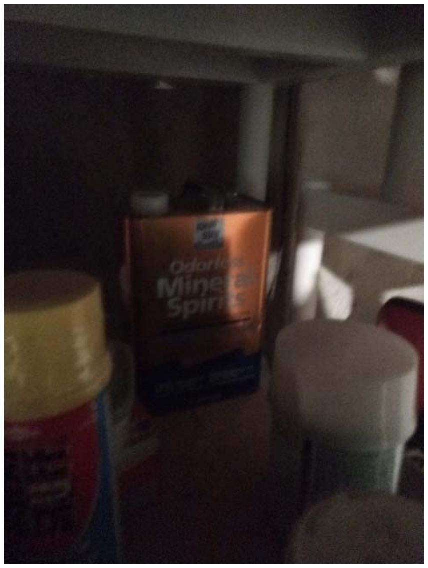
Klean Strip Denatured Alcohol

Klean Strip Japan Drier

Klean Strip Acetone

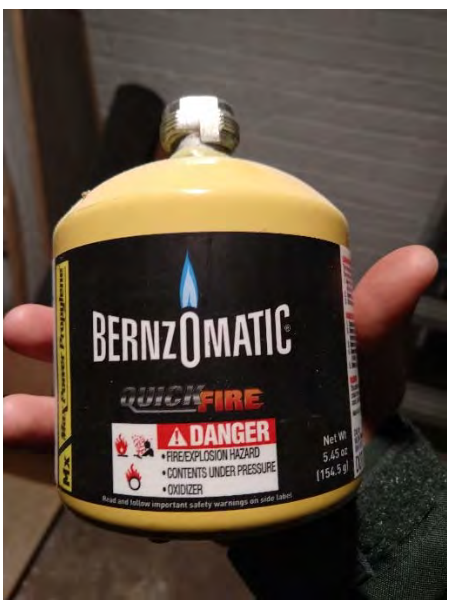
Metalwax Polishing Gel

Metalwax Metal Cleaner



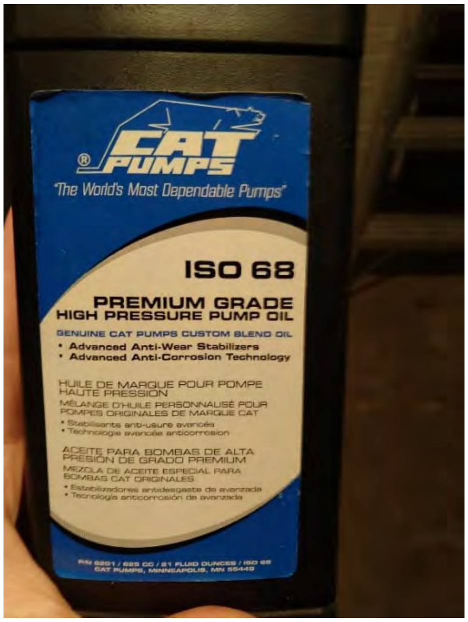
Klean Strip Odorless Mineral Spirits

Bondo All Purpose Putty



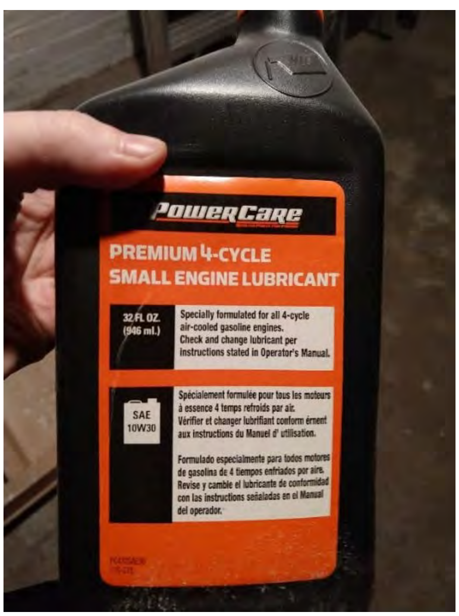
Bernzomatic Propane Tank

BEHR Paint and Primer in One



Cat Pumps High Pressure Pump Oil

RIDGID Small Engine Lubricant



PowerCare Small Engine Lubricant

STIHL 2-cycle Engine Oil

OSR – 3

5 University Place

NEW YORK STATE DEPARTMENT OF HEALTH
INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY
CENTER FOR ENVIRONMENTAL HEALTH

This form must be completed for each residence involved in indoor air testing.

Preparer's Name Erica Johnston Date/Time Prepared 4/5/19 @ 15:15

Preparer's Affiliation Environmental Consultant Phone No. 516-624-7200

Purpose of Investigation SVI Investigation for 218 Lakeville Road

1. OCCUPANT:

Interviewed: Y / N

Last Name: Bitondo First Name: Attilio

Address: 5 University place

County: Nassau

Home Phone: 516-487-5141 Office Phone: ____________

Number of Occupants/persons at this location 1 Age of Occupants ~80

2. OWNER OR LANDLORD: (Check if same as occupant ✓)

Interviewed: Y / N

Last Name: ____________ First Name: ____________

Address: ____________

County: ____________

Home Phone: ____________ Office Phone: ____________

3. BUILDING CHARACTERISTICS

Type of Building: (Circle appropriate response)

Residential	School	Commercial/Multi-use
Industrial	Church	Other: ____________

If the property is residential, type? (Circle appropriate response)

Ranch	2-Family	3-Family
Raised Ranch	Split Level	Colonial
Cape Cod	Contemporary	Mobile Home
Duplex	Apartment House	Townhouses/Condos
Modular	Log Home	Other:______________

If multiple units, how many? N/A

If the property is commercial, type?

Business Type(s) N/A

Does it include residences (i.e., multi-use)? Y / N If yes, how many? ______

Other characteristics:

Number of floors 1 + Basement Building age______

Is the building insulated? Y / N How air tight? Tight / Average / Not Tight

4. AIRFLOW

Use air current tubes or tracer smoke to evaluate airflow patterns and qualitatively describe:

Airflow between floors

____

____

____

Airflow near source

____

____

____

Outdoor air infiltration

____

____

____

Infiltration into air ducts

____

____

____

5. BASEMENT AND CONSTRUCTION CHARACTERISTICS (Circle all that apply)

a. Above grade construction:	wood frame	concrete	stone	brick
b. Basement type:	full	crawlspace	slab	other ________
c. Basement floor:	concrete	dirt	stone	other ________
d. Basement floor:	uncovered	covered	covered with tile	
e. Concrete floor:	unsealed	sealed	sealed with unknown	
f. Foundation walls:	poured	block	stone	other ________
g. Foundation walls:	unsealed	sealed	sealed with unable to observe	
h. The basement is:	wet	damp	dry	moldy
i. The basement is:	finished	unfinished	partially finished	
j. Sump present?	Y / N			
k. Water in sump?	Y / N / not applicable			

Basement/Lowest level depth below grade: ________(feet) basement is partially e grade + partially below grade

Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)

____

____

6. HEATING, VENTING and AIR CONDITIONING (Circle all that apply)

Type of heating system(s) used in this building: (circle all that apply – note primary)

Hot air circulation	Heat pump	Hot water baseboard	
Space Heaters	Stream radiation	Radiant floor	
Electric baseboard	Wood stove	Outdoor wood boiler	Other __________

The primary type of fuel used is:

Natural Gas	Fuel Oil	Kerosene
Electric	Propane	Solar
Wood	Coal	

Domestic hot water tank fueled by: fuel oil

Boiler/furnace located in: Basement Outdoors Main Floor Other__________

Air conditioning: Central Air Window units Open Windows None

Are there air distribution ducts present? Y / N

Describe the supply and cold air return ductwork, and its condition where visible, including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.

____

____

____

____

7. OCCUPANCY

Is basement/lowest level occupied? Full-time Occasionally Seldom Almost Never

Level	**General Use of Each Floor (e.g., familyroom, bedroom, laundry, workshop, storage)**
Basement	Residential / Storage / utility
1st Floor	Residential
2nd Floor	
3rd Floor	
4th Floor	

8. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY

a. Is there an attached garage? Y / N

b. Does the garage have a separate heating unit? Y / N / NA

c. Are petroleum-powered machines or vehicles stored in the garage (e.g., lawnmower, atv, car) Y / N / NA
Please specify______________

d. Has the building ever had a fire? Y / N When?______________

e. Is a kerosene or unvented gas space heater present? Y / N Where? ______________

f. Is there a workshop or hobby/craft area? Y / N Where & Type? ______________

g. Is there smoking in the building? Y / N How frequently? ______________

h. Have cleaning products been used recently? Y / N When & Type? ______________

i. Have cosmetic products been used recently? Y / N When & Type? ______________

j. **Has painting/staining been done in the last 6 months?** Y / N Where & When? ____________

k. **Is there new carpet, drapes or other textiles?** Y / N Where & When? ____________

l. **Have air fresheners been used recently?** Y / N When & Type? ____________

m. **Is there a kitchen exhaust fan?** Y / N If yes, where vented? ____________

n. **Is there a bathroom exhaust fan?** Y / N If yes, where vented? ____________

o. **Is there a clothes dryer?** Y / N If yes, is it vented outside? Y / N

p. **Has there been a pesticide application?** Y / N When & Type? ____________

Are there odors in the building? Y / N
If yes, please describe: ____________________________

Do any of the building occupants use solvents at work? Y / N
(e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist

If yes, what types of solvents are used? ____________________________

If yes, are their clothes washed at work? Y / N

Do any of the building occupants regularly use or work at a dry-cleaning service? (Circle appropriate response)

Yes, use dry-cleaning regularly (weekly) No
Yes, use dry-cleaning infrequently (monthly or less) Unknown
Yes, work at a dry-cleaning service

Is there a radon mitigation system for the building/structure? Y / N Date of Installation: ____________
Is the system active or passive? Active/Passive

9. WATER AND SEWAGE

Water Supply: Public Water Drilled Well Driven Well Dug Well Other: _______

Sewage Disposal: Public Sewer Septic Tank Leach Field Dry Well Other: _______

10. RELOCATION INFORMATION (for oil spill residential emergency)

a. **Provide reasons why relocation is recommended:** ____________________________

b. **Residents choose to:** remain in home relocate to friends/family relocate to hotel/motel

c. **Responsibility for costs associated with reimbursement explained?** Y / N

d. **Relocation package provided and explained to residents?** Y / N

11. FLOOR PLANS

Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.

Basement:

First Floor:

12. OUTDOOR PLOT

Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.

Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.

13. PRODUCT INVENTORY FORM

Make & Model of field instrument used: ______________________________

List specific products found in the residence that have the potential to affect indoor air quality.

Location	Product Description	Size (units)	Condition*	Chemical Ingredients	Field Instrument Reading (units)	Photo ** Y / N
	Clorox Max performance stain remover	3.33L	U			
	Downy fabric softner	1.32gal	U			
	Clorox Bleach	3.57L	U			
	Shout stain remover	22floz	U	22floz x 2 + 1.34gal x 1		
	Spectracide home pest control	unk.	U			
	Lysol disinfecting spray	19oz	U			
	Arm+Hammer w/oxi clean detergent	1.95gal	U			
	Clorox w/oxi magic	22.9oz	U			
	Oxi-clean stainremover	11.6lbs				
	Windex	32floz		x2		
	mr clean	1.25qt				
	Tilex	1qt		x2		
	Fantastik	32floz				
	soft scrub	2lb				
	Lysol toiletcleaner	32oz		x2		

* Describe the condition of the product containers as **Unopened (UO), Used (U),** or **Deteriorated (D)**
** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

Indoor Air Quality Questionnaire and Building Inventory
Product Inventory Photographs
5 University Place, Lake Success, NY

Ultra Downy Fabric Conditioner

Clorox Stain Remover and Color Booster

Bounce Fabric Softener Dryer Sheets

Clorox Bleach

OxiClean Stain Remover

OxiClean Stain Remover

Arm & Hammer Laundry Detergent

Shout Laundry Detergent

Spectracide Pest Control

Lysol Disinfectant Spray

Clorox Stain Remover

Shout Stain Remover

OxiClean Stain Remover/Bleach

Spray ‘n Wash Stain Remover

Windex Glass Cleaner

Tilex Bathroom Cleaner

Lysol Toilet Bowl Cleaner

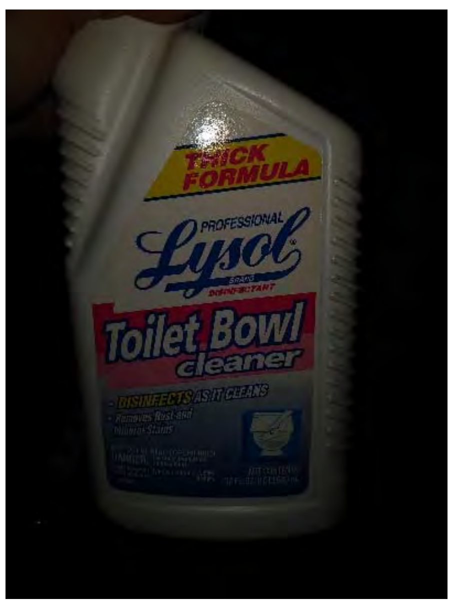
Windex Glass Cleaner

Tilex Bathroom Cleaner

Soft Scrub with Bleach Cleanser

Fantastik All Purpose Cleaner

Mr. Clean Multi-Purpose Cleaner



Lysol Toilet Bowl Cleaner

APPENDIX E

April 2019 Investigation Photolog

Appendix E
April 2019
SVI Investigation Photographs

Photo #1: Representative view of helium test on sub-slab vapor probe

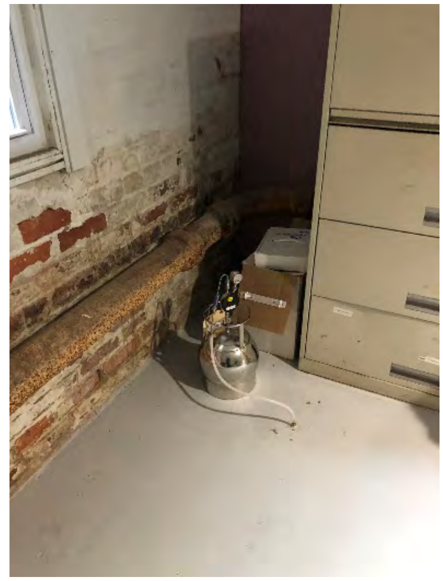


Photo #2: Sub-slab vapor sampling at 220 Lakeville Road (typical)

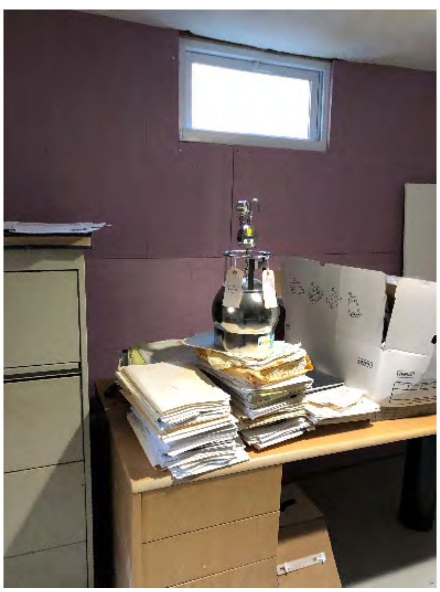


Photo #3: Indoor air sampling at 220 Lakeville Road (typical)

Photo #4: Concurrent indoor air and sub-slab vapor sampling at 218 Lakeville Road (typical)

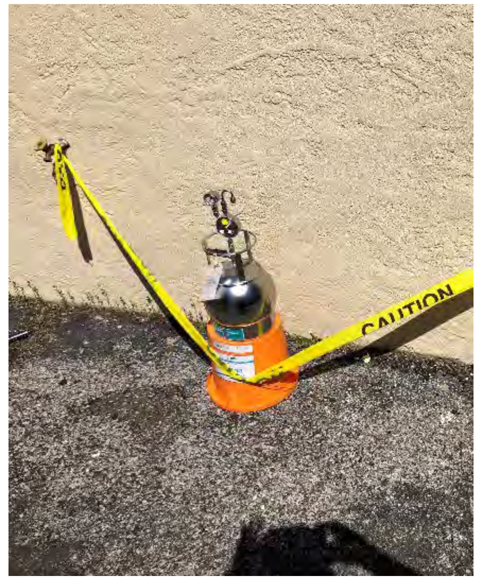


Photo #5: Upwind ambient air sample and duplicate

Photo #6: Downwind ambient air sample

Photo #7: Utility markout prior to sub-slab sample probe installation at 5 University Place

Photo #8: Sub-slab sample probe installation at 5 University Place

APPENDIX F

April 2019 Investigation Laboratory Analytical Report

APPENDIX G
April 2019 Investigation Data Usability Summary Report

Data Usability Summary Report

Soil Vapor Intrusion Investigation
Former Imperial Cleaners Site
218 Lakeville Road
Lake Success, NY 11020
BCP Site # C130225

This Data Usability Summary Report (DUSR) has been prepared to validate the results of the sub-slab vapor, indoor air and ambient air sampling conducted in and around 218 Lakeville Road, Lake Success, NY on April 4-5, 2019 in association with a soil vapor intrusion (SVI) investigation, and in accordance with the NYSDEC-approved *Remedial Work Plan* (RWP) for the site (Walden, February 2019)

This DUSR has been prepared in accordance with NYSDEC Draft DER-10 Appendix 2B – Guidance for Data Deliverables and the Development of Data Usability Summary Reports. The DUSR provides a thorough evaluation of analytical data without using the services of an independent third-party data validator. The primary objective of the DUSR is to determine whether or not the data presented meets project specific criteria for data quality and use.

The analytical data was evaluated by Mr. Lawrence Zeman (Walden), whose experience and qualifications to prepare the DUSR for this project are presented in the attached resume (see Attachment A). The sub-slab vapor, indoor air and ambient air samples collected for laboratory analysis were submitted to Phoenix Environmental Laboratories, Inc. (Phoenix) of Manchester, NH, a NYSDOH Environmental Laboratory Approval Program (ELAP) certified laboratory (NY Lab Registration #11301), and analyzed for volatile organic compounds (VOCs) via U.S. Environmental Protection Agency (USEPA) Method TO-15 with the analytical detection limits set forth in the *Guidance for Evaluating Soil Vapor Intrusion in the State of New York* (dated October 2006, with updates, referred to herein as "SVI Guidance"). The DUSR process consisted of evaluating the analytical data package produced by Phoenix and answering the following questions.

1. **Were there any component of the sampling protocol which deviated from established sampling procedures?**

   The sub-slab vapor, indoor air and ambient air samples were collected in laboratory-provided, individually certified 6-liter Summa® canisters equipped with flow regulators. The regulators were calibrated by the laboratory for a sampling period of 24 hours; this sampling duration was chosen in accordance with SVI Guidance for residential indoor air sampling to reflect the typical exposure scenario. The sampling followed the established sampling procedures in the NYSDEC-approved February 2019 RWP for the Site.

2. Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?

The sampling and analytical program outlined in the RWP was designed to conform to the NYSDEC ASP Category B and USEPA CLP deliverables criteria. Both field sampling and laboratory analytical activities were performed with built-in QA/QC programs. Duplicate samples were collected at a minimum of one (1) sample per ten (10) samples collected, with a minimum of one (1) of each type of sample (i.e., one sub-slab, one indoor air and one outdoor air). The analytical laboratory (Phoenix) included method blanks and batch QA/QC samples as part of their standard QA/QC program. Additionally, the samples were handled in compliance with the holding time allowances, meeting the NYSDEC ASP Category B and USEPA CLP deliverables criteria requirements.

3. Have all holding times been met?

Times of sample receipt, extraction, and analysis have been inspected to determine whether the holding time specifications have been met. All of the samples were analyzed within the specified holding times.

4. Do all QC data (blanks, instrument tunings, calibration standards, calibration verifications, surrogate recoveries, spike recoveries, replicate analyses, laboratory controls, and sample data) fall within the protocol-required limits and specifications?

All of the primary sample and QC data were reviewed. Duplicate sample analyses demonstrated a reasonable level of accuracy in the analytical results, and all of the QA/QC data met the protocol-required criteria with exceptions as noted below.

Two (2) duplicate QA/QC samples were run by the laboratory as part of their standard QA/QC program; a copy of the laboratory QA/QC report is included herein in Appendix B. The evaluation of the QA/QC data indicated that all laboratory control sample (LCS) recovery and sample duplicate relative percent difference (RPD) values were within required limits with the following exceptions:

- The RPD recovery for 4-Ethyltoluene, Cyclohexane, Ethanol, Heptane, Tetrachloroethane, Acetone and Carbon Disulfide exceeded the QA/QC acceptance criteria for 2 of the collected sample duplicates. The full analytical run is acceptable due to the fact that field duplicate samples have the potential for higher RPD due to discrete sample differences.

- The LCS exceeded the QA/QC acceptance criteria for 1,2,4-Trichlorobenzene, Bromoform, Dibromochloromethane and Hexachlorobutadiene. All sample results for 1,2,4-Trichlorobenzene, Bromoform, Dibromochloromethane and Hexachlorobutadiene were below laboratory method detection limits (MDLs) and reported as less than the MDLs. Since all LCS associated outliers exceeded the upper acceptance criteria, any bias in the primary samples would be high and the potential for undetected analytes is low, thus the analytical batch is acceptable.

- The LCS exceeded the QA/QC acceptance criteria for Ethanol. Ethanol is a prevalent compound in the laboratory environment and elevated quality control results are not uncommon. Since Ethanol exceeded the upper acceptance criteria, any bias in the primary samples would be high and the potential for undetected analytes is low, thus the analytical batch is acceptable.

In summary, although analytes from the QA/QC sample data did not meet all required laboratory criteria, the reliability of the laboratory results should not be affected.

5. Have all the data been generated using established and agreed upon analytical protocols?

Laboratory analytical protocols have been developed by the USEPA and are published in USEPA *Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air: Method TO-15* (Second Edition, January 1999). The review of the laboratory deliverables indicated that the analytical data for this project were generated following these standard protocols.

6. Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?

An evaluation of the raw data confirmed the accuracy of the results provided in the data summary sheets and the quality control verification forms included in the analytical data package prepared by the laboratory.

7. **Have the correct data qualifiers been used?**

The laboratory provided a list of qualifiers used in their data reporting. QC failures such as potential sample contamination by laboratory solvents or estimation of sample result values due to analyte concentrations detected above calibration ranges were checked back to the reported data to determine whether the qualifiers were properly used. The evaluation indicated that the laboratory flagged the data using the correct data qualifiers when necessary. The data qualifiers comply with the NYSDEC Analytical Services Protocol (ASP) 95 revised guidelines.

8. **Have the minimum reporting limits been met?**

The minimum reporting limits specified in the February 2019 RWP are as follows:

- All VOCs in sub-slab soil vapor samples: 1.0 ug/m^3
- For the indoor and outdoor air samples:
    - 0.20 ug/m^3 for trichloroethene (TCE), carbon tetrachloride, cis-1,2-dichloroethene, 1,1-dichloroethene, and vinyl chloride
    - 1.0 ug/m^3 for all other VOCs in the USEPA Method TO-15 analysis.

The laboratory utilized reporting limits of 0.25 $\mu g/m^3$ for tetrachloroethene (PCE), 0.20 $\mu g/m^3$ for TCE, cis-1,2-DCE, 1,1-DCE, vinyl chloride, and carbon tetrachloride, and 1.0 $\mu g/m^3$ for all other reportable VOCs which meets the minimum required reporting limits for all samples collected on April 4-5, 2019.

<u>Summary</u>

In summary, analytical data package review conducted when preparing this DUSR found no data deficiencies, analytical protocol deviations, or quality control problems that impact the quality of the data. No significant QC exceedances were identified and it was determined that none of the data should be rejected. Therefore, there is no need for resampling or reanalysis based on the evaluation presented herein.

Prepared by:
Lawrence Zeman

Attachment A

Resume of Environmental Professional

Lawrence F. Zeman
Project Scientist II

Lawrence has 20 years of environmental and lab consulting experience, taking on difficult laboratory issues and QA/QC. He is very well versed in areas as diverse as regulatory compliance, test protocol development and implementation, management of instrument repair and maintenance, field inspections and on-site audits, correlation studies of various analyses and engineering/technical reporting.

EDUCATION

B.A. Biology, Minor in Chemistry Queens College

LICENSES/ CERTIFICATIONS

New York State ELAP Laboratory Director

New York State ELAP Laboratory Microbiology Assistant Director

New York Department of Health Laboratory Technologist

OSHA HAZWOPER 40-hour & OSHA 10-hour Certified

SELECTED RELEVANT EXPERIENCE

Various Clients, New York

- Performed sample collection of various sample types at industrial facilities and construction & remediation project sites;
  Conducted soil sample collection, field activities oversight and continuous air monitoring for Community Air Monitoring Program (CAMP) in accordance with DER-10 as follows:
    - Elmhurst Tank Park & Playground, Queens, NY (2009 – 2011);
    - Calvert Vaux Park and Athletic Fields, Brooklyn, NY (2009 – 2011), as an Independent Environmental Monitor (IEM) on-site technician;
    - Harlem Rive Greenway, Bronx, NY (2011 – 2012);
    - Beach Channel H.S. Athletic Fields (2016);
    - P.S. 63M William McKinley School, Manhattan, NY (2016);
    - P.S. 131 Abigail Adams Public School, Queens, NY (2017);
    - Forest Hills High School, Queens, NY (2017)
- Developed and implemented new testing protocols and test procedures;
- Conducted instrumentation repair and scheduled maintenance;
- Conducted correlation studies of various analytic procedures;
- Verified laboratory Quality Assurance and Quality Control procedures and data;
- Responsible for regulatory compliance and quality control;
- Prepared and submitted facilities' annual Zoning Performance Standards Compliance Reports, including noise, vibration, odor and opacity testing for DSNY permit renewal;
- Provided environmental services to ensure compliance for facility's NYS DEC Title V Air Facility Permit. Completed monthly, semi-annual and annual compliance reports;
- Conducted field Inspections and on-site audits;
- Preformed field measurements and recording of Noise and Vibration;
- Prepared Engineering & Technical Reports;
- Prepared New York City Community Right-To-Know Law and SARA reports for Industrial facilities

ATTACHMENT 2

Pre-Design Subsurface Investigation Summary Report (Walden, October 2019)

Pre-Design Subsurface Investigation Summary Report

at

Former Imperial Cleaners Site
218 Lakeville Road
Lake Success, New York 11042
NYSDEC BCP Site #C130225

October 2019

Prepared for:

Mr. Joseph Jones
Project Manager
NYS Department of Environmental Conservation
Remedial Bureau A, 11th Floor
625 Broadway
Albany, New York 12233

WALDEN ENVIRONMENTAL ENGINEERING, PLLC

Industry Leader in Environmental Engineering Consulting

PROACTIVE SOLUTIONS SINCE 1995

WALDEN ENVIRONMENTAL ENGINEERING

Sent via email to joseph.jones@dec.ny.gov

October 17, 2019
IMPL0115.6

Mr. Joseph Jones
New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway, 12th Floor
Albany, New York 12233-7015

Re: Pre-Design Subsurface Investigation Report
Former Imperial Cleaners Site (BCP #C130225)
218 Lakeville Road, Lake Success, NY

Dear Mr. Jones:

Walden Environmental Engineering, PLLC (Walden) is submitting the attached *Pre-Design Subsurface Investigation Summary Report* for the above referenced site on behalf of the property owner, 218 Lakeville Acquisition LLC. This report summarizes the results of the May 2019 SVI soil and perched groundwater investigation completed in accordance with the NYSDEC approved *Remedial Work Plan* (Walden, February 2019). Please call me if you have any questions.

Very truly yours,
Walden Environmental Engineering, PLLC

Nora M Brew

Nora M. Brew, P.E.
Senior Project Manager

cc: R. Corcoran, NYSDEC
A. Tamuno, Esq., NYSDEC
C. Bethoney, NYSDOH
S. McLaughlin, NYSDOH
G. Bowitch, Esq., Bowitch & Coffey
N. Weisfeld, 218 Lakeville Aquisition LLC

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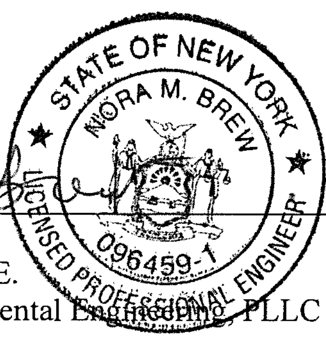
Professional Engineer Certification

I certify that I am currently a professional engineer licensed to practice in New York State in accordance with New York State Education Law, Article 145, Section 7200 et seq. I have completed accredited university courses and degrees in engineering and have sufficient training and experience in remediation, groundwater hydrology, and related fields that enable me to make sound professional judgments with regards to engineering design.

I further certify that this submittal, *Pre-Design Subsurface Investigation Summary Report*, dated October 17, 2019, was prepared under my direction.



Nora M. Brew, P.E.
Walden Environmental Engineering, PLLC

10/17/19
Date

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APPENDICES

1 INTRODUCTION

Walden Environmental Engineering, PLLC (Walden) has prepared this report to summarize the results of the May 2019 pre-design subsurface investigation conducted at the Former Imperial Cleaners site located at 218 Lakeville Road, Lake Success, New York (the "Site"). The Site is currently managed under the New York State Brownfield Cleanup Program (BCP) and is subject to New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Agreement #C130225-01-18. This agreement was fully executed by 218 Lakeville Acquisition LLC, the current Site owner (hereinafter, the "Volunteer") and the NYSDEC on February 12, 2018. Previously, the Site was managed under the NYSDEC Voluntary Cleanup Program (VCP) as site #V-00244-1. The Volunteer became owner of the Site in July 2015.

This investigation was conducted to support the design and implementation of a soil vapor extraction (SVE) system, which was determined to be the most feasible remedial alternative for the Site, as discussed in the February 2019 *Remedial Work Plan (RWP,* Walden). The investigation was completed in accordance with the NYSDEC-approved *RWP*, which was developed in accordance with the guidelines set forth in NYSDEC *DER-10: Technical Guidance for Site Investigation and Remediation* (issued May 3, 2010). The investigation included the advancement of soil borings, the installation of temporary groundwater monitoring wells and the subsequent collection of numerous soil and groundwater samples throughout the Site.

A brief Site description of the investigation and the objectives of this investigation are presented below. Section 2 describes the investigation fieldwork conducted at the Site. Section 3 summarizes the soil and groundwater sampling results, and Section 4 presents conclusions and recommendations based on the findings of the investigation.

1.1 Site History and Previous Investigations/Remediation

The Site location is illustrated on Figure 1. The Site is a commercial strip with a single-story building with a basement occupying approximately 4,250 square feet, with two (2) active tenants (Tobacco Plaza, Ltd. and CCQ Construction Inc.) and two (2) vacant spaces, as shown on Figure 2. Residential properties are located directly west of the Site and commercial parcels adjoin the Site to the north, northwest and south.

The basement of the on-site building has concrete block walls and a poured concrete floor slab. Outside the building footprint, the property is completely asphalt-paved. Sanitary wastewater from the building is discharged to two (2) on-site septic systems (refer to Figure 2) as there are no public sewers available near the Site. A perched water table underlies the Site at approximately 30 feet below grade, with a confining clay layer approximately 35 to 50 feet below grade; the groundwater table is located approximately 150 feet below grade. Groundwater flow at the Site varies from west to west-northwest.

A release of tetrachloroethylene (PCE) at the Site was first noted in 1995. The PCE contamination was suspected to originate from floor drains within the tenant space occupied by a dry cleaner (i.e., Imperial Cleaners) at that time and from a leaching pool and drywell on the property that were associated with the former dry cleaner operations. The site investigation and remediation work described below was conducted by the previous owners of the Site, 218 Lakeville Associates LP, as required by NYSDEC under the VCP prior to the Volunteer's ownership and involvement with the Site.

A site investigation was conducted to identify source areas and determine the extent of contaminated soil and groundwater at the Site. Contaminated sediments were removed from the source areas (drywell, interior floor drains and leaching pool associated with the former Imperial Cleaners operations) in 1996 and 2000 to the extent possible without undermining the on-Site structures. Post-excavation soil sampling results indicated that volatile organic compounds (VOCs) remained in the subsurface at concentrations above the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) 4046 Recommended Cleanup Objectives. However, no additional materials were removed because it was determined that further excavation would threaten the integrity of the structures. A SVE system was installed to remove VOC vapors remaining in the soil and to improve soil and groundwater quality. The SVE system included eight (8) extraction wells and began operating in 2001. A soil, soil gas, groundwater and indoor air monitoring program was implemented to track the reductions in VOC concentrations achieved by operation of the SVE system.

Site closure sampling (soil, soil vapor and indoor air perc badge sampling) was conducted in November 2007 – January 2008 in accordance with a NYSDEC-approved work plan. The closure sampling results indicated that the SVE system had successfully reduced soil contaminant concentrations to below the NYSDEC TAGM 4046 Recommended Cleanup Objectives. Permanent shutdown of the SVE system was recommended based on the 2007-2008 closure sampling results. 218 Lakeville Associates L.P., the previous Site owner, subsequently shut down the SVE system circa 2008 without approval from NYSDEC and NYSDOH. These activities occurred approximately seven (7) years before the current Owner/Volunteer purchased the Site or had any involvement in the Site.

Representatives from the NYSDEC, the Volunteer and Walden met on-site in September 2015 to evaluate Site conditions and discuss previous sampling investigations, potential redevelopment of the Site and the work required to achieve VCP Site closure. Based on this meeting and subsequent discussions, a soil vapor intrusion (SVI) investigation ensued to evaluate potential indoor air quality impacts related to SVI and to support development of appropriate Site closure/management recommendations for NYSDEC and New York State Department of Health (NYSDOH) review and approval. The SVI sampling was conducted in February 2016 in accordance with the NYSDEC-approved *Soil Vapor Intrusion Investigation Work Plan* (Walden, December 2015) and included the collection of sub-slab soil vapor, indoor air and outdoor (ambient) air samples at the Site and several neighboring properties. The results of this sampling were documented in the May 2017 *Soil Vapor Intrusion Investigation Summary Report*, prepared by Walden and submitted to the NYSDEC, and indicated that subsurface VOC concentrations at the Site and surrounding area had rebounded since the SVE system was shut down. Remedial action objectives were subsequently developed (and discussed in the February 2019 *RWP*) to guide the selection of an appropriate remedial alternative for the Site and to support future development of Site closure/management plans.

In accordance with the February 2019 *RWP*, a subsequent SVI investigation was performed in April 2019 to confirm the February 2016 SVI sampling results at the Site and the adjacent property to the south at 220 Lakeville Road, and to evaluate the potential for vapor migration and intrusion at additional off-site properties not included in the February 2016 investigation. The April 2019 investigation included the collection of sub-slab soil vapor, indoor air and outdoor air samples at the Site, 220 Lakeville Road and one (1) additional off-site residential property to the west (5 University Place). Sampling was performed in accordance with the procedures described in the NYSDEC- and NYSDOH-approved *Soil Vapor Intrusion Investigation Work Plan* (Walden, December 2015). The results were documented in the July 2019 *Soil Vapor Intrusion Investigation Summary Report*, prepared by Walden and submitted to the NYSDEC which indicated that subsurface VOC concentrations at the Site remained elevated. Additionally, elevated concentrations of VOC-contaminated vapors were detected at 5 University Place.

1.2 May 2019 Soil and Groundwater Sampling Objectives

Based on the results of the February 2016 SVI sampling, remedial action alternatives were evaluated and presented in the February 2019 *RWP*. The selected remedial strategy for the Site entails the development and installation of a SVE system to reduce the residual VOC mass and prevent off-site vapor migration by removing contaminated vapors in the subsurface, with excavation of residual source material as appropriate.

In accordance with the February 2019 *RWP*, a pre-design subsurface investigation was performed at the Site in May 2019. The objectives of the pre-design investigation were to support the design and implementation of the SVE system by further evaluating potential residual VOC source material and categorizing geological factors which may affect the radius of influence and screen zones of SVE wells in the unsaturated zone. Fieldwork included the advancement of soil borings and the installation of temporary monitoring wells throughout the

Site with collection of numerous soil and groundwater samples. Sampling locations were biased towards the on-site building space, drywells and leaching pools associated with the former dry-cleaning operations. The results of the investigation are detailed herein and, in conjunction with data from previous investigations at the Site, will be utilized to identify and delineate on-Site source areas for removal and to support development of the SVE system pilot test.

