

27-45 North Main Street Interim Remedial Measures Work Plan

27-45 North Main Street and 28 Adee Street – Port Chester, NY
Section 142.31, Block 1, Lots 7, 11, 12, 13, 14, 15, 16 and 17
BCP Site #TBD

Submitted to:
New York State Department of Environmental Conservation
Division of Environmental Remediation
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January 2023

CERTIFICATIONS

I, Matthew M. Carroll, certify that I am a NYS registered professional engineer as defined in 6 NYCRR Part 375 and that this Interim Remedial Measures Work Plan was prepared in accordance with all applicable statues and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

I certify that all information and statements in this certification are true. I understand that a false statement made herein is punishable as Class “A” misdemeanor, pursuant to Section 210.45 of the Penal Law.

091629
NYS Professional Engineer #

01/19/2023
Date

Matthew M. Carroll, P.E.
Signature

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LIST OF ACRONYMS

| | |
|--------------------|--|
| AGV | NYSDOH Air Guidance Value |
| AOC | area of concern |
| AS | air sparging |
| BCA | Brownfield Cleanup Agreement |
| BCP | Brownfield Cleanup Program |
| ECL | Environmental Conservation Law |
| BTEX | benzene, toluene, ethylbenzene and xylenes |
| CAMP | Community Air Monitoring Program |
| C&D | construction and demolition |
| CDS | construction dewatering system |
| Class GA Standards | NYSDEC TOGS 1.1.1 Class GA Ambient Water Quality Standards and Guidance Values |
| CEQR | City Environmental Quality Review |
| CFR | Code of Federal Regulations |
| CPP | Citizen Participation Plan |
| COC | Certificate of Completion |
| DCE | dichloroethylene |
| DER-10 | NYSDEC Division of Environmental Remediation (DER), DER-10 / Technical Guidance for Site Investigation and Remediation |
| DRO | diesel range organics |
| DOC | dissolved organic carbon |
| DUSR | Data Usability Summary Report |
| EC | engineering control |
| ESA | Environmental Site Assessment |
| EZ | exclusion zone |
| FB | field blanks |
| FER | Final Engineering Report |
| ft-bs | feet below building slab |
| ft-bg | feet below sidewalk grade |
| ft-msl | feet above mean sea level |
| HASP | Health and Safety Plan |
| HSA | Hollow Stem Auger |
| HSO | Health and Safety Officer |
| IC | institutional control |
| ISCO | in-situ chemical oxidation |
| IRM | Interim Remedial Measure |
| MW | monitoring well |
| NGVD | National Geodetic Vertical Datum |
| NIOSH | National Institute for Occupational Safety and Health |
| NYCDOB | New York City Department of Buildings |
| NYCDOT | New York City Department of Transportation |
| NYCRR | New York Codes, Rules and Regulations |
| NYSDEC | New York State Department of Environmental Conservation |

| | |
|-------------|--|
| NYSDOH | New York State Department of Health |
| NYSDOH-ELAP | NYSDOH Environmental Laboratory Approval Program |
| OSHA | Occupational Safety and Health Association |
| PCB | polychlorinated biphenyl |
| PCE | perchloroethylene, aka tetrachloroethylene |
| PID | photoionization detector |
| PGWSCOs | 6 NYCRR 375-6.8(b) – Protection of Groundwater Soil Cleanup Objectives |
| PP Metals | Priority Pollutant Metals |
| PPE | personal protective equipment |
| QA/QC | quality assurance / quality control |
| QAPP | Quality Assurance Project Plan |
| RAO | Remedial Action Objective |
| RAWP | Remedial Action Plan |
| RCNY | Rules of the City of New York |
| RMO | Remedial Measure Objective |
| RE | Remedial Engineer |
| RI | remedial investigation |
| RSCOs | Recommended Soil Cleanup Objectives |
| RCUSCOs | 6 NYCRR 375-6.8(b) – Restricted-Commercial Use Soil Cleanup Objectives |
| SB | soil boring |
| SV | soil vapor |
| SMP | Site Management Plan |
| SMMP | Soil/Material Management Plan |
| SSDS | sub-slab depressurization system |
| SVE | soil vapor extraction |
| SVOC | semi-volatile organic compound |
| TAL | Target Analyte List |
| TAGM 4046 | NYSDEC Technical and Administrative Guidance Memorandum #4046 |
| TB | trip blanks |
| TCE | trichloroethylene |
| TCL | Target Compound List |
| TCLP | Toxicity Characteristic Leaching Procedure |
| TCLP Limits | USEPA Maximum Concentrations of Contaminants for the Toxicity Characteristic |
| TOC | total organic carbon |
| USEPA | United States Environmental Protection Agency |
| USGS | United States Geological Survey |
| UST | underground storage tank |
| UUSCOs | 6 NYCRR 375-6.8(a) Track 1 Unrestricted Use Soil Cleanup Objectives |
| VOC | volatile organic compound |

INTERIM REMEDIAL MEASURES WORK PLAN

1.0 INTRODUCTION

This Interim Remedial Measures (IRM) Work Plan was prepared by Matthew M. Carroll, P.E. and Tenen Environmental (Tenen) on behalf of the Abendroth Green LLC (the “Requestor”). The Requestor submitted a Brownfield Cleanup Program (BCP) application, a Remedial Investigation Work Plan (RIWP), and this IRM Work Plan to the New York State Department of Environmental Conservation (NYSDEC) to investigate and remediate a property located at 27-45 Main Street and 28 Adee Street (the “Site”); Westchester County Tax ID Section 142.31, Block 1, Lots 7, 11, 12, 13, 14, 15, 16 and 17) in the Village of Port Chester in Westchester County, New York. Following NYSDEC review of the BCP application, the Requestor will enter into a Brownfield Cleanup Agreement (BCA) as a Participant with NYSDEC.

The objective of the IRM Work Plan is to: provide the means to implement the remedial investigation via demolition of existing structures; removal of one known underground storage tank (UST) and any unknown USTs encountered during demolition; to be protective of human health and the environment; and, to facilitate future full-scale remediation and redevelopment of the property.

The IRM Work Plan will include the following scope:

1. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking and staking of excavation areas;
2. Demolition of existing on-site structures;
3. Abatement of asbestos containing materials (ACM);
4. Removal of one known UST and any unknown USTs encountered during demolition in compliance with applicable local, State and Federal laws and regulations, and;
5. Collection of soil samples.

These remedial measures will be implemented in coordination with the remedial investigation (RI) for the site, with demolition of the existing on-site structures occurring prior to mobilization for the RI. Note that NYSDEC does not review demolition or ACM abatement plans for compliance with applicable local, State or federal requirements. These remedial measures will be submitted to, and/or performed in accordance with, the requirements of other agencies including but not limited to: the Village of Port Chester Building Department and the New York State Department of Labor, as may be applicable. A final Remedial Investigation Report (RIR) and Remedial Action Work Plan (RAWP) will be prepared at a later date to document a complete Site characterization and to address any remaining contamination and Site management requirements.

The procedures and reporting requirements contained in the IRM Work Plan are in accordance with NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation (May 2010). Consistent with Sections 1.11 and 5.3 of the DER-10 document, this IRM Work Plan includes the following items:

- A summary of previous environmental investigation findings and a description of the Remedial Areas of Concern identified by these investigations;
- A description of the proposed interim remedial measures;
- A listing of applicable guidance and standards relating to the work;
- A Health and Safety Plan (HASP) that outlines the health and safety policies and procedures that govern site investigation activities for the protection of personnel and others during the implementation of an IRM;
- A schedule for implementation and reporting; and,
- A Professional Engineer's certification.

1.1 Site Location and Description

The Site consists of an approximately 48,101-square foot parcel located at 27-45 North Main Street and 28 Adee Street in the Village of Port Chester, New York. The Site is identified by Westchester County as Section 142.31, Tax Block 1, Lots 7, 11, 12, 13, 14, 15, 16 and 17. The Site is an irregularly shaped parcel with approximately 250 feet of frontage along North Main Street, approximately 300 feet of frontage along Abendroth Avenue, and approximately 100 feet of frontage along Adee Street. The Site location is shown on Figure 1. A map of the current site layout is shown on Figure 2.

The Site is zoned CD-5, denoting an Urban Center Character District that consists of higher-density, mixed-use areas. The Site lot is currently occupied by one- to three-story commercial or mixed-use residential and commercial buildings. Exterior portions of the Site are largely capped with asphalt. The remainder of the exterior portions of the Site are utilized for landscaping. Currently, the entirety of the Site is vacant, but was most recently utilized by a realtor, restaurant, hardware store, ice cream shop, a jeweler, and non-profit organizations.

The ground level of the building on Lot 11 contains an active 1,500-gallon UST that contains #2 fuel oil. The UST is reportedly located in a subterranean vault. Lot 11 is identified on the Petroleum Bulk Storage (PBS) database as PBS #3-801942. The UST on Lot 11 is associated with an open spill (Spill No. 1708684) which was reported on December 15, 2017 due to equipment failure. The spill record indicates the UST was repaired and retested. No further information was provided and the spill case remains open.

The proposed IRM includes the demolition of the existing on-site structures and removal of one known UST. While this IRMWP includes measures associated with demolition and abatement of existing Site structures, NYSDEC does not review demolition or ACM abatement plans for compliance with applicable local, State or federal requirements. These remedial measures will be submitted to, and/or performed in accordance with, the requirements of other agencies including but not limited to: the Village of Port Chester Building Department and the New York State Department of Labor, as may be applicable.

1.2 Description of Surrounding Property

The surrounding area consists of mixed use residential, commercial and industrial use. The Site is bound to the northwest by North Main Street and adjacent mixed use properties; to the northeast by Adee Street and adjacent Walgreens drug store; to the southeast by Abendroth Avenue and an adjacent automotive parking lot, a surface water body leading into Port Chester Bay and a gas station, and; to the southwest by Westchester Avenue and adjacent commercial buildings.

2.0 SUMMARY OF PREVIOUS INVESTIGATION FINDINGS

Several investigations and reports were conducted for the Site between 2016 and 2022. The sampling that has been completed is sufficient to complete a preliminary qualitative human health exposure assessment (QHHEA) for the proposed interim remedial measures. A Remedial Investigation Work Plan (RIWP) has been submitted with this IRMWP and will be implemented following the demolition of the on-site structures. The following sections summarize the sampling that has been completed to-date.

2.1 Summary of Previous Investigations

Investigations and sampling efforts conducted at the Site or at portions of the Site are described in the following reports:

1. *Phase I Environmental Site Assessment, 29-31 and 37-39 North Main Street, Port Chester, NY*, Advanced Cleanup Technologies, Inc., July 25, 2016.
2. *Tier II: Soil Vapor Encroachment Screen, 29-31 and 37-39 North Main Street, Port Chester, NY*, Advanced Cleanup Technologies, Inc., August 30, 2016.
3. *Indoor Air and Groundwater Survey, 29-31 North Main Street, Port Chester, NY*, Advanced Cleanup Technologies, Inc., October 5, 2016.
4. *Phase I Environmental Site Assessment, 25-27 North Main Street, Port Chester, NY*, EBI Consulting, June 14, 2018.
5. *Phase I Environmental Site Assessment, 33-35 North Main Street, Port Chester, NY*, EBI Consulting, May 1, 2019.
6. *Phase I Environmental Site Assessment, 41 North Main Street, Port Chester, NY*, EBI Consulting, May 2, 2019.
7. *Phase I Environmental Site Assessment, 43 North Main Street, Port Chester, NY*, EBI Consulting, October 14, 2019.
8. *Phase I Environmental Site Assessment, 27-45 North Main Street and 28 Adee Street, Port Chester, NY*, Tenen Environmental, LLC, May 2022.
9. *Limited Due Diligence Environmental Site Investigation, 27-45 North Main Street and 28 Adee Street, Port Chester, NY*, Tenen Environmental, LLC, April 5, 2022.
10. *Off-Site Environmental Investigation, 27-45 North Main Street and 28 Adee Street, Port Chester, NY*, Tenen Environmental, LLC, November 8, 2022.

Summaries of previous investigations are provided below. Previous sample locations are shown on Figure 2. Copies of the aforementioned previous reports for the Site are included as Exhibit B of the BCP Application dated December 2022.

Site History

- Prior to 1890, an inlet of the Byram River extended north through the central portion of the Site. By 1895, the entirety of the inlet spanning the Site had been filled. By 1895, the Site area along North Main Street was developed with multiple small buildings and stores.
- The Site was historically utilized for commercial and residential purposes. Historic non-residential uses include: dry cleaning, a planing/lumber mill, a roller rink, printers, sign painting, lime and cement storage, plumbing, and a metal works.

- The Site has two closed Spill records and one open Spill record associated with it:
 - Spill No. 1308618 was reported on November 25, 2013 for Lot 11. The spill record indicates the spill was caused by an equipment failure from the boiler which released oil into the subterranean vault containing the known 1,500-gallon UST. The record noted the UST could not be located and is not in compliance with PBS regulations. There was no indication that oil discharged into the Byram River to the east. A 2013 NYSDEC memo noted that 2,000 gallons of oil and water were vacuumed from the vault and cleanup was completed. The spill case was closed on November 26, 2013.
 - Spill No. 1602940 was reported on June 24, 2016 for Lot 16. The spill record indicates samples were collected after four aboveground storage tanks (ASTs) were removed from the property. Slightly elevated concentrations of semivolatile organic compounds (SVOCs) were detected in one of the soil samples. No additional evidence of a leak or contamination was observed. A 2016 NYSDEC memo noted that no further action was required and the spill case was closed on July 12, 2016.
 - Spill No. 1708684 was reported on December 15, 2017 for Lot 11. The spill record indicates the spill was caused by equipment failure. The record indicates the tank was repaired and retested. No further information was provided and the spill case remains open.
- Previous Phase I Environmental Site Assessment (Phase I ESAs) conducted at the Site or a portion of the Site identified the following Recognized Environmental Conditions (RECs) in connection with the property:
 - The historical use of the Site for dry cleaning, printing, and metalworking;
 - The presence of historical fill material at the Site;
 - Open petroleum spill (Spill No. 1708684) associated with the Site, and the historic and current use of the Site for underground oil storage; and,
 - Historical use of the east adjoining property for coal storage and a west adjoining property for printing.

Geology/Hydrogeology

- The Site is located at an average elevation of approximately twelve feet above mean sea level (ft-msl) and slopes gently to the southeast.
- The overburden at the Site is composed predominantly of a shallow fill layer containing fine- to medium-grained sand and silt, brick and rock fragments, wood chips, and cobbles underlain by native till material consisting of fine- to coarse-grained sand, silt, and clay. The fill layer ranges in thickness from two to ten feet.
- Groundwater was encountered at approximately nine feet below grade (ft-bg) and generally flows to the east-southeast, towards the Byram River.

Soil

- Residual petroleum odors and PID readings were noted in the area of the 1,500 gallon UST.
- The results of the soil sampling performed as part of Tenen's 2022 LDDESI indicated one volatile organic compound (VOC), acetone, was detected slightly in exceedance of its Unrestricted Use Soil Cleanup Objective (SCO, UUSCO) in two soil samples. Acetone is a common laboratory artifact. No other VOCs were detected in exceedance of UUSCOs or Restricted-Residential Use SCOs (RRSCOs).