2 SUBSURFACE INVESTIGATION FIELDWORK

The pre-design soil and groundwater investigation began on May 13, 2019 with a ground penetrating radar (GPR) survey of the exterior portions of the Site to clear the proposed sampling locations of underground utilities and other structures prior to drilling. One (1) previously unidentified subsurface drainage pool was detected by the GPR survey; the structure was situated on the west (rear) side of the Site building near the tenant space occupied by Tobacco Plaza (see Figure 2) and appeared to be utilized for roof drainage.

The subsurface investigation was performed from May 14 through 22, 2019. Eastern Environmental Solutions, Inc. (Eastern) of Manorville, NY was retained to perform drilling activities and temporary well installations. Sampling locations were chosen, in accordance with the *RWP,* to target buried drainage structures throughout the Site (stormwater drywells/sanitary leaching pools) where residual source material may be present, particularly those associated with the former dry cleaning operations, and to evaluate subsurface conditions along the upgradient (eastern/ southeastern) and downgradient (western/northwestern) Site boundaries. Based on historic Site use, it was anticipated that residual contamination would likely be found at the inverts of stormwater drywells and septic leaching pools; therefore, soil sampling was conducted in accordance with the *RWP* from the depth of the suspected source material (minimum ten [10] feet below grade, or bg) to just above the perched groundwater interface at approximately 30 feet bg. Select borings were converted to temporary monitoring wells and groundwater samples were collected from the top five (5) feet of the perched water column. Fieldwork and sampling activities are described in further detail below.

2.1 Soil Investigation

Fourteen (14) soil borings (GB-1 through GB-14) were advanced throughout the Site utilizing a direct-push drill rig (Geoprobe® 7822DT). Boring locations are depicted on Figure 2. Two (2) borings were advanced on either side of each buried drainage structure, one upgradient (southeast) and one downgradient (northwest), including the suspected roof drainage structure initially identified during the May 13, 2019 GPR survey. Additional borings were also installed in the rear parking lot just outside the southernmost (former Imperial Cleaners) tenant space and in the southeastern, northeastern and northwestern corners of the Site to evaluate potential VOC contamination in these areas.

Continuous soil samples were collected via five (5) foot Macrocores from ten (10) feet bg to the terminus of each boring (35 feet bg). The cores were visually inspected, logged and screened utilizing a photoionization detector (PID) which was calibrated according to manufacturers' instructions prior to the commencement of drilling activities. Boring logs are provided in Appendix A and photographs collected during the fieldwork are provided in Appendix B.

Perched groundwater was encountered between 27 and 33 feet bg. The soil lithology generally included medium brown, fine to medium sand with trace amounts of silt and gravel. Solvent odors and elevated PID measurements were detected sparingly and at varying depths throughout the borings; the maximum PID reading was detected in boring GB-6 at a depth of 15.5 feet bg, immediately downgradient of stormwater drywell DW-1 in the southwestern corner of the Site.

Two (2) soil samples were selected for laboratory analysis from each boring based on PID readings, field screening results (visual/olfactory observations), and other factors including proximity to suspected source areas, distinct soil types, and/or depth with respect to the perched groundwater table. Quality assurance/quality control (QA/QC) samples were also collected in accordance with the Quality Assurance Project Plan (QAPP) for the Site, provided as Appendix B of the February 2019 *RWP*. All soil samples were containerized in clean, laboratory-provided glassware, labeled, placed in ice-filled coolers and transported via courier under standard Chain-of-Custody protocols to Phoenix Environmental Laboratories, Inc. (Phoenix) of Manchester, CT, a NYSDOH Environmental Laboratory Approval Program (ELAP) Contract Laboratory Protocol (CLP) laboratory, for analysis of VOCs via U.S. Environmental Protection Agency (USEPA) Method 5035. The laboratory analytical results are summarized in Table 1 and are compared with 6 NYCRR/NYSDEC Part 375 Soil Cleanup Objectives (SCOs) for Commercial Site Use and Protection of Groundwater. The complete laboratory analytical reports are presented in Appendix C.

Drill cuttings were containerized in one (1) 55-gallon drum, labeled as non-hazardous waste, and transported off-site on May 22, 2019 by Eastern for disposal at Clean Water of New York Inc. in Staten Island, NY. A copy of the waste disposal manifest is included in Appendix D.

2.2 Groundwater Investigation

Following soil boring advancement and sample collection, seven (7) of the boring locations were converted to temporary monitoring wells, as summarized below and depicted on Figure 2:

Soil Boring ID	Temporary Monitoring Well ID
GB-1	TMW-1
GB-2	TMW-2
GB-3	TMW-3
GB-6	TMW-4
GB-8	TMW-5
GB-9	TMW-6
GB-12	TMW-7

The wells were installed to collect groundwater samples from the top of the perched water column (approximately 30-35 feet bg) and to collect perched water table measurements to determine the groundwater flow direction. The approximate groundwater flow direction (west to west-northwest) determined based on water level measurements recorded historically at the Site is shown on Figure 2. Note that the surface elevations of the temporary wells will be surveyed to accurately map the groundwater elevations and confirm the flow direction. Each temporary well was constructed with a five (5)-foot long section of one (1)-inch diameter polyvinylchloride (PVC) 0.020-inch screen at the bottom of the column and solid one (1)-inch diameter PVC riser pipe to grade, and was finished with a J-plug within a five (5)-inch diameter roadbox with bolt-down manhole cover, as shown on the boring logs provided as Appendix A and the photographs included in Appendix B.

One (1) perched groundwater sample was collected for VOC analysis from each of the temporary wells via peristaltic pump and dedicated high-density polyethylene (HDPE) tubing. In addition, groundwater samples collected from four (4) locations (GB-1/TMW-1, GB-6/TMW-4, GB-8/TMW-5 and GB-12/TMW-7) were also analyzed for "emerging contaminants" (1,4-dioxane and per- and polyfluorinated alkyl substances [PFAS]) in accordance with the *RWP* and NYSDEC memos *Groundwater Sampling for Emerging Contaminants* (February 2018) and *Collection of Groundwater Samples for Perfluorooctanoic Acid (PFOA) and Perfluorinated Compounds (PFCs) from Monitoring Wells Sample Protocol* (June 2016). QA/QC samples were also collected as prescribed in the QAPP.

The groundwater and QA/QC samples were placed in single-use laboratory-provided bottleware, labeled, placed in ice-filled coolers and transported via courier under standard Chain-of-Custody protocols to Phoenix for analysis of VOCs via USEPA Method 8260 and 1,4-dioxane via USEPA Method 8270. The samples slated for PFAS analysis were sent by Phoenix to Con-Test Analytical Laboratory of East Longmeadow, MA. The laboratory results for VOC analyses are summarized in Table 2 and are compared with NYSDEC Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Class GA Ambient Water Quality Standards (Standards). Table 3 presents the emerging contaminants (1,4-dioxane and PFAS) analytical results. Note that on July 24, 2019, the NYSDOH issued a Notice of Proposed Rulemaking [Amendment of Subpart 5-1 of Title 10 NYCRR (Maximum Contaminant Levels (MCLs)] to establish MCLs of 1 microgram per liter (µg/L) for 1,4-dioxane and 10 nanograms per liter (ng/L) for perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS). Following a 60-day public comment period (which ended September 23, 2019), NYSDOH will review comments received on the proposed rule. The MCLs will go into effect upon publication of a Notice of Adoption in the New York State Register. The 1,4-dioxane and PFAS results in Table 3 are compared with the proposed MCLs. Complete laboratory reports are included in Appendix C.

Purged groundwater was containerized in one (1) 55-gallon drum, labeled as non-hazardous waste, and transported off-site by Eastern on May 22, 2019 to Clean Water of New York Inc. in Staten Island, NY for disposal. A copy of the waste disposal manifest is included in Appendix D.

3 EVALUATION OF SOIL AND GROUNDWATER INVESTIGATION SAMPLING RESULTS

3.1 Summary of Soil Sampling Results

Numerous VOCs were detected above laboratory Reporting Limits (RLs) in the soil samples, primarily PCE and associated breakdown products (cis-1,2-dichloroethene [cis-1,2-DCE] and trichloroethene [TCE]). Refer to Table 2 for a summary of the soil sampling results. None of the reported detections exceeded applicable NYSDEC SCOs (for Commercial Use or Protection of Groundwater) with the exception of PCE in the sample collected from boring GB-6, located immediately downgradient of stormwater drywell DW-1, at a depth of 14.5-15.5 feet bg (the suspected invert of this drainage structure). The PCE concentration detected in this sample exceeds the NYSDEC SCO for Protection of Groundwater and represents the highest VOC concentration reported in the 28 soil samples collected during this investigation. Low concentrations of several other VOCs, predominantly chlorinated compounds, were also reported in this sample at levels below their respective SCOs.

Low concentrations of PCE (well below NYSDEC SCOs) were detected in all other soil samples with the exception of the samples collected from borings GB-8 and GB-9 at a depth of 14-14.5 feet bg and those collected from boring location GB-12 in the southeastern corner of the Site, where PCE was not detected.

Low concentrations (below NYSDEC SCOs) of PCE, TCE and cis-1,2-DCE were detected in numerous soil samples, particularly those collected at the perched groundwater interface (approximately 27-33 feet below grade). As discussed in Section 3.2 below, concentrations of these compounds exceeding applicable NYSDEC water quality Standards were detected in groundwater samples collected throughout the Site.

Low concentrations of acetone were also detected in several soil samples. Acetone is a common laboratory solvent and all the reported concentrations were well below applicable NYSDEC SCOs. Therefore, these detections are not considered to present a concern.

3.2 Summary of Groundwater Sampling Results

3.2.1 VOC Analysis

Several VOCs were detected above laboratory RLs in perched groundwater samples collected from the temporary monitoring wells. All reported concentrations were below their respective NYSDEC Standards except as discussed below. Refer to Table 3 for a summary of the groundwater sampling results.

PCE was detected at concentrations exceeding the NYSDEC Standard of 5 µg/L in perched groundwater samples collected from all temporary monitoring wells with the exception of TMW-7. The highest reported PCE concentration occurred in the sample collected from monitoring well TMW-2, which was converted from soil boring GB-2 and is located immediately downgradient of sanitary overflow leaching pool LP-3 on the west side of the Site building. Concentrations of cis-1,2-DCE and TCE slightly exceeding NYSDEC Standards were also detected in temporary monitoring wells TMW-4 (downgradient of drywell DW-1), TMW-5 (located in the northeastern corner of the Site) and TMW-6 (downgradient of leaching pool LP-1).

Concentrations of methyl tertiary butyl ether (MTBE) above the NYSDEC Standard of 10 µg/L were detected in perched groundwater samples collected from temporary monitoring wells TMW-1, TMW- 2, TMW-3 and TMW-7. No other VOCs were detected in well TMW-7 at concentrations exceeding laboratory RLs. Monitoring well TMW-7 is situated along the upgradient (eastern/southeastern) property boundary while wells TMW-1, TMW-2 and TMW-3 are situated directly downgradient of TMW-7 on the western/ northwestern side of the Site. Current and reported former uses of the Site have not included potential sources of MTBE, such as the storage or dispensing of gasoline. Considering the Site history and hydrologic locations of the temporary monitoring wells in which elevated concentrations of MTBE were reported, these detections support the conclusion that MTBE from an off-Site upgradient source(s) has migrated onto the Site. Note that MTBE was not detected in any of the sub-slab soil vapor or indoor air samples collected during the April 2019 SVI investigation.

3.2.2 Emerging Contaminants Analysis

None of the perched groundwater samples contained 1,4-dioxane above the laboratory RL of 0.20 µg/L or the NYSDOH proposed MCL of 1 µg/L. Additionally, none of the detected PFOA and PFOS concentrations exceeded the current USEPA Health Advisory Level of 70 ng/L for combined concentrations of PFOA and PFOS. However, all of the groundwater samples contained PFOA above the NYSDOH proposed MCL of 10 ng/L and two (2) of samples, collected from temporary monitoring wells TMW-1 and TMW-4, contained PFOS above the proposed MCL of 10 ng/L. It should be noted that the 10 ng/L proposed MCLs are not final MCLs in the State of New York as of the date of this report. The source of the PFOA and PFOS concentrations detected in the perched groundwater samples is unknown; however, these compounds are believed to be attributable to off-site sources because historic Site uses did not involve manufacturing or the use of firefighting foams, the operations commonly associated with PFOA and PFOS.

3.3 Data Usability Summary Report (DUSR)

A Data Usability Summary Report (DUSR) completed in accordance with DER-10 is provided herein as Appendix E.

4 SUMMARY AND RECOMMENDATIONS

4.1 Summary

The May 2019 pre-design subsurface investigation at the Site included the advancement of fourteen (14) soil borings (GB-1 through GB-14), conversion of seven (7) borings into temporary monitoring wells (TMW-1 through TMW-7), and the collection of twenty-eight (28) soil and seven (7) perched groundwater samples. The investigation was performed to evaluate the nature and extent of residual VOC contamination and to characterize geological conditions at the Site. The results will be used to support the design and implementation of a SVE remediation system to remove elevated concentrations of VOC vapors remaining in the subsurface at the Site as identified during the SVI investigation completed in April 2019. The results will also be used to support excavation of residual VOC source material as appropriate.

On-site soils consist mainly of medium brown, fine to medium sand with trace amounts of silt and gravel. The depth to perched groundwater was observed during the investigation to vary from approximately 27 to 33 feet bg. The approximate groundwater flow direction is west to west-northwest, as determined from water level measurements recorded historically at the Site.

Numerous VOCs were detected above laboratory RLs in the soil samples. However, none of the reported detections exceeded applicable NYSDEC SCOs (for Commercial Use or Protection of Groundwater) with the exception of PCE in the sample collected from boring GB-6, located immediately downgradient of stormwater drywell DW-1, at a depth of 14.5-15.5 feet below grade (the suspected invert of this drainage structure). The reported PCE concentration in this sample exceeds the SCO for Protection of Groundwater. These data suggest that contaminant source material is present in and around the DW-1 structure.

PCE was detected at concentrations exceeding the NYSDEC Class GA Ambient Water Quality Standard of 5 µg/L in all temporary monitoring wells with the exception of TMW-7. The highest reported PCE concentration occurred in the perched groundwater sample collected from monitoring well TMW-2, located immediately downgradient of sanitary overflow leaching pool LP-3 on the west side of the Site building. Low concentrations of cis-1,2-DCE and TCE were detected in temporary monitoring wells TMW-4, TMW-5 and TMW-6.

MTBE concentrations above the 10 µg/L NYSDEC Standard were detected in perched groundwater samples collected from temporary monitoring wells TMW-1, TMW- 2, TMW-3 and TMW-7. These detections support the conclusion that MTBE from an off-Site upgradient source(s) has migrated onto the Site. Note that MTBE was not detected in any of the sub-slab soil vapor or indoor air samples collected during the April 2019 SVI investigation.

None of the perched groundwater samples analyzed for emerging contaminants contained 1,4-dioxane above the laboratory RL of 0.20 µg/L and none of the detected PFOA and PFOS concentrations exceeded the current USEPA Health Advisory Level of 70 ng/L for combined concentrations of PFOA and PFOS. The PFOS concentrations detected in the samples collected from temporary monitoring wells TMW-1 and TMW-4 and PFOA concentrations in all of the groundwater samples exceeded the NYSDOH proposed MCLs of 10 ng/L. It should be noted that the 10 ng/L proposed MCLs are not final MCLs in New York as of the date of this report. The source of the PFOA and PFOS concentrations detected in the perched groundwater samples is unknown; however, these compounds are believed to be attributable to off-site sources because historic Site uses did not involve manufacturing or the use of firefighting foams, the operations commonly associated with PFOA and PFOS.

4.2 Recommendations

The following actions are recommended based on the pre-design soil and groundwater investigation results:

- Removal of the DW-1 structure in the southwestern corner of the Site and remedial excavation of impacted soils in this area is recommended.

- In order focus source removal, Walden recommends advancing two (2) additional soil borings in the vicinity of DW-1 to a depth of approximately 27 feet bg (just above the perched groundwater interface) to delineate the lateral and vertical extent of soil impacts. Soils will be continuously sampled, logged, field screened for lithology and evidence of contamination, and selectively retained for laboratory analysis of VOCs. These data will be utilized to constrain the limits of remedial excavation in this area.

- No VOCs were detected above laboratory RLs in the soil samples collected from boring GB-7, situated just west of the former Imperial Cleaners tenant space between the Site building and drywells DW-1 and DW-2 near the western property boundary. However, the February 2016 and April 2019 soil vapor intrusion investigations performed at the Site indicated the presence of significantly elevated concentrations of chlorinated VOC vapors beneath the building slab. The impacts detected in the DW-1 area may not account for these sub-slab vapor concentrations and it is possible that an additional source of contaminated vapors is present beneath the building. Therefore, Walden recommends further investigation beneath the concrete slab floor of the former Imperial Cleaners basement. The collection of three (3) sub-slab soil samples is recommended in the vicinity of floor drain FD-2 to evaluate the potential presence of residual contaminant source material in this area. Remedial options will be evaluated as appropriate based on the sub-slab soil sampling results.

- Following remedial excavation activities in the DW-1 area, Walden recommends collecting a subsequent round of perched groundwater samples from all temporary monitoring wells to evaluate pre- and post-excavation perched groundwater conditions.

<u>Figure 1</u>

Site Location Map

Notes: Aerial photos obtained from the USGS

Creation date: 1/29/2018	Print Date: 4/10/2018
Author: MCT	Job No: IMPL0115.6

PDF: Z:\IMPL0115 (Imperial Cleaners)\IMPL0115.5 BCP Application\Remedial Work Plan APRIL 2018\Figures\Figure 1 Site Location Map.pdf

Map: Y:\IMPL0115.4\IMPL0115.5\Site Location Map.mxd

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Walden Environmental Engineering

Figure 1
Site Location Map

Former Imperial Cleaners Site
Site No. C130225

218 Lakeville Road
Lake Success, NY 11020

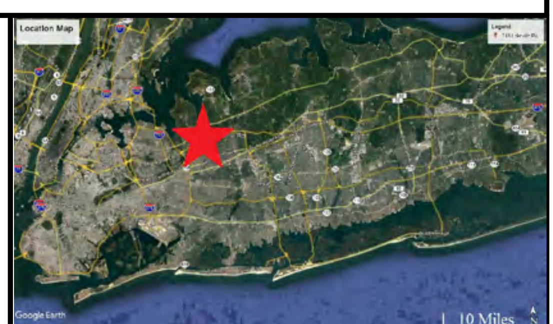


Figure 2

Pre-Design Investigation Soil Boring Locations

LEGEND

PROPERTY LINE OF BROWNFIELD SITE

PROPERTY LINE

DW #1 — STORMWATER DRYWELL

LP — SANITARY LEACHING POOL

FD–1 — FLOOR DRAIN

---- APPROXIMATE PIPING CONNECTION (SANITARY SYSTEM/STORMWATER/ROOF DRAINAGE)

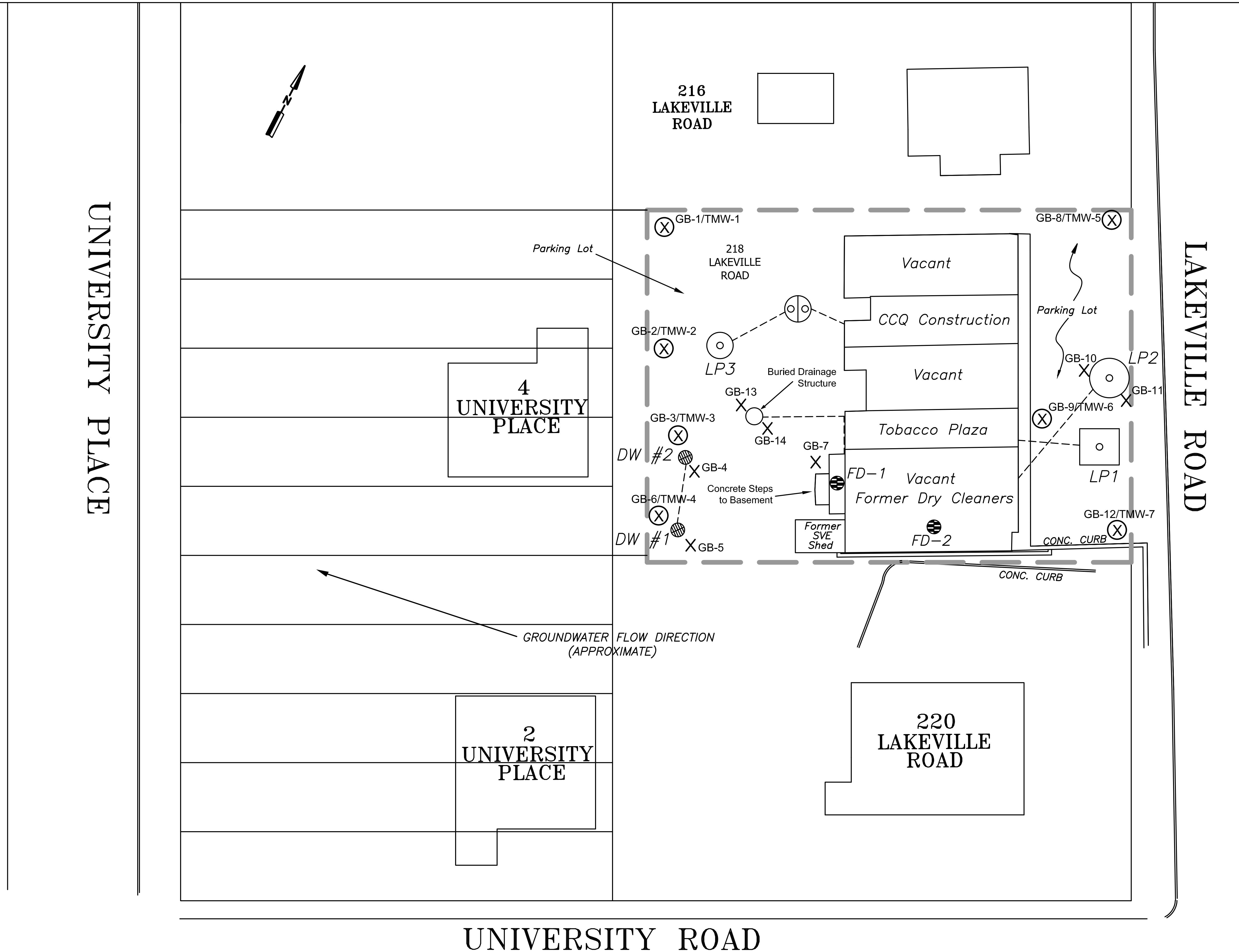
SOIL/ GROUNDWATER SAMPLE LOCATIONS (APPROXIMATE)

GB-5 X - SOIL BORING ONLY

GB-1/TMW-1 (X) - SOIL BORING/TEMPORARY MONITORING WELL

0' 15' 30' 45' 60'

SCALE: 1" = 30'



NOTES

1. Site base map was derived from a property survey prepared by Welsh Engineering & Land Surveying, P.C., 343 Manville Road, Pleasantville, NY 10570, revised on 7/14/00.

2. The Welsh Enineering north area was corrected based on 1999 Nassau County GIS basemap.

3. Piezometers were installed at each of the 7 groundwater sampling locations (GB-1, GB-2, GB-3, GB-6, GB-8, GB-9 and GB-12) to allow for groundwater collection and water level measurements.

4. Groundwater samples collected from each of the 7 piezometers were analyzed for VOCs by EPA Method 8260.

5. Groundwater samples collected from GB-1, GB-6, GB-8 and GB-12 were also analyzed for emerging contaminants (PFAS and 1,4 - dioxane).

Walden Environmental Engineering

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FORMER IMPERIAL CLEANERS SITE
Site No. C130225
218 Lakeville Road
Lake Success, New York 11020

DRAWING TITLE:
PRE-DESIGN INVESTIGATION
SOIL BORING LOCATIONS
218 LAKEVILLE ROAD
LAKE SUCCESS, NEW YORK

FIGURE 2

JOB NO: IMPL0115.6 | DATE: September 9, 2019

CAD FILE NAME:

Table 1

Summary of Soil Analysis – Volatile Organic Compounds (VOCs)

Pre-Design Soil and Groundwater Investigation
218 Lakeville Road
Lake Success, NY

Table 1
Summary of Soil Analysis - Volatile Organic Compounds (VOCs)

Chemical Compound	CAS	NYSDEC Soil Cleanup Objectives		GB-1 (14-15')		DUPLICATE 051719		GB-1 (28.75-29.25')		GB-2 (14-14.5')		GB-2 (27-28')		DUPLICATE 051519		GB-3 (16.5-17')		GB-3 (27.75-28.25')		GB-4 (16.5-17')		GB-4 (28-28.5')		GB-5 (14-14.5')		GB-5 (27.5-28')	
				5/17/2019		5/17/2019		5/17/2019		5/15/2019		5/15/2019		5/15/2019		5/16/2019		5/16/2019		5/17/2019		5/17/2019		5/16/2019		5/16/2019	
		Commercial Use	Protection of Groundwater	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1,1,1,2-Tetrachloroethane	630-20-6	-	-	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
1,1,1-Trichloroethane	71-55-6	500,000	680	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
1,1,2,2-Tetrachloroethane	79-34-5	-	600	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
1,1,2-Trichloroethane	79-00-5	-	-	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
1,1-Dichloroethane	75-34-3	240,000	270	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
1,1-Dichloroethene	75-35-4	500,000	330	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
1,1-Dichloropropene	563-58-6	-	-	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
1,2,3-Trichlorobenzene	87-61-6	-	-	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
1,2,3-Trichloropropane	96-18-4	-	340	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
1,2,4-Trichlorobenzene	120-82-1	-	3,400	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
1,2,4-Trimethylbenzene	95-63-6	190,000	3,600	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
1,2-Dibromo-3-chloropropane	96-12-8	-	-	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
1,2-Dibromoethane	106-93-4	-	-	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
1,2-Dichlorobenzene	95-50-1	500,000	1,100	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
1,2-Dichloroethane	107-06-2	30,000	20	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
1,2-Dichloropropane	78-87-5	-	-	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
1,3,5-Trimethylbenzene	108-67-8	190,000	8,400	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
1,3-Dichlorobenzene	541-73-1	280,000	2,400	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
1,3-Dichloropropane	142-28-9	-	300	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
1,4-Dichlorobenzene	106-46-7	130,000	1,800	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
2,2-Dichloropropane	594-20-7	-	-	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
2-Chlorotoluene	95-49-8	-	-	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
2-Hexanone	591-78-6	-	-	< 29	U	< 27	U	< 24	U	< 54	U	< 26	U	< 23	U	< 22	U	< 24	U	< 22	U	< 26	U	< 20	U	< 26	U
2-Isopropyltoluene	527-84-4	-	-	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
4-Chlorotoluene	106-43-4	-	-	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
4-Methyl-2-pentanone	108-10-1	-	1,000	< 29	U	< 27	U	< 24	U	< 54	U	< 26	U	< 23	U	< 22	U	< 24	U	< 22	U	< 26	U	< 20	U	< 26	U
Acetone	67-64-1	500,000	50	< 29	U	< 27	U	< 24	U	< 50	U	< 26	U	< 23	U	**7.0**	**JS**	**11**	**JS**	< 22	U	< 26	U	< 20	U	< 26	U
Acrylonitrile	107-13-1	-	-	< 12	U	< 11	U	< 9.8	U	< 22	U	< 10	U	< 9.1	U	< 8.6	U	< 9.6	U	< 8.8	U	< 10	U	< 8.0	U	< 10	U
Benzene	71-43-2	44,000	60	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
Bromobenzene	108-86-1	-	-	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
Bromochloromethane	74-97-5	-	-	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
Bromodichloromethane	75-27-4	-	-	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
Bromoform	75-25-2	-	-	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
Bromomethane	74-83-9	-	-	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
Carbon disulfide	75-15-0	-	2,700	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
Carbon tetrachloride	56-23-5	22,000	760	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
Chlorobenzene	108-90-7	500,000	1,100	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
Chloroethane	75-00-3	-	-	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
Chloroform	67-66-3	350,000	370	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
Chloromethane	74-87-3	-	-	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
cis-1,2-Dichloroethene	156-59-2	500,000	250	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	**1.1**	**J**	< 4.0	U	**1.4**	**J**
cis-1,3-Dichloropropene	10061-01-5	-	-	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
Dibromochloromethane	124-48-1	-	-	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
Dibromomethane	74-95-3	-	-	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
Dichlorodifluoromethane	75-71-8	-	-	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
Ethylbenzene	100-41-4	390,000	1,000	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
Hexachlorobutadiene	87-68-3	-	-	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
Isopropylbenzene	98-82-8	-	2,300	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
m&p-Xylene	179601-23-1	500,000	1,600	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
o-Xylene	95-47-6			< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
Methyl Ethyl Ketone	78-93-3	500,000	300	< 35	U	< 32	U	< 29	U	< 65	U	< 31	U	< 27	U	< 26	U	< 29	U	< 22	U	< 26	U	< 24	U	< 31	U
Methyl t-butyl ether (MTBE)	1634-04-4	500,000	930	< 12	U	< 11	U	< 9.8	U	< 22	U	< 10	U	< 9.1	U	< 8.6	U	< 9.6	U	< 8.8	U	< 10	U	< 8.0	U	< 10	U
Methylene chloride	75-09-2	500,000	50	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 8.8	U	< 10	U	< 4.0	U	< 5.1	U
Naphthalene	91-20-3	500,000	12,000	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
n-Butylbenzene	104-51-8	500,000	12,000	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
n-Propylbenzene	103-65-1	500,000	3,900	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
p-Isopropyltoluene	99-87-6	-	10,000	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
sec-Butylbenzene	135-98-8	500,000	11,000	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
Styrene	100-42-5	-	-	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
tert-Butylbenzene	98-06-6	500,000	5,900	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
Tetrachloroethene	127-18-4	150,000	1,300	**3.5**	**J**	**3.2**	**J**	**8.1**		**2.3**	**J**	**11**		**9.0**		**3.1**	**J**	**5.6**		**2.5**	**J**	**74**		**89**		**270**	
Tetrahydrofuran (THF)	109-99-9	-	-	< 12	U	< 11	U	< 9.8	U	< 22	U	< 10	U	< 9.1	U	< 8.6	U	< 9.6	U	< 8.8	U	< 10	U	< 8.0	U	< 10	U
Toluene	108-88-3	500,000	700	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
trans-1,2-Dichloroethene	156-60-5	500,000	190	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
trans-1,3-Dichloropropene	10061-02-6	-	-	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
trans-1,4-dichloro-2-butene	110-57-6	-	-	< 12	U	< 11	U	< 9.8	U	< 22	U	< 10	U	< 9.1	U	< 8.6	U	< 9.6	U	< 8.8	U	< 10	U	< 8.0	U	< 10	U
Trichloroethene	79-01-6	200,000	470	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	**2.4**	**J**	**1.6**	**J**	**2.5**	**J**
Trichlorofluoromethane	75-69-4	-	-	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
Trichlorotrifluoroethane	76-13-1	-	-	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U
Vinyl chloride	75-01-4	13,000	20	< 5.8	U	< 5.4	U	< 4.9	U	< 11	U	< 5.2	U	< 4.6	U	< 4.3	U	< 4.8	U	< 4.4	U	< 5.2	U	< 4.0	U	< 5.1	U

Notes:
Results reported in micrograms per kilogram (µg/Kg
CAS - Chemical Abstracts Service
NYSDEC - New York State Department of Environmental Conservatio
Samples were analyzed by U.S. Environmental Protection Agency (EPA) Method 503
- NYSDEC Soil Cleanup Objective (SCO) has not been establishe
Q - Laboratory qualifie
U - The compound was not detected above the laboratory Reporting Limit (RL
J - The result provided is estimated below the RI
S - Laboratory solvent; cross-contamination is possibl
* - The RL for this compound is greater than the NYSDEC Unrestricted Use Soil Cleanup Objective (SCO)
Bold results indicate those detected above the RI
Highlighted results indicate those detected above Commercial and/or Protection of Groundwater SCC

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218 Lakeville Road
Lake Success, NY

Table 1
Summary of Soil Analysis - Volatile Organic Compounds (VOCs)