- A variety of SVOCs, specifically polyaromatic hydrocarbons (PAHs), were detected in exceedance of Unrestricted Use SCOs in two soil samples, including benzo(a)anthracene [max. 3 parts per million (ppm) with a UUSCO of 1 ppm], benzo(a)pyrene (max. 2 ppm with a UUSCO of 1 ppm), benzo(b)fluoranthene (max. 2.1 ppm with a UUSCO of 1 ppm), benzo(k)fluoranthene (max. 2.2 ppm with a UUSCO of 0.8 ppm), chrysene (max. 2.6 ppm with a UUSCO of 1 ppm), dibenzo(a,h)anthracene (max. 0.56 ppm with a UUSCO of 0.33 ppm), and indeno(1,2,3-cd)pyrene (max. 1.5 ppm with a UUSCO of 0.5 ppm). Of these, the UUSCO is the same as the RRSCO for benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene, and any exceedances of UUSCOs for these analytes also exceeded RRSCOs. The highest concentrations of SVOCs were detected in SB-1, collected from the northern portion of Lot 11, upgradient of the 1,500-gallon UST. No other SVOCs were detected in exceedance of UUSCOs or RRSCOs.
- One pesticide, dieldrin, was detected slightly in exceedance of its UUSCO, but below its RRSCO, in one soil sample. Dieldrin was detected at a concentration of 0.01 ppm with an UUSCO of 0.005 ppm.
- The metals copper, lead, mercury, and nickel were each detected in one or more soil samples in exceedance of Unrestricted Use SCOs. Copper was detected in one sample at a concentration of 61.1 ppm with a UUSCO of 50 ppm; lead was detected in two samples at a max. concentration of 117 ppm with a UUSCO of 63 ppm; mercury was detected in all three samples at a max. concentration of 2.8 ppm with a UUSCO of 0.18 ppm; and, nickel was detected in one soil sample at a concentration of 34.4 ppm with a UUSCO of 30 ppm. Of these, mercury was also detected in exceedance of its RRSCO of 0.81 ppm in one soil sample collected from SB-6 in the southeastern portion of Lot 16.
- Polychlorinated biphenyls (PCBs) were not detected in exceedance of UUSCOs or RRSCOs in any soil samples.

Groundwater

- The results of the groundwater sampling performed onsite as part of the 2016 Indoor Air and Groundwater Survey performed by Advanced Cleanup Technologies, Inc. (ACT) and Tenen's 2022 LDDESI indicated VOCs were not detected in exceedance of the NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards (AWQS) and Guidance Values (Class GA Standards) in any groundwater samples.
- The results of the groundwater sampling performed as part of Tenen's 2022 LDDESI indicated a variety of SVOCs, specifically PAHs, were detected in one groundwater monitoring well, GW-1, (located upgradient of the 1,500 gallon UST on Lot 11) slightly in exceedance of Class GA Standards. Benzo(a)anthracene was detected at a concentration of 0.04 parts per billion (ppb), benzo(a)pyrene was detected at a concentration of 0.04 ppb, benzo(b)fluoranthene was detected at a concentration of 0.06 ppb, benzo(k)fluoranthene was detected at a concentration of 0.02 ppb, chrysene was detected at a concentration of 0.01 ppb, and, indeno(1,2,3-cd)pyrene was detected at a concentration of 0.03 ppb. The aforementioned analytes all have a Class GA Standard of 0.002 ppb, with the exception of benzo(a)pyrene, which has a Class GA Standard of 0 ppb. No other SVOCs were detected in exceedance of Class GA Standards in any groundwater samples.

Soil Vapor

- The results of the soil vapor sampling performed as part of ACT's 2016 Tier II Vapor Encroachment (VE) Screen indicated elevated concentrations of the chlorinated solvent tetrachloroethene (PCE) in one soil vapor sample collected from the southeastern portion of the exterior of Lot 16. PCE was detected at a concentration of 250 micrograms per cubic meter (ug/m³). No other cVOCs included on the NYSDOH Soil Vapor Intrusion Decision Matrices were detected in any soil vapor samples.
- The results of the soil vapor sampling performed as part of Tenen's 2022 LDDESI indicated concentrations of PCE were detected in all four soil vapor samples at concentrations ranging from 1.8 ug/m³ to 80.7 ug/m³. In addition, trichloroethene (TCE) and cis-1,2-dichloroethene (cis-1,2-DCE), breakdown products of PCE, were both detected in one soil vapor sample. TCE was detected at a concentration of 1.98 ug/m³ and cis-1,2-DCE was detected at a concentration of 0.22 ug/m³. Carbon tetrachloride was detected in three of four soil vapor samples at a maximum concentration of 0.55 ug/m³. No other cVOCs included on the NYSDOH Soil Vapor Intrusion Decision Matrices were detected in any soil vapor samples.
- Low levels of petroleum-related VOCs were detected in soil vapor across the Site, including benzene, toluene, ethylbenzene, xylenes, and 1,2,4-trimethylbenzene.

Indoor Air

- The results of the indoor air sampling conducted on Lot 16 as part of ACT's 2016 Air and Groundwater Survey indicated concentrations of cVOCs, including PCE, TCE, carbon tetrachloride, and methylene chloride were detected in all three indoor air samples. In addition, the cVOCs cis-1,2-DCE, vinyl chloride, 1,1,1-trichloroethane (1,1,1-TCA), and 1,1-dichloroethene (1,1-DCE) were each detected in one soil vapor sample. Of these, TCE was detected in exceedance of its NYSDOH Air Guideline Value (AGV) of 2 ug/m³ in one indoor air sample collected from the southeastern portion of Lot 16. No other cVOCs were detected in exceedance of their respective NYSDOH AGVs. PCE was detected at a max. concentration of 12 ug/m³; TCE was detected at a max. concentration of 6.9 ug/m³; carbon tetrachloride was detected at a max. concentration of 7.5 ug/m³; methylene chloride was detected at a max. concentration of 14 ug/m³; cis-1,2-DCE was detected at a concentration of 5.9 ug/m³; vinyl chloride was detected at a concentration of 4.6 ug/m³; 1,1,1-TCA was detected at a concentration of 6.7 ug/m³; and, 1,1-DCE was detected at a concentration of 5.4 ug/m³.
- Comparison of the concentrations of cVOCs detected in indoor air to the applicable NYSDOH Soil Vapor Intrusion Matrices indicates mitigation would likely be required for PCE at one location (CS-1, collected from the crawl space in the western portion of the building on Lot 16) and would likely be required for TCE, cis-1,2-DCE, vinyl chloride, carbon tetrachloride, and 1,1-DCE at one location (IA-2, collected from the southeastern portion of the building on Lot 16).

2.2 Significant Threat Determination

The NYSDEC and NYSDOH have yet to determine if the Site poses a significant threat to human health.

2.3 Contamination Conditions

The Site is currently vacant and improved with several one- to three-story commercial or mixed-use residential and commercial buildings. The majority of the Site is capped with either concrete building slabs or asphalt; the remaining exterior portions of the Site contain landscaping. Prior non-residential uses include dry cleaning, a planing/lumber mill, a roller rink, printers, sign painting, lime and cement storage, plumbing, and a metal works.

Based on the findings of prior investigations conducted at the Site, the contaminants of concern at the Site are petroleum, chlorinated VOCs (cVOCs, specifically PCE and its degradation compounds) and historic fill-related compounds (PAHs and metals).

Historic fill-related compounds were detected in soil and groundwater above regulatory standards. Elevated concentrations of PCE and its degradation compounds were detected in soil vapor and indoor air at the Site and are likely attributed to the former dry cleaner on Lot 16. Petroleum impacts were noted in a boring advanced near the 1,500 gallon UST.

This IRM Work Plan is focused on the removal of the known 1,500-gallon UST and demolition of the existing onsite structures. Remediation of contaminants in soil and groundwater and potential soil vapor intrusion to the new building will be addressed as part of the Remedial Action Work Plan (RAWP), to be submitted at a later date following implementation of the RIWP after the buildings are demolished.

3.0 STANDARDS, CRITERIA AND GUIDANCE

The IRM will include the demolition of on-site buildings, soil excavation for UST removal, and UST removal. The IRM will be implemented in accordance with the Standards, Criteria and Guidance (SCGs) detailed below.

The IRM SCGs are listed below.

| SCG | Scope / Application |
|---|---|
| NYSDEC Brownfield Cleanup Program Guide (draft 2004) | General program guidance |
| NYSDEC CP-51 / Soil Cleanup Guidance (2010) | Restricted Use SCOs for soil |
| NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation (2010) | End-point sampling methodology; underground storage tank (UST) closure |
| NYSDEC DER-31 Green Remediation (2011) | Green remediation components |
| NYSDEC TOGS 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations (1998) | Class GA Standards for groundwater |
| NYSDOH Guidance for Evaluating Soil Vapor Intrusions in the State of New York (2006) | Soil vapor guidance |
| NYSDOH Generic Community Air Monitoring Plan | Plan for monitoring dust and volatile organics resulting from construction activities |
| New York State Codes, Rules and Regulations (NYCRR) Title 6 Part 360 – Solid Waste Management Facilities | Off-site disposal of waste for facilities in NYC |
| New York State Codes, Rules and Regulations (NYCRR) Title 6 Part 364 – Waste Transporter Permits | Transporter requirements for off-site disposal of waste |
| 6 NYCRR Part 370 – Hazardous Waste Management System | Disposal of hazardous waste, if encountered |
| 6 NYCRR Part 375 – Environmental Remediation Programs (December 2006) | General administrative guidance |
| 6 NYCRR Part 376 – Land Disposal Restrictions | Disposal of hazardous waste, if encountered |
| Code of Federal Regulations (CFR) Title 29 Part 1910.120 - Hazardous Waste Operations and Emergency Response Standard | Worker safety |
| 29 CFR Title 29 Part 1926 - Safety and Health Regulations for Construction | Worker safety |

4.0 INTERIM REMEDIAL PROGRAM

4.1 Governing Documents

4.1.1 Site Specific Health and Safety Plan

A Site Specific HASP has been created for the Site and is included in Appendix B. All remedial work performed under this plan will be in full compliance with governmental requirements, including Site and worker safety requirements mandated by Federal OSHA. An emergency contact sheet with names and phone numbers is included in Table 1 of the HASP and defines the specific project contacts for use by NYSDEC and NYSDOH in the case of a day or night emergency. The HASP and requirements defined in this IRM pertain to all remedial and invasive work performed at the Site until the issuance of a Certificate of Completion.

4.1.2 Citizen Participation Plan

The Citizen Participation Plan (CPP) enables citizens to participate more fully in decisions that affect their health, environment and social well-being. The CPP will be updated throughout the Remedial Action in response to any community feedback. The current CPP is included in Appendix B.

4.1.3 Community Air Monitoring Plan

The purpose of the Community Air Monitoring Plan (CAMP) is to protect downwind and building receptors (e.g., residences, businesses, schools, nearby workers, and the public) from potential airborne contaminants released as a direct result of the IRM being performed at the Site. CAMP will be implemented during ground intrusive activities only. A summary of the CAMP is included in Appendix A.

4.1.4 Quality Assurance Project Plan

A Quality Assurance Project Plan (QAPP) has been created for the site to address quality control and quality assurance procedures for all site sampling and is included in Appendix C.

4.2 General Remedial Construction Information

4.2.1 Project Organization

An organization chart with emergency contacts is included in Table 1. The following are the principal personnel who will assist in the management, oversight and completion of this project:

Remedial Engineer

Matthew M. Carroll, PE
1085 Sackett Avenue
Bronx, NY 10461
(917) 510-6767

Tenen Environmental, LLC

121 West 27th Street, Suite 702, New York, NY 10001
(646) 606-2332

- Alana Carroll, Professional Geologist: responsible for overall coordination and management of the project.
- Mohamed Ahmed, Professional Geologist: responsible for quality assurance of sampling procedures and laboratory data.
- Claire Zaccheo, Project Engineer: responsible for the day-to-day field monitoring activities. Report preparation will be the function of a Project Engineer from Tenen.

Subcontractors*Laboratory:*

Alpha Analytical, Inc., 8 Walkup Drive in Westborough, MA
(800) 624-9220

NYSDOH Environmental Laboratory Approval Program (ELAP) Certification No. 11148 for solid and hazardous waste

Tank Removal / Vacuum Truck:

AARCO Environmental Services Corp., 50 Gear Avenue, Lindenhurst, NY 11757
(516) 596-6300

Data Validation:

L.A.B Validation Corp., 14 West Point Drive, East Northport, NY 11731
(516) 523-7891

Remedial Party:

Abendroth Green LLC
c/o The Hudson Companies Incorporated
826 Broadway, 11th Floor
New York, NY 10003
Attn: Mallory Warner
212-710-6029

Resumes of key personnel involved in the Remedial Action are presented in the QAPP, included as Appendix C.

4.2.2 Remedial Engineer

The Remedial Engineer (RE) for this project will be Matthew M. Carroll, P.E. The RE is a registered professional engineer (PE) licensed by the State of New York. The RE will have primary direct responsibility for implementation of the remedial program for the 27-45 North Main Street Site (NYSDEC BCA Index No.: TBD; Site No.: TBD). The RE will certify in the Interim Remedial Measure Construction Completion Report (IRMCCR) and Final Engineering Report (FER) that the IRM was performed by qualified environmental professionals under his supervision and that the

remediation requirements set forth in the IRM Work Plan and any other relevant provisions of ECL 27-1419 have been achieved in conformance with the IRM Work Plan.

The RE will coordinate the work of other contractors and subcontractors involved in all aspects of remedial construction, including soil removal, air monitoring, emergency spill response, import of back fill material (if any), and management of waste transport and disposal. The RE will be responsible for all appropriate communication with NYSDEC and NYSDOH.

The RE will review all pre-remedial plans submitted by contractors for compliance with this IRM Work Plan and will certify compliance in the FER.

4.2.3 Remedial Action Construction Schedule

A general IRM schedule is included in Table 2.

4.2.4 Work Hours

The hours for operation of remedial construction will conform to the Westchester County construction code requirements or according to specific variances issued by that agency. NYSDEC will be notified by the Requestor of any variances issued by the Department of Buildings. NYSDEC reserves the right to deny alternate remedial construction hours.

4.2.5 Mobilization

Mobilization includes field personnel orientation, equipment mobilization (including CAMP equipment), marking/staking sampling locations and utility mark-outs. Each field team member will attend an orientation meeting to become familiar with the general operation of the Site, health and safety requirements, and field procedures. The contractor will mobilize all necessary materials and equipment on Site directly prior to the initiation of any remedial activities.

4.2.6 Equipment and Material Staging

All equipment and materials will be stored at the Site in accordance with the requirements of this IRM Work Plan, manufacturer's recommendations, and in conformity to applicable statutes, ordinances, regulations, and rulings of the public authority having jurisdiction. The Contractor shall maintain accurate records documenting the measures taken to protect each equipment item. The Contractor shall not store materials or encroach upon private property without the written consent of the owners of such private property. No work shall commence until Notice to Commence work is provided by the Remedial Engineer.

4.2.7 Utility Markout and Easement Layout

The Requestor and its contractors are solely responsible for the identification of utilities that might be affected by work under the IRM and implementation of all required, appropriate, or necessary health and safety measures during performance of work under this IRM. The Participant and its contractors are solely responsible for safe execution of all invasive and other work performed under this IRM. The Participant and its contractors must obtain any local, State or Federal permits or

approvals pertinent to such work that may be required to perform work under this IRM. Approval of this IRM by NYSDEC does not constitute satisfaction of these requirements.

4.2.8 Required Permits

Demolition permits and asbestos abatement permits are required by the Village of Port Chester Building Department prior to the demolition of the onsite buildings and the abatement of ACM. ACM abatement must be completed prior to demolition activities. The contractor will ensure that necessary permits are obtained before the commencement of IRM tasks and the appropriate agencies and departments will be contacted prior to commencement of ACM abatement. Note that NYSDEC does not review demolition or ACM abatement plans for compliance with applicable local, State or federal requirements. These remedial measures will be submitted to, and/or performed in accordance with, the requirements of other agencies including, but not limited to: the Village of Port Chester Building Department and the New York State Department of Labor, as may be applicable. Demolition Plans will be provided when approved by the Village of Port Chester and prior to demolition.

4.2.9 Site Security and Signage

A solid eight-foot construction fence will be installed to enclose the Site. The fence will be maintained throughout the IRM. Sidewalks adjacent to the Site will be maintained with barriers, as necessary, to protect the public.

4.2.10 Deviations from the Interim Remedial Measures Work Plan

During the implementation of the IRM Work Plan, any material deviation will be noted and immediately brought to the attention of the RE. The RE or his/her representative will contact the NYSDEC Project Manager and determine if the deviation necessitates a formal IRM modification and NYSDEC approval. If no formal IRM modification is required, the deviation will be noted in the Site reports and explained in the FER.

4.2.11 Traffic Control

A truck route to and from the Site from the nearest major highway will be selected considering:

- Limited transport through residential areas
- Use of defined truck routes
- Limiting the total distance to the major thoroughfares, and
- Safety in access to highways

Egress points for truck and equipment transport from the Site will be kept clean of dirt and other materials during implementation of the IRM Work Plan; trucks exiting the Site will be securely covered, if applicable.

4.2.12 Underground Storage Tank Removal

One known in-service 1,500-gallon #2 fuel oil UST is present at the Site on Lot 11 and will be removed during the implementation of the IRM Work Plan. Unknown USTs encountered during IRM implementation will be decommissioned in accordance with applicable NYSDEC UST closure requirements. The tanks will be decommissioned and removed following the applicable NYSDEC petroleum storage tank closure (PBS) regulations, including registration.

4.2.13 Worker Training and Monitoring

Site workers involved with hazardous waste, as determined by 40 CFR 262.11 and ECL 27-0903 or a “source area” as determined by DER-10 1.3(b)70 at the Site will be required, at a minimum, to have completed 29 CFR 1910.120 Hazardous Waste Operations and Emergency Response (HAZWOPER), site safety training and medical monitoring for site workers. HAZWOPER training completion certificates will be submitted to the RE before commencement of site work.

4.2.19 Pre-Construction Meeting with NYSDEC

The NYSDEC project manager will be invited to attend a pre-IRM meeting at the Site with all parties involved in the remedial process prior to implementation of the IRM.

5.0 SUMMARY OF INTERIM REMEDIAL MEASURES

The proposed IRM consists of the following tasks:

1. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking and staking of excavation areas;
2. Demolition of existing on-site structures;
3. Abatement of asbestos containing materials (ACM);
4. Removal of one know UST and any unknown USTs in compliance with applicable local, State and Federal laws and regulations, and;
5. Collection of soil samples.

NYSDEC does not review demolition or ACM abatement plans for compliance with applicable local, State or federal requirements. These remedial measures will be submitted to, and/or performed in accordance with, the requirements of other agencies including but not limited to: the Village of Port Chester Building Department and the New York State Department of Labor, as may be applicable. The IRM described herein will be performed in accordance with applicable federal, state, and city regulations. A Health and Safety Plan (HASP) is included as Appendix A.

The objective of the IRM Work Plan is to: provide the means to implement the remedial investigation via demolition of existing structures; cleaning and removal of former USTs; to be protective of human health and the environment; and, to facilitate future full-scale remediation and redevelopment of the property.

5.1 ACM Abatement

ACM will be removed prior to the demolition of the onsite structures.

The ACM will be removed and disposed of by a New York State Department of Labor (NYSDOL) licensed asbestos handling contractor in accordance with federal, state, and city regulations.

NYSDEC does not review ACM abatement plans for compliance with applicable local, State or federal requirements. These remedial measures will be submitted to, and/or performed in accordance with, the requirements of other agencies including but not limited to: the Village of Port Chester Building Department and the New York State Department of Labor, as may be applicable.

5.2 Demolition

Demolition includes the demolition of all existing on-site structures. Below grade footings and foundation walls, the building foundation slab and all concrete or asphalt covers will be removed. NYSDEC does not review demolition plans for compliance with applicable local, State or federal requirements. These remedial measures will be submitted to, and/or performed in accordance with, the requirements of other agencies including but not limited to: the Village of Port Chester Building

Department and the New York State Department of Labor, as may be applicable. Demolition plans will be provided when approved by the Village of Port Chester and prior to demolition.

Construction and demolition debris will be disposed of in accordance with federal, state and city regulations, including 6NYCRR Part 360. All transport of materials will be performed by licensed haulers in accordance with appropriate local, state, and federal regulations, including 6NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded.

5.3 Tank Removal

One known in-service 1,500-gallon #2 fuel oil UST is present at the Site on Lot 11 and will be removed during the implementation of the IRM Work Plan. Any unknown USTs that are encountered during the course of demolition will also be removed during implementation of the IRM Work Plan. The UST(s) will be decommissioned in accordance with applicable NYSDEC UST closure requirements. The tank(s) will be decommissioned and removed following the applicable NYSDEC petroleum storage tank closure (PBS) regulations, including registration. Any impacted soil encountered surrounding the tank(s) will be excavated, segregated on polyethylene sheeting onsite, and sampled for offsite disposal.

5.4 Confirmation Soil Sampling

In accordance with DER-10, following UST removal, confirmation soil samples will be collected from the bottom and sidewalls of the excavation to confirm the soil conditions. Bottom of excavation samples will be collected at a frequency equal to the total length of the tank divided by five, rounded up to the nearest whole number. The outermost bottom samples will be collected at least 2.5 feet from each respective end of the tank. Sidewall excavation samples will be collected at a frequency of one for every 30 linear feet (LF) of sidewall (minimum one sample per sidewall of excavation). At a minimum, five confirmation soil samples will be collected from each UST excavation: one bottom sample, and four sidewall samples (one from each sidewall of the excavation). Confirmation soil samples collected from the tank excavation will be analyzed for target compound list (TCL) VOCs and TCL SVOCs.

5.4.1 Quality Assurance / Quality Control (QA/QC)

A Quality Assurance Project Plan (QAPP) detailing the frequency of sample collection, analytical methods and the quality standards that must be achieved by the analytical laboratory is included as Appendix C.

The QAPP includes provisions for trip blanks, field blanks, duplicates, matrix spike and matrix spike duplicate (MS/MSD) samples. The QAPP also describes field sampling procedures.

5.4.2 Data Usability Summary Report (DUSR)

A qualified data validator will prepare a Data Usability Summary Report (DUSR). The DUSR will be prepared according to the guidelines contained in Appendix 2B of DER-10.

5.4.3 Reporting of Confirmation Soil Sampling Data in IRMCCR

The IRMCCR will provide a tabular and map summary of all UST confirmation sample results. Remediation of soil will be addressed under a RAWP.

6.0 REPORTING

This section outlines the reporting requirements for the Site. All daily and monthly reports will be included in the FER. Job-site record keeping for all remedial work will be appropriately documented. These records will be maintained on-Site at all times during the project and be available for inspection by NYSDEC and NYSDOH staff.

6.1 Daily Reports

Daily reports will be submitted to NYSDEC and NYSDOH Project Managers by the end of each day following the reporting period and will include:

- An update of progress made during each day;
- Locations of work being performed;
- A summary of any and all complaints with relevant details (names, phone numbers);
- Photographs representative of Site conditions and work performed each day;
- A summary of CAMP findings, including excursions; and,
- An explanation of notable Site conditions.

Daily reporting and CAMP will be conducted during soil disturbance activities (removal of caps and foundations). Daily reporting will also be conducted during fuel removal activities.

Daily reports are not intended to be the mode of communication for notification to the NYSDEC of emergencies (accident, spill, etc.), requests for changes to the Remedial Action Plan or other sensitive or time critical information. However, such conditions must also be included in the daily reports. Emergency conditions and changes to the Remedial Action Plan will be addressed directly to NYSDEC Project Manager via personal communication.

Daily reports will include a description of daily activities keyed to a map for the Site that identifies work areas. These reports will include a summary of air sampling results, odor and dust problems and corrective actions, and any complaints received from the public. All complaints received will immediately be reported to NYSDEC and NYSDOH.

The NYSDEC assigned project number will appear on all reports.

6.2 Monthly Reports

Monthly reports will be submitted to NYSDEC and NYSDOH Project Managers by the 10th day of the following month and will include:

- Activities relative to the Site during the previous reporting period and those anticipated for the next reporting period, including a quantitative presentation of work performed (i.e., material exported and imported, etc.);
- Description of approved activity modifications, including changes of work scope and/or schedule;
- Sampling results received following internal data review and validation, as applicable; and,

- An update of the remedial schedule including the percentage of project completion, unresolved delays encountered or anticipated that may affect the future schedule, and efforts made to mitigate such delays.

6.3 Interim Remedial Measures Construction Completion Report

An Interim Remedial Measures Construction Completion Report (IRMCCR) will be submitted to NYSDEC after completion of the IRM, and will include the following documentation of the IRM:

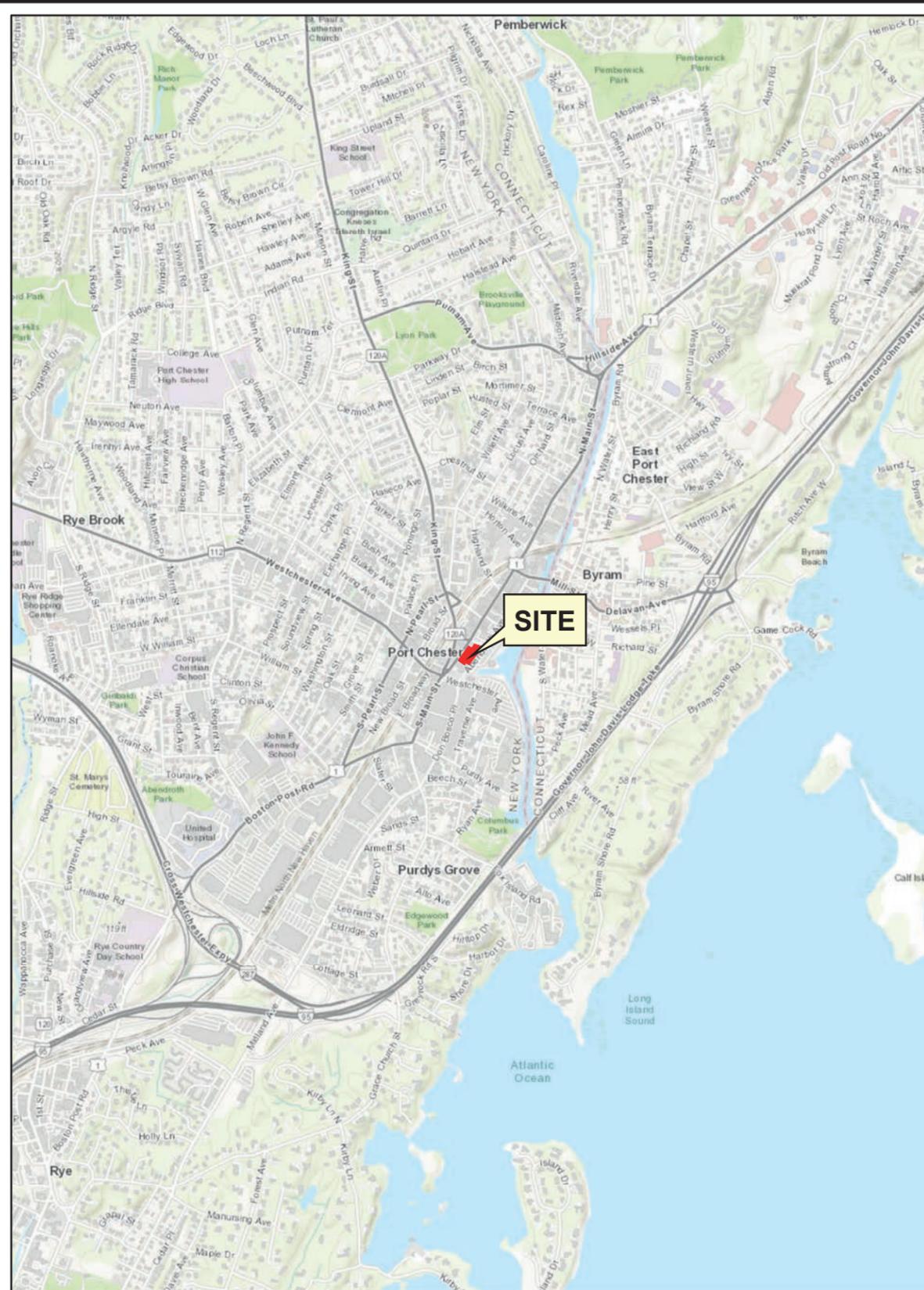
1. Certification by the RE that the interim remedial measures conformed to the IRM Work Plan;
2. Certification by the RE that dust, odor, and vapor control measures were implemented during invasive work and conformed with the IRM Work Plan;
3. Certification by the RE that any remedial waste was transported and disposed in accordance with the IRM Work Plan;
4. Certification by the RE that the source approval and sampling of imported acceptable fill was completed in a manner consistent with the methodology of the IRM Work Plan, if applicable;
5. Summary of the remedy and all remedial actions completed;
6. Description of any problems encountered and their resolutions;
7. Description of the deviations from the approved IRM Work Plan;
8. Listing of waste streams, quantity of materials disposed, and where they were disposed;
9. List of the remediation standards applied to the remedial actions;
10. List of all applicable local, regional, and national governmental permits, certificates, or other approvals required for the remedial and development work;
11. Tables and figures containing all pre- and post-remedial data, including volumes of soil removed, if applicable;
12. Description of source and quality of fill, if applicable;
13. Air quality and dust monitoring data, including any supporting documentation on the decisions made based on the data;
14. Copies of all the submitted periodic reports; and
15. Copies of all manifests of off-site transport of waste material, if applicable.

All documents and reports submitted to the NYSDEC will be in both hard copy and in digital format on CD. These digital documents shall be in PDF form and, where appropriate, supplemented by photos and Microsoft Excel files. Laboratory analytical data will be submitted in an electronic data deliverable (EDD) format that complies with the NYSDEC's electronic data warehouse standards.

6.4 Remedial Action Work Plan

A RAWP will be submitted to NYSDEC and NYSDOH. The RAWP will include a summary of the IRM, an alternatives analysis and description of a final remedy for the Site. Documentation of the IRM activities will be also be included in the FER that will be completed after the implementation of the RAWP.