Chemical Compound	CAS	NYSDEC Soil Cleanup Objectives		GB-6 (14.5-15.5')		DUPLICATE 05162019		GB-6 (28-29')		GB-7 (14-14.5')		DUPLICATE 05222019		GB-7 (30-31')		GB-8 (14-15')		GB-8 (33-33.5')		GB-9 (14-14.5')		GB-9 (31.5-32.5')		DUPLICATE 051419		GB-10 (14-14.5')		GB-10 (32-32.5')	
				5/16/2019		5/16/2019		5/16/2019		5/22/2019		5/22/2019		5/22/2019		5/17/2019		5/17/2019		5/14/2019		5/14/2019		5/14/2019		5/14/2019		5/14/2019	
		Commercial Use	Protection of Groundwater	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1,1,1,2-Tetrachloroethane	630-20-6	-	-	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
1,1,1-Trichloroethane	71-55-6	500,000	680	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
1,1,2,2-Tetrachloroethane	79-34-5	-	600	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
1,1,2-Trichloroethane	79-00-5	-	-	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
1,1-Dichloroethane	75-34-3	240,000	270	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
1,1-Dichloroethene	75-35-4	500,000	330	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
1,1-Dichloropropene	563-58-6	-	-	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
1,2,3-Trichlorobenzene	87-61-6	-	-	**2.0**	**J**	**1.6**	**J**	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
1,2,3-Trichloropropane	96-18-4	-	340	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
1,2,4-Trichlorobenzene	120-82-1	-	3,400	**6.4**		**5.3**		< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
1,2,4-Trimethylbenzene	95-63-6	190,000	3,600	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
1,2-Dibromo-3-chloropropane	96-12-8	-	-	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
1,2-Dibromoethane	106-93-4	-	-	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
1,2-Dichlorobenzene	95-50-1	500,000	1,100	**8.9**		**6.9**		< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
1,2-Dichloroethane	107-06-2	30,000	20	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
1,2-Dichloropropane	78-87-5	-	-	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
1,3,5-Trimethylbenzene	108-67-8	190,000	8,400	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
1,3-Dichlorobenzene	541-73-1	280,000	2,400	**3.3**	**J**	**3.3**	**J**	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
1,3-Dichloropropane	142-28-9	-	300	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
1,4-Dichlorobenzene	106-46-7	130,000	1,800	**10**		**9.7**		< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
2,2-Dichloropropane	594-20-7	-	-	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
2-Chlorotoluene	95-49-8	-	-	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
2-Hexanone	591-78-6	-	-	< 26	U	< 24	U	< 19	U	< 21	U	< 19	U	< 29	U	< 20	U	< 27	U	< 26	U	< 27	U	< 22	U	< 21	U	< 29	U
2-Isopropyltoluene	527-84-4	-	-	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
4-Chlorotoluene	106-43-4	-	-	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
4-Methyl-2-pentanone	108-10-1	-	1,000	< 26	U	< 24	U	< 19	U	< 21	U	< 19	U	< 29	U	< 20	U	< 27	U	< 26	U	< 27	U	< 22	U	< 21	U	< 29	U
Acetone	67-64-1	500,000	50	**7.4**	**JS**	**16**	**JS**	**13**	**JS**	< 21	U	< 19	U	< 29	U	< 20	U	< 27	U	< 26	U	**5.9**	**JS**	< 22	U	**6.0**	**JS**	**7.0**	**JS**
Acrylonitrile	107-13-1	-	-	< 11	U	< 9.5	U	< 7.4	U	< 8.4	U	< 7.5	U	< 11	U	< 7.9	U	< 11	U	< 11	U	< 11	U	< 8.9	U	< 8.5	U	< 12	U
Benzene	71-43-2	44,000	60	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
Bromobenzene	108-86-1	-	-	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
Bromochloromethane	74-97-5	-	-	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
Bromodichloromethane	75-27-4	-	-	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
Bromoform	75-25-2	-	-	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
Bromomethane	74-83-9	-	-	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
Carbon disulfide	75-15-0	-	2,700	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
Carbon tetrachloride	56-23-5	22,000	760	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
Chlorobenzene	108-90-7	500,000	1,100	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
Chloroethane	75-00-3	-	-	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
Chloroform	67-66-3	350,000	370	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
Chloromethane	74-87-3	-	-	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
cis-1,2-Dichloroethene	156-59-2	500,000	250	**1.7**	**J**	**1.2**	**J**	**1.8**	**J**	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	**2.1**	**J**	< 5.3	U	**2.0**	**J**	**1.7**	**J**	**5.9**		**28**	
cis-1,3-Dichloropropene	10061-01-5	-	-	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
Dibromochloromethane	124-48-1	-	-	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
Dibromomethane	74-95-3	-	-	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
Dichlorodifluoromethane	75-71-8	-	-	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
Ethylbenzene	100-41-4	390,000	1,000	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
Hexachlorobutadiene	87-68-3	-	-	**5.7**		**3.6**	**J**	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
Isopropylbenzene	98-82-8	-	2,300	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
m&p-Xylene	179601-23-1	500,000	1,600	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
o-Xylene	95-47-6			< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
Methyl Ethyl Ketone	78-93-3	500,000	300	< 32	U	< 29	U	< 22	U	< 25	U	< 23	U	< 34	U	< 24	U	< 32	U	< 32	U	< 32	U	< 27	U	< 26	U	< 35	U
Methyl t-butyl ether (MTBE)	1634-04-4	500,000	930	< 11	U	< 9.5	U	< 7.4	U	< 8.4	U	< 7.5	U	< 11	U	< 7.9	U	< 11	U	< 11	U	< 11	U	< 8.9	U	< 8.5	U	< 12	U
Methylene chloride	75-09-2	500,000	50	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
Naphthalene	91-20-3	500,000	12,000	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
n-Butylbenzene	104-51-8	500,000	12,000	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
n-Propylbenzene	103-65-1	500,000	3,900	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
p-Isopropyltoluene	99-87-6	-	10,000	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
sec-Butylbenzene	135-98-8	500,000	11,000	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
Styrene	100-42-5	-	-	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
tert-Butylbenzene	98-06-6	500,000	5,900	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
Tetrachloroethene	127-18-4	150,000	1,300	**5,900**		**1,400**		**62**		**20**		**13**		**2.9**	**J**	< 4.0	U	**4.9**	**J**	< 5.3	U	**4.2**	**J**	**3.3**	**J**	**8.8**		**16**	
Tetrahydrofuran (THF)	109-99-9	-	-	< 11	U	< 9.5	U	< 7.4	U	< 8.4	U	< 7.5	U	< 11	U	< 7.9	U	< 11	U	< 11	U	< 11	U	< 8.9	U	< 8.5	U	< 12	U
Toluene	108-88-3	500,000	700	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
trans-1,2-Dichloroethene	156-60-5	500,000	190	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
trans-1,3-Dichloropropene	10061-02-6	-	-	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
trans-1,4-dichloro-2-butene	110-57-6	-	-	< 11	U	< 9.5	U	< 7.4	U	< 8.4	U	< 7.5	U	< 11	U	< 7.9	U	< 11	U	< 11	U	< 11	U	< 8.9	U	< 8.5	U	< 12	U
Trichloroethene	79-01-6	200,000	470	**2.5**	**J**	**5.8**		**2.0**	**J**	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	**2.6**	**J**	< 5.3	U	**2.0**	**J**	**1.7**	**J**	**3.8**	**J**	**9.9**	
Trichlorofluoromethane	75-69-4	-	-	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
Trichlorotrifluoroethane	76-13-1	-	-	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U
Vinyl chloride	75-01-4	13,000	20	< 5.3	U	< 4.8	U	< 3.7	U	< 4.2	U	< 3.8	U	< 5.7	U	< 4.0	U	< 5.3	U	< 5.3	U	< 5.4	U	< 4.5	U	< 4.3	U	< 5.8	U

Notes:
Results reported in micrograms per kilogram (µg/Kg
CAS - Chemical Abstracts Service
NYSDEC - New York State Department of Environmental Conservatio
Samples were analyzed by U.S. Environmental Protection Agency (EPA) Method 503
- NYSDEC Soil Cleanup Objective (SCO) has not been establishe
Q - Laboratory qualifie
U - The compound was not detected above the laboratory Reporting Limit (RI
J - The result provided is estimated below the RI
S - Laboratory solvent; cross-contamination is possibl
* - The RL for this compound is greater than the NYSDEC Unrestricted Use Soil Cleanup (
Bold results indicate those detected above the RI
Highlighted results indicate those detected above Commercial and/or Protection of Ground

Pre-Design Soil and Groundwater Investigation
218 Lakeville Road
Lake Success, NY

Table 1
Summary of Soil Analysis - Volatile Organic Compounds (VOCs)

Chemical Compound	CAS	NYSDEC Soil Cleanup Objectives		GB-11 (14-14.5')		GB-11 (32-32.5')		GB-12 (15.5-16')		GB-12 (30.25-30.75')		GB-13 (14-14.5')		GB-13 (28.75-29.25')		GB-14 (14-14.5')		GB-14 (28.5-29')	
				5/14/2019		5/14/2019		5/15/2019		5/15/2019		5/15/2019		5/15/2019		5/22/2019		5/22/2019	
		Commercial Use	Protection of Groundwater	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1,1,1,2-Tetrachloroethane	630-20-6	-	-	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
1,1,1-Trichloroethane	71-55-6	500,000	680	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
1,1,2,2-Tetrachloroethane	79-34-5	-	600	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
1,1,2-Trichloroethane	79-00-5	-	-	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
1,1-Dichloroethane	75-34-3	240,000	270	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
1,1-Dichloroethene	75-35-4	500,000	330	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
1,1-Dichloropropene	563-58-6	-	-	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
1,2,3-Trichlorobenzene	87-61-6	-	-	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
1,2,3-Trichloropropane	96-18-4	-	340	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
1,2,4-Trichlorobenzene	120-82-1	-	3,400	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
1,2,4-Trimethylbenzene	95-63-6	190,000	3,600	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
1,2-Dibromo-3-chloropropane	96-12-8	-	-	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
1,2-Dibromoethane	106-93-4	-	-	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
1,2-Dichlorobenzene	95-50-1	500,000	1,100	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
1,2-Dichloroethane	107-06-2	30,000	20	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
1,2-Dichloropropane	78-87-5	-	-	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
1,3,5-Trimethylbenzene	108-67-8	190,000	8,400	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
1,3-Dichlorobenzene	541-73-1	280,000	2,400	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
1,3-Dichloropropane	142-28-9	-	300	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
1,4-Dichlorobenzene	106-46-7	130,000	1,800	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
2,2-Dichloropropane	594-20-7	-	-	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
2-Chlorotoluene	95-49-8	-	-	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
2-Hexanone	591-78-6	-	-	< 25	U	< 24	U	< 28	U	< 26	U	< 33	U	< 29	U	< 24	U	< 24	U
2-Isopropyltoluene	527-84-4	-	-	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
4-Chlorotoluene	106-43-4	-	-	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
4-Methyl-2-pentanone	108-10-1	-	1,000	< 25	U	< 24	U	< 28	U	< 26	U	< 33	U	< 29	U	< 24	U	< 24	U
Acetone	67-64-1	500,000	50	< 25	U	< 24	U	**5.8**	**JS**	**5.4**	**JS**	< 33	U	< 29	U	< 24	U	< 24	U
Acrylonitrile	107-13-1	-	-	< 10	U	< 9.6	U	< 11	U	< 10	U	< 13	U	< 12	U	< 9.8	U	< 9.5	U
Benzene	71-43-2	44,000	60	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
Bromobenzene	108-86-1	-	-	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
Bromochloromethane	74-97-5	-	-	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
Bromodichloromethane	75-27-4	-	-	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
Bromoform	75-25-2	-	-	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
Bromomethane	74-83-9	-	-	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
Carbon disulfide	75-15-0	-	2,700	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
Carbon tetrachloride	56-23-5	22,000	760	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
Chlorobenzene	108-90-7	500,000	1,100	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
Chloroethane	75-00-3	-	-	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
Chloroform	67-66-3	350,000	370	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
Chloromethane	74-87-3	-	-	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
cis-1,2-Dichloroethene	156-59-2	500,000	250	**2.1**	**J**	**28**		< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
cis-1,3-Dichloropropene	10061-01-5	-	-	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
Dibromochloromethane	124-48-1	-	-	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
Dibromomethane	74-95-3	-	-	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
Dichlorodifluoromethane	75-71-8	-	-	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
Ethylbenzene	100-41-4	390,000	1,000	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
Hexachlorobutadiene	87-68-3	-	-	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
Isopropylbenzene	98-82-8	-	2,300	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
m&p-Xylene	179601-23-1	500,000	1,600	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
o-Xylene	95-47-6			< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
Methyl Ethyl Ketone	78-93-3	500,000	300	< 30	U	< 29	U	< 34	U	< 31	U	< 40	U	< 35	U	< 29	U	< 28	U
Methyl t-butyl ether (MTBE)	1634-04-4	500,000	930	< 10	U	< 9.6	U	< 11	U	< 10	U	< 13	U	< 12	U	< 9.8	U	< 9.5	U
Methylene chloride	75-09-2	500,000	50	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
Naphthalene	91-20-3	500,000	12,000	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
n-Butylbenzene	104-51-8	500,000	12,000	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
n-Propylbenzene	103-65-1	500,000	3,900	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
p-Isopropyltoluene	99-87-6	-	10,000	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
sec-Butylbenzene	135-98-8	500,000	11,000	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
Styrene	100-42-5	-	-	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
tert-Butylbenzene	98-06-6	500,000	5,900	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
Tetrachloroethene	127-18-4	150,000	1,300	**1.2**	**J**	**18**		< 5.7	U	< 5.2	U	**1.7**	**J**	**8.7**		**4.3**	**J**	**15**	
Tetrahydrofuran (THF)	109-99-9	-	-	< 10	U	< 9.6	U	< 11	U	< 10	U	< 13	U	< 12	U	< 9.8	U	< 9.5	U
Toluene	108-88-3	500,000	700	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
trans-1,2-Dichloroethene	156-60-5	500,000	190	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
trans-1,3-Dichloropropene	10061-02-6	-	-	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
trans-1,4-dichloro-2-butene	110-57-6	-	-	< 10	U	< 9.6	U	< 11	U	< 10	U	< 13	U	< 12	U	< 9.8	U	< 9.5	U
Trichloroethene	79-01-6	200,000	470	**0.83**	**J**	**15**		< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
Trichlorofluoromethane	75-69-4	-	-	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
Trichlorotrifluoroethane	76-13-1	-	-	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U
Vinyl chloride	75-01-4	13,000	20	< 5.1	U	< 4.8	U	< 5.7	U	< 5.2	U	< 6.7	U	< 5.8	U	< 4.9	U	< 4.7	U

Notes:
Results reported in micrograms per kilogram (µg/Kg
CAS - Chemical Abstracts Service
NYSDEC - New York State Department of Environmental Conservatio
Samples were analyzed by U.S. Environmental Protection Agency (EPA) Method 503
- NYSDEC Soil Cleanup Objective (SCO) has not been establishe
Q - Laboratory qualifier
U - The compound was not detected above the laboratory Reporting Limit (RL
J - The result provided is estimated below the RL
S - Laboratory solvent; cross-contamination is possibl
* - The RL for this compound is greater than the NYSDEC Unrestricted Use Soil Cleanup (
Bold results indicate those detected above the RL
Highlighted results indicate those detected above Commercial and/or Protection of Ground

Table 2

Summary of Groundwater Analysis – Volatile Organic Compounds (VOCs)

Table 2
Summary of Groundwater Analysis - Volatile Organic Compounds (VOCs)

Chemical Compound	CAS	NYSDEC Class GA Ambient Water Quality Standard/Guidance Value	TMW-1		DUPLICATE GW 051719		TMW-2		TMW-3		DUPLICATE GW 05162019		TMW-4		TMW-5		TMW-6		DUPLICATE GW 051419		TMW-7		DUPLICATE GW 051519	
			5/17/2019		5/17/2019		5/15/2019		5/16/2019		5/16/2019		5/16/2019		5/17/2019		5/14/2019		5/14/2019		5/15/2019		5/15/2019	
			Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1,1,1,2-Tetrachloroethane	630-20-6	5	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
1,1,1-Trichloroethane	71-55-6	5	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U
1,1,2,2-Tetrachloroethane	79-34-5	5	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
1,1,2-Trichloroethane	79-00-5	1	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
1,1-Dichloroethane	75-34-3	5	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U
1,1-Dichloroethene	75-35-4	5	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
1,1-Dichloropropene	563-58-6	5	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
1,2,3-Trichlorobenzene	87-61-6	5	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
1,2,3-Trichloropropane	96-18-4	0.04	< 0.25	U*	< 0.25	U*	< 0.25	U*	< 0.25	U*	< 0.25	U*	< 0.25	U*	< 0.25	U*	< 0.25	U*	< 0.25	U*	< 0.25	U*	< 0.25	U*
1,2,4-Trichlorobenzene	120-82-1	5	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
1,2,4-Trimethylbenzene	95-63-6	5	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
1,2-Dibromo-3-chloropropane	96-12-8	0.04	< 0.50	U*	< 0.50	U*	< 0.50	U*	< 0.50	U*	< 0.50	U*	< 0.50	U*	< 0.50	U*	< 0.50	U*	< 0.50	U*	< 0.50	U*	< 0.50	U*
1,2-Dibromoethane	106-93-4	0.0006	< 0.25	U*	< 0.25	U*	< 0.25	U*	< 0.25	U*	< 0.25	U*	< 0.25	U*	< 0.25	U*	< 0.25	U*	< 0.25	U*	< 0.25	U*	< 0.25	U*
1,2-Dichlorobenzene	95-50-1	3	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
1,2-Dichloroethane	107-06-2	0.6	< 0.60	U	< 0.60	U	< 0.60	U	< 0.60	U	< 0.60	U	< 0.60	U	< 0.60	U	< 0.60	U	< 0.60	U	< 0.60	U	< 0.60	U
1,2-Dichloropropane	78-87-5	1	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
1,3,5-Trimethylbenzene	108-67-8	5	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
1,3-Dichlorobenzene	541-73-1	3	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
1,3-Dichloropropane	142-28-9	5	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
1,4-Dichlorobenzene	106-46-7	3	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
2,2-Dichloropropane	594-20-7	5	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
2-Chlorotoluene	95-49-8	5	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
2-Hexanone	591-78-6	50	< 2.5	U	< 2.5	U	< 2.5	U	< 2.5	U	< 2.5	U	< 2.5	U	< 2.5	U	< 2.5	U	< 2.5	U	< 2.5	U	< 2.5	U
2-Isopropyltoluene	527-84-4	5	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
4-Chlorotoluene	106-43-4	5	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
4-Methyl-2-pentanone (MIBK)	108-10-1	-	< 2.5	U	< 2.5	U	< 2.5	U	< 2.5	U	< 2.5	U	< 2.5	U	< 2.5	U	< 2.5	U	< 2.5	U	< 2.5	U	< 2.5	U
Acetone	67-64-1	50	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U
Acrolein	107-02-8	5	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U
Acrylonitrile	107-13-1	5	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U
Benzene	71-43-2	1	< 0.70	U	< 0.70	U	< 0.70	U	< 0.70	U	< 0.70	U	< 0.70	U	< 0.70	U	< 0.70	U	< 0.70	U	< 0.70	U	< 0.70	U
Bromobenzene	108-86-1	5	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
Bromochloromethane	74-97-5	5	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
Bromodichloromethane	75-27-4	50	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
Bromoform	75-25-2	50	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U
Bromomethane	74-83-9	5	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U
Carbon disulfide	75-15-0	60	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	**0.31**	**J**	< 1.0	U	< 1.0	U	< 1.0	U
Carbon tetrachloride	56-23-5	5	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
Chlorobenzene	108-90-7	5	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U
Chloroethane	75-00-3	5	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U
Chloroform	67-66-3	7	< 5.0	U	< 5.0	U	< 5.0	U	**0.46**	**J**	**0.49**	**J**	**0.47**	**J**	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U
Chloromethane	74-87-3	5	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U
cis-1,2-Dichloroethene	156-59-2	5	**4.1**		**3.7**		**1.1**		**0.89**	**J**	**0.93**	**J**	**9.5**		**10**		**9.3**		**17**		< 1.0	U	< 1.0	U
cis-1,3-Dichloropropene	10061-01-5	0.4**	< 0.40	U	< 0.40	U	< 0.40	U	< 0.40	U	< 0.40	U	< 0.40	U	< 0.40	U	< 0.40	U	< 0.40	U	< 0.40	U	< 0.40	U
Dibromochloromethane	124-48-1	50	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
Dibromomethane	74-95-3	5	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
Dichlorodifluoromethane	75-71-8	5	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
Ethylbenzene	100-41-4	5	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
Hexachlorobutadiene	87-68-3	0.5	< 0.50	U	< 0.50	U	< 0.50	U	< 0.50	U	< 0.50	U	< 0.50	U	< 0.50	U	< 0.50	U	< 0.50	U	< 0.50	U	< 0.50	U
Isopropylbenzene	98-82-8	5	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
m&p-Xylene	179601-23-1	10	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
Methyl Ethyl Ketone	78-93-3	50	< 2.5	U	< 2.5	U	< 2.5	U	< 2.5	U	< 2.5	U	< 2.5	U	< 2.5	U	< 2.5	U	< 2.5	U	< 2.5	U	< 2.5	U
Methyl t-butyl ether (MTBE)	1634-04-4	10	**46**		**41**		**49**		**21**		**25**		< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	**58**		**26**	
Methylene chloride	75-09-2	5	< 3.0	U	< 3.0	U	< 3.0	U	< 3.0	U	< 3.0	U	< 3.0	U	< 3.0	U	< 3.0	U	< 3.0	U	< 3.0	U	< 3.0	U
Naphthalene	91-20-3	10	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
n-Butylbenzene	104-51-8	5	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
n-Propylbenzene	103-65-1	5	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
o-Xylene	95-47-6	5	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
p-Isopropyltoluene	99-87-6	5	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
sec-Butylbenzene	135-98-8	5	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
Styrene	100-42-5	5	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
tert-Butylbenzene	98-06-6	5	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
Tetrachloroethene	127-18-4	5	**57**		**52**		**140**		**120**		**130**		**72**		**13**		**14**		**24**		< 1.0	U	< 1.0	U
Tetrahydrofuran (THF)	109-99-9	50	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U
Toluene	108-88-3	5	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
trans-1,2-Dichloroethene	156-60-5	5	**0.32**	**J**	**0.32**	**J**	< 5.0	U	< 5.0	U	< 5.0	U	**0.59**	**J**	**0.64**	**J**	< 5.0	U	**0.42**	**J**	< 5.0	U	< 5.0	U
trans-1,3-Dichloropropene	10061-02-6	0.4**	< 0.40	U	< 0.40	U	< 0.40	U	< 0.40	U	< 0.40	U	< 0.40	U	< 0.40	U	< 0.40	U	< 0.40	U	< 0.40	U	< 0.40	U
trans-1,4-dichloro-2-butene	110-57-6	5	< 2.5	U	< 2.5	U	< 2.5	U	< 2.5	U	< 2.5	U	< 2.5	U	< 2.5	U	< 2.5	U	< 2.5	U	< 2.5	U	< 2.5	U
Trichloroethene	79-01-6	5	**4.1**		**3.9**		**2.9**		**3.3**		**3.4**		**17**		**9.6**		**7.1**		**13**		< 1.0	U	< 1.0	U
Trichlorofluoromethane	75-69-4	5	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
Trichlorotrifluoroethane	76-13-1	5	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
Vinyl chloride	75-01-4	2	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U

Notes:
Results are reported in micrograms per liter (µg/L)
CAS - Chemical Abstracts Service
NYSDEC - New York State Department of Environmental Conservation
Samples were analyzed by U.S. Environmental Protection Agency (EPA) Method 8260C.
U - The compound was not detected above the laboratory Reporting Limit (RL)
J - The result provided is estimated below the RL
* - The RL for this compound is greater than the NYSDEC Standard
** - Applies to the sum of cis- and trans-1,3-dichloropropene
- NYSDEC Standard/Guidance Value has not been established
Bold results indicate those detected above the Rl
Highlighted results indicate those detected above NYSDEC Class GA Ambient Water Quality Standards/Guidance Values

<u>Table 3</u>

Summary of Groundwater Analysis – Emerging Contaminants (1,4-Dioxane and PFAS)

Pre-Design Soil and Groundwater Investigation

218 Lakeville Road

Lake Success, NY

Table 3

Summary of Groundwater Analysis - Emerging Contaminants (1,4-Dioxane and PFAS)

Chemical Compound	USEPA HAL	NYSDOH Proposed MCL	TMW-1		TMW-4		TMW-5		TMW-7		DUPLICATE GW 051519	
			5/17/2019		5/16/2019		5/17/2019		5/15/2019		5/15/2019	
			Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1,4-Dioxane	-	1 µg/L	< 0.20	U	< 0.20	U	< 0.20	U	< 0.20	U	< 0.20	U
PFAS Compounds												
Perfluorobutanesulfonic acid (PFBS)	-	-	**5.9**		**5.3**		**3.0**		**4.9**		**5.1**	
Perfluorohexanioc acid (PFHxA)	-	-	**3.8**		**7.0**		**15**		**5.3**		**7.6**	
Perfluoroheptanoic acid (PFHpA)	-	-	**3.4**		**6.3**		**10**		**3.6**		**5.5**	
Perfluorobutanoic acid (PFBA)	-	-	< 2.0	U	**2.1**		**3.2**		< 2.0	U	< 2.0	U
Perfluorodecanesulfonic acid (PFDS)	-	-	< 2.0	U	< 2.0	U	< 2.0	U	< 2.0	U	< 2.0	U
Perfluoroheptanesulfonic acid (PFHpS)	-	-	**4.7**		**2.5**		**2.5**		**4.7**		**5.3**	
Perfluorooctanesulfonamide (FOSA)	-	-	**3.3**		**2.4**		< 2.0	U	< 2.0	U	< 2.0	U
Perfluoropentanoic acid (PFPeA)	-	-	**2.9**		**6.7**		**13**		**8.0**		< 2.0	U
6:2 Fluorotelomersulfonate (6:2 FTS)	-	-	**3.9**		< 2.0	U	< 2.0	U	< 2.0	U	< 2.0	U
8:2 Fluorotelomersulfonate (8:2 FTS)	-	-	< 2.0	U	< 2.0	U	< 2.0	U	< 2.0	U	< 2.0	U
Perfluorohexanesulfonic acid (PFHxS)	-	-	**5.2**		**2.2**		**4.2**		**3.5**		**4.2**	
Perfluorooctanoic acid (PFOA)	70	10	**20**		**32**		**41**		**17**		**23**	
Perfluorooctanessulfonic acid (PFOS)		10	**28**		**26**		**3.4**		**3.0**		**5.6**	
Perfluorononanoic acid (PFNA)	-	-	< 2.0	U	**2.7**		< 2.0	U	< 2.0	U	< 2.0	U
Perfluorodecanoic acid (PFDA)	-	-	< 2.0	U	< 2.0	U	< 2.0	U	< 2.0	U	< 2.0	U
N-MeFOSAA	-	-	< 2.0	U	< 2.0	U	< 2.0	U	< 2.0	U	< 2.0	U
Perfluoroundecanoic acid (PFUnA)	-	-	< 2.0	U	< 2.0	U	< 2.0	U	< 2.0	U	< 2.0	U
N-EtFOSAA	-	-	**9.2**		< 2.0	U	< 2.0	U	< 2.0	U	< 2.0	U
Perfluorododecanoic acid (PFDoA)	-	-	< 2.0	U	< 2.0	U	< 2.0	U	< 2.0	U	< 2.0	U
Perfluorotridecanoic acid (PFTrDA)	-	-	< 2.0	U	< 2.0	U	< 2.0	U	< 2.0	U	< 2.0	U
Perfluorotetradecanoic acid (PFTA)	-	-	< 2.0	U	< 2.0	U	< 2.0	U	< 2.0	U	< 2.0	U

Notes:
Results are reported in nanograms per liter (ng/L)
USEPA - U.S. Environmental Protection Agency
HAL - Health Advisory Level
NYSDOH - New York State Department of Health
MCL - Maximum Contaminant Level
- HAL/MCL has not been established
U - The compound was not detected above the laboratory Reporting Limit (RL)
Bold results indicate those detected above the RL
Highlighted results indicate those detected above the NYSDOH proposed MCLs published in the July 24, 2019 Notice of Proposed Rulemaking [Amendment of Subpart 5-1 of Title 10 NYCRR (Maximum Contaminant Levels (MCLs)]

Appendix A

Soil Boring Logs

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING	SHEET: 1 OF 2

BORING/WELL I.D.:	GB-1	CLIENT:	218 Lakeville Acquisition, LLC
DATE(S) DRILLED:	5/17/19	PROJECT NAME:	218 Lakeville Road
DRILL METHOD:	Direct push via Geoprobe 7822 DT	PROJECT NO.:	IMPL0115.6
BORING DIAMETER:	2"	PROJECT LOCATION:	Lake Success, NY
SAMPLING METHOD/INTERVAL	Dual-tube; 5' length	DRILLING CONTRACTOR:	Eastern Environmental Solutions, Inc.
LOGGED BY:	JKB		
REMARKS:	Begin soil screening and logging at 10 ft bg		

TEMPORARY WELL CONSTRUCTION INFORMATION

SCREEN SIZE AND MATERIAL: 5' of 1" diameter 20-slot PVC	SCREEN INTERVAL: 29-34' bg
SAND PACK SIZE AND MATERIAL: Filbro Superior Quartz	SAND PACK INTERVAL: 28-34' bg
REF. POINT: Top of Casing	BENTONITE SEAL INTERVAL: 27-28' bg
STATIC WATER DEPTH: 29.20'	DATE: 5/22/19
REMARKS: TMW-1	

WELL/BOREHOLE ABANDONMENT INFORMATION

ABANDONMENT DATE: N/A	ABANDONMENT METHOD: N/A

DESCRIPTIVE LOG

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
10-15' bg	42	NA	0.0, 0.0, 0.0, 0.0, 0.0		-10- to -15-	Medium brown, fine-medium SAND with trace fine gravel; uniform; laminations present from 12-12.5' bg; no odors or staining; dry
15-20' bg	41	NA	0.0, 0.0, 0.0, 0.0, 0.0		-16- to -20-	Medium brown, fine-medium SAND with little fine-medium gravel; uniform; no odors or staining; dry
20-25' bg	40	NA	0.0, 0.0, 0.0, 0.0, 0.0		-21- to -25-	Medium brown, fine-medium SAND with fine-medium rounded gravel and few stone fragments; brick and asphalt debris between 22.5-23' bg; some coarse sand throughout

Native soil/rock
Sand pack
Bentonite seal
Cement/bentonite grout
Riser Pipe
Well screen

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING		SHEET: 2 OF 2
BORING/WELL I.D.: GB-1/TMW-1	CLIENT/SITE: 218 Lakeville Road	DATE(s) DRILLED: 5/17/19

DESCRIPTIVE LOG (continued)

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID/FID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
25-30' bg	45	NA	0.0		-26-	Medium brown, fine-medium SAND with trace fine-medium rounded gravel and trace stone fragments; no odors or staining; wet below ~29' bg
			0.0		-27-	
			0.0		-28-	
			0.0		-29-	
			0.2		-30-	
30-35' bg	36		0.0		-31-	Medium brown, fine-medium SAND with trace fine gravel; no odors or staining; wet
			0.0		-32-	
			0.0		-33-	
			0.0		-34-	
			0.0		-35-	
					-36-	END OF BORING
					-37-	
					-38-	
					-39-	
					-40-	
					-41-	
					-42-	
					-43-	
					-44-	
					-45-	

NOTES: Collected soil samples GB-1 (14'-15')/DUPLICATE 05172019 and GB-1 (28.75'-29.25')

Collected groundwater samples TMW-1 and DUPLICATE GW 051719

NA - Not applicable

Native soil/rock

Sand pack

Bentonite seal

Cement/bentonite grout

Well screen

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING		SHEET: 1 OF 2	
BORING/WELL I.D.:	GB-2	CLIENT:	218 Lakeville Acquisition, LLC
DATE(S) DRILLED:	5/15/19	PROJECT NAME:	218 Lakeville Road
DRILL METHOD:	Direct push via Geoprobe 7822 DT	PROJECT NO.:	IMPL0115.6
BORING DIAMETER:	2"	PROJECT LOCATION:	Lake Success, NY
SAMPLING METHOD/INTERVAL:	Dual-tube; 5' length	DRILLING CONTRACTOR:	Eastern Environmental Solutions, Inc.
LOGGED BY:	JKB		
REMARKS:	Begin soil screening and logging at 10 ft bg		

TEMPORARY WELL CONSTRUCTION INFORMATION

SCREEN SIZE AND MATERIAL: 5' of 1" diameter 20-slot PVC	SCREEN INTERVAL: 28-33' bg
SAND PACK SIZE AND MATERIAL: Filbro Superior Quartz	SAND PACK INTERVAL: 27-33' bg
REF. POINT: Top of Casing	BENTONITE SEAL INTERVAL: 26-27' bg
STATIC WATER DEPTH: 28.14'	DATE: 5/22/19
REMARKS: TMW-2	

WELL/BOREHOLE ABANDONMENT INFORMATION

ABANDONMENT DATE: N/A	ABANDONMENT METHOD: N/A

DESCRIPTIVE LOG

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
10-15' bg	27	NA	0.0 (11'), 0.0 (12'), 0.0 (13'), 0.0 (14'), 0.0 (15')		10-15	Medium brown, fine-medium SAND with trace fine-medium gravel towards bottom of interval
15-20' bg	34	NA	0.0 (16'), 0.0 (17'), 0.0 (18'), 0.0 (19'), 0.0 (20')		15-20	Medium brown, fine-medium SAND with trace fine-medium gravel; dry; no odor or staining
20-25' bg	41	NA	0.0 (21'), 0.0 (22'), 0.0 (23'), 0.0 (24'), 0.0 (25')		20-25	Medium brown fine-medium SAND with some fine-medium gravel; dry; no odor or staining

Native soil/rock
Sand pack
Bentonite seal
Cement/bentonite grout
Riser Pipe
Well screen

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING	SHEET: 2 OF 2

BORING/WELL I.D.: GB-2/TMW-2	CLIENT/SITE: 218 Lakeville Road	DATE(s) DRILLED: 5/15/19

DESCRIPTIVE LOG (continued)

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID/FID (ppm)	DEPTH (FT)	DESCRIPTION OF MATERIAL
25-30' bg	40	NA	0.0, 0.0, 0.0, 0.1, 0.1	-26- -27- -28- -29- -30-	Medium brown, fine-medium SAND with some fine-medium gravel; no odor or staining; wet below ~27.5' bg
30-35' bg	25		0.0, 0.0, 0.0, 0.0, 0.0	-31- -32- -33- -34- -35-	Same as above; wet; no odor or staining; greater average grain size from 32-33' bg
				-36- -37- -38- -39- -40-	END OF BORING
				-41- -42- -43- -44- -45-	

NOTES: Collected soil samples GB-2 (14-14.5), GB-2 (27-28) and DUPLICATE 05152019

Collected groundwater sample TMW-7

NA - Not applicable

Native soil/rock

Sand pack

Bentonite seal

Cement/bentonite grout

Well screen

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING	SHEET: 1 OF 2

BORING/WELL I.D.:	GB-3	CLIENT:	218 Lakeville Acquisition, LLC
DATE(S) DRILLED:	5/16/19	PROJECT NAME:	218 Lakeville Road
DRILL METHOD:	Direct push via Geoprobe 7822 DT	PROJECT NO.:	IMPL0115.6
BORING DIAMETER:	2"	PROJECT LOCATION:	Lake Success, NY
SAMPLING METHOD/INTERVAL:	Dual-tube; 5' length	DRILLING CONTRACTOR:	Eastern Environmental Solutions, Inc.
LOGGED BY:	JKB		
REMARKS:	Begin soil screening and logging at 10 ft bg		

TEMPORARY WELL CONSTRUCTION INFORMATION

SCREEN SIZE AND MATERIAL: 5' of 1" diameter 20-slot PVC	SCREEN INTERVAL: 28-33' bg
SAND PACK SIZE AND MATERIAL: Filbro Superior Quartz	SAND PACK INTERVAL: 27-33' bg
REF. POINT: Top of Casing	BENTONITE SEAL INTERVAL: 26-27' bg
STATIC WATER DEPTH: 27.76'	DATE: 5/22/19
REMARKS: TMW-3	

WELL/BOREHOLE ABANDONMENT INFORMATION

ABANDONMENT DATE: N/A	ABANDONMENT METHOD: N/A

DESCRIPTIVE LOG

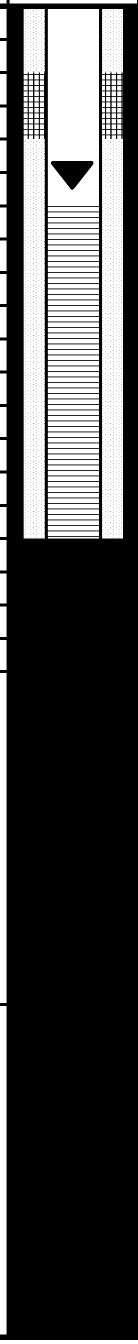
SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
10-15' bg	26	NA			-10-	
					-	Medium brown, fine-medium SAND with trace fine-medium gravel; uniform; dry; no odors or staining
			0.0		-11-	
					-	
			0.0		-12-	
					-	
			0.0		-13-	
					-	
			0.0		-14-	
					-	
			0.0		-15-	
15-20' bg	25				-	
			0.1		-16-	Same as above
					-	
			0.0		-17-	
					-	
			0.1		-18-	
					-	
			0.1		-19-	
					-	
			0.1		-20-	
20-25' bg	30				-	
			0.2		-21-	Medium brown, fine-medium SAND with little fine-medium gravel; dry; no odors or staining
					-	
			0.2		-22-	
					-	
			0.1		-23-	
					-	
			0.1		-24-	
					-	
			0.1		-25-	

Native soil/rock
Sand pack
Bentonite seal
Cement/bentonite grout
Riser Pipe
Well screen

BORING/WELL LOG

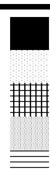
WALDEN ENVIRONMENTAL ENGINEERING		SHEET: 2 OF 2
BORING/WELL I.D.: GB-3/TMW-3	CLIENT/SITE: 218 Lakeville Road	DATE(s) DRILLED: 5/16/19

DESCRIPTIVE LOG (continued)

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID/FID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
25-30' bg	35	NA	0.1 (26'), 0.1 (27'), 0.3 (28'), 0.1 (29'), 0.1 (30')		-26- -27- -28- -29- -30-	Medium brown, fine-medium SAND with trace fine-medium gravel; few cobbles from 28.5-30' bg; wet below ~28' bg; no odors or staining
30-35' bg	34		0.2 (31'), 0.2 (32'), 0.1 (33'), 0.1 (34'), 0.1 (35')		-31- -32- -33- -34- -35-	Medium brown, medium SAND with some fine-coarse sand throughout and little fine-medium gravel; no odors or staining
					-36- -37- -38- -39- -40-	END OF BORING
					-41- -42- -43- -44- -45-	

NOTES: Collected soil samples GB-3 (16.5'-17') and GB-3 (27.75'-28.25')
Collected groundwater samples TMW-3 and DUPLICATE GW 05162019

NA - Not applicable



Native soil/rock
Sand pack
Bentonite seal
Cement/bentonite grout
Well screen

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING		SHEET: 1 OF 2	
BORING/WELL I.D.:	GB-4	CLIENT:	218 Lakeville Acquisition, LLC
DATE(S) DRILLED:	5/17/19	PROJECT NAME:	218 Lakeville Road
DRILL METHOD:	Direct push via Geoprobe 7822 DT	PROJECT NO.:	IMPL0115.6
BORING DIAMETER:	2"	PROJECT LOCATION:	Lake Success, NY
SAMPLING METHOD/INTERVAL:	Dual-tube; 5' length	DRILLING CONTRACTOR:	Eastern Environmental Solutions, Inc.
LOGGED BY:	JKB		
REMARKS:	Begin soil screening and logging at 10 ft bg		