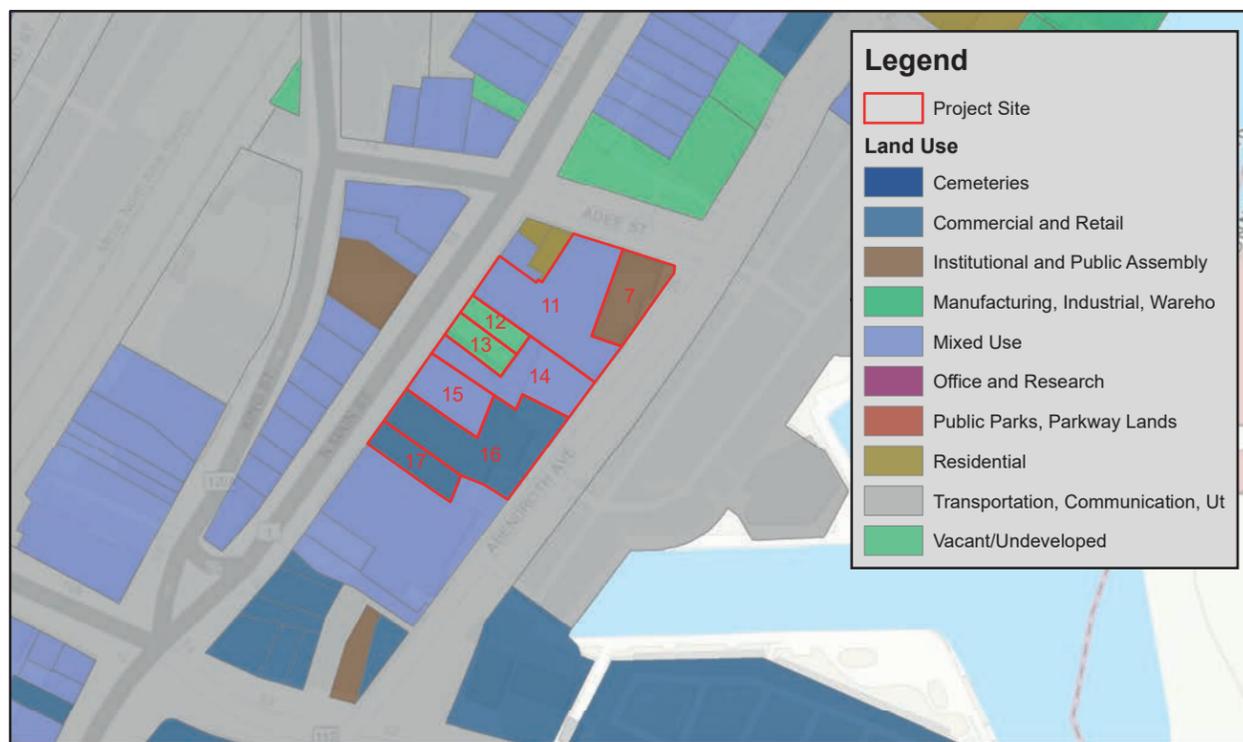
Figures



Site Location



January 19, 2022
 The parcel data was provided by local municipalities. This map is generated as a public service to Westchester County residents for general information and planning purposes only, and should not be relied upon as a sole informational source. The County of Westchester hereby disclaims any liability from the use of this GIS mapping system by any person or entity. Tax parcel boundaries represent approximate property line location and should NOT be interpreted as or used in lieu of a survey or property boundary description. Property descriptions must be obtained from surveys or deeds. For more information please contact local municipality assessor's office.
 1:500
 Westchester County GIS
 http://giswww.westchester.gov
 Michael Office Building
 148 Marine Avenue, Room 214
 White Plains, New York 10601



Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
 NYC Department of City Planning, Information Technology Division

Westchester County Dept. of Planning
 Parcel Based Land Use



Site
**27-45 North Main Street and
 28 Adee Street**
Port Chester, New York
**Section 142.31, Block 1,
 Lots 7 & 11-17**

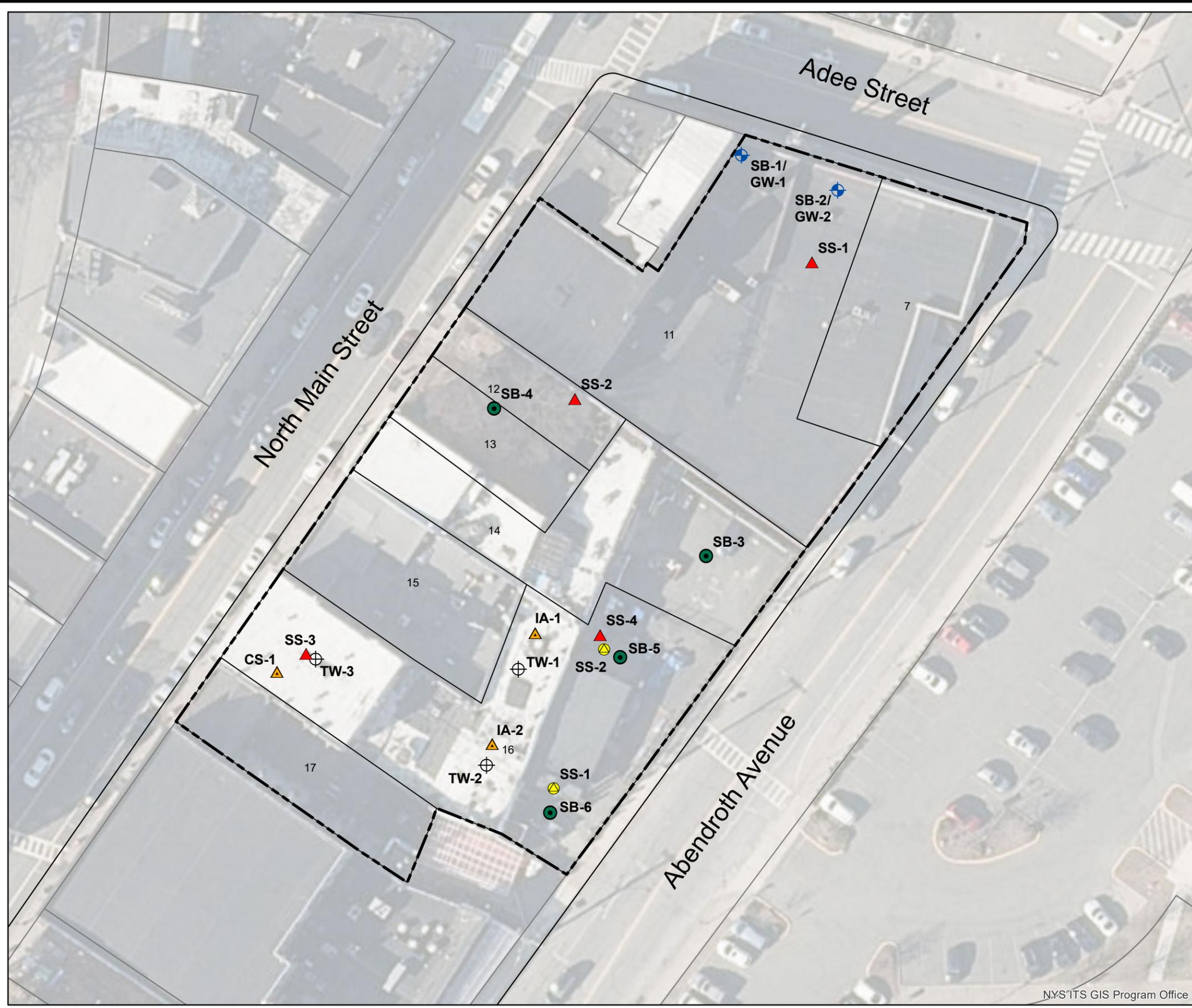
TENEN ENVIRONMENTAL
 Tenen Environmental, LLC
 121 West 27th Street
 Suite 702
 New York, NY 10001
 O: (646) 606-2332
 F: (646) 606-2379

| | |
|------------|--------------|
| Drawn By | LM |
| Checked By | SB |
| Date | January 2022 |
| Scale | As Noted |

Site Location Map
Figure 1

Drawing Title

Drawing No

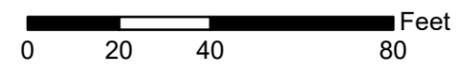


Legend

- LDDESI Soil Sample Location, Tenen 2022
- LDDESI Soil Groundwater Sample Location, Tenen 2022
- LDDESI Soil Vapor Sample Location, Tenen 2022
- Air and Groundwater Survey Groundwater Sample Location ACT 2016
- Air and Groundwater Survey Indoor Air Sample Location, ACT 2016
- Tier II Soil Vapor Encroachment Screen Soil Vapor Sample Location, ACT 2016
- Site Boundary

*LDDESI=Limited Due Diligence Environmental Site Investigation

**ACT=Advanced Cleanup Technologies, Inc.



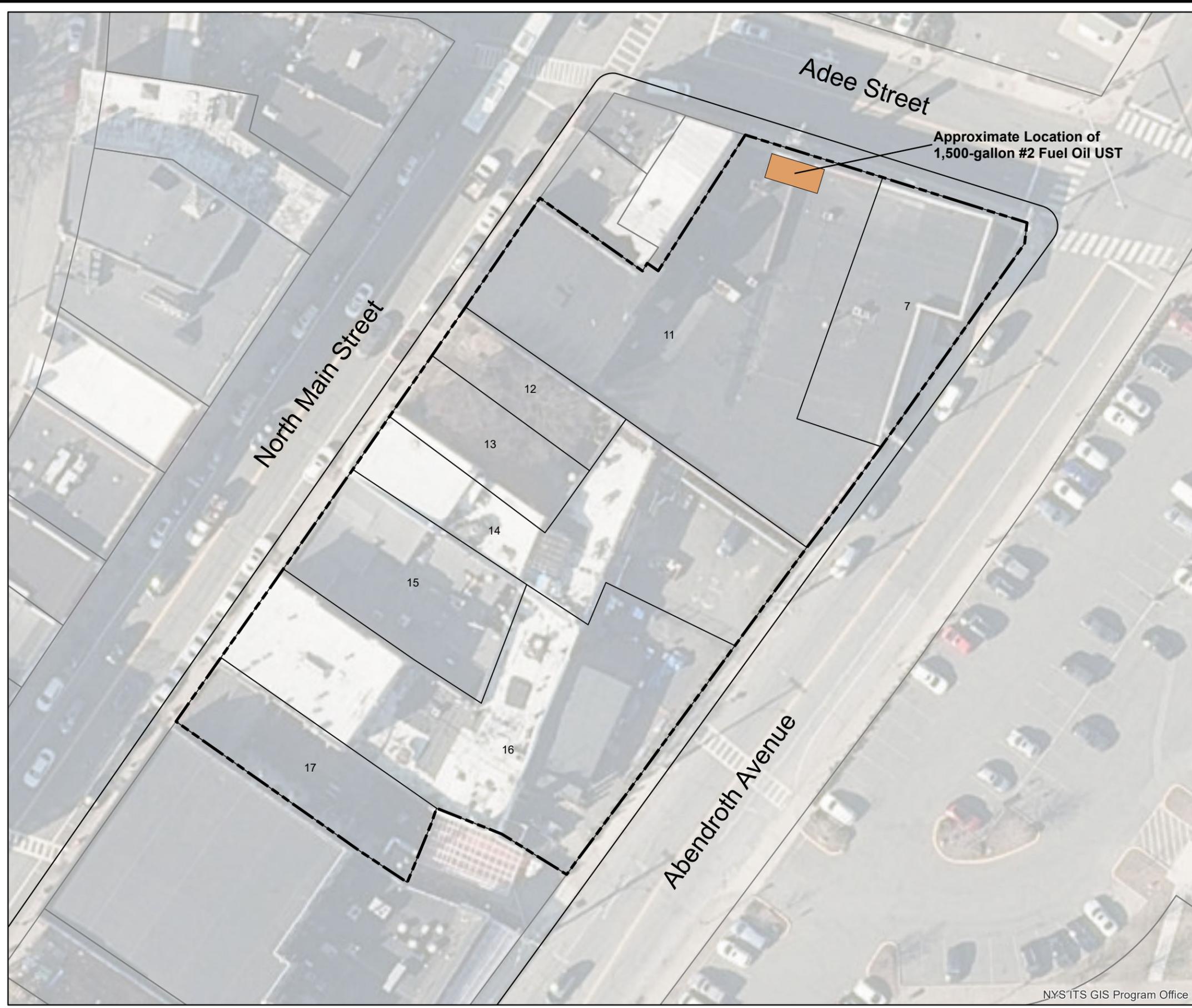
Site
**27-45 North Main Street and
 28 Adee Street**
 Port Chester, New York
 Section 142.31, Block 1,
 Lots 7 & 11-17

TENEN ENVIRONMENTAL
 Tenen Environmental, LLC
 121 West 27th Street
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 O: (646) 606-2332
 F: (646) 606-2379

| | |
|------------|---------------|
| Drawn By | LM |
| Checked By | AP |
| Date | November 2022 |
| Scale | As Noted |

Drawing Title
**Site Plan and
 Previous Sample Locations**

Drawing No
Figure 2



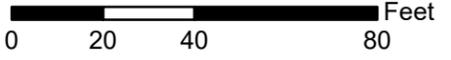
Westchester County GIS

NYS ITS GIS Program Office



Legend

- Approximate Location of 1,500-gallon #2 Fuel Oil UST
- Site Boundary



**27-45 North Main Street and
 28 Adee Street**
 Port Chester, New York
 Section 142.31, Block 1,
 Lots 7 & 11-17



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 121 West 27th Street
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 O: (646) 606-2332
 F: (646) 606-2379

| | |
|------------|---------------|
| Drawn By | LM |
| Checked By | AP |
| Date | November 2022 |
| Scale | As Noted |

Drawing Title
**Location of
 Underground Storage Tank**

Drawing No
Figure 3

Site

Drawing Title

Drawing No

Tables

Table 1. Project Organization and Emergency Contacts
27-45 North Main Street - Port Chester, NY
BCP #TBD

| Tenen Staff | Title | Role |
|---------------------|--|--|
| Alana Carroll, PG | Project Manager and Qualified Environmental Professional | Responsible for overall coordination and management of the project |
| Matthew Carroll, PE | Project Professional Engineer | Responsible for work plan, report and EC/IC certifications |
| Mohamed Ahmed, PG | Quality Assurance Officer | Responsible for quality assurance of sampling procedures and laboratory data |
| Claire Zaccheo | Project Engineer | Responsible for the day-to-day field monitoring and sampling activities, including dust monitoring, PID monitoring, test pit installation, and soil sampling |

| Name | Organization | Phone Number |
|-------------------------------|---|---------------------|
| Matthew Carroll, PE | Tenen Environmental, LLC | (646) 606-2332 |
| Alana Carroll, PG | Tenen Environmental, LLC | (646) 606-2332 |
| Mallory Warner, The Applicant | Abendroth Green LLC | (212) 710-6029 |
| NYSDEC Project Manager (TBD) | New York State Department of Environmental Conservation | TBD |
| NYSDOH Project Manager (TBD) | New York State Department of Health | TBD |

**Table 2. Interim Remedial Measures Schedule
 27-45 North Main Street - Port Chester, NY
 Interim Remedial Measures Work Plan
 BCP #TBD**

| Milestone | Weeks from IRM Approval | Duration (weeks) |
|--|-------------------------------|---------------------|
| Approval of IRMWP | -- | 0 |
| 30-Day Public Comment Period | 0 | 4 |
| Fact Sheet Announcing Start of IRM | 4 | 1 |
| Mobilization | 8 | 1 |
| Interim Remedial Measures (Demolition, Abatement of ACM, 1,500-gallon UST Removal and Confirmation Soil Sample Collection) | 12 | 12 |

Appendix A

Health and Safety Plan (HASP)

Health and Safety Plan
for
27-45 North Main Street
Interim Remedial Measures Work Plan

27-45 North Main Street and 28 Adee Street
Port Chester, New York 10573
BCP Site # TBD

Submitted to:
New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau B
625 Broadway, 12th Floor
Albany, NY 12233-7016

Prepared for:
Abendroth Green LLC
The Hudson Companies Incorporated
826 Broadway, 11th Floor
New York, NY 10003

Prepared by:



121 West 27th Street, Suite 702
New York, NY 10001

December 2022

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Table 1 – Emergency Contact Information (page 21)

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Appendix B – Injury Reporting Form (OSHA Form 300)

Appendix C – Material Safety Data Sheets

1.0 INTRODUCTION

This Health and Safety Plan (HASP) has been prepared in conformance with the Occupational Safety and Health Administration (OSHA) standards and guidance that govern site investigation activities, other applicable regulations, and Tenen Environmental LLC (Tenen) health and safety policies and procedures. The purpose of this HASP is the protection of Tenen field personnel and others during the implementation of an Interim Remedial Measures (IRM) Work Plan.

The Site consists of an approximately 48,101-square foot parcel located at 27-45 North Main Street and 28 Adee Street in the Village of Port Chester, New York. The Site is identified by Westchester County as Section 142.31, Tax Block 1, Lots 7, 11, 12, 13, 14, 15, 16 and 17. The Site is an irregularly shaped parcel with approximately 250 feet of frontage along North Main Street, approximately 300 feet of frontage along Abendroth Avenue, and approximately 100 feet of frontage along Adee Street. The Site location is shown on Figure 1. A map of the current site layout is shown on Figure 2.

The Site is zoned C2, denoting a commercial district of Main Street Business. The Site lot is currently occupied by one- to three-story commercial or mixed-use residential and commercial buildings. Exterior portions of the Site are largely capped with asphalt. The remainder of the exterior portions of the Site are utilized for landscaping. Currently, the entirety of the Site is vacant. The most recent commercial businesses to operate at the Site include a realtor, restaurant, hardware store, ice cream shop, a jeweler, and non-profit organizations.

The ground level of the building on Lot 11 contains an active 1,500-gallon UST that contains #2 fuel oil. The UST is located in a subterranean vault. Lot 11 is identified on the Petroleum Bulk Storage (PBS) database as PBS #3-801942. The UST on Lot 11 is associated with an open spill (Spill No. 1708684) which was reported on December 15, 2017 due to equipment failure. The spill record indicates the UST was repaired and retested. No further information was provided and the spill case remains open.

1.1 Scope of HASP

This HASP includes safety procedures to be used by Tenen staff during the following activities:

- Implementation of the Interim Remedial Measures Work Plan (IRMWP) and remedial oversight.

Subcontractors will ensure that performance of the work is in compliance with this HASP and applicable laws and regulations.

2.0 PROJECT SAFETY AUTHORITY

The following personnel are responsible for project health and safety under this HASP.

- Project Manager, Alana Carroll
- Health and Safety Officer (HSO), Matthew Carroll

In addition, each individual working at the Site will be responsible for compliance with this HASP and general safe working practices. All Site workers will have the authority to stop work if a potentially hazardous situation or event is observed.

2.1 Designated Personnel

The Project Manager is responsible for the overall operation of the project, including compliance with the HASP and general safe work practices. The Project Manager may also act as the Health and Safety Officer (HSO) for this project.

Tenen will appoint one of its on-site personnel as the on-site HSO. This individual will be responsible for the implementation of the HASP. The HSO will have a 4-year college degree in occupational safety or a related science/engineering field, and at least two (2) years of experience in implementation of air monitoring and hazardous materials sampling programs. The HSO will have completed a 40-hour training course that meets OSHA requirements of 29 CFR Part 1910, Occupational Safety and Health Standards.

The HSO will be present on-site during all field operations involving drilling or other subsurface disturbance, and will be responsible for all health and safety activities and the delegation of duties to the field crew. The HSO has stop-work authorization, which he/she will execute on his/her determination of an imminent safety hazard, emergency situation, or other potentially dangerous situation. If the HSO must be absent from the field, a replacement who is familiar with the Construction Health and Safety Plan, air monitoring and personnel protective equipment (PPE) will be designated.

3.0 HAZARD ASSESSMENT AND CONTROL MEASURES

Prior to 1890, an inlet of the Byram River extended north through the central portion of the Site. By 1890, a small area of the inlet onsite had been filled, and by 1895 the entire Site was filled. By 1895, the Site area along North Main Street was developed with multiple small buildings and stores. While individual store occupants changed over the years, retail use of these buildings is consistent through 2006, the date of the most recent available Sanborn map. The Site was historically utilized for commercial and residential purposes, with non-residential uses of the Site including dry cleaning, a planing/lumber mill, a roller rink, printers, sign painting, lime and cement storage, plumbing, and a metal works. Prior uses that appear to have led to site contamination include the filling of the Site with historic fill material and the use of chlorinated solvents.

A summary of previous environmental investigations conducted at the Site or a portion of the Site between 2016 and 2022 is provided below.

Site History

- Prior to 1890, an inlet of the Byram River extended north through the central portion of the Site. By 1895, the entirety of the inlet spanning the Site had been filled. By 1895, the Site area along North Main Street was developed with multiple small buildings and stores.
- The Site was historically utilized for commercial and residential purposes. Historic non-residential uses include: dry cleaning, a planing/lumber mill, a roller rink, printers, sign painting, lime and cement storage, plumbing, and a metal works.
- The Site has two closed Spill records and one open Spill record associated with it:
 - Spill No. 1308618 was reported on November 25, 2013 for Lot 11. The spill record indicates the spill was caused by an equipment failure from the boiler which released oil into the subterranean vault containing the known 1,500-gallon UST. The record noted the UST could not be located and is not in compliance with PBS regulations. There was no indication that oil discharged into the Byram River to the east. A 2013 NYSDEC memo noted that 2,000 gallons of oil and water were vacuumed from the vault and cleanup was completed. The spill case was closed on November 26, 2013.
 - Spill No. 1602940 was reported on June 24, 2016 for Lot 16. The spill record indicates samples were collected after four aboveground storage tanks (ASTs) were removed from the property. Slightly elevated concentrations of semivolatile organic compounds (SVOCs) were detected in one of the soil samples. No additional evidence of a leak or contamination was observed. A 2016 NYSDEC memo noted that no further action was required and the spill case was closed on July 12, 2016.
 - Spill No. 1708684 was reported on December 15, 2017 for Lot 11. The spill record indicates the spill was caused by equipment failure. The record indicates the tank was repaired and retested. No further information was provided and the spill case remains open.
- Previous Phase I Environmental Site Assessment (Phase I ESAs) conducted at the Site or a portion of the Site identified the following Recognized Environmental Conditions (RECs) in connection with the property:
 - The historical use of the Site for dry cleaning, printing, and metalworking;

- The presence of historical fill material at the Site;
- Open petroleum spill (Spill No. 1708684) associated with the Site, and the historic and current use of the Site for underground oil storage; and,
- Historical use of the east adjoining property for coal storage and a west adjoining property for printing.

Geology/Hydrogeology

- The Site is located at an average elevation of approximately twelve feet above mean sea level (ft-msl) and slopes gently to the southeast.
- The overburden at the Site is composed predominantly of a shallow fill layer containing fine- to medium-grained sand and silt, brick and rock fragments, wood chips, and cobbles underlain by native till material consisting of fine- to coarse-grained sand, silt, and clay. The fill layer ranges in thickness from two to ten feet.
- Groundwater was encountered at approximately nine feet below grade (ft-bg) and generally flows to the east-southeast, towards the Byram River.

Soil

- The results of the soil sampling performed as part of Tenen's 2022 LDDESI indicated one volatile organic compound (VOC), acetone, was detected slightly in exceedance of its Unrestricted Use Soil Cleanup Objective (SCO, UUSCO) in two soil samples. Acetone is a common laboratory artifact. No other VOCs were detected in exceedance of UUSCOs or Restricted-Residential Use SCOs (RRSCOs).
- A variety of SVOCs, specifically polyaromatic hydrocarbons (PAHs), were detected in exceedance of Unrestricted Use SCOs in two soil samples, including benzo(a)anthracene [max. 3 parts per million (ppm) with a UUSCO of 1 ppm], benzo(a)pyrene (max. 2 ppm with a UUSCO of 1 ppm), benzo(b)fluoranthene (max. 2.1 ppm with a UUSCO of 1 ppm), benzo(k)fluoranthene (max. 2.2 ppm with a UUSCO of 0.8 ppm), chrysene (max. 2.6 ppm with a UUSCO of 1 ppm), dibenzo(a,h)anthracene (max. 0.56 ppm with a UUSCO of 0.33 ppm), and indeno(1,2,3-cd)pyrene (max. 1.5 ppm with a UUSCO of 0.5 ppm). Of these, the UUSCO is the same as the RRSCO for benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene, and any exceedances of UUSCOs for these analytes also exceeded RRSCOs. The highest concentrations of SVOCs were detected in SB-1, collected from the northern portion of Lot 11, upgradient of the 1,500-gallon UST. No other SVOCs were detected in exceedance of UUSCOs or RRSCOs.
- One pesticide, dieldrin, was detected slightly in exceedance of its UUSCO, but below its RRSCO, in one soil sample. Dieldrin was detected at a concentration of 0.01 ppm with an UUSCO of 0.005 ppm.
- The metals copper, lead, mercury, and nickel were each detected in one or more soil samples in exceedance of Unrestricted Use SCOs. Copper was detected in one sample at a concentration of 61.1 ppm with a UUSCO of 50 ppm; lead was detected in two samples at a max. concentration of 117 ppm with a UUSCO of 63 ppm; mercury was detected in all three samples at a max. concentration of 2.8 ppm with a UUSCO of 0.18 ppm; and, nickel was detected in one soil sample at a concentration of 34.4 ppm with a UUSCO of 30 ppm. Of these, mercury was also detected in exceedance of its RRSCO of 0.81 ppm in one soil sample collected from SB-6 in the southeastern portion of Lot 16.

- Polychlorinated biphenyls (PCBs) were not detected in exceedance of UUSCOs or RRSCO in any soil samples.

Groundwater

- The results of the groundwater sampling performed onsite as part of the 2016 Indoor Air and Groundwater Survey performed by Advanced Cleanup Technologies, Inc. (ACT) and Tenen's 2022 LDDESI indicated VOCs were not detected in exceedance of the NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards (AWQS) and Guidance Values (Class GA Standards) in any groundwater samples.
- The results of the groundwater sampling performed as part of Tenen's 2022 LDDESI indicated a variety of SVOCs, specifically PAHs, were detected in one groundwater monitoring well, GW-1, (located upgradient of the 1,500 gallon UST on Lot 11) slightly in exceedance of Class GA Standards. Benzo(a)anthracene was detected at a concentration of 0.04 parts per billion (ppb), benzo(a)pyrene was detected at a concentration of 0.04 ppb, benzo(b)fluoranthene was detected at a concentration of 0.06 ppb, benzo(k)fluoranthene was detected at a concentration of 0.02 ppb, chrysene was detected at a concentration of 0.01 ppb, and, indeno(1,2,3-cd)pyrene was detected at a concentration of 0.03 ppb. The aforementioned analytes all have a Class GA Standard of 0.002 ppb, with the exception of benzo(a)pyrene, which has a Class GA Standard of 0 ppb. No other SVOCs were detected in exceedance of Class GA Standards in any groundwater samples.

Soil Vapor

- The results of the soil vapor sampling performed as part of ACT's 2016 Tier II Vapor Encroachment (VE) Screen indicated elevated concentrations of the chlorinated solvent tetrachloroethene (PCE) in one soil vapor sample collected from the southeastern portion of the exterior of Lot 16. PCE was detected at a concentration of 250 micrograms per cubic meter (ug/m³). No other cVOCs included on the NYSDOH Soil Vapor Intrusion Decision Matrices were detected in any soil vapor samples.
- The results of the soil vapor sampling performed as part of Tenen's 2022 LDDESI indicated concentrations of PCE were detected in all four soil vapor samples at concentrations ranging from 1.8 ug/m³ to 80.7 ug/m³. In addition, trichloroethene (TCE) and cis-1,2-dichloroethene (cis-1,2-DCE), breakdown products of PCE, were both detected in one soil vapor sample. TCE was detected at a concentration of 1.98 ug/m³ and cis-1,2-DCE was detected at a concentration of 0.22 ug/m³. Carbon tetrachloride was detected in three of four soil vapor samples at a maximum concentration of 0.55 ug/m³. No other cVOCs included on the NYSDOH Soil Vapor Intrusion Decision Matrices were detected in any soil vapor samples.
- Low levels of petroleum-related VOCs were detected in soil vapor across the Site, including benzene, toluene, ethylbenzene, xylenes, and 1,2,4-trimethylbenzene.

Indoor Air

- The results of the indoor air sampling conducted on Lot 16 as part of ACT's 2016 Air and Groundwater Survey indicated concentrations of cVOCs, including PCE, TCE, carbon tetrachloride, and methylene chloride were detected in all three indoor air samples. In addition, the cVOCs cis-1,2-DCE, vinyl chloride, 1,1,1-trichloroethane

(1,1,1-TCA), and 1,1-dichloroethene (1,1-DCE) were each detected in one soil vapor sample. Of these, TCE was detected in exceedance of its NYSDOH Air Guideline Value (AGV) of 2 ug/m³ in one indoor air sample collected from the southeastern portion of Lot 16. No other cVOCs were detected in exceedance of their respective NYSDOH AGVs. PCE was detected at a max. concentration of 12 ug/m³; TCE was detected at a max. concentration of 6.9 ug/m³; carbon tetrachloride was detected at a max. concentration of 7.5 ug/m³; methylene chloride was detected at a max. concentration of 14 ug/m³; cis-1,2-DCE was detected at a concentration of 5.9 ug/m³; vinyl chloride was detected at a concentration of 4.6 ug/m³; 1,1,1-TCA was detected at a concentration of 6.7 ug/m³; and, 1,1-DCE was detected at a concentration of 5.4 ug/m³.

- Comparison of the concentrations of cVOCs detected in indoor air to the applicable NYSDOH Soil Vapor Intrusion Matrices indicates mitigation would likely be required for PCE at one location (CS-1, collected from the crawl space in the western portion of the building on Lot 16) and would likely be required for TCE, cis-1,2-DCE, vinyl chloride, carbon tetrachloride, and 1,1-DCE at one location (IA-2, collected from the southeastern portion of the building on Lot 16).

Offsite Investigation

- In October 2022, Tenen performed a follow-up offsite investigation to assess potential offsite migration of the contamination identified in the 2022 LDDESI. Soil borings and monitoring wells installed as part of the offsite investigation were situated downgradient of the open petroleum spill, and the soil vapor sample points were biased toward the location of the former dry cleaner (Lot 16).
- The results of the offsite investigation indicated VOCs were not detected in any offsite soil or groundwater samples. Several SVOCs, consistent with the presence of historic fill, were detected in exceedance of UUSCOs and RRSCOs.
- The results of the offsite investigation indicated that cVOCs included on the NYSDOH Soil Vapor Intrusion Matrices, including PCE, TCE, cis-1,2-DCE, vinyl chloride, 1,1,1-TCA, carbon tetrachloride, 1,1-DCE, and methylene chloride, were not detected in any offsite soil vapor samples.
- Based upon the results of the offsite investigation, there is a low likelihood that previously detected petroleum and cVOC impacts associated with Site operations have migrated offsite.

3.1 Human Exposure Pathways

The media of concern at the Site include potentially-impacted soil, groundwater and soil vapor. Potential exposure pathways include dermal contact, incidental ingestion and inhalation of vapors. The risk of dermal contact and incidental ingestion will be minimized through general safe work practices, a personal hygiene program and the use of PPE. The risk of inhalation will be minimized through the use of an air monitoring program for VOCs and particulates.