TEMPORARY WELL CONSTRUCTION INFORMATION

SCREEN SIZE AND MATERIAL:	SCREEN INTERVAL:
SAND PACK SIZE AND MATERIAL:	SAND PACK INTERVAL:
REF. POINT:	BENTONITE SEAL INTERVAL:
STATIC WATER DEPTH:	DATE:
REMARKS: No well installation	

WELL/BOREHOLE ABANDONMENT INFORMATION

ABANDONMENT DATE: 5/17/19	ABANDONMENT METHOD: Backfilled with clean sand; asphalt patch

DESCRIPTIVE LOG

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
					-10-	
					-	Medium brown, fine-medium SAND with trace fine gravel; uniform; no odors
			0.0		-11-	or staining; dry
					-	
			0.1		-12-	
10-15' bg	40				-	
			0.1		-13-	
					-	
			0.2		-14-	
					-	
			0.0		-15-	
					-	
			0.1		-16-	Same as above; organics 19-20' bg
					-	
			0.0		-17-	
		NA			-	
15-20' bg	38		0.0		-18-	
					-	
			0.0		-19-	
					-	
			0.0		-20-	
					-	
			0.0		-21-	Same as above; organics 20-21' bg
					-	
			0.1		-22-	
20-25' bg	39				-	
			0.1		-23-	
					-	
			0.1		-24-	
					-	
			0.0		-25-	

Fill
Sand/gravel
Silty sand/clay
Depth to Water
N/A Not Applicable

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING		SHEET: 2 OF 2
BORING/WELL I.D.: GB-4	CLIENT/SITE: 218 Lakeville Road	DATE(s) DRILLED: 5/17/19

DESCRIPTIVE LOG (continued)

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID/FID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
25-30' bg	40	NA			-	Medium brown, fine-medium SAND with little fine-medium gravel; slightly larger grain size than above; no odors or staining; wet below ~27.75' bg
			0.4		-26-	
					-	
			0.2		-27-	
			0.3		-	
			1.4		-28-	
			1.6		-	
			0.5		-29-	
					-	
			0.1		-30-	
30-35' bg	16				-	Medium brown, fine-medium SAND with little fine-medium gravel; no odors or staining; wet
					-31-	
					-	
					-32-	
					-	
					-33-	
					-	
					-34-	
					-	
					-35-	
					-	END OF BORING
					-36-	
					-	
					-37-	
					-	
					-38-	
					-	
					-39-	
					-	
					-40-	
					-	
					-41-	
					-	
					-42-	
					-	
					-43-	
					-	
					-44-	
					-	
					-45-	

NOTES: Collected soil samples GB-4 (16.5'-17') and GB-4 (28'-28.5')

Fill
Sand/gravel
Silty sand/clay
Depth to Water
N/A Not Applicable

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING		SHEET: 1 OF 2	
BORING/WELL I.D.:	GB-5	CLIENT:	218 Lakeville Acquisition, LLC
DATE(S) DRILLED:	5/16/19	PROJECT NAME:	218 Lakeville Road
DRILL METHOD:	Direct push via Geoprobe 7822 DT	PROJECT NO.:	IMPL0115.6
BORING DIAMETER:	2"	PROJECT LOCATION:	Lake Success, NY
SAMPLING METHOD/INTERVAL:	Dual-tube; 5' length	DRILLING CONTRACTOR:	Eastern Environmental Solutions, Inc.
LOGGED BY:	JKB		
REMARKS:	Begin soil screening and logging at 10 ft bg		

TEMPORARY WELL CONSTRUCTION INFORMATION

SCREEN SIZE AND MATERIAL:	SCREEN INTERVAL:
SAND PACK SIZE AND MATERIAL:	SAND PACK INTERVAL:
REF. POINT:	BENTONITE SEAL INTERVAL:
STATIC WATER DEPTH:	DATE:
REMARKS: No well installation	

WELL/BOREHOLE ABANDONMENT INFORMATION

ABANDONMENT DATE: 5/16/19	ABANDONMENT METHOD: Backfilled with clean sand; asphalt patch

DESCRIPTIVE LOG

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
10-15' bg	48	NA			-10-	
					-	Medium brown, fine-medium SILTY SAND with fine-medium gravel and stone
			0.1		-11-	fragments; moist and slightly cohesive; no odors or staining
					-	
			0.2		-12-	
					-	
			0.7		-13-	
					-	
			1.4		-14-	
			0.5		-	
			0.9		-15-	
15-20' bg	42				-	
			0.4		-16-	15-16.25' bg: Same as above; slightly less silt content
					-	
			0.1		-17-	16-20' bg: Medium brown, fine-medium SAND with trace gravel; no odors
					-	or staining
			0.0		-18-	
					-	
			0.1		-19-	
					-	
			0.1		-20-	
20-25' bg	38				-	
			0.0		-21-	Same as above
					-	
			0.1		-22-	
					-	
			0.1		-23-	
					-	
			0.1		-24-	
					-	
			0.1		-25-	

Fill
Sand/gravel
Silty sand/clay
Depth to Water
N/A Not Applicable

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING		SHEET: 2 OF 2
BORING/WELL I.D.: GB-5	CLIENT/SITE: 218 Lakeville Road	DATE(s) DRILLED: 5/16/19

DESCRIPTIVE LOG (continued)

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID/FID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
25-30' bg	28	NA	0.0, 0.0, 0.1, 2.3, 0.2, 0.1		-26- -27- -28- -29- -30-	Medium brown, fine-medium SAND with trace gravel; no odors or staining; wet below ~27.5' bg
30-35' bg	21		0.0, 0.0, 0.0, 0.0, 0.1		-31- -32- -33- -34- -35-	Medium brown, medium SAND with little fine sand, some coarse sand and fine-medium gravel; no odors or staining; wet
					-36- -37- -38- -39- -40-	END OF BORING
					-41- -42- -43- -44- -45-	

NOTES: Collected soil samples GB-5 (14'-14.5') and GB-5 (27.5'-28')

Fill
Sand/gravel
Silty sand/clay
Depth to Water
N/A Not Applicable

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING		SHEET: 1 OF 2	
BORING/WELL I.D.:	GB-6	CLIENT:	218 Lakeville Acquisition, LLC
DATE(S) DRILLED:	5/16/19	PROJECT NAME:	218 Lakeville Road
DRILL METHOD:	Direct push via Geoprobe 7822 DT	PROJECT NO.:	IMPL0115.6
BORING DIAMETER:	2"	PROJECT LOCATION:	Lake Success, NY
SAMPLING METHOD/INTERVAL:	Dual-tube; 5' length	DRILLING CONTRACTOR:	Eastern Environmental Solutions, Inc.
LOGGED BY:	JKB		
REMARKS:	Begin soil screening and logging at 10 ft bg		

TEMPORARY WELL CONSTRUCTION INFORMATION

SCREEN SIZE AND MATERIAL: 5' of 1" diameter 20-slot PVC	SCREEN INTERVAL: 29-34' bg
SAND PACK SIZE AND MATERIAL: Filbro Superior Quartz	SAND PACK INTERVAL: 28-34' bg
REF. POINT: Top of Casing	BENTONITE SEAL INTERVAL: 27-28' bg
STATIC WATER DEPTH: 27.14'	DATE: 5/22/19
REMARKS: TMW-4	

WELL/BOREHOLE ABANDONMENT INFORMATION

ABANDONMENT DATE: N/A	ABANDONMENT METHOD: N/A

DESCRIPTIVE LOG

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
10-15' bg	43.5	NA			-10-	
					-	Medium brown, fine-medium SAND with trace fine-medium rounded gravel; uniform; slightly damp; musty odor in lower half of interval; no staining
			0.7		-11-	
					-	
			2.2		-12-	
					-	
			0.6		-13-	
					-	
			8.3		-14-	
			14.1		-	
			22.1		-15-	
15-20' bg	41		35.8		-	
			4.3		-16-	Same as above; musty/perchloroethene odor
			9.9		-	
			11.9		-17-	
			16.1		-	
			6.4		-18-	
			4.5		-	
			5.2		-19-	
			0.3		-	
			0.1		-20-	
20-25' bg	25				-	
			0.1		-21-	Same as above; no odor
					-	
			0.1		-22-	
					-	
			0.1		-23-	
					-	
			0.1		-24-	
					-	
			0.1		-25-	

Native soil/rock
Sand pack
Bentonite seal
Cement/bentonite grout
Riser Pipe
Well screen

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING		SHEET: 2 OF 2
BORING/WELL I.D.: GB-6/TMW-4	CLIENT/SITE: 218 Lakeville Road	DATE(s) DRILLED: 5/16/19

DESCRIPTIVE LOG (continued)

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID/FID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
25-30' bg	7	NA	 0.1 0.1 0.1 0.9 0.2		- -26- - -27- - -28- - -29- - -30-	Medium brown, fine-medium SAND with trace fine-medium rounded gravel; uniform; no odor or staining; slightly larger average grain size in lower half of interval; wet below ~28' bg
30-35' bg	0				- -31- - -32- - -33- - -34- - -35-	No recovery
					- -36- - -37- - -38- - -39- - -40-	END OF BORING
					- -41- - -42- - -43- - -44- - -45-	

NOTES: Collected soil samples GB-6 (14.5'-15.5')/DUPLICATE 05162019 and GB-6 (28'-29')
Collected groundwater sample TMW-4

NA - Not applicable

Native soil/rock
Sand pack
Bentonite seal
Cement/bentonite grout
Well screen

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING		SHEET: 1 OF 2	
BORING/WELL I.D.:	GB-7	CLIENT:	218 Lakeville Acquisition, LLC
DATE(S) DRILLED:	5/22/19	PROJECT NAME:	218 Lakeville Road
DRILL METHOD:	Direct push via Geoprobe 7822 DT	PROJECT NO.:	IMPL0115.6
BORING DIAMETER:	2"	PROJECT LOCATION:	Lake Success, NY
SAMPLING METHOD/INTERVAL:	Dual-tube; 5' length	DRILLING CONTRACTOR:	Eastern Environmental Solutions, Inc.
LOGGED BY:	JKB		
REMARKS:	Begin soil screening and logging at 10 ft bg		

TEMPORARY WELL CONSTRUCTION INFORMATION

SCREEN SIZE AND MATERIAL:	SCREEN INTERVAL:
SAND PACK SIZE AND MATERIAL:	SAND PACK INTERVAL:
REF. POINT:	BENTONITE SEAL INTERVAL:
STATIC WATER DEPTH:	DATE:
REMARKS: No well installation	

WELL/BOREHOLE ABANDONMENT INFORMATION

ABANDONMENT DATE: 5/22/19	ABANDONMENT METHOD: Backfilled with clean sand; asphalt patch

DESCRIPTIVE LOG

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
10-15' bg	50	NA			-10-	
					-	10-12.5' bg: Medium brown, fine-medium SAND with little silt and fine-medium rounded gravel; very slightly cohesive; no odors or staining; moist
			0.1		-11-	
					-	
			0.0		-12-	12.5-14' bg: Medium brown, fine-medium SAND with little fine rounded gravel; organics at ~14' bg; no odors or staining
					-	
			0.1		-13-	
					-	14-14.75' bg: Medium brown, fine-medium SAND with little silt and fine-medium rounded gravel; very slightly cohesive; no odors or staining; moist
			0.1		-14-	
					-	14.75-15' bg: Light/medium brown, fine-medium SAND with trace gravel; no odors or staining
			0.0		-15-	
15-20' bg	55				-	
			0.1		-16-	15-17.5' bg: Medium brown, fine-medium SAND with little silt and fine-medium rounded gravel; very slightly cohesive; few stone fragments; 5" void space between 16-17' bg; no odors or staining; moist
					-	
			0.1		-17-	
					-	
			0.0		-18-	17.5-20' bg: Medium brown, fine-medium SAND with little fine rounded gravel; uniform; no odors or staining; dry
					-	
			0.0		-19-	
					-	
			0.0		-20-	
20-25' bg	46				-	
			0.0		-21-	Medium brown, fine-medium SAND with trace fine-medium gravel; uniform; no odors or staining; dry
					-	
			0.0		-22-	
					-	
			0.0		-23-	
					-	
			0.1		-24-	
					-	
			0.0		-25-	

Fill
Sand/gravel
Silty sand/clay
Depth to Water
N/A Not Applicable

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING		SHEET: 2 OF 2
BORING/WELL I.D.: GB-7	CLIENT/SITE: 218 Lakeville Road	DATE(s) DRILLED: 5/22/19

DESCRIPTIVE LOG (continued)

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID/FID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
25-30' bg	21	NA	0.0 0.0 0.0 0.0 0.0		-26- -27- -28- -29- -30-	Medium brown, fine-medium SAND with trace fine-medium gravel; uniform; no odors or staining; dry
30-35' bg	10		0.0 0.1 0.0 0.0 0.0		-31- -32- -33- -34- -35-	Same as above; wet at ~30' bg
					-36- -37- -38- -39- -40-	END OF BORING
					-41- -42- -43- -44- -45-	

NOTES: Collected soil samples GB-7 (14'-14.5')/DUPLICATE 05222019 and GB-7 (30'-31')

Fill
Sand/gravel
Silty sand/clay
Depth to Water
N/A Not Applicable

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING		SHEET: 1 OF 2	
BORING/WELL I.D.:	GB-8	CLIENT:	218 Lakeville Acquisition, LLC
DATE(S) DRILLED:	5/17/19	PROJECT NAME:	218 Lakeville Road
DRILL METHOD:	Direct push via Geoprobe 7822 DT	PROJECT NO.:	IMPL0115.6
BORING DIAMETER:	2"	PROJECT LOCATION:	Lake Success, NY
SAMPLING METHOD/INTERVAL:	Dual-tube; 5' length	DRILLING CONTRACTOR:	Eastern Environmental Solutions, Inc.
LOGGED BY:	JKB		
REMARKS:	Begin soil screening and logging at 10 ft bg		

TEMPORARY WELL CONSTRUCTION INFORMATION	
SCREEN SIZE AND MATERIAL: 5' of 1" diameter 20-slot PVC	SCREEN INTERVAL: 33.5-38.5' bg
SAND PACK SIZE AND MATERIAL: Filbro Superior Quartz	SAND PACK INTERVAL: 32-38.5' bg
REF. POINT: Top of Casing	BENTONITE SEAL INTERVAL: 31-32' bg
STATIC WATER DEPTH: 32.67'	DATE: 5/22/19
REMARKS: TMW-5	

WELL/BOREHOLE ABANDONMENT INFORMATION	
ABANDONMENT DATE: N/A	ABANDONMENT METHOD: N/A

DESCRIPTIVE LOG

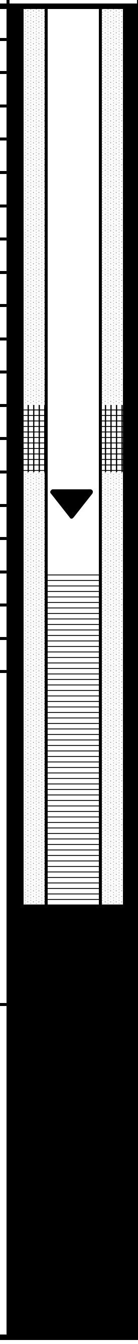
SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
10-15' bg	15.5	NA			-10-	
					-	Medium brown, fine-medium SILTY SAND with fine-medium gravel and trace brick/
			0.0		-11-	asphalt debris and broken stone; very slightly cohesive; no odors or staining
					-	
			0.1		-12-	
					-	
			0.1		-13-	
					-	
			0.2		-14-	
					-	
			0.0		-15-	
15-20' bg	30.5				-	
			0.0		-16-	15-17.5' bg: Medium brown, fine-medium SAND with abundant gravel and crushed/broken
					-	stone; no odors or staining
			0.0		-17-	
					-	17.5-20' bg: Medium brown, fine-medium SAND with gravel and stone from 17.5-18.5' bg;
			0.1		-18-	no odors or staining
					-	
			0.0		-19-	
					-	
			0.0		-20-	
20-25' bg	40				-	
			0.0		-21-	Medium brown, fine-medium SAND with trace fine-medium gravel; uniform; dry;
					-	no odors or staining
			0.0		-22-	
					-	
			0.0		-23-	
					-	
			0.0		-24-	
					-	
			0.0		-25-	

Native soil/rock
Sand pack
Bentonite seal
Cement/bentonite grout
Riser Pipe
Well screen

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING		SHEET: 2 OF 2
BORING/WELL I.D.: GB-8/TMW-5	CLIENT/SITE: 218 Lakeville Road	DATE(s) DRILLED: 5/17/19

DESCRIPTIVE LOG (continued)

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID/FID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
25-30' bg	43	NA	0.0 0.0 0.0 0.0 0.0		-26- -27- -28- -29- -30-	Medium brown, fine-medium SAND with trace fine-medium gravel; uniform; dry; no odors or staining
30-35' bg	18		0.0 0.0 0.0 0.0 0.0		-31- -32- -33- -34- -35-	Same as above; broken stone at ~32' bg with some coarse sand present immediately above; dry
35-40' bg	0				-36- -37- -38- -39- -40-	No recovery; drilling rod is wet
					-41- -42- -43- -44- -45-	END OF BORING

NOTES:	Collected soil samples GB-8 (14'-15') and GB-8 (33'-33.5')
	Collected groundwater sample TMW-5

NA - Not applicable

Native soil/rock
Sand pack
Bentonite seal
Cement/bentonite grout
Well screen

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING		SHEET: 1 OF 2	
BORING/WELL I.D.:	GB-9	CLIENT:	218 Lakeville Acquisition, LLC
DATE(S) DRILLED:	5/14/19	PROJECT NAME:	218 Lakeville Road
DRILL METHOD:	Direct push via Geoprobe 7822 DT	PROJECT NO.:	IMPL0115.6
BORING DIAMETER:	2"	PROJECT LOCATION:	Lake Success, NY
SAMPLING METHOD/INTERVAL:	Dual-tube; 5' length	DRILLING CONTRACTOR:	Eastern Environmental Solutions, Inc.
LOGGED BY:	JKB		
REMARKS:	Begin soil screening and logging at 10 ft bg		

TEMPORARY WELL CONSTRUCTION INFORMATION

SCREEN SIZE AND MATERIAL: 5' of 1" diameter 20-slot PVC	SCREEN INTERVAL: 33.8-38.8' bg
SAND PACK SIZE AND MATERIAL: Filbro Superior Quartz	SAND PACK INTERVAL: 32-38.8' bg
REF. POINT: Top of Casing	BENTONITE SEAL INTERVAL: 29-30' bg
STATIC WATER DEPTH: 32.24'	DATE: 5/22/19
REMARKS: TMW-6	

WELL/BOREHOLE ABANDONMENT INFORMATION

ABANDONMENT DATE: N/A	ABANDONMENT METHOD: N/A

DESCRIPTIVE LOG

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
10-15' bg	48	NA			-10-	
					-	
			0.0		-11-	Medium brown, fine-medium SAND with little gravel and little silt below ~13.5' bg; fractured stone; slightly cohesive; suspected brick debris at ~12.25' bg; no odors or staining
					-	
			0.0		-12-	
					-	
			0.0		-13-	
					-	
			0.0		-14-	
					-	
			0.1		-15-	
15-20' bg	50				-	
			0.0		-16-	15-17' bg: Medium brown, fine-medium SAND with fine-medium gravel and trace silt; very slightly cohesive; no odors or staining
					-	
			0.1		-17-	
					-	17-20' bg: Medium brown, fine-medium SAND; uniform; dry; no odors or staining
			0.0		-18-	
					-	
			0.0		-19-	
					-	
			0.0		-20-	
20-25' bg	45				-	
			0.0		-21-	Medium brown, medium SAND with trace fine-medium gravel; uniform; dry; no odors or staining
					-	
			0.0		-22-	
					-	
			0.0		-23-	
					-	
			0.0		-24-	
					-	
			0.0		-25-	

Native soil/rock
Sand pack
Bentonite seal
Cement/bentonite grout
Riser Pipe
Well screen

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING		SHEET: 2 OF 2
BORING/WELL I.D.: GB-9/TMW-6	CLIENT/SITE: 218 Lakeville Road	DATE(s) DRILLED: 5/14/19

DESCRIPTIVE LOG (continued)

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID/FID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
25-30' bg	42	NA	0.0		-	Medium brown, medium SAND with trace fine-medium gravel; uniform; dry; no odors or staining; broken stone from 29-30' bg
					-26-	
					-	
			0.0		-27-	
					-	
			0.0		-28-	
					-	
			0.0		-29-	
					-	
			0.0		-30-	
30-35' bg	40				-	Same as above; greater average grain size below ~32.5' bg, some coarse sand and higher concentration of fine gravel; gritty texture; wet below ~32.5' bg
			0.0		-31-	
					-	
			0.0		-32-	
					-	
			0.0		-33-	
					-	
			0.1		-34-	
					-	
			0.1		-35-	
					-	END OF BORING
					-36-	
					-	
					-37-	
					-	
					-38-	
					-	
					-39-	
					-	
					-40-	
					-	
					-41-	
					-	
					-42-	
					-	
					-43-	
					-	
					-44-	
					-	
					-45-	

NOTES: Collected soil samples GB-9 (14'-14.5') and GB-9 (31.5'-32.5')/DUPLICATE 051419
Collected groundwater sample TMW-6

NA - Not applicable

Native soil/rock
Sand pack
Bentonite seal
Cement/bentonite grout
Well screen

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING		SHEET: 1 OF 2	
BORING/WELL I.D.:	GB-10	CLIENT:	218 Lakeville Acquisition, LLC
DATE(S) DRILLED:	5/14/19	PROJECT NAME:	218 Lakeville Road
DRILL METHOD:	Direct push via Geoprobe 7822 DT	PROJECT NO.:	IMPL0115.6
BORING DIAMETER:	2"	PROJECT LOCATION:	Lake Success, NY
SAMPLING METHOD/INTERVAL:	Dual-tube; 5' length	DRILLING CONTRACTOR:	Eastern Environmental Solutions, Inc.
LOGGED BY:	JKB		
REMARKS:	Begin soil screening and logging at 10 ft bg		

TEMPORARY WELL CONSTRUCTION INFORMATION

SCREEN SIZE AND MATERIAL:	SCREEN INTERVAL:
SAND PACK SIZE AND MATERIAL:	SAND PACK INTERVAL:
REF. POINT:	BENTONITE SEAL INTERVAL:
STATIC WATER DEPTH:	DATE:
REMARKS: No well installation	

WELL/BOREHOLE ABANDONMENT INFORMATION

ABANDONMENT DATE: 5/14/19	ABANDONMENT METHOD: Backfilled with clean sand; asphalt patch

DESCRIPTIVE LOG

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
10-15' bg	40	NA			-10-	
					-	
			0.0		-11-	Medium brown, fine-medium SAND with fine-medium gravel; broken stone at ~12' bg;
					-	little silt from 13-15' bg, moist and slightly cohesive
			0.1		-12-	
					-	
			0.0		-13-	
					-	
			0.1		-14-	
					-	
			0.1		-15-	
15-20' bg	35				-	15-16' bg: Dull medium brown, fine-medium SAND with trace silt, abundant gravel/
			0.4		-16-	crushed stone and suspected brick debris; no odors or staining
					-	
			0.2		-17-	16-17.5' bg: Dull medium brown, fine-medium SAND with reddish-brown parallel streaks
					-	(suspected oxidation); no odors or staining
			0.1		-18-	
					-	17.5-19' bg: Dull medium brown/gray, fine-medium SAND; uniform; dry; no odors
			0.1		-19-	or staining
					-	19-20' bg: Dull medium brown, fine-medium SAND; uniform; dry; no odors or staining
			0.1		-20-	
20-25' bg	33				-	
			0.0		-21-	20-22' bg: Same as above
					-	
			0.0		-22-	22-25' bg: Medium brown/orange, fine-medium SAND with trace fine gravel; no odors
					-	or staining
			0.0		-23-	
					-	
			0.0		-24-	
					-	
			0.0		-25-	

Fill
Sand/gravel
Silty sand/clay
Depth to Water
N/A Not Applicable

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING		SHEET: 2 OF 2
BORING/WELL I.D.: GB-10	CLIENT/SITE: 218 Lakeville Road	DATE(s) DRILLED: 5/14/19

DESCRIPTIVE LOG (continued)

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID/FID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
25-30' bg	34	NA	0.0, 0.0, 0.0, 0.0, 0.0	Sand/gravel	-26- to -30-	Medium brown/orange, fine-medium SAND with trace fine gravel and trace amounts of rounded cobbles; no odors or staining
30-35' bg	37	NA	0.1, 1.4, 1.2, 0.1, 0.1	Sand/gravel; Depth to Water at 32'	-31- to -35-	Dull medium brown/red-brown/orange, medium SAND; some reddish-brown coloring from 33-35' bg; wet below 32' bg; no odors or staining
					-36- to -40-	END OF BORING
					-41- to -45-	

NOTES: Collected soil samples GB-10 (14'-14.5') and GB-10 (32'-32.5')

Fill
Sand/gravel
Silty sand/clay
Depth to Water
N/A Not Applicable

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING		SHEET: 1 OF 2	
BORING/WELL I.D.:	GB-11	CLIENT:	218 Lakeville Acquisition, LLC
DATE(S) DRILLED:	5/14/19	PROJECT NAME:	218 Lakeville Road
DRILL METHOD:	Direct push via Geoprobe 7822 DT	PROJECT NO.:	IMPL0115.6
BORING DIAMETER:	2"	PROJECT LOCATION:	Lake Success, NY
SAMPLING METHOD/INTERVAL:	Dual-tube; 5' length	DRILLING CONTRACTOR:	Eastern Environmental Solutions, Inc.
LOGGED BY:	JKB		
REMARKS:	Begin soil screening and logging at 10 ft bg		

TEMPORARY WELL CONSTRUCTION INFORMATION

SCREEN SIZE AND MATERIAL:	SCREEN INTERVAL:
SAND PACK SIZE AND MATERIAL:	SAND PACK INTERVAL:
REF. POINT:	BENTONITE SEAL INTERVAL:
STATIC WATER DEPTH:	DATE:
REMARKS: No well installation	

WELL/BOREHOLE ABANDONMENT INFORMATION

ABANDONMENT DATE: 5/14/19	ABANDONMENT METHOD: Backfilled with clean sand; asphalt patch

DESCRIPTIVE LOG

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
					-10-	
					-	10-13' bg: Medium brown, fine-medium SAND with fine-medium gravel, weathered/
			0.1		-11-	broken stone and suspected brick debris; no odors or staining
					-	
			0.3		-12-	
10-15' bg	43				-	
			0.1		-13-	13-13.5' bg: Medium brown, fine-medium SAND; uniform; dry; no odors or staining
					-	
			0.2		-14-	13.5-15' bg: Dull medium brown/gray, fine-medium SAND; uniform; dry; no odors
					-	or staining
			0.0		-15-	
					-	
			0.2		-16-	15-16.25' bg: Same as above
					-	
			0.1		-17-	16.25-20' bg: Fine-medium SAND with little fine-medium gravel and broken stone;
		NA			-	interbedded layers of medium brown/orange and medium dull brown/gray color, each
15-20' bg	33		0.1		-18-	~9-12" thick; no odors or staining
					-	
			0.1		-19-	
					-	
			0.0		-20-	
					-	
			0.1		-21-	Medium brown, fine-medium SAND with little fine gravel and trace cobbles; no odors
					-	or staining
			0.0		-22-	
					-	
20-25' bg	29		0.1		-23-	
					-	
			0.1		-24-	
					-	
			0.1		-25-	

Fill
Sand/gravel
Silty sand/clay
Depth to Water
N/A Not Applicable

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING		SHEET: 2 OF 2
BORING/WELL I.D.: GB-11	CLIENT/SITE: 218 Lakeville Road	DATE(s) DRILLED: 5/14/19

DESCRIPTIVE LOG (continued)

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID/FID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
25-30' bg	35	NA			-	
			0.1		-26-	Medium brown, fine-medium SAND with little fine gravel and trace cobbles; no odors or staining
					-	
			0.1		-27-	
					-	
			0.1		-28-	
					-	
			0.1		-29-	
					-	
			0.0		-30-	
30-35' bg	42				-	
			0.1		-31-	Same as above but with trace fine gravel; wet below ~32.5' bg
					-	
			0.1		-32-	
				▼	-	
			0.1		-33-	
					-	
			0.0		-34-	
					-	
			0.1		-35-	
					-	END OF BORING
					-36-	
					-	
					-37-	
					-	
					-38-	
					-	
					-39-	
					-	
					-40-	
					-	
					-41-	
					-	
					-42-	
					-	
					-43-	
					-	
					-44-	
					-	
					-45-	

NOTES: Collected soil samples GB-11 (14'-14.5') and GB-11 (32'-32.5')

Fill
Sand/gravel
Silty sand/clay
▼ Depth to Water
N/A Not Applicable

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING	SHEET: 1 OF 2

BORING/WELL I.D.:	GB-12	CLIENT:	218 Lakeville Acquisition, LLC
DATE(S) DRILLED:	5/15/19	PROJECT NAME:	218 Lakeville Road
DRILL METHOD:	Direct push via Geoprobe 7822 DT	PROJECT NO.:	IMPL0115.6
BORING DIAMETER:	2"	PROJECT LOCATION:	Lake Success, NY
SAMPLING METHOD/INTERVAL:	Dual-tube; 5' length	DRILLING CONTRACTOR:	Eastern Environmental Solutions, Inc.
LOGGED BY:	JKB		
REMARKS:	Begin soil screening and logging at 10 ft bg		

TEMPORARY WELL CONSTRUCTION INFORMATION

SCREEN SIZE AND MATERIAL: 5' of 1" diameter 20-slot PVC	SCREEN INTERVAL: 31-36' bg
SAND PACK SIZE AND MATERIAL: Filbro Superior Quartz	SAND PACK INTERVAL: 30-36' bg
REF. POINT: Top of Casing	BENTONITE SEAL INTERVAL: 29-30' bg
STATIC WATER DEPTH: 30.21'	DATE: 5/22/19
REMARKS: TMW-7	

WELL/BOREHOLE ABANDONMENT INFORMATION

ABANDONMENT DATE: N/A	ABANDONMENT METHOD: N/A

DESCRIPTIVE LOG

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
10-15' bg	25	NA			-10-	
					-	10-13' bg: Medium brown, fine-medium SAND with fine-medium gravel; crushed rock at
			0.0		-11-	13' bg; no odors or staining
					-	
			0.0		-12-	
					-	
			0.0		-13-	13-14' bg: Medium brown, fine-medium SILTY SAND with some fine gravel and trace
					-	pebbles; slightly cohesive; no odors or staining
			0.0		-14-	
					-	14-15' bg: Medium brown, fine-medium SAND with fine-medium gravel; crushed rock
			0.0		-15-	at 13' bg; no odors or staining
15-20' bg	35.5				-	
			0.0		-16-	Medium brown, fine-medium SAND with trace fine-medium gravel; dry; no odors
					-	or staining
			0.0		-17-	
					-	
			0.0		-18-	
					-	
			0.0		-19-	
					-	
			0.0		-20-	
20-25' bg	33				-	
			0.0		-21-	Same as above
					-	
			0.0		-22-	
					-	
			0.0		-23-	
					-	
			0.0		-24-	
					-	
			0.1		-25-	

Native soil/rock
Sand pack
Bentonite seal
Cement/bentonite grout
Riser Pipe
Well screen

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING	SHEET: 2 OF 2

BORING/WELL I.D.: GB-12/TMW-7	CLIENT/SITE: 218 Lakeville Road	DATE(s) DRILLED: 5/15/19

DESCRIPTIVE LOG (continued)

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID/FID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
25-30' bg	35.5	NA	0.0		-26-	Medium brown, fine-medium SAND with trace fine-medium gravel; dry; no odors or staining
			0.0		-27-	
			0.0		-28-	
			0.0		-29-	
			0.1		-30-	
30-35' bg	43		0.0		-31-	Same as above; wet below ~30.5' bg
			0.0		-32-	
			0.0		-33-	
			0.0		-34-	
			0.0		-35-	
					-36-	END OF BORING
					-37-	
					-38-	
					-39-	
					-40-	
					-41-	
					-42-	
					-43-	
					-44-	
					-45-	

NOTES: Collected soil samples GB-12 (15.5'-16') and GB-12 (30.25'-30.75')

Collected groundwater samples TMW-7 and DUPLICATE 05152019

NA - Not applicable

- Native soil/rock
- Sand pack
- Bentonite seal
- Cement/bentonite grout
- Well screen

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING		SHEET: 1 OF 2	
BORING/WELL I.D.:	GB-13	CLIENT:	218 Lakeville Acquisition, LLC
DATE(S) DRILLED:	5/15/19	PROJECT NAME:	218 Lakeville Road
DRILL METHOD:	Direct push via Geoprobe 7822 DT	PROJECT NO.:	IMPL0115.6
BORING DIAMETER:	2"	PROJECT LOCATION:	Lake Success, NY
SAMPLING METHOD/INTERVAL:	Dual-tube; 5' length	DRILLING CONTRACTOR:	Eastern Environmental Solutions, Inc.
LOGGED BY:	JKB		
REMARKS:	Begin soil screening and logging at 10 ft bg		

TEMPORARY WELL CONSTRUCTION INFORMATION

SCREEN SIZE AND MATERIAL:	SCREEN INTERVAL:
SAND PACK SIZE AND MATERIAL:	SAND PACK INTERVAL:
REF. POINT:	BENTONITE SEAL INTERVAL:
STATIC WATER DEPTH:	DATE:
REMARKS: No well installation	

WELL/BOREHOLE ABANDONMENT INFORMATION

ABANDONMENT DATE: 5/15/19	ABANDONMENT METHOD: Backfilled with clean sand; asphalt patch

DESCRIPTIVE LOG

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
10-15' bg	38.5	NA			-10-	
					-	Medium brown, fine-medium SAND; uniform; dry; no odors or staining
			0.0		-11-	
					-	
			0.0		-12-	
					-	
			0.0		-13-	
					-	
			0.1		-14-	
					-	
			0.0		-15-	
15-20' bg	35				-	
			0.0		-16-	Same as above
					-	
			0.0		-17-	
					-	
			0.0		-18-	
					-	
			0.0		-19-	
					-	
			0.0		-20-	
20-25' bg	43				-	
			0.0		-21-	Same as above with trace fine-medium gravel
					-	
			0.0		-22-	
					-	
			0.0		-23-	
					-	
			0.0		-24-	
					-	
			0.1		-25-	

Fill
Sand/gravel
Silty sand/clay
Depth to Water
N/A Not Applicable

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING		SHEET: 2 OF 2
BORING/WELL I.D.: GB-13	CLIENT/SITE: 218 Lakeville Road	DATE(s) DRILLED: 5/15/19

DESCRIPTIVE LOG (continued)

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID/FID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
25-30' bg	35	NA	0.0		-26-	Medium brown, fine-medium SAND; uniform; no odors or staining; wet below ~29' bg
			0.0		-27-	
			0.0		-28-	
			0.1		-29-	
			0.1		-30-	
30-35' bg	34		0.1		-31-	Same as above with some coarse sand and trace fine-medium gravel throughout; wet
			0.1		-32-	
			0.0		-33-	
			0.1		-34-	
			0.0		-35-	
					-36-	END OF BORING
					-37-	
					-38-	
					-39-	
					-40-	
					-41-	
					-42-	
					-43-	
					-44-	
					-45-	

NOTES: Collected soil samples GB-13 (14'-14.5') and GB-13 (28.75'-29.25')

Fill
Sand/gravel
Silty sand/clay
Depth to Water
N/A Not Applicable

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING	SHEET: 1 OF 2

BORING/WELL I.D.:	GB-14	CLIENT:	218 Lakeville Acquisition, LLC
DATE(S) DRILLED:	5/22/19	PROJECT NAME:	218 Lakeville Road
DRILL METHOD:	Direct push via Geoprobe 7822 DT	PROJECT NO.:	IMPL0115.6
BORING DIAMETER:	2"	PROJECT LOCATION:	Lake Success, NY
SAMPLING METHOD/INTERVAL:	Dual-tube; 5' length	DRILLING CONTRACTOR:	Eastern Environmental Solutions, Inc.
LOGGED BY:	JKB		
REMARKS:	Begin soil screening and logging at 10 ft bg		

TEMPORARY WELL CONSTRUCTION INFORMATION

SCREEN SIZE AND MATERIAL:	SCREEN INTERVAL:
SAND PACK SIZE AND MATERIAL:	SAND PACK INTERVAL:
REF. POINT:	BENTONITE SEAL INTERVAL:
STATIC WATER DEPTH:	DATE:
REMARKS: No well installation	

WELL/BOREHOLE ABANDONMENT INFORMATION

ABANDONMENT DATE: 5/22/19	ABANDONMENT METHOD: Backfilled with clean sand; asphalt patch

DESCRIPTIVE LOG

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
10-15' bg	33	NA			-10-	
					-	Medium brown, fine-medium SAND with trace fine-medium gravel; uniform; no odors
			0.1		-11-	or staining; dry
					-	
			0.2		-12-	
					-	
			0.2		-13-	
					-	
			0.2		-14-	
					-	
			0.3		-15-	
15-20' bg	40				-	
			0.0		-16-	Same as above
					-	
			0.0		-17-	
					-	
			0.0		-18-	
					-	
			0.0		-19-	
					-	
			0.1		-20-	
20-25' bg	42				-	
			0.0		-21-	Medium brown, fine-medium SAND with little fine-medium rounded gravel and few
					-	stone fragments; dry; no odors or staining
			0.0		-22-	
					-	
			0.0		-23-	
					-	
			0.0		-24-	
					-	
			0.0		-25-	

Fill
Sand/gravel
Silty sand/clay
Depth to Water
N/A Not Applicable

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING		SHEET: 2 OF 2
BORING/WELL I.D.: GB-14	CLIENT/SITE: 218 Lakeville Road	DATE(s) DRILLED: 5/22/19

DESCRIPTIVE LOG (continued)

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID/FID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
25-30' bg	42	NA			-	
			0.0		-26-	Medium brown, fine-medium SAND with trace fine-medium gravel; no odors or staining; wet below ~28' bg
					-	
			0.0		-27-	
					-	
			0.1		-28-	
					-	
			0.5		-29-	
					-	
			0.0		-30-	
30-35' bg	34				-	
			0.0		-31-	Same as above with some coarse sand mixed throughout; wet
					-	
			0.0		-32-	
					-	
			0.0		-33-	
					-	
			0.0		-34-	
					-	
			0.0		-35-	
					-	END OF BORING
					-36-	
					-	
					-37-	
					-	
					-38-	
					-	
					-39-	
					-	
	.				-40-	
					-	
					-41-	
					-	
					-42-	
					-	
					-43-	
					-	
					-44-	
					-	
					-45-	

NOTES: Collected soil samples GB-14 (14'-14.5') and GB-14 (28.5'-29')

Fill
Sand/gravel
Silty sand/clay
Depth to Water
N/A Not Applicable

Appendix B

Site Photographs

Photograph 1

Ground penetrating radar (GPR) survey for utility markout purposes.