3.2 Chemical Hazards

Based on historic uses, the following contaminants of concern may be present at the Site:

Petroleum-Related VOCs

- Benzene
- Ethylbenzene
- Toluene
- Xylenes
- MTBE

Chlorinated Solvents

- Tetrachloroethene (PCE)
- Trichloroethene (TCE)
- Cis-1,2-Dichloroethene (cis-1,2-DCE)

SVOCs

- PAHs

Metals

- Copper
- Lead
- Mercury

Material Safety Data Sheets (MSDSs) for each contaminant of concern are included in Appendix C. All personnel are required to review the MSDSs included in this HASP.

3.3 Physical Hazards

The physical hazards associated with the field activities likely present a greater risk of injury than the chemical constituents at the Site. Activities within the scope of this project shall comply with New York State and Federal OSHA construction safety standards.

Head Trauma

To minimize the potential for head injuries, field personnel will be required to wear National Institutes of Occupational Safety and Health (NIOSH)-approved hard hats during field activities. Hats must be worn properly and not altered in any way that would decrease the degree of protection provided.

Foot Trauma

To avoid foot injuries, field personnel will be required to wear steel-toed safety shoes while field activities are being performed. To afford maximum protection, all safety shoes must meet American National Standards Institute (ANSI) standards.

Eye Trauma

Field personnel will be required to wear eye protection (safety glasses with side shields) while field activities are being performed to prevent eye injuries caused by contact with chemical or physical agents.

Noise Exposure

Field personnel will be required to wear hearing protection (ear plugs or muffs) in high noise areas (noise from heavy equipment) while field activities are being performed.

Buried Utilities and Overhead Power Lines

Boring locations will be cleared by an underground utility locator service. In addition, prior to intrusive activities, the drilling subcontractor will contact the One Call Center to arrange for a utility mark-out, in accordance with New York State requirements. Protection from overhead power lines will be accomplished by maintaining safe distances of at least 15 feet at all times.

Thermal Stress

The effects of ambient temperature can cause physical discomfort, personal injury, and increase the probability of accidents. In addition, heat stress due to lack of body ventilation caused by protective clothing is an important consideration. Heat-related illnesses commonly consist of heat stroke and heat exhaustion.

The symptoms of heat stroke include: sudden onset; change in behavior; confusion; dry, hot and flushed skin; dilated pupils; fast pulse rate; body temperature reaching 105° or more; and/or, deep breathing later followed by shallow breathing.

The symptoms of heat exhaustion include: weak pulse; general weakness and fatigue; rapid shallow breathing; cold, pale and clammy skin; nausea or headache; profuse perspiration; unconsciousness; and/or, appearance of having fainted.

Heat-stress monitoring will be conducted if air temperatures exceed 70 degrees Fahrenheit. The initial work period will be set at 2 hours. Each worker will check his/her pulse at the wrist for 30 seconds early in each rest period. If the pulse rate exceeds 110 beats per minute, the next work period will be shortened by one-third.

One or more of the following precautions will reduce the risk of heat stress on the Site:

- Provide plenty of liquids to replace lost body fluids; water, electrolytic drinks, or both will be made available to minimize the risk of dehydration and heat stress
- Establish a work schedule that will provide appropriate rest periods
- Establish work regimens consistent with the American Conference of Governmental Industrial Hygienists (ACGIH) guidelines
- Provide adequate employee training on the causes of heat stress and preventive measures

In the highly unlikely event of extreme low temperatures, reasonable precautions will be made to avoid risks associated with low temperature exposure.

Traffic

Field activities will occur near public roadways. As a result, vehicular traffic will be a potential hazard during these activities and control of these areas will be established using barricades or traffic cones. Additional staff will be assigned, as warranted, for the sole purpose of coordinating traffic. Personnel will also be required to wear high-visibility traffic vests while working in the vicinity of the public roadways and local requirements for lane closure will be observed as needed. All work in public rights-of-way will be coordinated with local authorities and will adhere to their requirements for working in traffic zones.

Hazardous Weather Conditions

All Site workers will be made aware of hazardous weather conditions, specifically including extreme heat, and will be requested to take the precautions described herein to avoid adverse health risks. All workers are encouraged to take reasonable, common sense precautions to avoid potential injury associated with possible rain or high wind, sleet, snow or freezing.

Slip, Trip and Fall

Areas at the Site may be slippery from mud or water. Care should be taken by all Site workers to avoid slip, trip, and fall hazards. Workers shall not enter areas that do not have adequate lighting. Additional portable lighting will be provided at the discretion of the HSO.

Biological Hazards

Drugs and alcohol are prohibited from the Site. Any on-site personnel violating this requirement will be immediately expelled from the site.

Any worker or oversight personnel with a medical condition that may require attention must inform the HSO of such condition. The HSO will describe appropriate measures to be taken if the individual should become symptomatic.

Due to the Site location in an urban area, it is highly unlikely that poisonous snakes, spiders, plants and insects will be encountered. However, other animals (dogs, cats, etc.) may be encountered and care should be taken to avoid contact.

4.0 COVID-19 HEALTH AND SAFETY

The following requirements apply to all Tenen employees working on project sites for the duration of the COVID-19 pandemic. These guidelines are based on information provided by the Centers for Disease Control, the Occupational Safety and Health Administration and the New York State “New York Forward” Covid-19 management plans. Information regarding the health status of Tenen employees will be kept confidential, with the exception of required notifications to health authorities. The following are guidelines. **As with any potential workplace hazard, employees should report any concerns related to potential Covid-19 exposure to the Project Manager.**

Communication/Reporting:

Employees should not report to work and should notify the Project Manager immediately in the event of the following:

- You are exhibiting flu-like symptoms (fever, body aches, cough, difficulty breathing). Contact your health care provider and follow their instructions.
- You do not exhibit symptoms but have a sick (i.e., diagnosed with Covid-19 or exhibiting flu-like symptoms) family member at home. Remember that the virus can be spread by asymptomatic individuals.
- You have been exposed to someone who has been diagnosed with Covid-19.

In each of the above cases, inform your Project Manager regarding others who may have been exposed in order to facilitate any necessary notification or contact tracing efforts.

Hygiene

- Wash hands frequently with soap and water for at least 20 seconds or use hand sanitizer with at least 60% alcohol if soap and water are not available. Key times for employees to clean their hands include:
 - Before and after work shifts
 - Before and after work breaks
 - After blowing the nose, coughing, or sneezing
 - After using the restroom
 - Before eating or preparing food
 - After putting on, touching, or removing face coverings
- Avoid touching the eyes, nose, and mouth with unwashed hands.
- Practice good respiratory etiquette, including covering coughs and sneezes.
- To the extent possible, avoid sharing tools and sampling equipment. Shared tools and equipment should be regularly disinfected.

Physical Distancing

- Minimize contact with others, maintaining a distance of at least six feet to the extent possible
- Employees should wear masks over their nose and mouth to prevent spread of the virus; this is especially important when a minimum 6-foot distance cannot be maintained.
- Maintain the 6-foot distance to the extent possible during sampling efforts and pickup and delivery of sampling equipment and containers.
- Keep job site meetings to a minimum and of short duration; limit the number of people involved and maintain social distance.

5.0 AIR MONITORING

The NYSDOH Generic Community Air Monitoring Plan (CAMP), included as Appendix 1A of DER-10, will be implemented during all ground-intrusive sampling activities.

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, particularly if wind direction changes. The monitoring should be performed using equipment appropriate for 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.

1. 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.
2. 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.
3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shut down.
4. All 15-minute readings must be recorded and be available for State (NYSDEC and NYSDOH) 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.

1. 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.
2. 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.
 3. All readings must be recorded and be available for State (NYSDEC and NYSDOH) personnel to review.

6.0 PERSONAL PROTECTIVE EQUIPMENT

The personal protection equipment required for various kinds of site investigation tasks is based on 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response, “General Description and Discussion of the Levels of Protection and Protective Gear” and the Centers for CDC COVID-19 “Guidelines on How to Protect Yourself and Others”.

Tenen field personnel and other site personnel will wear Modified Level D-1 personal protective equipment. During activities such as drilling, well installation, or sampling, where there is a chance of contact with contaminated materials, Modified Level D-2 equipment will be worn. The protection will be upgraded to Level C if warranted by the results of the air monitoring. A six-foot minimum distance between individuals (both workers and non-workers) will be maintained at all times. A description of the personnel protective equipment for Levels D and C is provided below.

Modified Level D-1

Respiratory Protection: Cloth face covering

Protective Clothing: Hard hat, steel-toed shoes, long pants, nitrile gloves

Modified Level D-2

Respiratory Protection: Cloth face covering

Protective Clothing: Hard hat, steel-toed shoes, coveralls/tyvek, nitrile gloves

Level C

Respiratory Protection: Air purifying respirator with organic vapor cartridges and filters.

Protective Clothing: Same as Modified Level D-2

7.0 EXPOSURE MONITORING

7.1 Hazardous Materials

Selective monitoring of workers in the exclusion area may be conducted, as determined by the HSO, if sources of hazardous materials are identified. Personal monitoring may be conducted in the breathing zone at the discretion of the Project Manager or HSO. All monitoring will comply with the CDCs Guidance on Social Distancing.

7.2 COVID-19

For any employee that may have come into contact with a person who has COVID-19, a 14-day quarantine will be imposed for that individual and any employee that individual was in contact with.

8.0 SITE ACCESS

Access to the Site during the investigation will be controlled by the Project Manager or HSO. Unauthorized personnel will not be allowed access to the sampling areas.

9.0 WORK AREAS

During any activities involving drilling or other subsurface disturbance, the work area must be divided into various zones to prevent the spread of contamination, clarify the type of protective equipment needed, and provide an area for decontamination.

The Exclusion Zone is defined as the area where potentially contaminated materials are generated as the result of drilling, sampling, or similar activities. The Contamination Reduction Zone (CRZ) is the area where decontamination procedures take place and is located adjacent to the Exclusion Zone. The Support Zone is the area where support facilities such as vehicles, a field phone, fire extinguisher and/or first aid supplies are located. The emergency staging area (part of the Support Zone) is the area where all Site workers will assemble in the event of an emergency. These zones shall be designated daily, depending on that day's activities. All field personnel will be informed of the location of these zones before work begins.

Control measures such as "Caution" tape and traffic cones will be placed around the perimeter of the work area when work is being done in the areas of concern (i.e., areas with exposed soil) to prevent unnecessary access.

10.0 DECONTAMINATION PROCEDURES

Personnel Decontamination

Personnel decontamination (decon), if deemed necessary by the HSO, will take place in the designated decontamination area delineated for each sampling location. Personnel decontamination will consist of the following steps:

- Soap and potable water wash and potable water rinse of gloves;
- Tyvek removal;
- Glove removal;
- Disposable clothing removal; and
- Field wash of hands and face.

Equipment Decontamination

Sampling equipment, such as split-spoons and bailers, will be decontaminated in accordance with U.S. Environmental Protection Agency methodologies, as described in the work plan.

Disposal of Materials

Purged well water, water used to decontaminate any equipment and well cuttings will be containerized and disposed off-site in accordance with federal, state and local regulations.

11.0 GENERAL SAFE WORK PRACTICES

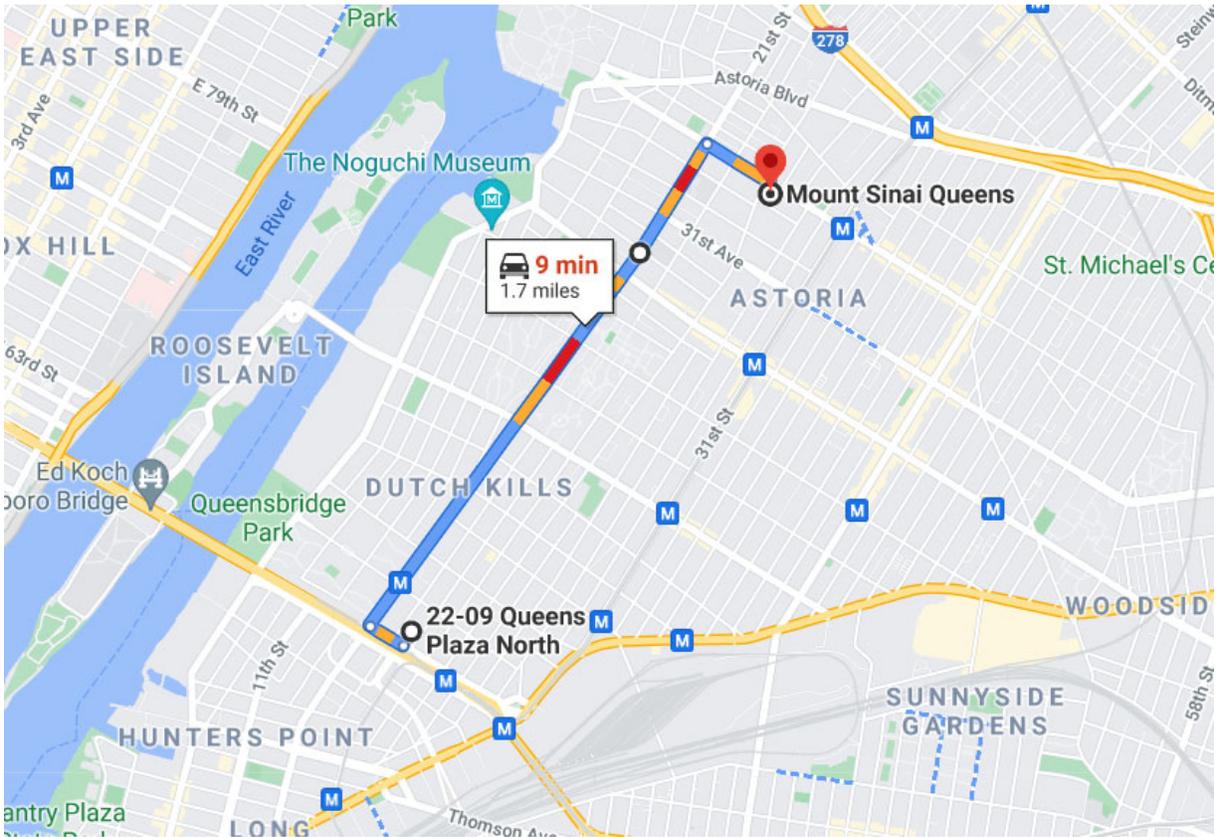
To protect the health and safety of the field personnel, all field personnel will adhere to the guidelines listed below during activities involving subsurface disturbance.

- Eating, drinking, chewing gum or tobacco, and smoking are prohibited, except in designated areas on the site. These areas will be designated by the HSO.
- Workers must wash their hands and face thoroughly on leaving the work area and before eating, drinking, or any other such activity. The workers should shower as soon as possible after leaving the site.
- Removal of potential contamination from PPE and equipment by blowing, shaking or any means that may disperse materials into the air is prohibited.
- Contact with contaminated or suspected surfaces should be avoided.
- The buddy system should always be used; each buddy should watch for signs of fatigue, exposure, and heat stress.
- Personnel will be cautioned to inform each other of symptoms of chemical exposure such as headache, dizziness, nausea, and irritation of the respiratory tract and heat stress.
- No excessive facial hair that interferes with a satisfactory fit of the face-piece of the respirator to the face will be allowed on personnel required to wear respiratory protective equipment.
- On-site personnel will be thoroughly briefed about the anticipated hazards, equipment requirements, safety practices, emergency procedures, and communications methods.

12.0 EMERGENCY PROCEDURES

The field crew will be equipped with emergency equipment, such as a first aid kit and disposable eye washes. In the case of a medical emergency, the HSO will determine the nature of the emergency and will have someone call for an ambulance, if needed. If the nature of the injury is not serious—i.e., the person can be moved without expert emergency medical personnel—onsite personnel should drive injured person to a hospital. **The nearest emergency room is located at the Greenwich Hospital located at 5 Perryridge Road, Greenwich, CT 06830. The phone number is (203) 863-3637.** The route to the hospital is shown and detailed on the next page.

12.1 Route to Hospital



Driving directions to **Greenwich Hospital** from **27-45 North Main Street, Port Chester, New York.**

Driving Directions

1. Head northeast on US-1 North/North Main Street towards Connecticut (2.6 mi).
2. Turn left onto Dearfield Drive (0.3 mi).
3. At the traffic circle, take the first exit onto Lake Avenue (0.1 mi).
4. Take the first left (62 ft). Destination will be on the right.

12.2 Emergency Contacts

There will be an on-site field phone. Emergency and contact telephone numbers are listed below:

Table 1 – Emergency Contacts

| | |
|-----------------------------------|----------------|
| Ambulance | 911 |
| Emergency Room | (718) 918-5000 |
| NYSDEC Spill Hotline | (800) 457-7362 |
| NYSDEC | (518) 402-8013 |
| Project Manager, Matthew Carroll | (917) 510-6767 |
| On-site Personnel, Claire Zaccheo | (917) 744-5421 |

13.0 TRAINING

All personnel performing the field activities described in this HASP will have received the initial safety training required by 29 CFR, 1910.120. Current refresher training status also will be required for all personnel engaged in field activities.

All those who enter the work area while intrusive activities are being performed must recognize and understand the potential hazards to health and safety. All field personnel must attend a training program covering the following areas:

- potential hazards that may be encountered;
- the knowledge and skills necessary for them to perform the work with minimal risk to health and safety;
- the purpose and limitations of safety equipment; and
- protocols to enable field personnel to safely avoid or escape from emergencies.

Each member of the field crew will be instructed in the above objectives before he/she goes onto the site. The HSO will be responsible for conducting the training program.

14.0 MEDICAL SURVEILLANCE

All Tenen and subcontractor personnel performing field work involving drilling or other subsurface disturbance at the site are required to have passed a complete medical surveillance examination in accordance with 29 CFR 1910.120 (f). The medical examination for Tenen employees will, at a minimum, be provided annually and upon termination of hazardous waste site work.

Appendix A

Acknowledgement of HASP

ACKNOWLEDGMENT OF HASP

Below is an affidavit that must be signed by all Tenen Environmental employees who enter the site. A copy of the HASP must be on-site at all times and will be kept by the HSO.

AFFIDAVIT

I have read the Construction Health and Safety Plan (HASP) for the 27-45 North Main Street site in the Village of Port Chester, NY. I agree to conduct all on-site work in accordance with the requirements set forth in this HASP and understand that failure to comply with this HASP could lead to my removal from the site.

Signature: _____
Signature: _____
Signature: _____
Signature: _____
Signature: _____

Date: _____
Date: _____
Date: _____
Date: _____
Date: _____

Appendix B

Injury Reporting Form (OSHA Form 300)

Appendix C

Material Safety Data Sheets (MSDS)

This fact sheet answers the most frequently asked health questions (FAQs) about benzene. For more information, call the CDC Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Benzene is a widely used chemical formed from both natural processes and human activities. Breathing benzene can cause drowsiness, dizziness, and unconsciousness; long-term benzene exposure causes effects on the bone marrow and can cause anemia and leukemia. Benzene has been found in at least 1,000 of the 1,684 National Priority List (NPL) sites identified by the Environmental Protection Agency (EPA).

What is benzene?

Benzene is a colorless liquid with a sweet odor. It evaporates into the air very quickly and dissolves slightly in water. It is highly flammable and is formed from both natural processes and human activities.

Benzene is widely used in the United States; it ranks in the top 20 chemicals for production volume. Some industries use benzene to make other chemicals which are used to make plastics, resins, and nylon and other synthetic fibers. Benzene is also used to make some types of rubbers, lubricants, dyes, detergents, drugs, and pesticides. Natural sources of benzene include emissions from volcanoes and forest fires. Benzene is also a natural part of crude oil, gasoline, and cigarette smoke.

What happens to benzene when it enters the environment?

- Industrial processes are the main source of benzene in the environment.
- Benzene can pass into the air from water and soil.
- It reacts with other chemicals in the air and breaks down within a few days.
- Benzene in the air can attach to rain or snow and be carried back down to the ground.
- It breaks down more slowly in water and soil, and can pass through the soil into underground water.
- Benzene does not build up in plants or animals.

How might I be exposed to benzene?

- Outdoor air contains low levels of benzene from tobacco smoke, automobile service stations, exhaust from motor vehicles, and industrial emissions.
- Vapors (or gases) from products that contain benzene, such as glues, paints, furniture wax, and detergents, can also be a source of exposure.
- Air around hazardous waste sites or gas stations will contain higher levels of benzene.
- Working in industries that make or use benzene.

How can benzene affect my health?

Breathing very high levels of benzene can result in death, while high levels can cause drowsiness, dizziness, rapid heart rate, headaches, tremors, confusion, and unconsciousness. Eating or drinking foods containing high levels of benzene can cause vomiting, irritation of the stomach, dizziness, sleepiness, convulsions, rapid heart rate, and death.

The major effect of benzene from long-term exposure is on the blood. Benzene causes harmful effects on the bone marrow and can cause a decrease in red blood cells leading to anemia. It can also cause excessive bleeding and can affect the immune system, increasing the chance for infection. Some women who breathed high levels of benzene for many months had irregular menstrual periods and a decrease in the size of their ovaries, but we do not know for certain that benzene caused the effects. It is not known whether benzene will affect fertility in men.

Benzene

CAS # 71-43-2

How likely is benzene to cause cancer?

Long-term exposure to high levels of benzene in the air can cause leukemia, particularly acute myelogenous leukemia, often referred to as AML. This is a cancer of the bloodforming organs. The Department of Health and Human Services (DHHS) has determined that benzene is a known carcinogen. The International Agency for Research on Cancer (IARC) and the EPA have determined that benzene is carcinogenic to humans.

How can benzene affect children?

Children can be affected by benzene exposure in the same ways as adults. It is not known if children are more susceptible to benzene poisoning than adults.

Benzene can pass from the mother's blood to a fetus. Animal studies have shown low birth weights, delayed bone formation, and bone marrow damage when pregnant animals breathed benzene.

How can families reduce the risks of exposure to benzene?

Benzene exposure can be reduced by limiting contact with gasoline and cigarette smoke. Families are encouraged not to smoke in their house, in enclosed environments, or near their children.

Is there a medical test to determine whether I've been exposed to benzene?

Several tests can show if you have been exposed to benzene. There is a test for measuring benzene in the breath; this test must be done shortly after exposure. Benzene can also be measured in the blood; however, since benzene disappears rapidly from the blood, this test is only useful for recent exposures.

In the body, benzene is converted to products called metabolites. Certain metabolites can be measured in the urine. The metabolite S-phenylmercapturic acid in urine is a sensitive indicator of benzene exposure. However, this test must be done shortly after exposure and is not a reliable indicator of how much benzene you have been exposed to, since the metabolites may be present in urine from other sources.

Has the federal government made recommendations to protect human health?

The EPA has set the maximum permissible level of benzene in drinking water at 5 parts benzene per billion parts of water (5 ppb).

The Occupational Safety and Health Administration (OSHA) has set limits of 1 part benzene per million parts of workplace air (1 ppm) for 8 hour shifts and 40 hour work weeks.

References

Agency for Toxic Substances and Disease Registry (ATSDR) 2007. Toxicological Profile for Benzene (Update). Atlanta, GA: U.S. Department of Public Health and Human Services, Public Health Service.

Where can I get more information?

For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Human Health Sciences, 1600 Clifton Road NE, Mailstop F-57, Atlanta, GA 30329-4027.

Phone: 1-800-232-4636

ToxFAQs™ Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaqs/index.asp>.

ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

This fact sheet answers the most frequently asked health questions (FAQs) about 1,2-dichloroethene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to 1,2-dichloroethene occurs mainly in workplaces where it is made or used. Breathing high levels of 1,2-dichloroethene can make you feel nauseous, drowsy, and tired. *cis*-1,2-Dichloroethene has been found in at least 146 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA). *trans*-1,2-Dichloroethene was found in at least 563 NPL sites. 1,2-Dichloroethene was found at 336 sites, but the isomer (*cis*- or *trans*-) was not specified.

What is 1,2-dichloroethene?

(Pronounced 1,2-dī-klôr' õ-ěth'ēn)

1,2-Dichloroethene, also called 1,2-dichloroethylene, is a highly flammable, colorless liquid with a sharp, harsh odor. It is used to produce solvents and in chemical mixtures. You can smell very small amounts of 1,2-dichloroethene in air (about 17 parts of 1,2-dichloroethene per million parts of air [17 ppm]).

There are two forms of 1,2-dichloroethene; one is called *cis*-1,2-dichloroethene and the other is called *trans*-1,2-dichloroethene. Sometimes both forms are present as a mixture.

What happens to 1,2-dichloroethene when it enters the environment?

- 1,2-Dichloroethene evaporates rapidly into air.
- In the air, it takes about 5-12 days for half of it to break down.
- Most 1,2-dichloroethene in the soil surface or bodies of water will evaporate into air.
- 1,2-Dichloroethene can travel through soil or dissolve in water in the soil. It is possible that it can contaminate groundwater.
- In groundwater, it takes about 13-48 weeks to break down.

- There is a slight chance that 1,2-dichloroethene will break down into vinyl chloride, a different chemical which is believed to be more toxic than 1,2-dichloroethene.

How might I be exposed to 1,2-dichloroethene?

- Breathing 1,2-dichloroethene that has leaked from hazardous waste sites and landfills.
- Drinking contaminated tap water or breathing vapors from contaminated water while cooking, bathing, or washing dishes.
- Breathing 1,2-dichloroethene, touching it, or touching contaminated materials in the workplace.

How can 1,2-dichloroethene affect my health?

Breathing high levels of 1,2-dichloroethene can make you feel nauseous, drowsy, and tired; breathing very high levels can kill you.

When animals breathed high levels of *trans*-1,2-dichloroethene for short or longer periods of time, their livers and lungs were damaged and the effects were more severe with longer exposure times. Animals that breathed very high

ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html>

levels of *trans*-1,2-dichloroethene had damaged hearts.

Animals that ingested extremely high doses of *cis*- or *trans*-1,2-dichloroethene died.

Lower doses of *cis*-1,2-dichloroethene caused effects on the blood, such as decreased numbers of red blood cells, and also effects on the liver.

The long-term (365 days or longer) human health effects after exposure to low concentrations of 1,2-dichloroethene aren't known. One animal study suggested that an exposed fetus may not grow as quickly as one that hasn't been exposed.

Exposure to 1,2-dichloroethene hasn't been shown to affect fertility in people or animals.

How likely is 1,2-dichloroethene to cause cancer?

The EPA has determined that *cis*-1,2-dichloroethene is not classifiable as to its human carcinogenicity.

No EPA cancer classification is available for *trans*-1,2-dichloroethene.

Is there a medical test to show whether I've been exposed to 1,2-dichloroethene?

Tests are available to measure concentrations of the breakdown products of 1,2-dichloroethene in blood, urine, and tissues. However, these tests aren't used routinely to determine whether a person has been exposed to this compound. This is because after you are exposed to 1,2-dichloroethene, the breakdown products in your body that are detected with these tests may be the same as those that come from exposure to other chemicals. These tests aren't available in most doctors' offices, but can be done at special laboratories that have the right equipment.

Has the federal government made recommendations to protect human health?

The EPA has set the maximum allowable level of *cis*-1,2-dichloroethene in drinking water at 0.07 milligrams per liter of water (0.07 mg/L) and *trans*-1,2-dichloroethene at 0.1 mg/L.

The EPA requires that any spills or accidental release of 1,000 pounds or more of 1,2-dichloroethene must be reported to the EPA.

The Occupational Health Safety and Health Administration (OSHA) has set the maximum allowable amount of 1,2-dichloroethene in workroom air during an 8-hour workday in a 40-hour workweek at 200 parts of 1,2-dichloroethene per million parts of air (200 ppm).

Glossary

Carcinogenicity: Ability of a substance to cause cancer.

CAS: Chemical Abstracts Service.

Fertility: Ability to reproduce.

Ingest: To eat or drink something.

Milligram (mg): One thousandth of a gram.

ppm: Parts per million.

Solvent: A chemical that can dissolve other substances.

References

This ToxFAQs information is taken from the 1996 Toxicological Profile for 1,2-Dichloroethene produced by the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services, Public Health Service in Atlanta, GA.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html> ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.



Copper - ToxFAQs™

What is copper?

Copper (Cu) is an element and metal. It is found in rocks, soils, water, and air. Copper is an essential nutrient for humans and is in many foods. It's also essential to animals and plants. Copper and substances containing copper are used in many industries in the U.S.. Copper can be found in materials and products such as wiring, plumbing, pesticides, cookware, and dietary supplements, among others. Copper scrap can be combined with other metals to make brass and bronze pipes. In the U.S., copper is mined and recovered from metal through smelting.



What happens to copper in the environment?

- Copper is released from natural sources, such as windblown dusts, decaying vegetation, and from human activities like municipal solid waste management and fossil fuel burning.
- In air, copper usually attaches to particles (particulate matter) and can travel far from its source.
- In water, copper will usually attach to soils if possible, or dissolve.
- Copper attaches to soils, where it can be taken up by plants.
- Mollusks, such as clams and oysters, can build up copper in their bodies.
- Copper does not break down in the environment.

Ingesting copper in food is necessary for human health. Too much copper can be harmful.

How can I be exposed to copper?

- People ingest copper from drinking water and food, inhale copper from air, and may touch copper or products that contain copper.
- Drinking water can contain high levels of copper if your home has copper pipes and acidic water. This is more likely to occur in new or recently renovated buildings/homes using copper plumbing.
- Blue copper sulfate crystals are available to purchase and have been accidentally ingested by people who confused them for candy or toys.
- You may be exposed to copper fumes if you work or live near a site that uses copper in mining, agriculture, or in a facility that processes copper.
- Soils near mines, processing facilities, or waste dump sites may have a lot of copper.

How can copper affect my health?

It is essential for people to ingest small amounts of copper everyday in food and water. Ingesting too much or too little copper can lead to illness and/or disease. Ingesting a high amount of copper, usually in drinking water, can cause vomiting, nausea, abdominal pain, and/or diarrhea. Ingesting higher than recommended amounts of copper every day over time, such as in water or in copper supplements, can lead to severe illness, such as kidney and liver damage.

Breathing in copper dusts, sprays, or crystals can irritate your nose and throat, and cause dizziness and headaches. People who have ingested these substances have gotten very sick and/or died.

Copper is essential to the development of babies and children, and is found in breastmilk. Babies and children are expected to have symptoms similar to adults when exposed to high levels of copper in air, water, or food. If you have a disorder that causes copper to build up in your body, like Wilson's disease, you may be especially vulnerable to high copper levels in air, food, or water.

Copper

Can copper cause cancer?

The U.S. Department of Health and Human Services (DHHS) has not evaluated the carcinogenicity (whether it causes cancer) of copper.

The U.S. Environmental Protection Agency (EPA) has not classified if copper is carcinogenic (cancer causing) to humans.

The International Agency for Research on Cancer (IARC) has not evaluated the carcinogenicity of copper. IARC lists copper 8-hydroxyquinoline as a group 3 agent indicating the carcinogenicity in humans cannot be classified due to lack of cancer studies in humans and animals.