Photograph 2

Representative view of direct-push (Geoprobe) drilling activities.

Photograph 3

Representative view of temporary monitoring well installation.

Photograph 4

Representative view of completed temporary monitoring well.

Photograph 5

Asphalt patch after borehole completion.

Photograph 6

Removal of waste drums for off-site disposal.

Appendix C

Laboratory Analytical Reports

Appendix D

Waste Disposal Manifest

CWO 29040

Please print or type
(Form designed for use on elite (12-pitch) typewriter.)

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone 631 727 2700	4. Waste Tracking Number

GENERATOR

5. Generator's Name and Mailing Address: 218 Lakeville Aquisition LLC, 218 Lakeville Road, Lake Success NY

Generator's Site Address (if different than mailing address)

Generator's Phone:

6. Transporter 1 Company Name: Eastern Environmental Solutions Inc. — U.S. EPA ID Number: NYR000135624

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address: Clean Water of New York Inc, 3249 Richmond Terrace, Staten Island, NY 10303 — U.S. EPA ID Number

Facility's Phone: (718) 981-4600

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1.	RNWN Non Haz, Non RCRA Regulated Solids (Drill Cuttings)	001	DM	400	P
2.	Non Haz, Non RCRA Regulated Liquids (Purge Water From Wells)	001	DM	55	gal
3.					
4.					

13. Special Handling Instructions and Additional Information

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Jessica Bluth (Walden) as Agent for 218 Lakeville Aquisition LLC — Signature: [signature] — Month 05 Day 22 Year 19

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: John Zinser — Signature: [signature] — Month 05 Day 22 Year 19

Transporter 2 Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Alexian Acevedo — Signature: [signature] — Month 6 Day 5 Year 19

<u>Appendix E</u>

Data Usability Summary Report

<u>Data Usability Summary Report</u>

Pre-Design Soil and Groundwater Sampling Investigation
Former Imperial Cleaners Site
218 Lakeville Road
Lake Success, NY 11020
BCP Site # C130225

This Data Usability Summary Report (DUSR) has been prepared to validate the results of the pre-design soil and groundwater sampling conducted at 218 Lakeville Road, Lake Success, New York on May 14, 2019 through May 22, 2019 in accordance with the NYSDEC-approved *Remedial Work Plan* (RWP) for the Site (Walden, February 2019).

This DUSR has been prepared in accordance with NYSDEC Draft DER-10, Appendix 2B – *"Guidance for Data Deliverables and the Development of Data Usability Summary Reports"*. The DUSR provides a thorough evaluation of analytical data without using the services of an independent third-party data validator. The primary objective of the DUSR is to determine whether or not the data presented meets project-specific criteria for data quality and use.

The analytical data were evaluated by Mr. Lawrence Zeman of Walden Environmental Engineering PLLC, whose experience and qualifications to prepare the DUSR for this project are presented in the attached resume. Soil and groundwater samples collected for laboratory analysis were submitted to Phoenix Environmental Laboratories, Inc. (Phoenix) of Manchester, Connecticut, a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) certified laboratory (NY Lab Registration #11301). Samples for pre-and polyfluoroalkyl (PFAS) substances were then submitted by Phoenix to Con-Test Analytical Laboratory of East Longmeadow, Massachusetts, a NYSDOH ELAP certified laboratory (NY Lab Registration # 10899). Soil and groundwater sample preparation for volatile organic compounds (VOCs) analysis was performed via U.S. Environmental Protection Agency (USEPA) SW-846 Method 5035 and 5030C for soil and groundwater samples. Samples were then analyzed for VOCs via USEPA SW-846 Method 8260C. Samples for 1,4-dioxane were analyzed via USEPA SW-846 Method SW8270-MOD (SIM) and pre-and polyfluoroalkyl (PFAS) substance analysis via USEPA modified Method 537.

The DUSR process consisted of evaluating the analytical data packages produced by Phoenix and Con-Test and answering the following questions.

1. **Were there any components of the sampling protocol which deviated from established sampling procedures?**

   The soil and groundwater samples were collected in laboratory-provided sample containers with prescribed preservatives utilizing Terra Core® sample kits for soil sample collection. The sampling followed the established sampling procedures in the NYSDEC-approved *RWP* for the Site (Walden, February 2019).

2. **Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?**

   The sampling and analytical program outlined in the RWP was designed to conform to the NYSDEC ASP Category B and USEPA CLP deliverables criteria. Both field sampling and laboratory analytical activities were performed with built-in QA/QC programs. Duplicate soil and groundwater samples were collected at a frequency of one (1) of each type of sample per day of sampling. (i.e. five (5) soil duplicate samples and four (4) groundwater duplicate samples). The analytical testing included method blanks and batch QA/QC samples as part of the laboratories' standard QA/QC program. Additionally, the samples were handled in compliance with the holding time allowances, meeting the NYSDEC ASP Category B and USEPA CLP deliverables criteria requirements.

3. **Have all holding times been met?**

   Times of sample receipt, extraction and analysis have been evaluated to determine whether the holding time specifications have been met. All of the samples were analyzed within the specified holding times.

4. **Do all QC data (blanks, instrument tunings, calibration standards, calibration verifications, surrogate recoveries, spike recoveries, replicate analyses, laboratory controls, and sample data) fall within the protocol-required limits and specifications?**

   All the primary samples and QC data were reviewed. Duplicate and Matrix Spike sample analyses demonstrated a reasonable level of accuracy in the analytical results. Although not all QA/QC data met the protocol-required criteria, these outliers do not impact the quality of the data package or the reliability of the laboratory results.

5. **Have all the data been generated using established and agreed upon analytical protocols?**

   Laboratory analytical protocols have been developed by the USEPA and are published in SW-846 Method SW5035 for soil sample extraction, SW-846 Method SW5030C for groundwater sample preparation, SW-846 Method SW8260C for volatile organic compounds (VOCs) analysis, SW-846 Method SW8270-MOD (SIM) for 1,4-Dioxane, and modified Method 537 for PFAS substances analysis. The review of the laboratory deliverables indicated that the analytical data for this project were generated following these standard protocols.

6. Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?

An evaluation of the raw data confirmed the accuracy of results provided in the data summary sheets and the quality control verification forms included in the analytical data packages prepared by the laboratory with one exception. Samples TMW-3 and Duplicate GW 05162019 (duplicate of TMW-3) were mistakenly entered on the chain of custody as soil samples. This soil designation was carried through on all the associated documents, however, the samples were analyzed as liquid samples. These samples and the associated quality control analysis meet the required laboratory criteria, and as such the reliability of the results should not be affected.

7. Have the correct data qualifiers been used?

The laboratory provided a list of qualifiers used in their data reporting. QC failures such as potential sample contamination by laboratory solvents or estimation of sample result values due to analyte concentrations detected above calibration ranges were checked back to the reported data to determine whether the qualifiers were properly used. The evaluation indicated that the laboratory flagged the data using the correct data qualifiers when necessary. The data qualifiers comply with the NYSDEC Analytical Services Protocol (ASP) 95 revised guidelines.

8. Have the minimum detection limits been met?

The minimum detection limits derived from the analytical methods and the laboratories' quality control are as follows:

- VOC for Groundwater: 5.0 ug/L
- VOC for Soil: 0.5 ug/kg
- 1,4-dioxane for Groundwater: 0.2 ug/L
- PFAS for Groundwater: Not required as per EPA Method 537

All the minimum detection limits were met.

Summary

In summary, the analytical data package review conducted while preparing this DUSR found that no data deficiencies, analytical protocol deviations, or quality control problems impacted the quality of the data. No significant QC exceedances were identified and it was determined that none of the data should be rejected.

Prepared by:
Lawrence Zeman

Attachment A

Resume of Environmental Professional

Lawrence F. Zeman

Project Scientist II

Lawrence has 20 years of environmental and lab consulting experience, taking on difficult laboratory issues and QA/QC. He is very well versed in areas as diverse as regulatory compliance, test protocol development and implementation, management of instrument repair and maintenance, field inspections and on-site audits, correlation studies of various analyses and engineering/technical reporting.

SELECTED RELEVANT EXPERIENCE

Various Clients, New York

- Performed sample collection of various sample types at industrial facilities and construction & remediation project sites;
  Conducted soil sample collection, field activities oversight and continuous air monitoring for Community Air Monitoring Program (CAMP) in accordance with DER-10 as follows:
  - Elmhurst Tank Park & Playground, Queens, NY (2009 – 2011);
  - Calvert Vaux Park and Athletic Fields, Brooklyn, NY (2009 – 2011), as an Independent Environmental Monitor (IEM) on-site technician;
  - Harlem Rive Greenway, Bronx, NY (2011 – 2012);
  - Beach Channel H.S. Athletic Fields (2016);
  - P.S. 63M William McKinley School, Manhattan, NY (2016);
  - P.S. 131 Abigail Adams Public School, Queens, NY (2017);
  - Forest Hills High School, Queens, NY (2017)
- Developed and implemented new testing protocols and test procedures;
- Conducted instrumentation repair and scheduled maintenance;
- Conducted correlation studies of various analytic procedures;
- Verified laboratory Quality Assurance and Quality Control procedures and data;
- Responsible for regulatory compliance and quality control;
- Prepared and submitted facilities' annual Zoning Performance Standards Compliance Reports, including noise, vibration, odor and opacity testing for DSNY permit renewal;
- Provided environmental services to ensure compliance for facility's NYS DEC Title V Air Facility Permit. Completed monthly, semi-annual and annual compliance reports;
- Conducted field Inspections and on-site audits;
- Preformed field measurements and recording of Noise and Vibration;
- Prepared Engineering & Technical Reports;
- Prepared New York City Community Right-To-Know Law and SARA reports for Industrial facilities

EDUCATION

B.A. Biology, Minor in Chemistry Queens College

LICENSES/ CERTIFICATIONS

New York State ELAP Laboratory Director

New York State ELAP Laboratory Microbiology Assistant Director

New York Department of Health Laboratory Technologist

OSHA HAZWOPER 40-hour & OSHA 10-hour Certified

ATTACHMENT 3

Additional Pre-Design Subsurface Investigation Report (Walden, October 2021)

WALDEN ENVIRONMENTAL ENGINEERING

Sent via email to joseph.jones@dec.ny.gov

October 6, 2021
IMPL0115.6

Mr. Joseph Jones
New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway, 12th Floor
Albany, New York 12233-7015

Re: Additional Pre-Design Subsurface Investigation Summary Report
Former Imperial Cleaners Site (BCP #C130225)
218 Lakeville Road, Lake Success, NY

Dear Mr. Jones:

Walden Environmental Engineering, PLLC (Walden) has reviewed the NYSDEC and NYSDOH comments on the *Additional Pre-Design Subsurface Investigation Summary Report and Remedial Plan* (March 2021) for the above referenced site, as presented in a letter from NYSDEC dated July 23, 2021. This report, which summarizes the results of the additional on-site soil sampling and off-site perched groundwater sampling completed in August – December 2020, has been revised in accordance with the State's comments. Note that the remedial plan components of the March 2021 report have been removed and the text "and Remedial Plan" has been deleted from the title as required by NYSDEC's July 23, 2021 letter. Walden is submitting the attached *Additional Pre-Design Subsurface Investigation Summary Report* on behalf of the property owner and BCP Volunteer, 218 Lakeville Aquisition LLC.

Walden's revisions in response to the State's comments are detailed below, in the same order presented in NYSDEC's July 23, 2021 letter.

- **Section 3.3 Data Usability Summary Report**: *"The DUSR should be attached to this report. Please revise."*

  Response: The DUSR is provided as Appendix D of the attached report.

- **Section 4.2 Recommendations (1st bullet):** *"The limits of remedial investigation should be based on endpoint sampling that confirms soils meet applicable SCOs (to the extent practicable). Residual contamination left on-site will be documented accordingly. Please revise."*

  - **Response:** The first bullet under Section 4.2 has been revised as follows: "<u>Removal of drywell structure DW-1 in the southwestern corner of the Site and excavation to remove impacted soils remaining in this area. The soil removal will be guided based on field observations and screening, and the limits of remedial excavation will be determined based on endpoint sampling that confirms that the soils meet applicable SCOs to the extent practicable. Residual contamination that will remain on-site after the remedial excavation is completed will be documented accordingly.</u>"

- **Figure 2 Comment:** *"Please add sampling dates to the data boxes or elsewhere on the figures."*

  Response: Figure 2 has been revised in accordance with this comment.

Please call me if you have any questions.

Very truly yours,
Walden Environmental Engineering, PLLC

Nora M Brew

Nora M. Brew, P.E.
VP/Senior Project Manager

cc: R. Corcoran, NYSDEC
A. Tamuno, Esq., NYSDEC
C. Bethoney, NYSDOH
A. Martin, NYSDOH
K. Mintzer, Mintzer Mauch PLLC
N. Weisfeld, 218 Lakeville Aquisition LLC

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Additional Pre-Design Subsurface Investigation Summary Report

at

Former Imperial Cleaners Site
218 Lakeville Road
Lake Success, New York 11042
NYSDEC BCP Site #C130225

October 2021

Prepared for:

Mr. Joseph Jones
Project Manager
NYS Department of Environmental Conservation
Remedial Bureau A, 11th Floor
625 Broadway
Albany, New York 12233

WALDEN ENVIRONMENTAL ENGINEERING, PLLC

Industry Leader in Environmental Engineering Consulting

PROACTIVE SOLUTIONS SINCE 1995

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TABLES

FIGURES

APPENDICES

Professional Engineer Certification

I certify that I am currently a professional engineer licensed to practice in New York State in accordance with New York State Education Law, Article 145, Section 7200 et seq. I have completed accredited university courses and degrees in engineering and have sufficient training and experience in remediation, groundwater hydrology, and related fields that enable me to make sound professional judgments with regards to engineering design.

I further certify that this submittal, *Additional Pre-Design Subsurface Investigation Summary Report*, dated October 5, 2021, was prepared under my direction.

STATE OF NEW YORK
NORA M. BREW
096459-1
LICENSED PROFESSIONAL ENGINEER

Nora M Brew

Nora M. Brew, P.E.
Walden Environmental Engineering, PLLC

10/5/2021

Date

1 INTRODUCTION

Walden Environmental Engineering, PLLC (Walden) has prepared this report to summarize the results of the additional on-site soil and off-site groundwater investigation conducted at the Former Imperial Cleaners site located at 218 Lakeville Road, Lake Success, New York (the "Site") in August/September and December 2020. The remedial actions to be completed at the Site are also presented. The Site is currently managed under the New York State Brownfield Cleanup Program (BCP) and is subject to New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Agreement #C130225-01-18. This agreement was fully executed by 218 Lakeville Acquisition LLC, the current Site owner (hereinafter, the "Volunteer") and the NYSDEC on February 12, 2018. Previously, the Site was managed under the NYSDEC Voluntary Cleanup Program (VCP) as site #V-00244-1. The Volunteer became owner of the Site in July 2015.

This investigation was conducted in accordance with the NYSDEC-approved *Additional Pre-Design Subsurface Investigation Work Plan - Revised ("Work Plan",* Walden, July 27, 2020) to support on-site source removal and the design and implementation of a soil vapor extraction (SVE) system. The NYSDEC-approved *Work Plan* was developed in accordance with the guidelines set forth in NYSDEC *DER-10: Technical Guidance for Site Investigation and Remediation* (May 3, 2010).

A brief Site description and the objectives of this investigation are presented below. Section 2 describes the investigation fieldwork conducted at the Site. Section 3 summarizes the on-site soil and off-site perched groundwater sampling results, and Section 4 presents conclusions and recommendations based on the findings of the investigation.

1.1 Site History and Previous Investigations/Remediation

The Site location is illustrated on **Figure 1**. The Site is a commercial strip with a single-story building with a basement occupying approximately 4,250 square feet, with four (4) current tenants (CCQ Construction Inc., W Brothers Realty, Tobacco Plaza, Ltd. and Real Eyes Optical) as shown on **Figure 2**. Residential properties are located directly west of the Site and commercial parcels adjoin the Site to the north, northwest and south.

The basement of the on-site building has concrete block walls and a poured concrete floor slab. Outside the building footprint, the property is completely asphalt-paved. Sanitary wastewater from the building is discharged to two (2) on-site septic systems (refer to **Figure 2**) as no public sewers are available near the Site; however, the Site is served by public water. A perched water table underlies the Site at approximately 30 feet below grade, with a confining clay layer approximately 35 to 50 feet below grade; the true groundwater table is located approximately 150 feet below grade. Groundwater flow at the Site varies from west to west-northwest.

A release of tetrachloroethylene (PCE) at the Site was first noted in 1995. The PCE contamination was suspected to originate from floor drains within the tenant space occupied by a dry cleaner (Imperial Cleaners) at that time and from a sanitary leaching pool and drywell on the property that were associated with the former dry cleaner operations. The site investigation and remediation work described below was conducted by the previous owners of the Site, 218 Lakeville Associates LP, as required by NYSDEC under the VCP prior to the Volunteer's ownership and involvement with the Site.

A site investigation was conducted to verify source areas and determine the extent of contaminated soil and groundwater at the Site. Contaminated sediments were removed from the source areas (drywell, interior floor drains and leaching pool associated with the former Imperial Cleaners operations) in 1996 and 2000 to the extent possible without undermining the on-site structures. Post-excavation soil sampling results indicated that volatile organic compounds (VOCs) remained in the subsurface at concentrations above the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) 4046 Recommended Cleanup Objectives. However, no additional materials were removed because it was determined that further excavation would threaten the integrity of the structures. A SVE system was installed to remove VOC vapors remaining in the soil and to improve soil and groundwater quality. The SVE system included eight (8) extraction wells and began operating in 2001. A soil, soil gas, groundwater and indoor air monitoring program was implemented to track the reductions in VOC concentrations achieved by operation of the SVE system.

Site closure sampling (soil, soil vapor and indoor air perc badge sampling) was conducted in November 2007 – January 2008 in accordance with a NYSDEC-approved work plan. The closure sampling results indicated that the SVE system had successfully reduced soil contaminant concentrations to levels below the NYSDEC TAGM 4046 Recommended Cleanup Objectives. Permanent shutdown of the SVE system was recommended based on the 2007-2008 closure sampling results. 218 Lakeville Associates L.P., the previous Site owner, subsequently shut down the SVE system circa 2008 without approval from NYSDEC and the New York State Department of Health (NYSDOH). These activities occurred approximately seven (7) years before the current Owner/Volunteer purchased the Site or had any involvement with the Site.

Representatives from the NYSDEC, the Volunteer and Walden met on-site in September 2015 to evaluate Site conditions and discuss previous sampling investigations, potential redevelopment of the Site and the work required to achieve VCP Site closure. Based on this meeting and subsequent discussions, a soil vapor intrusion (SVI) investigation ensued to evaluate potential indoor air quality impacts related to SVI and to support development of appropriate Site closure/management recommendations for NYSDEC and NYSDOH review and approval. The SVI sampling was conducted in February 2016 in accordance with the NYSDEC-approved *Soil Vapor Intrusion Investigation Work Plan* (Walden, December 2015) and included the collection of sub-slab soil vapor, indoor air and outdoor (ambient) air samples at the Site and several neighboring properties. The results of this sampling were documented in the May 2017 *Soil Vapor Intrusion Investigation Summary Report*, prepared by Walden and submitted to the NYSDEC. This report indicated that subsurface VOC concentrations at the Site and surrounding area had rebounded since the SVE system was shut down. Remedial action objectives were subsequently developed and presented in the *Remedial Work Plan* (*"RWP"*, Walden, February 2019) to guide the selection of an appropriate remedial alternative for the Site and to support future development of Site closure/management plans.

In accordance with the NYSDEC-approved 2019 *RWP*, a subsequent SVI investigation was performed in April 2019 to confirm the February 2016 SVI sampling results at the Site and the adjacent property to the south, 220 Lakeville Road, and to evaluate the potential for vapor migration and intrusion at additional off-site properties not included in the February 2016 investigation. The April 2019 investigation included the collection of sub-slab soil vapor, indoor air and outdoor air samples at the Site, 220 Lakeville Road and one (1) additional off-site residential property to the west (5 University Place). Sampling was performed in accordance with the procedures described in the NYSDEC- and NYSDOH-approved *Soil Vapor Intrusion Investigation Work Plan* (Walden, December 2015). The results were documented in the July 2019 *Soil Vapor Intrusion Investigation Summary Report* (revised September 2021), prepared by Walden and submitted to the NYSDEC which indicated that subsurface vapors contain elevated concentrations of VOCs (mainly PCE and breakdown products trichloroethylene [TCE] and cis-1,2-dichloroethylene [cis-1,2-DCE]) attributable to historic releases at the Former Imperial Cleaners Site. In addition, the indoor air sample collected at 5 University Place contained an elevated concentration of methylene chloride, a VOC attributable to household products and unrelated to the Site.

A pre-design subsurface investigation performed at the Site in May 2019 included the advancement of fourteen (14) soil borings (GB-1 through GB-14), conversion of seven (7) borings into temporary monitoring wells (TMW-1 through TMW-7), and the collection of twenty-eight (28) soil and seven (7) perched groundwater samples. This investigation was performed to evaluate the nature and extent of residual VOC contamination, to characterize geological conditions at the Site to support the design and implementation of a SVE remediation system, and to identify residual VOC source material to be targeted for excavation. The results were documented in the October 2019 *Pre-Design Subsurface Investigation Summary Report*, prepared by Walden and submitted to the NYSDEC and NYSDOH. Refer to **Figure 3** for a summary of the PCE and TCE concentrations detected at the on-site soil and groundwater sampling locations.

The reported PCE concentration in the sample collected from boring GB-6, located in the southwestern corner of the Site immediately downgradient of stormwater drywell DW-1 at the suspected invert of this drainage structure (14.5-15.5 feet below grade), exceeded the NYSDEC Soil Cleanup Objective (SCO) for Protection of Groundwater, suggesting that contaminant source material is present in and around this drywell structure. PCE was detected at concentrations exceeding the NYSDEC Class GA Ambient Water Quality Standard of 5 micrograms per liter (µg/L) in all temporary on-site monitoring wells with the exception of TMW-7.

1.2 September 2020 Soil and Groundwater Sampling Objectives

Remedial action alternatives for the Site were evaluated and presented in the February 2019 *RWP*. The selected remedial strategy for the Site entails the design and installation of an on-site SVE system to reduce the residual VOC mass and prevent off-site vapor migration by removing contaminated vapors in the subsurface, with excavation of residual source material as appropriate.

A July 2020 Pre-design Investigation *Work Plan*, approved by NYSDEC and NYSDOH on August 19, 2020, detailed the scope of an additional pre-design subsurface investigation which was performed in August/September and December 2020. The objectives of the additional pre-design investigation were as follows:

- To focus excavation of residual VOC source material by delineating the extent of VOC impacted soil in the suspected source areas in the vicinity of DW-1 and beneath the former Imperial Cleaners space;
- To support the design and implementation of the SVE system at the Site by identifying geological factors which may affect the radius of influence and screened intervals of SVE wells in the unsaturated zone; and
- To evaluate off-site perched groundwater quality.

Fieldwork included the advancement of on-site soil borings to characterize soils in suspected areas of residual contamination and the installation and sampling of temporary monitoring wells located along University Drive, downgradient (west to west-northwest) of the Site, to evaluate off-site perched groundwater quality. The results of the investigation are detailed herein and, in conjunction with data from previous investigations, will be utilized to identify and constrain on-site source areas for excavation and to support SVE system design.

2 SUBSURFACE INVESTIGATION FIELDWORK

The additional pre-design soil and groundwater investigation began on August 31, 2020. Lakewood Environmental Services, Inc. (Lakewood) of Smithtown, NY was retained to perform drilling activities and temporary well installations while Walden performed field oversight and sampling activities. Refer to **Figure 2** for the sampling locations, which were chosen in accordance with the NYSDEC-approved *Work Plan.* Based on historic Site use and the May 2019 pre-design investigation sampling results (see **Figure 3**), the on-site soil sampling locations were biased towards the on-site building space and drywell DW-1 in the rear parking lot associated with the former dry-cleaning operations. Groundwater samples were collected from temporary monitoring wells installed downgradient of the Site at locations directed by NYSDEC/NYSDOH to evaluate off-site perched groundwater conditions.

2.1 Soil Investigation

Based on the presence of an elevated PCE concentration in soil immediately downgradient of drywell DW-1 in the southwestern corner of the Site (as detected in boring GB-6 during the May 2019 investigation), removal of this structure and remedial excavation of impacted soils in this area was recommended. In order focus the scope of source removal, additional soil borings (GB-15A through GB-15D; GB-16A and GB-16B) were advanced in the vicinity of DW-1.

Soil vapor intrusion (SVI) investigations previously performed at the Site detected the presence of elevated concentrations of chlorinated VOC vapors beneath the building slab. During the May 2019 subsurface investigation, no VOCs were detected above laboratory reporting limits in soil samples collected from boring GB-7, situated immediately west of the former Imperial Cleaners tenant space. Furthermore, it is possible that the soil impacts detected in the DW-1 area in the southwestern portion of the Site may not represent the source of the elevated sub-slab VOC vapor concentrations based on their nature and distance from the building. Therefore, four (4) borings (GB-17 through GB-20) were cored through the concrete slab floor in the basement of the former Imperial Cleaners space where historical discharges of dry-cleaning solvents have been suspected to evaluate the potential presence of additional source material beneath the building. The on-site soil sampling locations are depicted on **Figure 2**. The fieldwork and sampling activities are described in further detail below.

2.1.1 Soil Borings in Vicinity of Drywell DW-1

On August 31, 2020, six (6) soil borings (GB-15A through GB-15D; GB-16A and GB-16B) were advanced utilizing a direct-push drill rig (Geoprobe® 6610DT) in the vicinity of drywell DW-1, from the ground surface to a depth of approximately 28-30 feet bg (just above the perched groundwater interface) to better delineate the lateral and vertical extent of soil impacts in this area.

Continuous soil samples were collected via five (5) foot Macrocores from the surface to the terminus of each boring (28-30 feet bg) at locations GB-15A through GB-15D and GB-16A and GB-16B. The soil cores were inspected and any visual or olfactory evidence of contamination was noted. The soils were logged and field screened utilizing a photoionization detector (PID) which was calibrated according to manufacturers' instructions prior to the commencement of drilling activities.

Sampling proceeded in the direction of elevated PID readings to delineate the extent of impacted soils, and continued laterally and vertically until visual observations and field screening results indicated that clean soil was encountered. These data will be utilized to supplement the May 2019 data to constrain the limits of remedial excavation in this portion of the Site. Delineation immediately downgradient (west-northwest) of DW-1 was not feasible due to the proximity of the western Site boundary; therefore, delineation efforts were focused primarily on the eastern and northeastern sides of DW-1. The GB-15 borings were located north-northeast of DW-1 and the GB-16 borings were located east-northeast of DW-1 as shown on **Figure 2**. Boring logs are provided in **Appendix A** and photographs collected during the fieldwork are provided in **Appendix B**.

The soil lithology generally consisted of medium brown, fine to medium sand with trace amounts of silt and gravel. Solvent odors and elevated PID measurements were detected at varying depths as noted on the boring logs in **Appendix A**; the maximum PID reading detected from a depth greater than 10 ft bg in each boring is shown in the table below. The maximum PID reading amongst all of the borings was detected in GB-15A at a depth of approximately 18 feet bg; solvent odors were also noted in soils from GB-15A from 18 ft bg to the bottom of the borehole.

One (1) soil sample from each boring was retained for laboratory analysis from a depth greater than 10 ft bg based on field screening results (PID readings, visual/olfactory observations) and other factors including proximity to suspected source areas, distinct soil types, and/or depth with respect to the perched groundwater table. The depths of the samples collected for laboratory analysis are noted in the table below.

Soil Boring	Max. PID Reading (ppm) below 10 ft bg	Depth of Max. PID Reading (ft bg)	Depth of Sample Submitted for Lab Analysis (ft bg)
GB-15A	2012	18	18-20
GB-15B	148.3	15	13-15
GB-15C	105.8	11	15-17
GB-15D	43.0	13	12-14
GB-16A	13.1	23	22-24
GB-16B	5.7	13	12-14

Quality assurance/quality control (QA/QC) samples were also collected in accordance with the Quality Assurance Project Plan (QAPP) for the Site, provided as Appendix B of the July 2020 *Work Plan*. All soil samples were containerized in clean, laboratory-provided glassware, labeled, placed in ice-filled coolers and transported via courier under standard Chain-of-Custody protocols to York Analytical Laboratories, Inc. (York) of Richmond Hill, NY, a NYSDOH Environmental Laboratory Approval Program (ELAP) Contract Laboratory Protocol (CLP) laboratory, for analysis of VOCs via U.S. Environmental Protection Agency (USEPA) Method 5035.

2.1.2 Soil Sampling Beneath Building Slab in Former Imperial Cleaners Basement

Floor drain FD-2 in the basement beneath the former Imperial Cleaners space was previously identified as a source of on-site PCE contamination. In 1996, FD-2 was converted into a SVE remediation well with a screened interval of 4-10 feet below grade. On September 1 and 3, 2020, four (4) sub-slab soil borings (GB-17 through GB-20) were advanced using a core drill in the vicinity of floor drain FD-2 to evaluate the potential presence of residual source material in this area. Each boring was located approximately five (5) feet from FD-2 to characterize the soils beneath the slab. See **Figure 2** for the boring locations. While the *Work Plan* called for these sub-slab soil borings to reach a depth of ten (10) feet below the bottom of the slab (to remain consistent with the terminus of the FD-2 SVE well screen), drilling proved difficult due to the presence of tightly compacted material with pebbles/cobbles. Refusal was encountered at depths between 4-6 ft bg at each location.

The soil cores were inspected and no visual or olfactory evidence of contamination was noted. The soils were logged and field screened utilizing a calibrated PID. The maximum PID reading detected in each boring is shown in the table below. One (1) soil sample from each boring was retained for laboratory analysis based on the PID readings. The depths of the samples collected for laboratory analysis are noted in the table below.

Soil Boring	Max. PID Reading (ppm)	Depth of Max. PID Reading (ft bg)	Depth of Sample Submitted for Lab Analysis (ft bg)
GB-17	2.0	5	4-5
GB-18	1.1	3	2-4
GB-19	0.5	2.5	2-4
GB-20	0.5	5	4-6

All soil samples were collected in laboratory-supplied glassware and transported to York Labs via courier under chain-of-custody procedures for analysis of VOCs via USEPA Method 5035.

2.2 Groundwater Investigation

On November 12 and 16, 2020, four (4) off-site temporary wells (PW-1 through PW-4) were installed along University Place as shown on **Figure 2.** Photographs taken during the work are included in **Appendix B**. The asphalt pavement was sawcut and a direct push (Geoprobe 6610 DT) drill rig was used to bore to approximately 20 ft below grade. Split spoons were continuously utilized at each location to characterize the subsurface materials at two (2)-foot intervals in order to determine when the top of the confining clay layer underlying the Site vicinity was reached. The bottom of each temporary well was set approximately two (2) feet above the top of the clay. The temporary wells were constructed of one (1)-inch diameter polyvinylchloride (PVC) with 20-slot PVC screen extending from the bottom of the well to approximately two (2) feet above the observed perched water table and solid one (1)-inch diameter PVC riser pipe to grade. Each temporary well was finished with a J-plug within a five (5)-inch diameter road box with a bolt-down manhole cover. The well construction details are included on the logs provided as **Appendix A.** The new temporary wells remained undisturbed and were allowed to reach equilibrium with the formation for approximately two (2) weeks before groundwater samples were collected.

On December 2, 2020, Walden collected groundwater samples from the new temporary wells. At least three (3) well volumes were purged from each well using a check valve and polyethylene tubing. Two (2) perched groundwater samples were then collected at each location using a disposable microbailer: one (1) sample from the top of the water column (PW-1U, PW-2U, PW-3U and PW-4U, collected from approximately 1 to 2 feet below the top of the perched water table) and one (1) sample from the bottom of the water column (PW-1L, PW-2L, PW-3L and PW-4L).

The perched groundwater samples were placed into single-use sampling glassware provided by the laboratory, packed in ice-filled coolers, and transported to York Labs via courier under standard Chain-of-Custody protocols. All groundwater samples were analyzed for VOCs via USEPA Method 8260.

3 EVALUATION OF SOIL AND GROUNDWATER INVESTIGATION RESULTS

3.1 Summary of Soil Sampling Results

The laboratory analytical results for the on-site soil samples collected in August/September 2020 are summarized in **Table 1**. The complete laboratory analytical reports are provided in **Appendix C**. PCE and TCE concentrations detected at each boring location are included on **Figure 2**. The results are discussed below.

3.1.1 Soil Samples in Vicinity of Drywell DW-1

The laboratory analytical results for the soil samples collected from soil borings GB-15A through GB-15D and GB-16A and GB-16B were compared to 6 NYCRR/NYSDEC Part 375 Soil Cleanup Objectives (SCOs) for Commercial Site Use and Protection of Groundwater; the SCOs are listed in **Table 1**. Evaluation of the VOC results reported by the laboratory indicated the following:

- No VOCs were detected at concentrations above NYSDEC SCOs in any of the soil samples collected in the vicinity of DW-1.
- Low concentrations of PCE, well below applicable NYSDEC SCOs, were detected in the soil samples collected from borings GB-15A, GB-15B, GB-16A and GB-16B.
- Low concentrations of acetone were also detected in several soil samples. Acetone is a common laboratory solvent and all the reported concentrations were well below applicable NYSDEC SCOs. Therefore, these detections are not considered to present a concern.

Although field observations and PID screening results indicated evidence of potential soil contamination, particularly in boring GB-15A, the VOC concentrations reported by the laboratory do not indicate any exceedances of SCOs in the soil samples collected in the vicinity of DW-1.

3.1.2 Soil Samples Beneath Building Slab in Former Imperial Cleaners Basement

The laboratory analytical data for the sub-slab soil samples collected from GB-17 through GB-20 beneath the former dry-cleaners space were also compared to the 6 NYCRR/NYSDEC Part 375 SCOs for Commercial Site Use and Protection of Groundwater, as listed in **Table 1**. The evaluation of the VOC results reported by the laboratory indicated the following:

- PCE was detected in the samples collected from borings GB-17 and GB-18 at concentrations of 43,000 micrograms per kilogram (μg/kg) and 22,000 μg/kg, respectively. These concentrations exceed the NYSDEC Protection of Groundwater SCO (1,300 μg/kg PCE), indicating that VOC-impacted soils remain beneath the on-site building.
- Low concentrations of TCE and cis-1,2-DCE were also detected in GB-17 and GB-18 at concentrations well below applicable SCOs.
- Low concentrations of acetone were also detected in several soil samples. Acetone is a common laboratory solvent and all the reported concentrations were well below applicable NYSDEC SCOs. Therefore, these detections are not considered to present a concern.

3.2 Summary of Groundwater Sampling Results

The laboratory analytical data for the perched groundwater samples collected from the four (4) off-site temporary monitoring wells (PW-1 through PW-4) are summarized in **Table 2**. The complete laboratory analytical report is provided in **Appendix C**. The analytical results were compared to the NYSDEC Class GA Ambient Water Quality Standards as listed in **Table 2**. Evaluation of the groundwater sample analytical results indicated the following:

- No VOCs were detected at concentrations above the NYSDEC Class GA Ambient Water Quality Standards in the off-site perched groundwater samples.
- Low concentrations of acetone were detected in several groundwater samples. Acetone is a common laboratory solvent; therefore, these detections are not considered to present a concern.

3.3 Data Usability Summary Report (DUSR)

The on-site soil and off-site groundwater data from the additional pre-design subsurface investigation completed in August/September and December 2020 were evaluated in accordance with NYSDEC DER-10 Data Usability Summary Report (DUSR) guidance. The DUSR is attached in **Appendix D**.

4 SUMMARY OF RESULTS AND RECOMMENDATIONS

4.1 Summary of Results

The additional pre-design subsurface investigations were performed at the Site in August/ September and December 2020 to further evaluate on-site soil and off-site groundwater conditions as a follow up to the May 2019 investigation findings. The objectives of the additional pre-design investigations were to identify and constrain on-site soils (residual VOC source material) for potential excavation and to support the design of an on-site SVE system.

Six (6) soil borings (GB-15A through GB-15D; GB-16A and GB-16B) were installed in the vicinity of drywell DW-1 in the rear parking lot near the former Imperial Cleaners tenant space, and four (4) soil borings (GB-17 through GB-20) were advanced through the concrete slab floor in the basement of the former dry-cleaners space. Soil samples were selected for laboratory analysis of VOCs based on field observations, PID screening results, and other factors including proximity to suspected source areas and depth.

- Field observations and elevated PID readings indicated evidence of potential soil contamination in the six (6) soil borings advanced in the vicinity of DW-1, particularly in GB-15A; however, no VOCs were detected at concentrations above NYSDEC SCOs in any of the soil samples collected from these borings.
- PCE was detected in soil samples collected from beneath the basement slab in borings GB-17 and GB-18 at concentrations exceeding the applicable NYSDEC Protection of Groundwater SCO, indicating that VOC-impacted soils remain beneath this portion of the Site building.

Four (4) temporary monitoring wells (PW-1 through PW-4) were installed downgradient of the site on University Drive to evaluate off-site perched groundwater quality. Groundwater samples were collected from the upper and lower portions of the water column in each well and analyzed for VOCs.

- None of the groundwater samples contained VOCs at concentrations above the NYSDEC Class GA Ambient Water Quality Standards, indicating that there are no impacts to the off-site perched groundwater quality.

4.2 Recommendations

Walden recommends the following actions based on the pre-design soil and groundwater investigation results:

- Removal of drywell structure DW-1 in the southwestern corner of the Site and excavation to remove impacted soils remaining in this area. The soil removal will be guided based on field observations and screening, and the limits of remedial excavation will be determined based on endpoint sampling that confirms that the soils meet applicable SCOs to the extent practicable. Residual contamination that will remain on-site after the remedial excavation is completed will be documented accordingly.

- Removal of a limited portion of the slab beneath the former Imperial Cleaners space (in the area of FD-2, GB-17 and GB-18) and excavation of underlying impacted soils where PCE concentrations exceeded applicable SCOs, based on the September 2020 sampling results.

- Design, testing and installation of an on-site remedial system to prevent soil vapor intrusion into the on-site building, achieve contaminant source removal, contain VOCs on-site and prevent off-site VOC vapor migration

- Air monitoring for VOCs and dust in accordance with a Community Air Monitoring Program (CAMP) approved by NYSDEC/NYSDOH will be implemented during all ground intrusive work and activities involving soil disturbance at the Site.

<u>Figure 1</u>

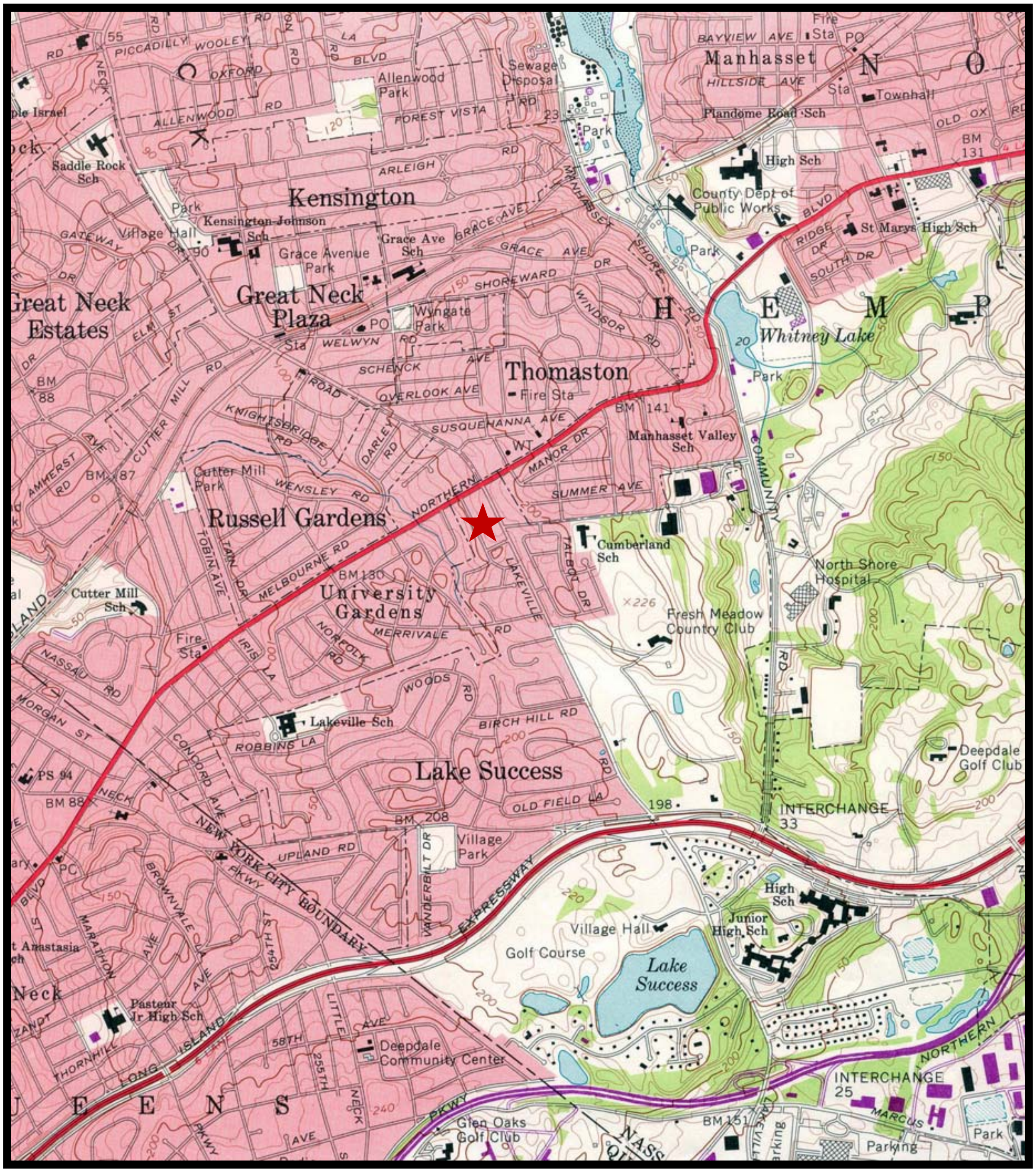
Site Location Map

Former Imperial Cleaners Site
BCP Site #C130225
218 Lakeville Road
Lake Success, New York

FIGURE 1

SITE LOCATION MAP

N



(USGS QUAD Sea Cliff, New York) (Scale 1:24000)

Figure 2

Additional Pre-Design Investigation (2020)

Sampling Locations & Results Summary

LEGEND

- SUBJECT PROPERTY LINE
- DW #1 — STORMWATER DRYWELL
- LP — SANITARY LEACHING POOL
- FD–1 — FLOOR DRAIN
- APPROXIMATE PIPING CONNECTION (SANITARY SYSTEM/STORMWATER/ROOF DRAINAGE)

SOIL/ GROUNDWATER SAMPLE LOCATIONS (APPROXIMATE)

GB-# X - SOIL BORING (2020)

PW-1 - OFF-SITE GROUND WATER (PERCHED WATER) SAMPLING LOCATION (2020)

- SOIL BORING/TEMPORARY MONITORING WELL GB-1/TMW-1 (2019)

NOTES

1. SITE BASE MAP WAS DERIVED FROM A PROPERTY SURVEY PREPARED BY WELSH ENGINEERING & LAND SURVEYING, P.C., 343 MANVILLE ROAD, PLEASANTVILLE, NY 10570, REVISED ON 7/14/00.

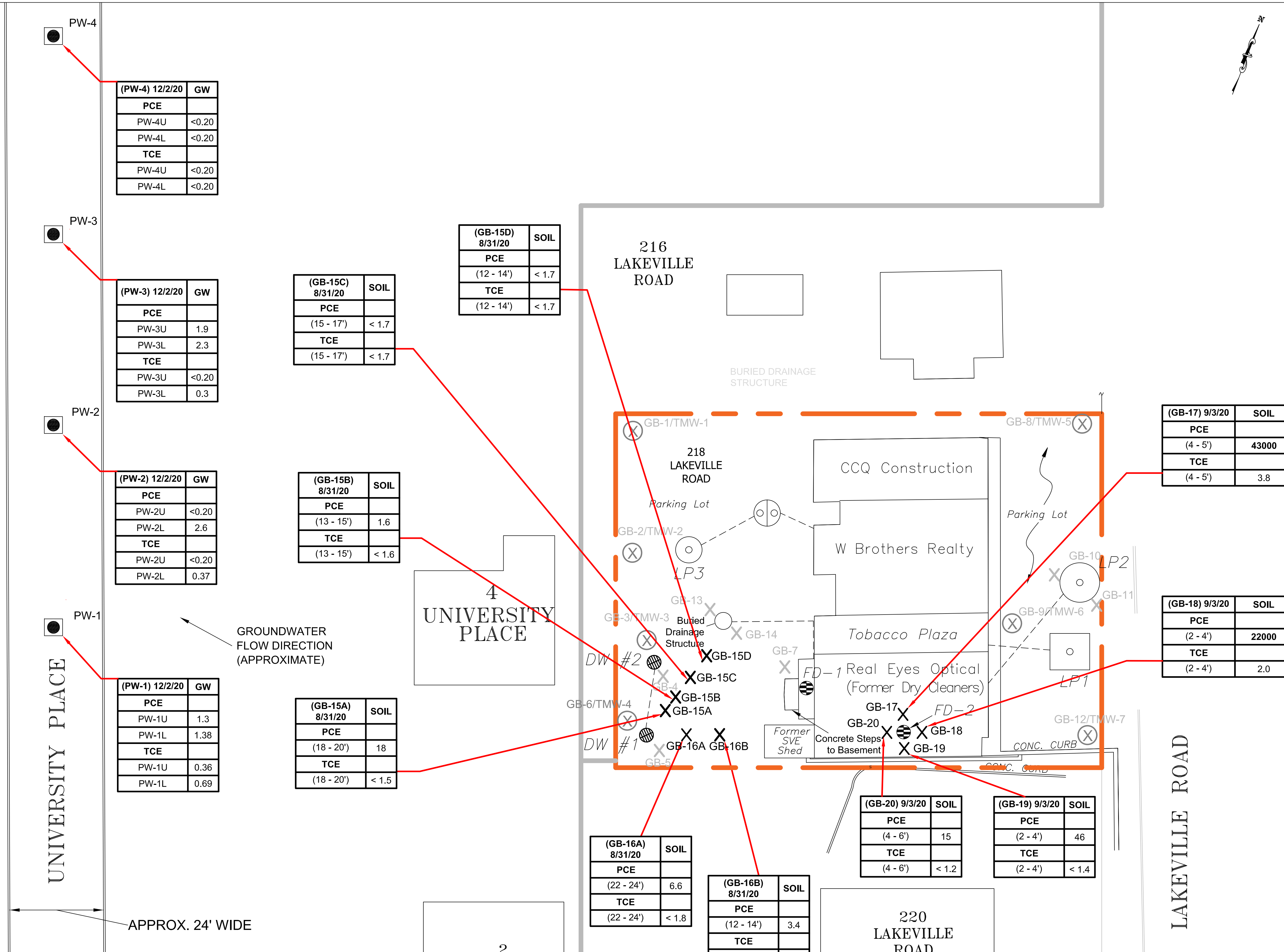
2. THE WELSH ENINGEERING NORTH AREA WAS CORRECTED BASED ON 1999 NASSAU COUNTY GIS BASEMAP.

3. PCE AND TCE CONCENTRATIONS REPORTED BY THE LABORATORY FOR SOIL SAMPLES COLLECTED FROM ON-SITE BORING BORINGS ARE LISTED IN MICROGRAMS PER KILOGRAM (UG/KG). CONCENTRATIONS THAT EXCEED NYSDEC SCOS FOR PROTECTION OF GROUNDWATER ARE INDICATED IN **BOLD**.

4. PCE AND TCE CONCENTRATIONS REPORTED BY THE LABORATORY FOR PERCHED GROUNDWATER SAMPLES COLLECTED FROM THE OFF-SITE TEMPORARY MONITORING WELLS ARE LISTED IN MICROGRAMS PER LITER (UG/L). PERCHED WATER SAMPLES WERE COLLECTED FROM THE TOP OF THE WATER COLUMN ("U" SUFFIX) AND THE BOTTOM OF THE WATER COLUMN ("L" SUFFIX) AT EACH LOCATION.

0' 15' 30' 45' 60'

SCALE: 1" = 30'



(PW-4) 12/2/20	GW
PCE	
PW-4U	<0.20
PW-4L	<0.20
TCE	
PW-4U	<0.20
PW-4L	<0.20

(PW-3) 12/2/20	GW
PCE	
PW-3U	1.9
PW-3L	2.3
TCE	
PW-3U	<0.20
PW-3L	0.3

(PW-2) 12/2/20	GW
PCE	
PW-2U	<0.20
PW-2L	2.6
TCE	
PW-2U	<0.20
PW-2L	0.37

(PW-1) 12/2/20	GW
PCE	
PW-1U	1.3
PW-1L	1.38
TCE	
PW-1U	0.36
PW-1L	0.69

(GB-15D) 8/31/20	SOIL
PCE	
(12 - 14')	< 1.7
TCE	
(12 - 14')	< 1.7

(GB-15C) 8/31/20	SOIL
PCE	
(15 - 17')	< 1.7
TCE	
(15 - 17')	< 1.7

(GB-15B) 8/31/20	SOIL
PCE	
(13 - 15')	1.6
TCE	
(13 - 15')	< 1.6

(GB-15A) 8/31/20	SOIL
PCE	
(18 - 20')	18
TCE	
(18 - 20')	< 1.5

(GB-16A) 8/31/20	SOIL
PCE	
(22 - 24')	6.6
TCE	
(22 - 24')	< 1.8

(GB-16B) 8/31/20	SOIL
PCE	
(12 - 14')	3.4
TCE	
(12 - 14')	< 1.3

(GB-17) 9/3/20	SOIL
PCE	
(4 - 5')	**43000**
TCE	
(4 - 5')	3.8

(GB-18) 9/3/20	SOIL
PCE	
(2 - 4')	**22000**
TCE	
(2 - 4')	2.0

(GB-20) 9/3/20	SOIL
PCE	
(4 - 6')	15
TCE	
(4 - 6')	< 1.2

(GB-19) 9/3/20	SOIL
PCE	
(2 - 4')	46
TCE	
(2 - 4')	< 1.4

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FORMER IMPERIAL CLEANERS SITE
BCP Site No. C130225
218 Lakeville Road
Lake Success, New York 11020

DRAWING TITLE:
ADDITIONAL PRE-DESIGN INVESTIGATION (2020) SAMPLING LOCATIONS & RESULTS SUMMARY

FIGURE 2

JOB NO: IMPL0115.6
DATE: October 4, 2021

<u>Figure 3</u>

May 2019 Pre-Design Investigation Sampling

Locations & Results Summary

LEGEND

SUBJECT PROPERTY LINE

DW #1 STORMWATER DRYWELL

SANITARY LEACHING POOL

LP

FD-1 FLOOR DRAIN

APPROXIMATE PIPING CONNECTION (SANITARY SYSTEM/STORMWATER/ROOF DRAINAGE)

2019 SOIL/ GROUNDWATER SAMPLE LOCATIONS (APPROXIMATE)

GB-5

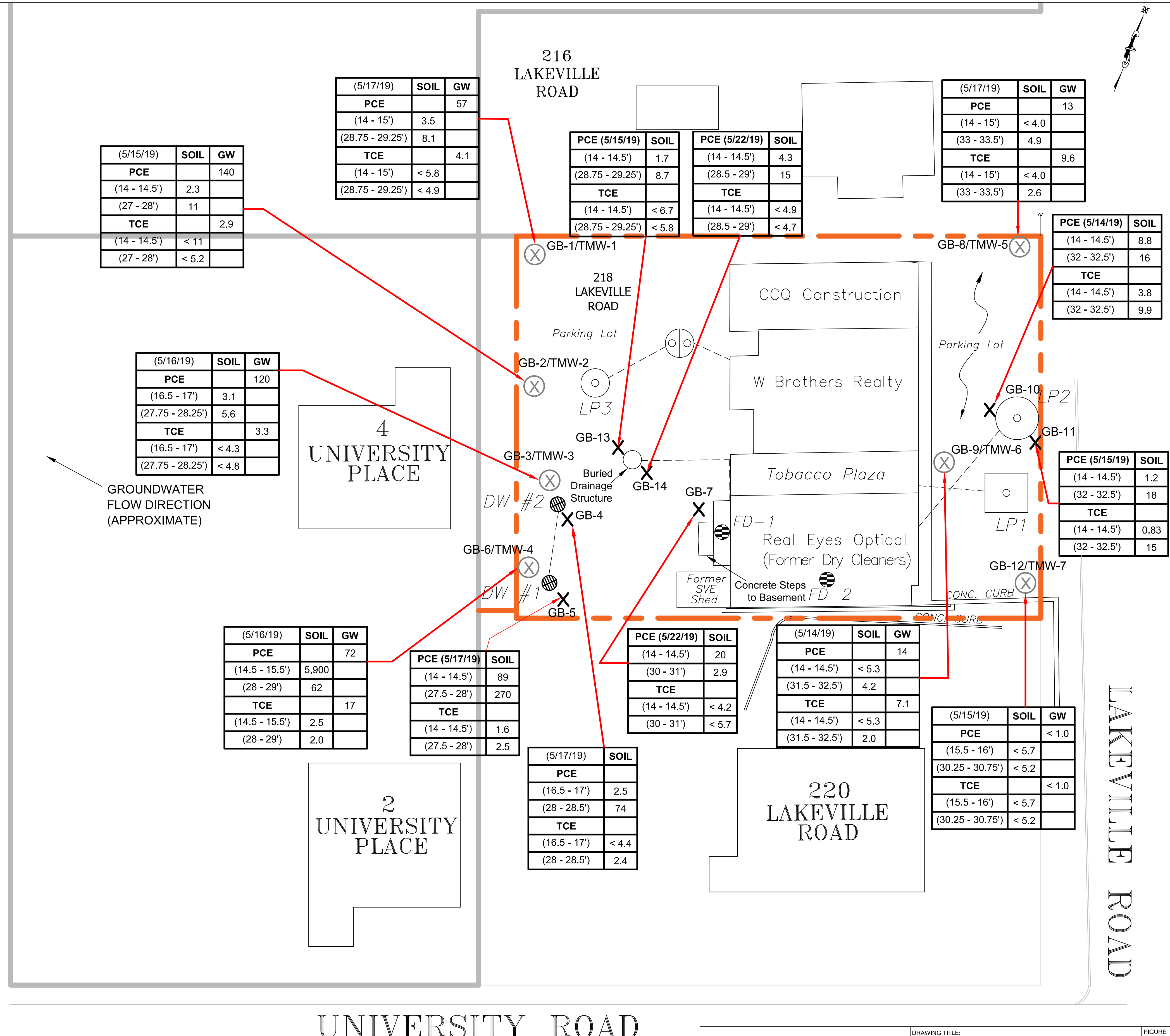
X - SOIL BORING ONLY

(X) - SOIL BORING/TEMPORARY MONITORING WELL GB-1/TMW-1

0 15 30 60 90

SCALE: 1"=30'-0"

UNIVERSITY PLACE



(5/15/19)	SOIL	GW
PCE		140
(14 - 14.5')	2.3	
(27 - 28')	11	
TCE		2.9
(14 - 14.5')	< 11	
(27 - 28')	< 5.2	

(5/17/19)	SOIL	GW
PCE		57
(14 - 15')	3.5	
(28.75 - 29.25')	8.1	
TCE		4.1
(14 - 15')	< 5.8	
(28.75 - 29.25')	< 4.9	

PCE (5/15/19)	SOIL
(14 - 14.5')	1.7
(28.75 - 29.25')	8.7
TCE	
(14 - 14.5')	< 6.7
(28.75 - 29.25')	< 5.8

PCE (5/22/19)	SOIL
(14 - 14.5')	4.3
(28.5 - 29')	15
TCE	
(14 - 14.5')	< 4.9
(28.5 - 29')	< 4.7

(5/17/19)	SOIL	GW
PCE		13
(14 - 15')	< 4.0	
(33 - 33.5')	4.9	
TCE		9.6
(14 - 15')	< 4.0	
(33 - 33.5')	2.6	

PCE (5/14/19)	SOIL
(14 - 14.5')	8.8
(32 - 32.5')	16
TCE	
(14 - 14.5')	3.8
(32 - 32.5')	9.9

(5/16/19)	SOIL	GW
PCE		120
(16.5 - 17')	3.1	
(27.75 - 28.25')	5.6	
TCE		3.3
(16.5 - 17')	< 4.3	
(27.75 - 28.25')	< 4.8	

PCE (5/15/19)	SOIL
(14 - 14.5')	1.2
(32 - 32.5')	18
TCE	
(14 - 14.5')	0.83
(32 - 32.5')	15

(5/16/19)	SOIL	GW
PCE		72
(14.5 - 15.5')	5,900	
(28 - 29')	62	
TCE		17
(14.5 - 15.5')	2.5	
(28 - 29')	2.0	

PCE (5/17/19)	SOIL
(14 - 14.5')	89
(27.5 - 28')	270
TCE	
(14 - 14.5')	1.6
(27.5 - 28')	2.5

PCE (5/22/19)	SOIL
(14 - 14.5')	20
(30 - 31')	2.9
TCE	
(14 - 14.5')	< 4.2
(30 - 31')	< 5.7

(5/14/19)	SOIL	GW
PCE		14
(14 - 14.5')	< 5.3	
(31.5 - 32.5')	4.2	
TCE		7.1
(14 - 14.5')	< 5.3	
(31.5 - 32.5')	2.0	

(5/17/19)	SOIL
PCE	
(16.5 - 17')	2.5
(28 - 28.5')	74
TCE	
(16.5 - 17')	< 4.4
(28 - 28.5')	2.4

(5/15/19)	SOIL	GW
PCE		< 1.0
(15.5 - 16')	< 5.7	
(30.25 - 30.75')	< 5.2	
TCE		< 1.0
(15.5 - 16')	< 5.7	
(30.25 - 30.75')	< 5.2	

NOTES

1. Site base map was derived from a property survey prepared by Welsh Engineering & Land Surveying, P.C., 343 Manville Road, Pleasantville, NY 10570, revised on 7/14/00.

2. The Welsh Enineering north area was corrected based on 1999 Nassau County GIS basemap.

3. Piezometers were installed at each of the 7 groundwater sampling locations (GB-1, GB-2, GB-3, GB-6, GB-8, GB-9 and GB-12) to allow for groundwater collection and water level measurements.

4. Groundwater samples collected from each of the 7 piezometers were analyzed for VOCs by EPA Method 8260.

5. Groundwater samples collected from GB-1, GB-6, GB-8 and GB-12 were also analyzed for emerging contaminants (PFAS and 1,4 - dioxane).

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FORMER IMPERIAL CLEANERS SITE
BCP Site No. C130225
218 Lakeville Road
Lake Success, New York 11020

DRAWING TITLE:
MAY 2019 PRE-DESIGN INVESTIGATION SAMPLING LOCATIONS & RESULTS SUMMARY

FIGURE
3

JOB NO: IMPL0115.6
DATE: October 4, 2021
CAD FILE NAME: Z:\IMPL0115 (Imperial Cleaners)\IMPL0115.6 - 2019 Pre-Design Investigation\September 2020 Investigation\ACAD\IMPL0115.6 Additional Pre-design Sample Locations (10-4-21) LS.dwg

Table 1

Summary of Soil Analysis
Volatile Organic Compounds (VOCs)

Former Imperial Cleaners Site
218 Lakeville Road, Lake Success, New York

Table 1
Summary of On-Site Soil Analysis - Volatile Organic Compounds (VOCs)
August - September 2020

				On-Site Samples in Drywell DW#1 Area													
Chemical Compound	CAS No.	NYSDEC Restricted Use Soil Cleanup Objectives (6 NYCRR Part 375)		GB-15A (18'-20')		GB-15B (13'-15')		GB-15C (15'-17')		GB-15D (22'-24')		GB-16A (22'-24')		GB-DUP		GB-16B (12'-14')	
		Commercial Use	Protection of Groundwater	8/31/2020		8/31/2020		8/31/2020		8/31/2020		8/31/2020		8/31/2020		8/31/2020	
				µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q
1,1,1,2-Tetrachloroethane	630-20-6	NA	NA	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
1,1,1-Trichloroethane	71-55-6	500,000	680	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
1,1,2,2-Tetrachloroethane	79-34-5	NA	600	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	76-13-1	NA	6,000	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
1,1,2-Trichloroethane	79-00-5	NA	NA	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
1,1-Dichloroethane	75-34-3	240,000	270	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
1,1-Dichloroethylene	75-35-4	500,000	330	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
1,2,3-Trichlorobenzene	87-61-6	NA	NA	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
1,2,3-Trichloropropane	96-18-4	NA	340	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
1,2,4-Trichlorobenzene	120-82-1	NA	3,400	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
1,2,4-Trimethylbenzene	95-63-6	190,000	3,600	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
1,2-Dibromo-3-chloropropane	96-12-8	NA	NA	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
1,2-Dibromoethane	106-93-4	NA	NA	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
1,2-Dichlorobenzene	95-50-1	500,000	1,100	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
1,2-Dichloroethane	107-06-2	30,000	20	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
1,2-Dichloropropane	78-87-5	NA	700,000*	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
1,3,5-Trimethylbenzene	108-67-8	190,000	8,400	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
1,3-Dichlorobenzene	541-73-1	280,000	2,400	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
1,4-Dichlorobenzene	106-46-7	130,000	1,800	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
1,4-Dioxane	123-91-1	130,000	100	< 30		< 31		< 33		< 35		< 35		< 31		< 27	
2-Butanone	78-93-3	500,000	300	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
2-Hexanone	591-78-6	NA	NA	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
4-Methyl-2-pentanone	108-10-1	NA	1,000	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
Acetone	67-64-1	500,000	50	**4.4**	**J**	< 3.1		< 3.3		< 3.5		< 3.5		< 3.1		< 2.7	
Acrolein	107-02-8	NA	NA	< 3.0		< 3.1		< 3.3		< 3.5		< 3.5		< 3.1		< 2.7	
Acrylonitrile	107-13-1	NA	NA	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
Benzene	71-43-2	44,000	60	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
Bromochloromethane	74-97-5	NA	NA	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
Bromodichloromethane	75-27-4	NA	NA	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
Bromoform	75-25-2	NA	NA	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
Bromomethane	74-83-9	NA	NA	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
Carbon disulfide	75-15-0	NA	2,700	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
Carbon tetrachloride	56-23-5	22,000	760	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
Chlorobenzene	108-90-7	500,000	1,100	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
Chloroethane	75-00-3	NA	1,900	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
Chloroform	67-66-3	350,000	370	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
Chloromethane	74-87-3	NA	-	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
cis-1,2-Dichloroethylene	156-59-2	500,000	250	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
cis-1,3-Dichloropropylene	10061-01-5	NA	NA	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
Cyclohexane	110-82-7	NA	NA	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
Dibromochloromethane	124-48-1	NA	10,000*	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
Dibromomethane	74-95-3	NA	NA	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
Dichlorodifluoromethane	75-71-8	NA	NA	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
Ethylbenzene	100-41-4	390,000	1,000	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
Hexachlorobutadiene	87-68-3	NA	NA	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
Isopropylbenzene	98-82-8	NA	2,300	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
Methyl acetate	79-20-9	NA	NA	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
Methyl tert-butyl ether (MTBE)	1634-04-4	500,000	930	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
Methylcyclohexane	108-87-2	NA	NA	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
Methylene chloride	75-09-2	500,000	50	< 3.0		< 3.1		< 3.3		< 3.5		< 3.5		< 3.1		< 2.7	
n-Butylbenzene	104-51-8	500,000	12000	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
n-Propylbenzene	103-65-1	500,000	3,900	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
o-Xylene	95-47-6	500,000	1,600	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
p- & m- Xylenes	179601-23-1	500,000	1,600	< 3.0		< 3.1		< 3.3		< 3.5		< 3.5		< 3.1		< 2.7	
p-Isopropyltoluene	99-87-6	NA	10,000	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
sec-Butylbenzene	135-98-8	500,000	11,000	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
Styrene	100-42-5	NA	300,000*	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
tert-Butyl alcohol (TBA)	75-65-0	NA	NA	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
tert-Butylbenzene	98-06-6	500,000	5,900	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
Tetrachloroethylene	127-18-4	150,000	1,300	**18**		**1.6**	**J**	< 1.7		< 1.7		**6.6**		**4.8**		**3.4**	
Toluene	108-88-3	500,000	700	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
trans-1,2-Dichloroethylene	156-60-5	500,000	190	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
trans-1,3-Dichloropropylene	10061-02-6	NA	NA	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
trans-1,4-dichloro-2-butene	110-57-6	NA	NA	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
Trichloroethylene	79-01-6	200,000	470	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
Trichlorofluoromethane	75-69-4	NA	NA	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
Vinyl Chloride	75-01-4	13,000	20	< 1.5		< 1.6		< 1.7		< 1.7		< 1.8		< 1.5		< 1.3	
Xylenes, Total	1330-20-7	500,000	1,600	< 4.5		< 4.7		< 5.0		< 5.2		< 5.3		< 4.6		< 4.0	

Notes:
CAS - Chemical Abstracts Service
NYSDEC - New York State Department of Environmental Conservation
µg/kg - micrograms per kilogram
Samples were analyzed by U.S. Environmental Protection Agency (EPA) Method 8260C.
Bold - Compound detected at concentration above laboratory method detection limit
Bold/Highlighted - Concentration exceeds applicable NYSDEC Soil Cleanup Objectives (SCOs) for Protection of Groundwater and/or Commercial Use
*NYSDEC SCO for Commercial Use or Protection of Groundwater not established; NYSDEC SCO for Protection of Ecological Resources applied
NA - NYSDEC SCO not established
Q - Laboratory Qualifier
J - Estimated concentration; detected below the Reporting Limit (RL) but greater than or equal to the Method Detection Limit/Limit of Detection (MDL/LOD)
E - Reported value is estimated due to behavior during initial calibration verification or during continuing calibration verification.

Former Imperial Cleaners Site
218 Lakeville Road, Lake Success, New York

Table 1
Summary of On-Site Soil Analysis - Volatile Organic Compounds (VOCs)
August - September 2020

				On-Site Samples Beneath Former Dry Cleaner Building											
Chemical Compound	CAS No.	NYSDEC Restricted Use Soil Cleanup Objectives (6 NYCRR Part 375)		GB-17 (4-5')			GB-18 (2-4')			GB-19 (2-4')			GB-20 (4-6')		
				9/3/2020			9/3/2020			9/3/2020			9/3/2020		
		Commercial Use	Protection of Groundwater		µg/kg	Q		µg/kg	Q		µg/kg	Q		µg/kg	Q
1,1,1,2-Tetrachloroethane	630-20-6	NA	NA	<	1.4		<	1.6		<	1.4		<	1.2	
1,1,1-Trichloroethane	71-55-6	500,000	680	<	1.4		<	1.6		<	1.4		<	1.2	
1,1,2,2-Tetrachloroethane	79-34-5	NA	600	<	1.4		<	1.6		<	1.4		<	1.2	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	76-13-1	NA	6,000	<	1.4		<	1.6		<	1.4		<	1.2	
1,1,2-Trichloroethane	79-00-5	NA	NA	<	1.4		<	1.6		<	1.4		<	1.2	
1,1-Dichloroethane	75-34-3	240,000	270	<	1.4		<	1.6		<	1.4		<	1.2	
1,1-Dichloroethylene	75-35-4	500,000	330	<	1.4		<	1.6		<	1.4		<	1.2	
1,2,3-Trichlorobenzene	87-61-6	NA	NA	<	1.4		<	1.6		<	1.4		<	1.2	
1,2,3-Trichloropropane	96-18-4	NA	340	<	1.4		<	1.6		<	1.4		<	1.2	
1,2,4-Trichlorobenzene	120-82-1	NA	3,400	<	1.4		<	1.6		<	1.4		<	1.2	
1,2,4-Trimethylbenzene	95-63-6	190,000	3,600	<	1.4		<	1.6		<	1.4		<	1.2	
1,2-Dibromo-3-chloropropane	96-12-8	NA	NA	<	1.4		<	1.6		<	1.4		<	1.2	
1,2-Dibromoethane	106-93-4	NA	NA	<	1.4		<	1.6		<	1.4		<	1.2	
1,2-Dichlorobenzene	95-50-1	500,000	1,100	<	1.4		<	1.6		<	1.4		<	1.2	
1,2-Dichloroethane	107-06-2	30,000	20	<	1.4		<	1.6		<	1.4		<	1.2	
1,2-Dichloropropane	78-87-5	NA	700,000*	<	1.4		<	1.6		<	1.4		<	1.2	
1,3,5-Trimethylbenzene	108-67-8	190,000	8,400	<	1.4		<	1.6		<	1.4		<	1.2	
1,3-Dichlorobenzene	541-73-1	280,000	2,400	<	1.4		<	1.6		<	1.4		<	1.2	
1,4-Dichlorobenzene	106-46-7	130,000	1,800	<	1.4		<	1.6		<	1.4		<	1.2	
1,4-Dioxane	123-91-1	130,000	100	<	28		<	33		<	28		<	25	
2-Butanone	78-93-3	500,000	300	<	1.4		<	1.6		<	1.4		<	1.2	
2-Hexanone	591-78-6	NA	NA	<	1.4		<	1.6		<	1.4		<	1.2	
4-Methyl-2-pentanone	108-10-1	NA	1,000	<	1.4		<	1.6		<	1.4		<	1.2	
Acetone	67-64-1	500,000	50		**6.6**	**E**		**3.7**	**E**	<	2.8			**6.6**	**E**
Acrolein	107-02-8	NA	NA	<	2.8		<	3.3		<	2.8		<	2.5	
Acrylonitrile	107-13-1	NA	NA	<	1.4		<	1.6		<	1.4		<	1.2	
Benzene	71-43-2	44,000	60	<	1.4		<	1.6		<	1.4		<	1.2	
Bromochloromethane	74-97-5	NA	NA	<	1.4		<	1.6		<	1.4		<	1.2	
Bromodichloromethane	75-27-4	NA	NA	<	1.4		<	1.6		<	1.4		<	1.2	
Bromoform	75-25-2	NA	NA	<	1.4		<	1.6		<	1.4		<	1.2	
Bromomethane	74-83-9	NA	NA	<	1.4		<	1.6		<	1.4		<	1.2	
Carbon disulfide	75-15-0	NA	2,700	<	1.4		<	1.6		<	1.4		<	1.2	
Carbon tetrachloride	56-23-5	22,000	760	<	1.4		<	1.6		<	1.4		<	1.2	
Chlorobenzene	108-90-7	500,000	1,100	<	1.4		<	1.6		<	1.4		<	1.2	
Chloroethane	75-00-3	NA	1,900	<	1.4		<	1.6		<	1.4		<	1.2	
Chloroform	67-66-3	350,000	370	<	1.4		<	1.6		<	1.4		<	1.2	
Chloromethane	74-87-3	NA	-	<	1.4		<	1.6		<	1.4		<	1.2	
cis-1,2-Dichloroethylene	156-59-2	500,000	250		**10**			**6.4**		<	1.4		<	1.2	
cis-1,3-Dichloropropylene	10061-01-5	NA	NA	<	1.4		<	1.6		<	1.4		<	1.2	
Cyclohexane	110-82-7	NA	NA	<	1.4		<	1.6		<	1.4		<	1.2	
Dibromochloromethane	124-48-1	NA	10,000*	<	1.4		<	1.6		<	1.4		<	1.2	
Dibromomethane	74-95-3	NA	NA	<	1.4		<	1.6		<	1.4		<	1.2	
Dichlorodifluoromethane	75-71-8	NA	NA	<	1.4		<	1.6		<	1.4		<	1.2	
Ethylbenzene	100-41-4	390,000	1,000	<	1.4		<	1.6		<	1.4		<	1.2	
Hexachlorobutadiene	87-68-3	NA	NA	<	1.4		<	1.6		<	1.4		<	1.2	
Isopropylbenzene	98-82-8	NA	2,300	<	1.4		<	1.6		<	1.4		<	1.2	
Methyl acetate	79-20-9	NA	NA	<	1.4		<	1.6		<	1.4		<	1.2	
Methyl tert-butyl ether (MTBE)	1634-04-4	500,000	930	<	1.4		<	1.6		<	1.4		<	1.2	
Methylcyclohexane	108-87-2	NA	NA	<	1.4		<	1.6		<	1.4		<	1.2	
Methylene chloride	75-09-2	500,000	50	<	2.8		<	3.3		<	2.8		<	2.5	
n-Butylbenzene	104-51-8	500,000	12000	<	1.4		<	1.6		<	1.4		<	1.2	
n-Propylbenzene	103-65-1	500,000	3,900	<	1.4		<	1.6		<	1.4		<	1.2	
o-Xylene	95-47-6	500,000	1,600	<	1.4		<	1.6		<	1.4		<	1.2	
p- & m- Xylenes	179601-23-1	500,000	1,600	<	2.8		<	3.3		<	2.8		<	2.5	
p-Isopropyltoluene	99-87-6	NA	10,000	<	1.4		<	1.6		<	1.4		<	1.2	
sec-Butylbenzene	135-98-8	500,000	11,000	<	1.4		<	1.6		<	1.4		<	1.2	
Styrene	100-42-5	NA	300,000*	<	1.4		<	1.6		<	1.4		<	1.2	
tert-Butyl alcohol (TBA)	75-65-0	NA	NA	<	1.4		<	1.6		<	1.4		<	1.2	
tert-Butylbenzene	98-06-6	500,000	5,900	<	1.4		<	1.6		<	1.4		<	1.2	
Tetrachloroethylene	127-18-4	150,000	1,300		**43,000**			**22,000**			**46**			**15**	
Toluene	108-88-3	500,000	700	<	1.4		<	1.6		<	1.4		<	1.2	
trans-1,2-Dichloroethylene	156-60-5	500,000	190	<	1.4		<	1.6		<	1.4		<	1.2	
trans-1,3-Dichloropropylene	10061-02-6	NA	NA	<	1.4		<	1.6		<	1.4		<	1.2	
trans-1,4-dichloro-2-butene	110-57-6	NA	NA	<	1.4		<	1.6		<	1.4		<	1.2	
Trichloroethylene	79-01-6	200,000	470		**3.8**			**2.0**	**J**	<	1.4		<	1.2	
Trichlorofluoromethane	75-69-4	NA	NA	<	1.4		<	1.6		<	1.4		<	1.2	
Vinyl Chloride	75-01-4	13,000	20	<	1.4		<	1.6		<	1.4		<	1.2	
Xylenes, Total	1330-20-7	500,000	1,600	<	4.2		<	4.9		<	4.1		<	3.7	

Notes:

CAS - Chemical Abstracts Service

NYSDEC - New York State Department of Environmental Conservation

µg/kg - micrograms per kilogram

Samples were analyzed by U.S. Environmental Protection Agency (EPA) Method 8260C.

Bold - Compound detected at concentration above laboratory method detection limit

Bold/Highlighted - Concentration exceeds applicable NYSDEC Soil Cleanup Objectives (SCOs) for Protection of Groundwater and/or Commercial Use

*NYSDEC SCO for Commercial Use or Protection of Groundwater not established; NYSDEC SCO for Protection of Ecological Resources applied

NA - NYSDEC SCO not established

Q - Laboratory Qualifier

J - Estimated concentration; detected below the Reporting Limit (RL) but greater than or equal to the Method Detection Limit/Limit of Detection (MDL/LOD)

E - Reported value is estimated due to behavior during initial calibration verification or during continuing calibration verification.

Table 2

Summary of Groundwater Analysis
Volatile Organic Compounds (VOCs)

Former Imperial Cleaners Site
218 Lakeville Road, Lake Success, New York

Table 2
Summary of Off-Site Perched Groundwater Analysis - Volatile Organic Compounds (VOCs)
December 2020

Chemical Compound	CAS No.	NYSDEC Class GA Groundwater Standards	PW-1-L		PW-1-U		PW-2-L		PW-2-U	
			12/2/2020		12/2/2020		12/2/2020		12/2/2020	
		µg/L	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q
1,1,1,2-Tetrachloroethane	630-20-6	5	< 0.20		< 0.20		< 0.20		< 0.20	
1,1,1-Trichloroethane	71-55-6	5	< 0.20		< 0.20		< 0.20		< 0.20	
1,1,2,2-Tetrachloroethane	79-34-5	5	< 0.20		< 0.20		< 0.20		< 0.20	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	76-13-1	5	**0.39**	**J**	< 0.20		< 0.20		< 0.20	
1,1,2-Trichloroethane	79-00-5	1	< 0.20		< 0.20		< 0.20		< 0.20	
1,1-Dichloroethane	75-34-3	5	< 0.20		< 0.20		< 0.20		< 0.20	
1,1-Dichloroethylene	75-35-4	5	< 0.20		< 0.20		< 0.20		< 0.20	
1,2,3-Trichlorobenzene	87-61-6	5	< 0.20		< 0.20		< 0.20		< 0.20	
1,2,3-Trichloropropane	96-18-4	0.04	< 0.20		< 0.20		< 0.20		< 0.20	
1,2,4-Trichlorobenzene	120-82-1	5	< 0.20		< 0.20		< 0.20		< 0.20	
1,2,4-Trimethylbenzene	95-63-6	5	< 0.20		< 0.20		< 0.20		< 0.20	
1,2-Dibromo-3-chloropropane	96-12-8	0.04	< 0.20		< 0.20		< 0.20		< 0.20	
1,2-Dibromoethane	106-93-4	0.0006	< 0.20		< 0.20		< 0.20		< 0.20	
1,2-Dichlorobenzene	95-50-1	3	< 0.20		< 0.20		< 0.20		< 0.20	
1,2-Dichloroethane	107-06-2	0.6	< 0.20		< 0.20		< 0.20		< 0.20	
1,2-Dichloropropane	78-87-5	1	< 0.20		< 0.20		< 0.20		< 0.20	
1,3,5-Trimethylbenzene	108-67-8	5	< 0.20		< 0.20		< 0.20		< 0.20	
1,3-Dichlorobenzene	541-73-1	3	< 0.20		< 0.20		< 0.20		< 0.20	
1,4-Dichlorobenzene	106-46-7	3	< 0.20		< 0.20		< 0.20		< 0.20	
1,4-Dioxane	123-91-1	1*	< 40		< 40		< 40		< 40	
Methyl Ethyl Ketone (2-Butanone)	78-93-3	50	**1.3**	**B**	**1.2**	**B**	**1.0**	**B**	**1.1**	**B**
Methyl Butyl Ketone (2-Hexanone)	591-78-6	50	< 0.20		< 0.20		< 0.20		< 0.20	
Methyl Isobutyl Ketone (4-methyl-2-pentanone)	108-10-1	NA	< 0.20		< 0.20		< 0.20		< 0.20	
Acetone	67-64-1	50	< 1.0		< 1.0		< 1.0		< 1.0	
Acrolein	107-02-8	5	< 0.20		< 0.20		< 0.20		< 0.20	
Acrylonitrile	107-13-1	5	< 0.20		< 0.20		< 0.20		< 0.20	
Benzene	71-43-2	1	< 0.20		< 0.20		< 0.20		< 0.20	
Bromochloromethane	74-97-5	5	< 0.20		< 0.20		< 0.20		< 0.20	
Bromodichloromethane	75-27-4	50	< 0.20		< 0.20		< 0.20		< 0.20	
Bromoform	75-25-2	50	< 0.20		< 0.20		< 0.20		< 0.20	
Bromomethane	74-83-9	5	< 0.20		< 0.20		< 0.20		< 0.20	
Carbon disulfide	75-15-0	60	< 0.20		< 0.20		< 0.20		< 0.20	
Carbon Tetrachloride	56-23-5	5	< 0.20		< 0.20		< 0.20		< 0.20	
Chlorobenzene	108-90-7	5	< 0.20		< 0.20		< 0.20		< 0.20	
Chloroethane	75-00-3	5	< 0.20		< 0.20		< 0.20		< 0.20	
Chloroform	67-66-3	7	< 0.20		< 0.20		**0.23**	**J**	**0.27**	**J**
Chloromethane (Methyl Chloride)	74-87-3	5	< 0.20		< 0.20		< 0.20		< 0.20	
cis-1,2-Dichloroethylene	156-59-2	5	**1.0**		**0.57**		**0.57**		**0.35**	**J**
cis-1,3-Dichloropropylene	10061-01-5	0.4	< 0.20		< 0.20		< 0.20		< 0.20	
Cyclohexane	110-82-7	NA	< 0.20		< 0.20		< 0.20		< 0.20	
Dibromochloromethane	124-48-1	50	< 0.20		< 0.20		< 0.20		< 0.20	
Dibromomethane	74-95-3	5	< 0.20		< 0.20		< 0.20		< 0.20	
Dichlorodifluoromethane	75-71-8	5	< 0.20		< 0.20		< 0.20		< 0.20	
Ethyl benzene	100-41-4	5	< 0.20		< 0.20		< 0.20		< 0.20	
Hexachlorobutadiene	87-68-3	0.5	< 0.20		< 0.20		< 0.20		< 0.20	
Isopropylbenzene (Cumene)	98-82-8	5	< 0.20		< 0.20		< 0.20		< 0.20	
Methyl Acetate	79-20-9	NA	< 0.20		< 0.20		< 0.20		< 0.20	
Methyl-tert-Butyl Ether	1634-04-4	10	< 0.20		< 0.20		< 0.20		< 0.20	
Methylcyclohexane	108-87-2	NA	< 0.20		< 0.20		< 0.20		< 0.20	
Methylene Chloride (dichloromethane)	75-09-2	5	< 1.0		< 1.0		< 1.0		< 1.0	
n-Butylbenzene	104-51-8	5	< 0.20		< 0.20		< 0.20		< 0.20	
n-Propylbenzene	103-65-1	5	< 0.20		< 0.20		< 0.20		< 0.20	
o-Xylene	95-47-6	5	< 0.20		< 0.20		< 0.20		< 0.20	
m,p-Xylenes	179601-23-1	10	< 0.50		< 0.50		< 0.50		< 0.50	
4-Isopropyltoluene	99-87-6	5	< 0.20		< 0.20		< 0.20		< 0.20	
sec-Butylbenzene	135-98-8	5	< 0.20		0.20		< 0.20		< 0.20	
Styrene	100-42-5	5	< 0.20		< 0.20		< 0.20		< 0.20	
tert-Butyl alcohol	75-65-0	NA	< 0.50		< 0.50		< 0.50		< 0.50	
tert-Butylbenzene	98-06-6	5	< 0.20		< 0.20		< 0.20		< 0.20	
Tetrachloroethylene	127-18-4	5	**0.38**	**QL02,J**	**1.3**	**QL02**	**2.6**	**QL02**	< 0.20	
Toluene	108-88-3	5	< 0.20		< 0.20		< 0.20		< 0.20	
trans-1,2-Dichloroethylene	156-60-5	5	< 0.20		< 0.20		< 0.20		< 0.20	
trans-1,3-Dichloropropylene	10061-02-6	0.4	< 0.20		< 0.20		< 0.20		< 0.20	
trans-1,4-dichloro-2-butene	110-57-6	5	< 0.20		< 0.20		< 0.20		< 0.20	
Trichloroethylene	79-01-6	5	**0.69**		**0.36**	**J**	**0.37**	**J**	< 0.20	
Trichlorofluoromethane	75-69-4	5	< 0.20		< 0.20		< 0.20		< 0.20	
Vinyl chloride	75-01-4	2	< 0.20		< 0.20		< 0.20		< 0.20	

Notes:
CAS - Chemical Abstracts Service
NYSDEC - New York State Department of Environmental Conservation
Samples were analyzed via U.S. Environmental Protection Agency (EPA) Method 8260C.
µg/L - micrograms per liter
Bold - Compound detected at concentration above the method detection lim
* - New York State Maximum Contaminant Level
NA - NYSDEC Groundwater Standard or Guidance Value not available
Q - Laboratory Qualifier
J - Estimated concentration; detected below the Reporting Limit (RL) but greater than or equal to the Method Detection Limit/Limit of Detection (MDL/LOD)
B - Analyte is found in the associated batch blank. Methylene chloride and acetone are common lab contaminants.
E - Reported value is estimated due to behavior during initial calibration verification (recovery >30% of expected value) or during continuing calibration verification (>20% Difference for ave
QL02 - Analyte is outside Laboratory Recovery Limits

Former Imperial Cleaners Site
218 Lakeville Road, Lake Success, New York

Table 2
Summary of Off-Site Perched Groundwater Analysis - Volatile Organic Compounds (VOCs)
December 2020

Chemical Compound	CAS No.	NYSDEC Class GA Groundwater Standards	PW-3-L		PW-3-U		PW-4-L		PW-4-U	
			12/2/2020		12/2/2020		12/2/2020		12/2/2020	
		µg/L	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q
1,1,1,2-Tetrachloroethane	630-20-6	5	< 0.20		< 0.20		< 0.20		< 0.20	
1,1,1-Trichloroethane	71-55-6	5	< 0.20		< 0.20		< 0.20		< 0.20	
1,1,2,2-Tetrachloroethane	79-34-5	5	< 0.20		< 0.20		< 0.20		< 0.20	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	76-13-1	5	< 0.20		< 0.20		< 0.20		< 0.20	
1,1,2-Trichloroethane	79-00-5	1	< 0.20		< 0.20		< 0.20		< 0.20	
1,1-Dichloroethane	75-34-3	5	< 0.20		< 0.20		< 0.20		< 0.20	
1,1-Dichloroethylene	75-35-4	5	< 0.20		< 0.20		< 0.20		< 0.20	
1,2,3-Trichlorobenzene	87-61-6	5	< 0.20		< 0.20		< 0.20		< 0.20	
1,2,3-Trichloropropane	96-18-4	0.04	< 0.20		< 0.20		< 0.20		< 0.20	
1,2,4-Trichlorobenzene	120-82-1	5	< 0.20		< 0.20		< 0.20		< 0.20	
1,2,4-Trimethylbenzene	95-63-6	5	< 0.20		< 0.20		< 0.20		< 0.20	
1,2-Dibromo-3-chloropropane	96-12-8	0.04	< 0.20		< 0.20		< 0.20		< 0.20	
1,2-Dibromoethane	106-93-4	0.0006	< 0.20		< 0.20		< 0.20		< 0.20	
1,2-Dichlorobenzene	95-50-1	3	< 0.20		< 0.20		< 0.20		< 0.20	
1,2-Dichloroethane	107-06-2	0.6	< 0.20		< 0.20		< 0.20		< 0.20	
1,2-Dichloropropane	78-87-5	1	< 0.20		< 0.20		< 0.20		< 0.20	
1,3,5-Trimethylbenzene	108-67-8	5	< 0.20		< 0.20		< 0.20		< 0.20	
1,3-Dichlorobenzene	541-73-1	3	< 0.20		< 0.20		< 0.20		< 0.20	
1,4-Dichlorobenzene	106-46-7	3	< 0.20		< 0.20		< 0.20		< 0.20	
1,4-Dioxane	123-91-1	1*	< 40		< 40		< 40		< 40	
Methyl Ethyl Ketone (2-Butanone)	78-93-3	50	**1.2**	**B**	< 0.20		< 0.20		< 0.20	
Methyl Butyl Ketone (2-Hexanone)	591-78-6	50	< 0.20		< 0.20		< 0.20		< 0.20	
Methyl Isobutyl Ketone (4-methyl-2-pentanone)	108-10-1	NA	< 0.20		< 0.20		< 0.20		< 0.20	
Acetone	67-64-1	50	< 1.0		< 1.0		< 1.0		< 1.0	
Acrolein	107-02-8	5	< 0.20		< 0.20		< 0.20		< 0.20	
Acrylonitrile	107-13-1	5	< 0.20		< 0.20		< 0.20		< 0.20	
Benzene	71-43-2	1	< 0.20		< 0.20		< 0.20		< 0.20	
Bromochloromethane	74-97-5	5	< 0.20		< 0.20		< 0.20		< 0.20	
Bromodichloromethane	75-27-4	50	< 0.20		< 0.20		< 0.20		< 0.20	
Bromoform	75-25-2	50	< 0.20		< 0.20		< 0.20		< 0.20	
Bromomethane	74-83-9	5	< 0.20		< 0.20		< 0.20		< 0.20	
Carbon disulfide	75-15-0	60	< 0.20		< 0.20		< 0.20		< 0.20	
Carbon Tetrachloride	56-23-5	5	< 0.20		< 0.20		< 0.20		< 0.20	
Chlorobenzene	108-90-7	5	< 0.20		< 0.20		< 0.20		< 0.20	
Chloroethane	75-00-3	5	< 0.20		< 0.20		< 0.20		< 0.20	
Chloroform	67-66-3	7	**1.1**		**1.5**	**E**	< 0.20		< 0.20	
Chloromethane (Methyl Chloride)	74-87-3	5	< 0.20		< 0.20		< 0.20		< 0.20	
cis-1,2-Dichloroethylene	156-59-2	5	**0.32**	**J**	< 0.20		< 0.20		< 0.20	
cis-1,3-Dichloropropylene	10061-01-5	0.4	< 0.20		< 0.20		< 0.20		< 0.20	
Cyclohexane	110-82-7	NA	< 0.20		< 0.20		< 0.20		< 0.20	
Dibromochloromethane	124-48-1	50	< 0.20		< 0.20		< 0.20		< 0.20	
Dibromomethane	74-95-3	5	< 0.20		< 0.20		< 0.20		< 0.20	
Dichlorodifluoromethane	75-71-8	5	< 0.20		< 0.20		< 0.20		< 0.20	
Ethyl benzene	100-41-4	5	< 0.20		< 0.20		< 0.20		< 0.20	
Hexachlorobutadiene	87-68-3	0.5	< 0.20		< 0.20		< 0.20		< 0.20	
Isopropylbenzene (Cumene)	98-82-8	5	< 0.20		< 0.20		< 0.20		< 0.20	
Methyl Acetate	79-20-9	NA	< 0.20		< 0.20		< 0.20		< 0.20	
Methyl-tert-Butyl Ether	1634-04-4	10	< 0.20		< 0.20		< 0.20		< 0.20	
Methylcyclohexane	108-87-2	NA	< 0.20		< 0.20		< 0.20		< 0.20	
Methylene Chloride (dichloromethane)	75-09-2	5	< 1.0		< 1.0		< 1.0		< 1.0	
n-Butylbenzene	104-51-8	5	< 0.20		< 0.20		< 0.20		< 0.20	
n-Propylbenzene	103-65-1	5	< 0.20		< 0.20		< 0.20		< 0.20	
o-Xylene	95-47-6	5	< 0.20		< 0.20		< 0.20		< 0.20	
m,p-Xylenes	179601-23-1	10	< 0.50		< 0.50		< 0.50		< 0.50	
4-Isopropyltoluene	99-87-6	5	< 0.20		< 0.20		< 0.20		< 0.20	
sec-Butylbenzene	135-98-8	5	< 0.20		< 0.20		< 0.20		< 0.20	
Styrene	100-42-5	5	< 0.20		< 0.20		< 0.20		< 0.20	
tert-Butyl alcohol	75-65-0	NA	< 0.50		< 0.50		< 0.50		< 0.50	
tert-Butylbenzene	98-06-6	5	< 0.20		< 0.20		< 0.20		< 0.20	
Tetrachloroethylene	127-18-4	5	**2.3**	**QL02**	**1.9**		< 0.20		< 0.20	
Toluene	108-88-3	5	< 0.20		< 0.20		< 0.20		< 0.20	
trans-1,2-Dichloroethylene	156-60-5	5	< 0.20		< 0.20		< 0.20		< 0.20	
trans-1,3-Dichloropropylene	10061-02-6	0.4	< 0.20		< 0.20		< 0.20		< 0.20	
trans-1,4-dichloro-2-butene	110-57-6	5	< 0.20		< 0.20		< 0.20		< 0.20	
Trichloroethylene	79-01-6	5	**0.30**	**J**	< 0.20		< 0.20		< 0.20	
Trichlorofluoromethane	75-69-4	5	< 0.20		< 0.20		< 0.20		< 0.20	
Vinyl chloride	75-01-4	2	< 0.20		< 0.20		< 0.20		< 0.20	

Notes:
CAS - Chemical Abstracts Service
NYSDEC - New York State Department of Environmental Conservation
Samples were analyzed via U.S. Environmental Protection Agency (EPA) Method 8260C.
µg/L - micrograms per liter
Bold - Compound detected at concentration above the method detection lim
* - New York State Maximum Contaminant Level
NA - NYSDEC Groundwater Standard or Guidance Value not available
Q - Laboratory Qualifier
J - Estimated concentration; detected below the Reporting Limit (RL) but greater than or equal to th
B - Analyte is found in the associated batch blank. Methylene chloride and acetone are common lal
E - Reported value is estimated due to behavior during initial calibration verification (recovery >30rage Rf or >20% Drift for quadratic
QL02 - Analyte is outside Laboratory Recovery Limits

Appendix A

Soil Boring Logs & Temporary Monitoring Well Logs

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING		SHEET: 1 OF 2	
BORING/WELL I.D.:	GB-15A	CLIENT:	218 Lakeville Acquisition, LLC
DATE(S) DRILLED:	8/31/20	PROJECT NAME:	218 Lakeville Road
DRILL METHOD:	Direct push via Geoprobe 6610 DT	PROJECT NO.:	IMPL0115.6
BORING DIAMETER:	2"	PROJECT LOCATION:	Lake Success, NY
SAMPLING METHOD/INTERVAl	Dual-tube; 5' length	DRILLING CONTRACTOR:	Lakewood Environmental Services Corp.
LOGGED BY:	EMJ		
REMARKS:	Begin soil screening and logging at 1 ft bg		

TEMPORARY WELL CONSTRUCTION INFORMATION

SCREEN SIZE AND MATERIAL:	SCREEN INTERVAL:
SAND PACK SIZE AND MATERIAL:	SAND PACK INTERVAL:
REF. POINT: Top of Casing	BENTONITE SEAL INTERVAL:
STATIC WATER DEPTH:	DATE:
REMARKS:	

WELL/BOREHOLE ABANDONMENT INFORMATION

ABANDONMENT DATE:	ABANDONMENT METHOD:

DESCRIPTIVE LOG

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
			-		-0-	
			-		-	Medium to dark brown, fine grained SAND;
			-		-1-	no odors or staining; dry
			-		-	
			147.9		-2-	
0-5' bg	42		-		-	
			165.3		-3-	
			-		-	
			97.2		-4-	
			-		-	
			-		-5-	
			-		-	
			202.7		-6-	Tan - brown, medium grained SAND with pebbles; no odors
			-		-	or staining; dry
			-		-7-	
5-10' bg	41	NA	-		-	
			-		-8-	
			-		-	
			-		-9-	
			-		-	
			1535		-10-	
			-		-	
			382.2		-11-	Tan - brown, medium grained SAND with pebbles; no odors
			-		-	or staining; dry
			-		-12-	
10-15' bg	40		-		-	
			-		-13-	
			-		-	
			283.5		-14-	
			-		-	
			218.2		-15-	

Native soil/rock
Sand/gravel
Silty sand/clay
Depth to Water
N/A Not Applicable

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING		SHEET: 2 OF 2
BORING/WELL I.D.: GB-15A	CLIENT/SITE: 218 Lakeville Road	DATE(s) DRILLED: 8/31/20
DESCRIPTIVE LOG (continued)		

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID/FID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
			-		-	
			-		-16-	Tan - brown, medium grained SAND with pebbles;
			-		-	no staining; dry
			-		-17-	
			-		-	
15-20' bg	45		2012		-18-	Solvent odor observed at 18'
			-		-	
			-		-19-	
			-		-	
			364.0		-20-	
			-		-	
			958.1		-21-	Tan - brown, medium grained SAND with pebbles;
			-		-	Solvent odor observed; no staining; dry
			-		-22-	
			-		-	
20-25' bg	36	NA	320.4		-23-	
			-		-	
			-		-24-	
			-		-	
			233.3		-25-	
			-		-	Tan - brown, medium grained SAND with pebbles;
			285.3		-26-	Solvent odor observed; no staining
			-		-	Moisture encountered at 30' bg.
			-		-27-	
			-		-	
25-30' bg			290.9		-28-	
			-		-	
			-		-29-	
			-		-	
			258.8		-30-	
					-	END OF BORING
					-31-	
					-	
					-32-	
					-	
					-33-	
					-	
					-34-	
					-	
					-35-	

NOTES:

NA - Not applicable

Native soil/rock

Sand/gravel

Silty sand/clay

Depth to Water

N/A Not Applicable

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING		SHEET: 1 OF 2	
BORING/WELL I.D.:	GB-15B	CLIENT:	218 Lakeville Acquisition, LLC
DATE(S) DRILLED:	8/31/20	PROJECT NAME:	218 Lakeville Road
DRILL METHOD:	Direct push via Geoprobe 6610 DT	PROJECT NO.:	IMPL0115.6
BORING DIAMETER:	2"	PROJECT LOCATION:	Lake Success, NY
SAMPLING METHOD/INTERVAL:	Dual-tube; 5' length	DRILLING CONTRACTOR:	Lakewood Environmental Services Corp.
LOGGED BY:	EMJ		
REMARKS:	Begin soil screening and logging at 1 ft bg		

TEMPORARY WELL CONSTRUCTION INFORMATION

SCREEN SIZE AND MATERIAL:	SCREEN INTERVAL:
SAND PACK SIZE AND MATERIAL:	SAND PACK INTERVAL:
REF. POINT: Top of Casing	BENTONITE SEAL INTERVAL:
STATIC WATER DEPTH:	DATE:
REMARKS:	

WELL/BOREHOLE ABANDONMENT INFORMATION

ABANDONMENT DATE:	ABANDONMENT METHOD:

DESCRIPTIVE LOG

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
			-		-0-	
			-		-	Asphalt; Medium to dark brown, fine grained SAND with trace pebbles.
			90.7		-1-	No odor or staining; dry
			-		-	
			-		-2-	
0-5' bg	27		-		-	
			-		-3-	
			-		-	
			94.3		-4-	
			-		-	
			-		-5-	
			-		-	
			100.3		-6-	Medium to dark brown, fine grained SAND with trace pebbles.
			-		-	No odor or staining; dry
			62.8		-7-	
		NA	-		-	
5-10' bg	34		-		-8-	
			-		-	
			-		-9-	
			-		-	
			168.8		-10-	
			-		-	
			135.7		-11-	Medium to dark brown, fine grained SAND with trace pebbles.
			-		-	No odor or staining; dry
			-		-12-	
10-15' bg	41		-		-	
			93.7		-13-	
			-		-	
			-		-14-	
			-		-	
			148.3		-15-	

Native soil/rock
Sand/gravel
Silty sand/clay
Depth to Water
N/A Not Applicable

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING	SHEET: 2 OF 2

BORING/WELL I.D.: GB-15B	CLIENT/SITE: 218 Lakeville Road	DATE(s) DRILLED: 8/31/20

DESCRIPTIVE LOG (continued)

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID/FID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
15-20' bg	40		-		-	
			50.7		-16-	Medium to dark brown, fine grained SAND with trace pebbles.
			-		-	No odor or staining; dry
			-		-17-	
			-		-	
			-		-18-	
			-		-	
			32.4		-19-	
			-		-	
			50.6		-20-	
20-25' bg	25	NA	-		-	
			18.9		-21-	Medium to dark brown, fine grained SAND with trace pebbles.
			-		-	No odor or staining; dry
			-		-22-	
			-		-	
			95.8		-23-	
			-		-	
			-		-24-	
			-		-	
			68.1		-25-	
25-30' bg			-		-	
			-		-26-	Medium to dark brown, fine grained SAND with trace pebbles.
			-		-	No odor or staining
			66.7		-27-	Moisture Encountered at 30' bg
			-		-	
			-		-28-	
			-		-	
			61.7		-29-	
			-		-	
			-		-30-	
30-35' bg					-	END OF BORING
					-31-	
					-	
					-32-	
					-	
					-33-	
					-	
					-34-	
					-	
					-35-	

NOTES:

NA - Not applicable

Native soil/rock
Sand/gravel
Silty sand/clay
Depth to Water
N/A Not Applicable

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING		SHEET: 1 OF 2	
BORING/WELL I.D.:	GB-15C	CLIENT:	218 Lakeville Acquisition, LLC
DATE(S) DRILLED:	8/31/20	PROJECT NAME:	218 Lakeville Road
DRILL METHOD:	Direct push via Geoprobe 6610 DT	PROJECT NO.:	IMPL0115.6
BORING DIAMETER:	2"	PROJECT LOCATION:	Lake Success, NY
SAMPLING METHOD/INTERVAL:	Dual-tube; 5' length	DRILLING CONTRACTOR:	Lakewood Environmental Services Corp.
LOGGED BY:	EMJ		
REMARKS:	Begin soil screening and logging at 1 ft bg		

TEMPORARY WELL CONSTRUCTION INFORMATION

SCREEN SIZE AND MATERIAL:	SCREEN INTERVAL:
SAND PACK SIZE AND MATERIAL:	SAND PACK INTERVAL:
REF. POINT: Top of Casing	BENTONITE SEAL INTERVAL:
STATIC WATER DEPTH:	DATE:
REMARKS:	

WELL/BOREHOLE ABANDONMENT INFORMATION

ABANDONMENT DATE:	ABANDONMENT METHOD:

DESCRIPTIVE LOG

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
			-		-0-	
			-		-	Ashpalt
			33.9		-1-	Medium to dark brown, fine-medium SAND with trace pebbles; dry; no
			-		-	odors or staining
			-		-2-	
0-5' bg	26		-		-	
			84.7		-3-	
			-		-	
			-		-4-	
			-		-	
			69.1		-5-	
			-		-	
			110.1		-6-	Medium to dark brown, fine-medium SAND with trace pebbles; dry; no
			-		-	odors or staining
			-		-7-	
5-10' bg	25	NA	-		-	
			139.3		-8-	
			-		-	
			-		-9-	
			-		-	
			56.8		-10-	
			-		-	
			105.8		-11-	Medium to dark brown, fine-medium SAND with trace pebbles; dry; no
			-		-	odors or staining
			-		-12-	
10-15' bg	30		-		-	
			94.0		-13-	
			-		-	
			-		-14-	
			-		-	
			33.4		-15-	

Native soil/rock
Sand/gravel
Silty sand/clay
▼ Depth to Water
N/A Not Applicable

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING		SHEET: 2 OF 2
BORING/WELL I.D.: GB-15C	CLIENT/SITE: 218 Lakeville Road	DATE(s) DRILLED: 8/31/20

DESCRIPTIVE LOG (continued)

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID/FID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
15-20' bg	35		-		-	
			53.2		-16-	Medium to dark brown, fine-medium SAND with trace pebbles; dry; no odors or staining
			-		-	
			-		-17-	
			-		-	
			72.5		-18-	
			-		-	
			-		-19-	
			-		-	
			100.3		-20-	
20-25' bg	34	NA	-		-	
			85.5		-21-	Medium to dark brown, fine-medium SAND with trace pebbles; dry; no odors or staining
			-		-	
			-		-22-	
			-		-	
			58.9		-23-	
			-		-	
			-		-24-	
			-		-	
			80.2		-25-	
25-30' bg			-		-	
			49.4		-26-	Medium to dark brown, fine-medium SAND with trace pebbles; no odors or staining; Moisture encountered below 29' bgs.
			-		-	
			-		-27-	
			-		-	
			23.5		-28-	
			-		-	
			-		-29-	
			-		-	
			-		-30-	
30-35' bg					-	END OF BORING.
					-31-	
					-	
					-32-	
					-	
					-33-	
					-	
					-34-	
					-	
					-35-	

NOTES:

NA - Not applicable

Native soil/rock

Sand/gravel

Silty sand/clay

Depth to Water

N/A Not Applicable

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING	SHEET: 1 OF 2

BORING/WELL I.D.:	GB-15D	CLIENT:	218 Lakeville Acquisition, LLC
DATE(S) DRILLED:	8/31/20	PROJECT NAME:	218 Lakeville Road
DRILL METHOD:	Direct push via Geoprobe 6610 DT	PROJECT NO.:	IMPL0115.6
BORING DIAMETER: 2"		PROJECT LOCATION:	Lake Success, NY
SAMPLING METHOD/INTERVAL: Dual-tube; 5' length		DRILLING CONTRACTOR:	Lakewood Environmental Services Corp.
LOGGED BY:	EMJ		
REMARKS:	Begin soil screening and logging at 1 ft bg		

TEMPORARY WELL CONSTRUCTION INFORMATION

SCREEN SIZE AND MATERIAL:	SCREEN INTERVAL:
SAND PACK SIZE AND MATERIAL:	SAND PACK INTERVAL:
REF. POINT:	BENTONITE SEAL INTERVAL:
STATIC WATER DEPTH:	DATE:
REMARKS:	

WELL/BOREHOLE ABANDONMENT INFORMATION

ABANDONMENT DATE:	ABANDONMENT METHOD:

DESCRIPTIVE LOG

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
			-		-0-	
			-		-	Asphalt; Medium brown, fine-medium SAND with trace pebbles; no odors
			11.3		-1-	or staining; dry
			-		-	
			-		-2-	
0-5' bg	40		-		-	
			-		-3-	
			-		-	
			43.5		-4-	
			-		-	
			25.6		-5-	
			-		-	
			20.5		-6-	Medium brown, fine-medium SAND with trace pebbles; no odors
			-		-	or staining; dry
			-		-7-	
5-10' bg	38	NA	-		-	
			91.2		-8-	
			-		-	
			-		-9-	
			-		-	
			16.4		-10-	
			-		-	
			6.9		-11-	Medium brown, fine-medium SAND with trace pebbles; no odors
			-		-	or staining; dry
			-		-12-	
			-		-	
10-15' bg	39		43.0		-13-	
			-		-	
			-		-14-	
			-		-	
			18.9		-15-	

Fill
Sand/gravel
Silty sand/clay
Depth to Water
N/A Not Applicable

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING		SHEET: 2 OF 2
BORING/WELL I.D.: GB-15D	CLIENT/SITE: 218 Lakeville Road	DATE(s) DRILLED: 8/31/20

DESCRIPTIVE LOG (continued)

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID/FID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
15-20' bg	40	NA	-		-	
			-		-16-	Medium brown, fine-medium SAND with trace pebbles; no odors
			-		-	or staining; dry
			5.6		-17-	
			-		-	
			1.3		-18-	
			-		-	
			-		-19-	
			-		-	
			2.9		-20-	
20-25' bg	16		-		-	
			11.3		-21-	Medium brown, fine-medium SAND with trace pebbles; no odors
			-		-	or staining; dry
			-		-22-	
			-		-	
			-		-23-	
			-		-	
			-		-24-	
			-		-	
			1.5		-25-	
25-30' bg			-		-	
			2.1		-26-	Medium brown, fine-medium SAND with trace pebbles; no odors
			-		-	or staining; Moisture encountered below 29' bgs.
			7.3		-27-	
			-		-	
			-		-28-	
			-		-	
			1.3	▼	-29-	
			-		-	
			-		-30-	
30-35' bg					-	END OF BORING.
					-31-	
					-	
					-32-	
					-	
					-33-	
					-	
					-34-	
					-	
					-35-	

NOTES:

Fill
Sand/gravel
Silty sand/clay
▼ Depth to Water
N/A Not Applicable

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING		SHEET: 1 OF 2	
BORING/WELL I.D.:	GB-16A	CLIENT:	218 Lakeville Acquisition, LLC
DATE(S) DRILLED:	8/31/20	PROJECT NAME:	218 Lakeville Road
DRILL METHOD:	Direct push via Geoprobe 6610 DT	PROJECT NO.:	IMPL0115.6
BORING DIAMETER:	2"	PROJECT LOCATION:	Lake Success, NY
SAMPLING METHOD/INTERVAL:	Dual-tube; 5' length	DRILLING CONTRACTOR:	Lakewood Environmental Services Corp.
LOGGED BY:	EMJ		
REMARKS:	Begin soil screening and logging at 1 ft bg		

TEMPORARY WELL CONSTRUCTION INFORMATION

SCREEN SIZE AND MATERIAL:	SCREEN INTERVAL:
SAND PACK SIZE AND MATERIAL:	SAND PACK INTERVAL:
REF. POINT:	BENTONITE SEAL INTERVAL:
STATIC WATER DEPTH:	DATE:
REMARKS:	

WELL/BOREHOLE ABANDONMENT INFORMATION

ABANDONMENT DATE:	ABANDONMENT METHOD:

DESCRIPTIVE LOG

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
0-5' bg	48	NA	-		-0-	
			-		-	Asphalt
			11.5		-1-	Medium brown, fine-medium SAND with trace pebbles;
			-		-	no odors or staining; dry
			-		-2-	
			-		-	
			3.7		-3-	
			-		-	
			-		-4-	
			-		-	
			0.5		-5-	
5-10' bg	42		-		-	
			3.6		-6-	Medium brown, fine-medium SAND with trace pebbles;
			-		-	no odors or staining; dry
			-		-7-	
			-		-	
			4.8		-8-	
			-		-	
			-		-9-	
			-		-	
			5.4		-10-	
10-15' bg	38		-		-	
			1.6		-11-	Medium brown, fine-medium SAND with trace pebbles;
			-		-	no odors or staining; dry
			-		-12-	
			-		-	
			2.4		-13-	
			-		-	
			-		-14-	
			-		-	
			2.4		-15-	

Fill
Sand/gravel
Silty sand/clay
Depth to Water
N/A Not Applicable

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING		SHEET: 2 OF 2
BORING/WELL I.D.: GB-16A	CLIENT/SITE: 218 Lakeville Road	DATE(s) DRILLED: 8/31/20

DESCRIPTIVE LOG (continued)

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID/FID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
15-20' bg	28		-		-	
			2.6		-16-	Medium brown, fine-medium SAND with trace pebbles;
			-		-	no odors or staining; dry
			-		-17-	
			-		-	
			3.4		-18-	
			-		-	
			-		-19-	
			-		-	
			3.0		-20-	
20-25' bg	21	NA	-		-	
			1.0		-21-	Medium brown, fine-medium SAND with trace pebbles;
			-		-	no odors or staining; dry
			-		-22-	
			-		-	
			13.1		-23-	
			-		-	
			-		-24-	
			-		-	
			10.3		-25-	
25-30' bg			-		-	
			1.0		-26-	Medium brown, fine-medium SAND with trace pebbles;
			-		-	no odors or staining; Moisture encountered below 28' bgs.
			-		-27-	
			-		-	
			4.8		-28-	
			-		-	
			-		-29-	
			-		-	
			0.7		-30-	
30-35' bg					-	END OF BORING.
					-31-	
					-	
					-32-	
					-	
					-33-	
					-	
					-34-	
					-	
					-35-	

NOTES:

Fill
Sand/gravel
Silty sand/clay
Depth to Water
N/A Not Applicable

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING	SHEET: 1 OF 2

BORING/WELL I.D.:	GB-16B	CLIENT:	218 Lakeville Acquisition, LLC
DATE(S) DRILLED:	8/31/20	PROJECT NAME:	218 Lakeville Road
DRILL METHOD:	Direct push via Geoprobe 6610 DT	PROJECT NO.:	IMPL0115.6
BORING DIAMETER:	2"	PROJECT LOCATION:	Lake Success, NY
SAMPLING METHOD/INTERVAL:	Dual-tube; 5' length	DRILLING CONTRACTOR:	Lakewood Environmental Services Corp.
LOGGED BY:	EMJ		
REMARKS:	Begin soil screening and logging at 1 ft bg		

TEMPORARY WELL CONSTRUCTION INFORMATION

SCREEN SIZE AND MATERIAL:	SCREEN INTERVAL:
SAND PACK SIZE AND MATERIAL:	SAND PACK INTERVAL:
REF. POINT: Top of Casing	BENTONITE SEAL INTERVAL:
STATIC WATER DEPTH:	DATE:
REMARKS:	

WELL/BOREHOLE ABANDONMENT INFORMATION

ABANDONMENT DATE:	ABANDONMENT METHOD:

DESCRIPTIVE LOG

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
			-		-0-	
			-		-	Asphalt
			5.8		-1-	Medium brown, fine-medium SAND with trace pebbles;
			-		-	no odors or staining; dry
			-		-2-	
0-5' bg	43.5		-		-	
			4.2		-3-	
			-		-	
			-		-4-	
			-		-	
			1.0		-5-	
			-		-	
			1.0		-6-	Medium brown, fine-medium SAND with trace pebbles;
			-		-	no odors or staining; dry
			-		-7-	
5-10' bg	41	NA	-		-	
			2.7		-8-	
			-		-	
			-		-9-	
			-		-	
			1.9		-10-	
			-		-	
			1.0		-11-	Medium brown, fine-medium SAND with trace pebbles;
			-		-	no odors or staining; dry
			-		-12-	
			-		-	
10-15' bg	25		5.7		-13-	
			-		-	
			-		-14-	
			-		-	
			2.9		-15-	

Native soil/rock
Sand/gravel
Silty sand/clay
Depth to Water
N/A Not Applicable

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING		SHEET: 2 OF 2
BORING/WELL I.D.: GB-16B	CLIENT/SITE: 218 Lakeville Road	DATE(s) DRILLED: 8/31/20

DESCRIPTIVE LOG (continued)

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID/FID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
			-		-	
			0.4		-16-	Medium brown, fine-medium SAND with trace pebbles;
			-		-	no odors or staining; dry
			-		-17-	
			-		-	
15-20' bg	7		1.4		-18-	
			-		-	
			-		-19-	
			-		-	
			1.0		-20-	
			-		-	
			1.4		-21-	Medium brown, fine-medium SAND with trace pebbles;
			-		-	no odors or staining; dry
			-		-22-	
			-		-	
20-25' bg	0	NA	1.9		-23-	
			-		-	
			-		-24-	
			-		-	
			1.0		-25-	
			-		-	
			1.0		-26-	Medium brown, fine-medium SAND with trace pebbles;
			-		-	no odors or staining; Moisture encountered below 28' bgs.
			-		-27-	
			-		-	
25-30' bg			0.2	▼	-28-	
					-	
			-		-29-	
			-		-	
			0.8		-30-	
					-	END OF BORING.
					-31-	
					-	
					-32-	
					-	
30-35' bg					-33-	
					-	
					-34-	
					-	
					-35-	

NOTES:

Native soil/rock
Sand/gravel
Silty sand/clay
▼ Depth to Water
N/A Not Applicable

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING	SHEET: 1 OF 2
BORING/WELL I.D.: PW-1	CLIENT: 218 Lakeville Acquisition, LLC
DATE(S) DRILLED: 11/16/20	PROJECT NAME: 218 Lakeville Road
DRILL METHOD: Direct push via Geoprobe 6610 DT	PROJECT NO.: IMPL0115.6
BORING DIAMETER: 2"	PROJECT LOCATION: Lake Success, NY
SAMPLING METHOD/INTERVAL: Dual-tube; 5' length	DRILLING CONTRACTOR: Lakewood Environmental Services Corp.
LOGGED BY: JKB	
REMARKS: Begin soil screening and logging at 1 ft bg	

TEMPORARY WELL CONSTRUCTION INFORMATION

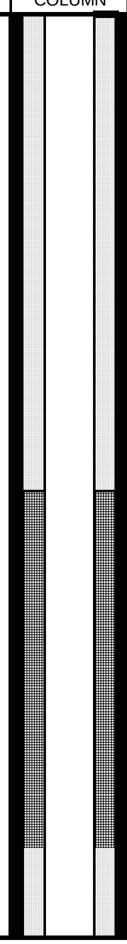
SCREEN SIZE AND MATERIAL: 1" diameter 20-slot Sch 40 PVC	SCREEN INTERVAL: 16-29' bg (13' length)
SAND PACK SIZE AND MATERIAL: Filbro Superior Quartz	SAND PACK INTERVAL: 14-29' bg
REF. POINT: Top of Casing	BENTONITE SEAL INTERVAL: 8-14' bg
STATIC WATER DEPTH: ~18.3'	DATE: 11/16/20

REMARKS: 1" diameter Sch 40 PVC riser from 16' bg to grade; finished with J-plug and 5" bolt-down road box in 12"x12" concrete pad.

WELL/BOREHOLE ABANDONMENT INFORMATION

ABANDONMENT DATE:	ABANDONMENT METHOD:

DESCRIPTIVE LOG



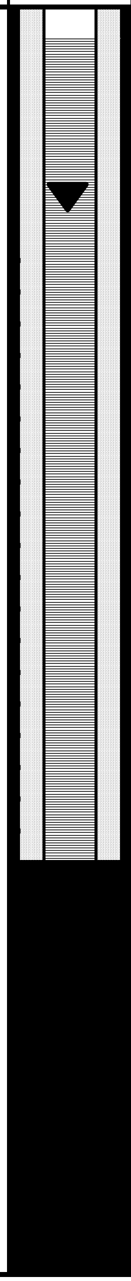
SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
0-5' bg	-	NA	NA		-0- - -1- - -2- - -3- - -4- - -5-	Asphalt Medium brown, medium sand; no odor or staining; dry
5-10' bg	-				- -6- - -7- - -8- - -9- - -10-	Medium brown, medium sand; no odor or staining; dry
10-15' bg	-				- -11- - -12- - -13- - -14- - -15-	Medium brown, medium sand; no odor or staining; dry

Native soil/rock
Sand Pack
Bentonite seal
Riser Pipe
Well screen
Depth to Water
N/A Not Applicable

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING		SHEET: 2 OF 2
BORING/WELL I.D.: PW-1	CLIENT/SITE: 218 Lakeville Road	DATE(s) DRILLED: 11/16/20

DESCRIPTIVE LOG (continued)

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID/FID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
15-20' bg	-	NA	NA		-16-	Medium brown, medium sand; no odor or staining
					-17-	
					-18-	Wet below 18.3' bgs
					-19-	
					-20-	
20-25' bg	-				-21-	Medium brown, medium sand; no odor or staining; wet
					-22-	
					-23-	
					-24-	
					-25-	
25-30' bg	-				-	25' - 25.5' bgs: Medium brown, medium sand; no odor or staining; wet
					-26-	25.5' - 26.75' bgs: Olive-gray clay with trace fine sand and silt
					-	26.75' - 30' bgs: Medium brown, fine sand with silt and clay
					-27-	
					-28-	
					-29-	- Bottom of well at 29' bg -
					-30-	
30-35' bg	-				-	30' - 31' bgs: Medium brown, fine sand with silt and clay
					-31-	
					-	31' - 35' bgs: Medium brown clay with trace fine sand and silt. Lens of fine silty sand from ~32.5-33' bg.
					-32-	
					-33-	
					-34-	
					-35-	END OF BORING

NOTES:

Native soil/rock
Sand Pack
Bentonite seal
Riser Pipe
Well screen
Depth to Water
N/A Not Applicable

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING		SHEET: 1 OF 2	
BORING/WELL I.D.:	PW-2	CLIENT:	218 Lakeville Acquisition, LLC
DATE(S) DRILLED:	11/16/20	PROJECT NAME:	218 Lakeville Road
DRILL METHOD:	Direct push via Geoprobe 6610 DT	PROJECT NO.:	IMPL0115.6
BORING DIAMETER:	2"	PROJECT LOCATION:	Lake Success, NY
SAMPLING METHOD/INTERVAL:	Dual-tube; 5' length	DRILLING CONTRACTOR:	Lakewood Environmental Services Corp.
LOGGED BY:	JKB		
REMARKS:	Begin soil screening and logging at 1 ft bg		

TEMPORARY WELL CONSTRUCTION INFORMATION

SCREEN SIZE AND MATERIAL: 1" diameter 20-slot Sch 40 PVC	SCREEN INTERVAL: 16-30.5' bg (14.5' length)
SAND PACK SIZE AND MATERIAL: Filbro Superior Quartz	SAND PACK INTERVAL: 15-30.5' bg
REF. POINT: Top of Casing	BENTONITE SEAL INTERVAL: 13-15' bg
STATIC WATER DEPTH: ~18.5' bg	DATE: 11/16/20

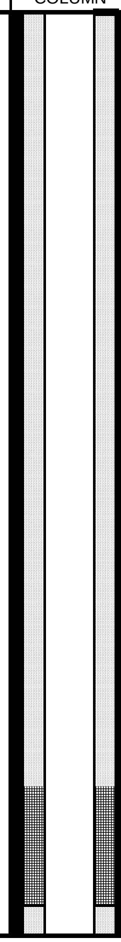
REMARKS: 1" diameter Sch 40 PVC riser from 16' bg to grade; finished with J-plug and 5" bolt-down road box in 12"x12" concrete pad.

WELL/BOREHOLE ABANDONMENT INFORMATION

ABANDONMENT DATE:	ABANDONMENT METHOD:

DESCRIPTIVE LOG

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
0-5' bg	-	NA	NA		-0- - -1- - -2- - -3- - -4- - -5-	Asphalt Medium brown, medium sand; no odor or staining; dry
5-10' bg	-				- -6- - -7- - -8- - -9- - -10-	Medium brown, medium sand; no odor or staining; dry
10-15' bg	-				- -11- - -12- - -13- - -14- - -15-	Medium brown, medium sand; no odor or staining; dry



Native soil/rock
Sand Pack
Bentonite seal
Riser Pipe
Well screen
Depth to Water
N/A Not Applicable

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING		SHEET: 2 OF 2
BORING/WELL I.D.: PW-2	CLIENT/SITE: 218 Lakeville Road	DATE(s) DRILLED: 11/16/20

DESCRIPTIVE LOG (continued)

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID/FID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
15-20' bg	-	NA	NA		-16-	Medium brown, medium sand; no odor or staining
					-18-	Wet below 18.5' bgs
20-25' bg	-				-21-	Medium brown, medium sand; no odor or staining; wet
25-30' bg	-				-	25' - 27' bgs: Medium brown, medium sand; no odor or staining; wet
					-27-	27' - 29' bgs: Olive-gray clay with little fine sand and silt; no odor or staining
					-29-	29' - 30' bgs: Medium brown, medium sand; no odor or staining; wet
30-35' bg	-				-	30' - 32.5' bgs: Medium brown clay with fine sand and silt; wet; cohesive
					-31-	- Bottom of well at 30.5' bg -
					-	32.5' - 35' bgs: Medium brown clay with trace fine sand and silt; stiff
					-35-	END OF BORING

NOTES:

Native soil/rock
Sand Pack
Bentonite seal
Riser Pipe
Well screen
Depth to Water
N/A Not Applicable

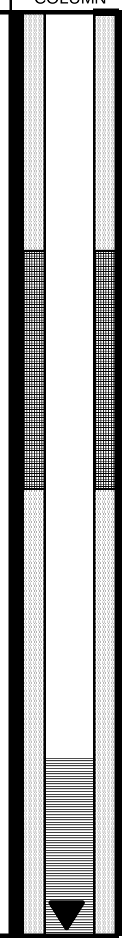
BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING		SHEET: 1 OF 2	
BORING/WELL I.D.:	PW-3	CLIENT:	218 Lakeville Acquisition, LLC
DATE(S) DRILLED:	11/12/20	PROJECT NAME:	218 Lakeville Road
DRILL METHOD:	Direct push via Geoprobe 6610 DT	PROJECT NO.:	IMPL0115.6
BORING DIAMETER:	2"	PROJECT LOCATION:	Lake Success, NY
SAMPLING METHOD/INTERVAL:	Dual-tube; 5' length	DRILLING CONTRACTOR:	Lakewood Environmental Services Corp.
LOGGED BY:	JKB		
REMARKS:	Begin soil screening and logging at 1 ft bg		

TEMPORARY WELL CONSTRUCTION INFORMATION	
SCREEN SIZE AND MATERIAL: 1" diameter 20-slot Sch 40 PVC	SCREEN INTERVAL: 12.5-29.5' bg (17' length)
SAND PACK SIZE AND MATERIAL: Filbro Superior Quartz	SAND PACK INTERVAL: 8-29.5' bg
REF. POINT: Top of Casing	BENTONITE SEAL INTERVAL: 4-8' bg
STATIC WATER DEPTH: ~15' bg	DATE: 11/12/20
REMARKS: 1" diameter Sch 40 PVC riser from 12.5' bg to grade; finished with J-plug and 5" bolt-down road box in 12"x12" concrete pad.	

WELL/BOREHOLE ABANDONMENT INFORMATION	
ABANDONMENT DATE:	ABANDONMENT METHOD:

DESCRIPTIVE LOG

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
0-5' bg	-	NA	NA		-0-	Asphalt
					-1-	Medium brown, medium sand; no odor or staining; dry
					-2-	
					-3-	
					-4-	
					-5-	
5-10' bg	-				-6-	Medium brown, medium sand; no odor or staining; dry
					-7-	
					-8-	
					-9-	
					-10-	
10-15' bg	-				-11-	Medium brown, medium sand; no odor or staining; dry
					-12-	
					-13-	
					-14-	
					-15-	

Native soil/rock
Sand Pack
Bentonite seal
Riser Pipe
Well screen
Depth to Water
N/A Not Applicable

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING			SHEET: 2 OF 2
BORING/WELL I.D.: PW-3	CLIENT/SITE: 218 Lakeville Road		DATE(s) DRILLED: 11/12/20

DESCRIPTIVE LOG (continued)

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID/FID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
15-20' bg	-	NA	NA		- -16- - -17- - -18- - -19- - -20-	Medium brown, medium sand; no odor or staining Wet below 15' bgs
20-25' bg	-				- -21- - -22- - -23- - -24- - -25-	Medium brown, medium sand; no odor or staining; wet
25-30' bg	-				- -26- - -27- - -28- - -29- - -30-	Medium brown, medium sand; no odor or staining; wet - Bottom of well at 29.5' bg -
30-35' bg	32				- -31- - -32- - -33- - -34- - -35-	30' - 31.3' bgs: Medium brown, medium sand; no odor or staining; wet 31.3' - 35' bgs: Medium brown clay END OF BORING

NOTES:

Native soil/rock
Sand Pack
Bentonite seal
Riser Pipe
Well screen
Depth to Water
N/A Not Applicable

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING		SHEET: 1 OF 2	
BORING/WELL I.D.:	PW-4	CLIENT:	218 Lakeville Acquisition, LLC
DATE(S) DRILLED:	11/12/20	PROJECT NAME:	218 Lakeville Road
DRILL METHOD:	Direct push via Geoprobe 6610 DT	PROJECT NO.:	IMPL0115.6
BORING DIAMETER:	2"	PROJECT LOCATION:	Lake Success, NY
SAMPLING METHOD/INTERVAL:	Dual-tube; 5' length	DRILLING CONTRACTOR:	Lakewood Environmental Services Corp.
LOGGED BY:	JKB		
REMARKS:	Begin soil screening and logging at 1 ft bg		

TEMPORARY WELL CONSTRUCTION INFORMATION

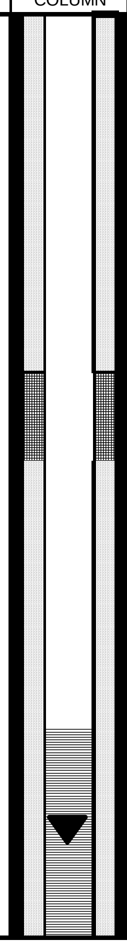
SCREEN SIZE AND MATERIAL: 1" diameter 20-slot Sch 40 PVC	SCREEN INTERVAL: 12-22' bg (10' length)
SAND PACK SIZE AND MATERIAL: Filbro Superior Quartz	SAND PACK INTERVAL: 7-22' bg
REF. POINT: Top of Casing	BENTONITE SEAL INTERVAL: 6-7' bg
STATIC WATER DEPTH: ~14' bg	DATE: 11/12/20

REMARKS: 1" diameter Sch 40 PVC riser from 12' bg to grade; finished with J-plug and 5" bolt-down road box in 12"x12" concrete pad.

WELL/BOREHOLE ABANDONMENT INFORMATION

ABANDONMENT DATE:	ABANDONMENT METHOD:

DESCRIPTIVE LOG

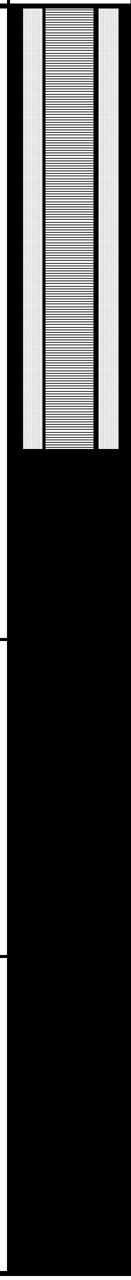
SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
0-5' bg	-	N/A	N/A		-0- - -1- - -2- - -3- - -4- - -5-	Asphalt Medium brown, medium sand; no odor or staining; dry
5-10' bg	-				- -6- - -7- - -8- - -9- - -10-	Medium brown, medium sand; no odor or staining; dry
10-15' bg	-				- -11- - -12- - -13- - -14- - -15-	Medium brown, medium sand; no odor or staining; dry Wet below 14' bgs.

Native soil/rock
Sand Pack
Bentonite seal
Riser Pipe
Well screen
Depth to Water
N/A Not Applicable

BORING/WELL LOG

WALDEN ENVIRONMENTAL ENGINEERING		SHEET: 2 OF 2
BORING/WELL I.D.: PW-4	CLIENT/SITE: 218 Lakeville Road	DATE(s) DRILLED: 11/12/20

DESCRIPTIVE LOG (continued)

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID/FID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF MATERIAL
15-20' bg	-	NA	NA		- -16- - -17- - -18- - -19- - -20-	Medium brown, medium sand; no odor or staining; wet
20-25' bg	-				- -21- - -22- - -23- - -24- - -25-	Medium brown, medium sand to 23.5' bgs; no odor or staining; wet - Bottom of well at 22' bg - 23.5' - 24' bgs: Medium brown, fine silty-sand with clay; wet 24' - 25' bgs: Gray clay; uniform; wet
					- -26- - -27- - -28- - -29- - -30-	END OF BORING
					- -31- - -32- - -33- - -34- - -35-	

NOTES:

Native soil/rock
Sand Pack
Bentonite seal
Riser Pipe
Well screen
Depth to Water
N/A Not Applicable

<u>Appendix B</u>

Site Photographs

Appendix B – Site Photographs
Additional Pre-Design Subsurface Investigation
218 Lakeville Road
Lake Success, New York


Photo #1 (8/31/2020): Soil boring via direct-push drilling (typical)


Photo #2 (8/31/2020): Field screening of soil borings with PID (typical)


Photo #3 (9/1/2020): Soil boring inside building

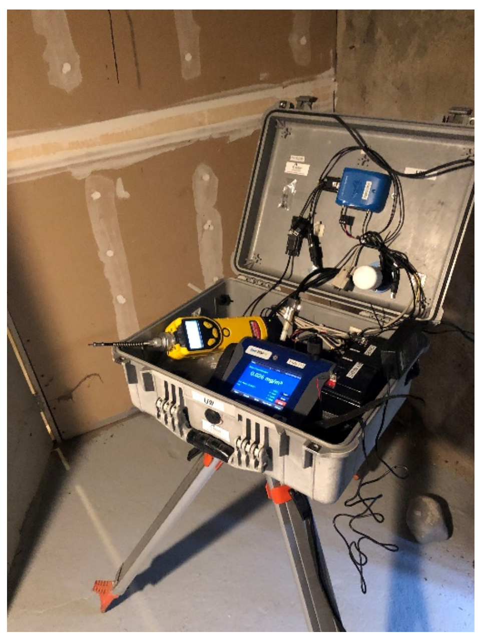


Photo #4 (9/1/2020): CAMP air monitoring equipment set up inside building

Photo #5 (9/3/2020): Patched boring location inside building

Photo #6 (11/12/2020): Direct-push drilling at off-site monitoring well location (typical)

Photo #7 (11/12/2020): Contact between sand and clay at off-site monitoring well location PW-4

Photo #8 (11/12/2020): Off-site monitoring well installation on University Place (typical).

Photo #9 (11/12/2020): Installation of bentonite seal during monitoring well installation (typical)

Photo #10 (11/12/2020): Completed monitoring well (typical)

Appendix C

Laboratory Analytical Reports

Appendix D

Data Usability Summary Report

Data Usability Summary Report

Additional Pre-Design On-Site Soil and Off-Site Groundwater Investigation
Former Imperial Cleaners Site
BCP Site # C130225
218 Lakeville Road
Lake Success, NY 11020

This Data Usability Summary Report (DUSR) has been prepared to validate the results of the additional on-site soil and off-site perched groundwater sampling conducted at 218 Lakeville Road, Lake Success, New York (Former Imperial Cleaners Site). This sampling was conducted on August 31, September 3 and December 2, 2020 in support of a pre-design subsurface investigation. Walden performed the sampling in accordance with the *Additional Pre-Design Subsurface Investigation Work Plan - Revised ("Work Plan"*, Walden, July 27, 2020) which was approved by New York State Department of Environmental Conservation (NYSDEC) and the New York State Department of Health (NYSDOH) by NYSDEC letter dated August 19, 2020.

This DUSR has been prepared in accordance with NYSDEC Draft DER-10 Appendix 2B – *Guidance for Data Deliverables and the Development of Data Usability Summary Reports*. The DUSR provides a thorough evaluation of analytical data without using the services of an independent third-party data validator. The primary objective of the DUSR is to determine whether or not the data presented meets project specific criteria for data quality and use.

The analytical data was evaluated by Ms. Lathika Varanasi (Walden), whose experience and qualifications to prepare the DUSR for this project are presented in the attached resume (see Attachment A). The soil samples and perched groundwater samples collected for laboratory analysis were submitted to York Analytical Laboratories, Inc. (York) of Richmond Hill, New York, a NYSDOH Environmental Laboratory Approval Program (ELAP) Contract Laboratory Protocol (CLP) laboratory (NY Cert. Nos. 10854 and 1205). Soil and perched groundwater sample preparation for volatile organic compounds (VOCs) analysis was performed via U.S. Environmental Protection Agency (USEPA) SW-846 Method 5035 and 5030C for soil and groundwater samples respectively. Samples were then analyzed for VOCs via USEPA SW-846 Method 8260C.

The DUSR process consisted of evaluating the analytical data packages produced by York and answering the following questions.

1. **Were there any deviations in the sampling protocol which deviated from established sampling procedures?**

   The sampling followed the established sampling procedures in the NYSDEC-approved *Additional Pre-Design Subsurface Investigation Work Plan - Revised (“Work Plan”,* Walden, July 27, 2020). The soil and perched groundwater samples were collected in laboratory-provided sample containers with prescribed preservatives. Terra Core® sample kits were utilized for soil sample collection. All soil samples were containerized in clean, laboratory-provided glassware, labeled, and placed in ice-filled coolers. The perched groundwater samples were placed into single-use sampling glassware provided by the laboratory and packed in ice-filled coolers.

2. **Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?**

   The sampling and analytical program outlined in the *Additional Pre-Design Subsurface Investigation Work Plan - Revised* was designed to conform to the NYSDEC ASP Category B and USEPA CLP deliverables criteria. Both field sampling and laboratory analytical activities were performed with built-in QA/QC programs. One duplicate soil sample was collected during the investigation. The analytical laboratory (York) included method blanks and batch QA/QC samples as part of their standard QA/QC program. Additionally, the samples were handled in compliance with the holding time allowances, meeting the NYSDEC ASP Category B and USEPA CLP deliverables criteria requirements.

3. **Have all holding times been met?**

   Times of sample receipt, extraction, and analysis have been evaluated to determine whether the holding time specifications have been met. All of the samples were analyzed within the specified holding times.

4. **Do all QC data (blanks, instrument tunings, calibration standards, calibration verifications, surrogate recoveries, spike recoveries, replicate analyses, laboratory controls, and sample data) fall within the protocol-required limits and specifications?**

   All the primary samples and QC data were reviewed. Duplicate and Matrix Spike sample analyses demonstrated a reasonable level of accuracy in the analytical results. Although not all QA/QC data met the protocol-required criteria, these outliers do not impact the quality of the data package or the reliability of the laboratory results.

5. **Have all the data been generated using established and agreed upon analytical protocols?**

   Laboratory analytical protocols have been developed by the USEPA and are published in USEPA Method 8260C (SW-846): Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS), Revision 3. The review of the laboratory deliverables indicated that the analytical data for this project was generated following these standard protocols.

6. **Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?**

   An evaluation of the raw data confirmed the accuracy and reliability of the results provided in the data summary sheets and the quality control verification forms included in the analytical data package prepared by the laboratory.

7. **Have the correct data qualifiers been used?**

   The laboratory provided a list of qualifiers used in their data reporting. QC failures such as potential sample contamination by laboratory solvents or estimation of sample result values due to analyte concentrations detected above calibration ranges were checked back to the reported data to determine whether the qualifiers were properly used. The evaluation indicated that the laboratory flagged the data using the correct data qualifiers when necessary. The data qualifiers comply with the NYSDEC Analytical Services Protocol (ASP) 95 revised guidelines.

8. **Have the minimum reporting limits been met?**

   The minimum detection limits derived from the USEPA analytical methods and the laboratories' quality control are as follows:

   - VOC for Groundwater: 5.0 ug/L
   - VOC for Soil: 0.5 ug/kg

   The minimum reporting limits have been met for all perched groundwater and soil samples.

<u>Summary</u>

In summary, the analytical data package review conducted when preparing this DUSR found no data deficiencies, no major analytical protocol deviations, or major quality control problems that impact the quality of the data. No significant QC exceedances were identified and it was determined that none of the data should be rejected.

Prepared by:

Lathika Varanasi, Ph.D.

Z:\IMPL0115 (Imperial Cleaners)\IMPL0115.6 - 2019 Pre-Design Investigation\September 2020 Investigation\York Lab Results\York Cat B Reports\DUSR_Imperial Cleaners Final 9.29.2021.docx

WALDEN ENVIRONMENTAL ENGINEERING

Lathika Varanasi, Ph.D.
Project Engineer

Project Engineer with experience in energy recovery/energy auditing of water and wastewater treatment facilities, wastewater treatment and renewable energy. She also has a strong background in environmental remediation, technical writing, techno-economic feasibility studies, engineering data analysis, analytical and organic chemistry.

EDUCATION

Ph.D. in Environmental Engineering, Michigan Technological University

LICENSES/ CERTIFICATIONS

NYSDEC 4-Hour Erosion and Sediment Control Training

Confined Space Trained General Industry

NFPA 70E: Standard for Electrical Safety in the Workplace

OSHA 10 Hour General Industry

OSHA 40 Hour HAZWOPER

SELECTED RELEVANT EXPERIENCE

- Energy optimization of Water and Wastewater Treatment Plants: Conducted energy consumption and process evaluations for equipment and process systems of water and wastewater treatment facilities and associated Combined Heat and Power (CHP) systems. Developed energy efficiency funding applications and quantified energy savings associated with treatment and process equipment as well as lighting and HVAC systems of water and wastewater treatment facilities. Developed energy conservation measures and provided recommendations for alternative low energy technologies for the upgrade of process operations and performances of water and wastewater treatment facilities. Created operation and maintenance manuals for water and wastewater treatment facilities.

- Environmental Impact Assessment: Evaluated sustainability, techno-economic feasibility of solar energy systems and analyzed energy consumption data to optimize energy efficiency for clients.

- Energy optimization of Sewage Treatment Plants: Established potential areas of energy optimization through data analysis of the unit processes of sewage treatment plants (STP), including pumps, blowers and compressors. Developed technical summaries of STP facilities' site operating manuals. Designed a template with the layout of unit processes of a sewage treatment plant and highlighted segments of high energy consumption for the stakeholders.

- Wastewater Treatment: Designed bench scale UV/Advanced Oxidation Processes (UV/AOPs) and investigated transformation of dissolved organic matter (DOM) of secondary effluent wastewater in the UV/AOPs. Characterized DOM transformation using ultra-high-resolution mass spectrometer. Identified specific low-molecular weight organic acids and chlorinated by-products formed due to interaction of DOM with UV/AOPs. Analyzed the role of DOM in reducing the treatment efficiency of UV-AOPs. Developed methods for the application of analytical chemistry instruments for data analysis. Prepared research reports, grant proposals, research proposals and journal articles.

- Renewable Energy Applications: Identified, analyzed and applied renewable and energy efficient technologies (Solar, Biomass, Biogas, Solar-LED) for industrial and community use. Made site visits to evaluate clients' operations and provided appropriate recommendations based on clients' requirements and project viability. Prepared detailed project reports, presentations, techno-economic feasibility studies and financial projections. Secured funds for renewable energy projects in rural areas by applying for seed grants.