Can I get a medical test to check for copper?

There are tests to measure the amount of copper in your blood, urine, nails, and hair. Your medical provider can help decide if a test is needed and which is the most appropriate for you. High levels of copper in these tests can show if you have been exposed to a lot of copper or if there is a problem with copper regulation in the body. These tests will not predict if you will have health problems. These tests are not part of standard health tests that are done at your doctor's office and are done through a special lab. If you think you may have been exposed to high levels of copper, talk to your doctor, nurse, or clinic, or call poison control.

How can I protect my family from copper exposure?

If your water is metallic or bitter in taste or smell, and/or is green-blue in color this may be a sign that there is too much copper in your drinking water. If you have copper piping, it can leach into water if your home is new or recently renovated, or if your water is corrosive. Regularly cleaning or flushing out your system can help avoid this. There are tests available to check if your water is corrosive or if copper levels in your water are high.

Safely store copper powders, crystals, or dusts away from children, pets, or other adults.

Monitor your copper intake if you are adding more copper to your diet, such as by taking dietary supplements with copper, to make sure you are not eating too much. Talk to your doctor, nurse, or clinic to figure out if you are taking the proper amount of copper.

If you work with copper, wear the necessary protective clothing and equipment, and always follow safety procedures. Shower and change your clothes before going home each day.

Want more information?

Call **CDC-INFO** at 1-800-232-4636, or submit your question online at <https://wwwn.cdc.gov/dcs/ContactUs/Form>

Go to ATSDR's [Toxicological Profile for Copper](#)

Go to ATSDR's Toxic Substances Portal: <http://www.atsdr.cdc.gov/substances/index.asp>

If you have any more questions or concerns, you can also find & contact your ATSDR Regional Representative at http://www.atsdr.cdc.gov/DRO/dro_org.html



This fact sheet answers the most frequently asked health questions (FAQs) about ethylbenzene. For more information, call the CDC Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Ethylbenzene is a colorless liquid found in a number of products including gasoline and paints. Breathing very high levels can cause dizziness and throat and eye irritation. Breathing lower levels has resulted in hearing effects and kidney damage in animals. Ethylbenzene has been found in at least 829 of 1,699 National Priorities List (NPL) sites identified by the Environmental Protection Agency (EPA).

What is ethylbenzene?

Ethylbenzene is a colorless, flammable liquid that smells like gasoline.

It is naturally found in coal tar and petroleum and is also found in manufactured products such as inks, pesticides, and paints.

Ethylbenzene is used primarily to make another chemical, styrene. Other uses include as a solvent, in fuels, and to make other chemicals.

What happens to ethylbenzene when it enters the environment?

- Ethylbenzene moves easily into the air from water and soil.
- It takes about 3 days for ethylbenzene to be broken down in air into other chemicals.
- In surface water, ethylbenzene breaks down by reacting with other chemicals found naturally in water.
- Ethylbenzene can move through soil into groundwater.
- In soil, it is broken down by bacteria.

How might I be exposed to ethylbenzene?

- If you live in a city or near many factories or heavily traveled highways, you may be exposed to ethylbenzene in air.

- Releases of ethylbenzene into the air occur from burning oil, gas, and coal and from industries using ethylbenzene.
- Ethylbenzene is not often found in drinking water. Higher levels may be found in residential drinking water wells near landfills, waste sites, or leaking underground fuel storage tanks.
- Exposure can occur if you work in an industry where ethylbenzene is used or made.
- Exposure can occur if you use products containing it, such as gasoline, carpet glues, varnishes, and paints.

How can ethylbenzene affect my health?

Exposure to high levels of ethylbenzene in air for short periods can cause eye and throat irritation. Exposure to higher levels can result in dizziness.

Irreversible damage to the inner ear and hearing has been observed in animals exposed to relatively low concentrations of ethylbenzene for several days to weeks.

Exposure to relatively low concentrations of ethylbenzene in air for several months to years causes kidney damage in animals.

How likely is ethylbenzene to cause cancer?

The International Agency for Research on Cancer (IARC) has determined that ethylbenzene is a possible human carcinogen.

Ethylbenzene

CAS # 100-41-4

How does ethylbenzene affect children?

There are no studies evaluating the effects of ethylbenzene exposure on children or immature animals. It is likely that children would have the same health effects as adults. We do not know whether children would be more sensitive than adults to the effects of ethylbenzene.

We do not know if ethylbenzene will cause birth defects in humans. Minor birth defects and low birth weight have occurred in newborn animals whose mothers were exposed to ethylbenzene in air during pregnancy.

How can families reduce the risk of exposure to ethylbenzene?

- Use adequate ventilation to reduce exposure to ethylbenzene vapors from consumer products such as gasoline, pesticides, varnishes and paints, and newly installed carpeting.
- Sometimes older children sniff household chemicals, including ethylbenzene, in an attempt to get high. Talk with your children about the dangers of sniffing chemicals.
- Household chemicals should be stored out of reach of children to prevent accidental poisoning. Always store household chemicals in their original containers; never store them in containers that children would find attractive to eat or drink from, such as old soda bottles. Gasoline should be stored in a gasoline can with a locked cap.

Is there a medical test to show whether I've been exposed to ethylbenzene?

Ethylbenzene is found in the blood, urine, breath, and some body tissues of exposed people. The most common way to test for ethylbenzene is in the urine. This test measures substances formed by the breakdown of ethylbenzene. Because these substances leave the body very quickly, this test needs to be done within a few hours after exposure occurs.

These tests can show you were exposed to ethylbenzene, but cannot predict the kind of health effects that might occur.

Has the federal government made recommendations to protect human health?

The EPA has determined that exposure to ethylbenzene in drinking water at concentrations of 30 mg/L for 1 day or 3 mg/L for 10 days is not expected to cause any adverse effects in a child.

The EPA has determined that lifetime exposure to 0.7 mg/L ethylbenzene is not expected to cause any adverse effects.

The Occupational Health and Safety Administration (OSHA) has limited workers' exposure to an average of 100 ppm for an 8-hour workday, 40-hour workweek.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2010. Toxicological Profile for Ethylbenzene. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information?

For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Human Health Sciences, 1600 Clifton Road NE, Mailstop F-57, Atlanta, GA 30329-4027.

Phone: 1-800-232-4636

ToxFAQs™ Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaqs/index.asp>.

ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

Lead - ToxFAQs™

What is lead?

Lead is a metal found naturally in the earth's crust. It can be found in all parts of our environment, including air, water, and soil. Lead can combine with other chemicals to make different compounds.



Lead is used in the production of batteries, ammunition, and metal products (solder and pipes). Because of health concerns, the use of lead in paints, ceramic products, caulking, and pipe solder has been dramatically reduced. The use of lead as an additive to automobile gasoline was banned in 1996 in the United States.

What happens to lead in the environment?

- Lead is an element, so it does not break down.
- When lead is released into the air, it may be transported long distances before it lands and stays on the ground.
- Once on the ground, lead can often stick to soil particles.
- Lead in soil can get into groundwater, but the amount of lead that moves into groundwater will depend on the lead compound and soil type.

How can I be exposed to lead?

- Eating food or drinking water that contains lead.
- Drinking water from pipes that were soldered with lead can cause exposure.
- Spending time or living in homes with lead-based paints can result in exposure when the paint breaks down and forms dust, which can get on your hands, or into your mouth and nose and be swallowed.
- Spending time in areas where the soil is contaminated with lead.
- Working in a job where lead is used or participating in certain hobbies where lead is used, such as making stained glass.
- Using healthcare products from other countries, alternative treatments, or folk remedies.

Lead can cause health problems in almost every organ and system in your body.

How can lead affect my health?

The effects of lead are the same whether it enters the body by breathing it in or eating it. Lead can affect almost every organ and system in your body. The nervous system is the main target for lead poisoning in children and adults. Long-term exposure can result in decreased learning, memory, and attention, and weakness in fingers, wrists, or ankles. Lead exposure can cause anemia (low iron in the blood) and damage to the kidneys. It can also cause increases in blood pressure, particularly in middle-aged and older individuals. Exposure to high lead levels can severely damage the brain and kidneys and can cause death. In pregnant women, exposure to high levels of lead may cause a miscarriage. In men, it can cause damage to reproductive organs.

Lead

How can lead affect children?

Children are more vulnerable to lead poisoning than adults because their nervous system is still developing. Children can be exposed to lead in their environment and before birth from lead in their mother's body. At lower levels of exposure, lead can decrease mental development, especially learning, intelligence, and behavior. Physical growth may also be decreased. A child who swallows large amounts of lead may develop anemia, severe stomachache, muscle weakness, and brain damage. Exposure to lead during pregnancy can also result in premature births. Some effects of lead poisoning in a child may continue into adulthood.

Can lead cause cancer?

Several agencies and organizations both in the United States and internationally have reviewed studies and made an assessment about whether lead can cause cancer.

- The Department of Health and Human Services (HHS) has determined that lead and lead compounds are reasonably anticipated to be human carcinogens (causing cancer in people).
- The U.S. Environmental Protection Agency (EPA) has classified lead as a probable human carcinogen.
- The International Agency for Research on Cancer (IARC) has determined that inorganic lead is probably carcinogenic to humans, and that there is insufficient information to determine whether organic lead compounds will cause cancer in humans.

Can I get a medical test to check for lead?

A blood test is available to measure the amount of lead in your blood. Blood tests are commonly used to screen children for lead poisoning. Your doctor can draw blood samples and send them to appropriate laboratories for analysis. If you think you or anyone in your family has been exposed to lead, contact your doctor, nurse, or poison control center.

How can I protect my family from lead exposure?

- Avoid exposure to sources of lead.
- Do not allow children to chew or mouth surfaces that may have been painted with lead-based paint.
- If your home contains lead-based paint (built before 1978), or if you live in an area contaminated with lead, wash children's hands and faces often to remove lead dusts and soil, and regularly clean the house to remove lead dust and lead tracked in soil.
- Certain water pipes may contain lead, so if you know that pipes have lead solder, you should avoid drinking from that source.
- Check for lead in some products such as toys and jewelry and avoid such products.
- Lead is sometimes in candies imported from other countries or traditional home remedies; find out if yours has any lead and avoid using these products or giving them to children.
- You can learn more about preventing lead poisoning here: <https://www.cdc.gov/nceh/lead/faqs/lead-faqs.htm>

Want more information?

Call **CDC-INFO** at 1-800-232-4636, or submit your question online at <https://wwwn.cdc.gov/dcs/ContactUs/Form>

Go to ATSDR's [Toxicological Profile for Lead](#)

CDC Lead Poisoning Prevention Program <https://www.cdc.gov/nceh/lead/default.htm>

Environmental Protection Agency <https://www.epa.gov/lead/protect-your-family-exposures-lead>

Go to ATSDR's Toxic Substances Portal: <https://wwwn.cdc.gov/TSP/index.aspx>

If you have any more questions or concerns, you can also find & contact your ATSDR Regional Representative at http://www.atsdr.cdc.gov/DRO/dro_org.html



Mercury - ToxFAQs™

What is mercury?

Mercury is a naturally occurring element with a chemical symbol of Hg. Elemental mercury is a silver liquid at room temperature that can also evaporate into the air as a gas or become a solid at very low temperatures. It can combine with other substances to form solid compounds that are categorized into two groups: inorganic mercury salts and organic mercury compounds. Mercury and mercury compounds are odorless.



Mercury is used in a number of industries and products. It is primarily used in the manufacture of electronics, fluorescent-lighting, and production of chlorine-caustic soda. It is also used in dental products (fillings), although uses in dentistry are being phased-out. Other historical uses of mercury (batteries; thermometers and other scientific and medical devices; electronic switches and lighting applications; paints and pigments; fungicides and pesticides) have been eliminated or drastically reduced.

What happens to mercury in the environment?

Because mercury is a naturally occurring element, it can be found in the air, water, or soil. It can also be found in the environment due to industrial releases to air and water. Industrial releases to air have steadily decreased over the past few decades.

Mercury does not break down in the environment. In air, mercury may spread far from where it was released. Mercury seldom appears as a silver liquid in the environment. In water, mercury can evaporate into the air. In soil, it can adhere (stick) to soil and sediments (dirt deposits at the bottom of bodies of water). One type of organic mercury compound called methylmercury can build up in plants and fish.

How can I be exposed to mercury?

Most people are exposed to organic mercury compounds (typically methylmercury) in food (such as fish, seafood, rice) or to elemental mercury from dental fillings. Food is the most common form of exposure. Most people are not exposed to inorganic mercury salts. Industrial and dental workers who use mercury are primarily exposed to elemental mercury. Some cultures use mercury in traditional medicines or religious practices, although this is not recommended or approved for use in the United States.

How can mercury affect my health?

All forms of mercury can affect the nervous system and the kidneys. Workers exposed to elemental mercury vapor and people who eat foods with high levels of methylmercury experienced tremors, incoordination, impaired vision, impaired learning and memory, and mood changes. Some children born in communities that ate food with high levels of organic mercury had learning, sensory, and movement problems. In people exposed to high levels of methylmercury in their diets, birth defects have occurred. Some humans and animals that ate mercury compounds had high blood pressure and alterations in their immune systems. Animals that breathed elemental mercury vapor or ate organic or inorganic mercury compounds in their diets showed nervous system effects and/or kidney damage. Animals that ate high levels of mercury compounds showed decreased fertility and/or birth defects.

Mercury can affect the nervous system and kidneys. The health effects from exposure to mercury depend on a number of factors including the amount and form of mercury, route and length of exposure, and age.

Mercury

Can mercury cause cancer?

Rats that ate an inorganic mercury compound for a long period of time developed stomach or thyroid cancer. Rats and mice that ate organic mercury compounds for a long period of time developed kidney cancer.

The [U.S. Department of Health and Human Services \(DHHS\)](#) has not evaluated the potential of mercury or mercury compounds to cause cancer in people.

The [U.S. Environmental Protection Agency \(EPA\)](#) has determined that mercuric chloride (inorganic mercury salt) and methylmercury (organic mercury compound) are possible human carcinogens (cause cancer). The EPA did not classify the potential of elemental mercury to cause cancer in humans.

The [International Agency for Research on Cancer \(IARC\)](#) classified methylmercury compounds as possibly carcinogenic to humans. IARC designated inorganic mercury and elemental mercury as not classifiable for causing cancer in humans.

Can I get a medical test to check for mercury?

Mercury can be measured in your blood, urine, hair, or toenails. However, tests cannot determine which form of mercury you were exposed to. Tests also cannot predict whether you will have health problems. If you think you have been exposed to mercury, call your doctor, nurse, or poison control center.

How can I protect myself and my family from mercury?

People should avoid eating fish that contain high levels of methylmercury. This is particularly important for pregnant women and children. Follow your state's health advisories that tell you about whether it is okay to eat fish or wildlife caught in contaminated areas. Avoid all contact with spills of the liquid form of elemental mercury (the type of mercury found in old thermometers). If a spill occurs, refer to <https://www.atsdr.cdc.gov/dontmesswithmercury> for safe clean-up practices. Most people don't need to take any special steps to avoid exposure to inorganic mercury salts in their daily lives. Keep children from playing in areas near hazardous waste sites to avoid coming in contact with mercury.

For more information:



Call **CDC-INFO** at 1-800-232-4636, or submit your question online at

<https://wwwn.cdc.gov/dcs/ContactUs/Form>

Go to ATSDR's Toxicological Profile for mercury:

<https://wwwn.cdc.gov/TSP/ToxProfiles/ToxProfiles.aspx?id=115&tid=24>

Go to ATSDR's Toxic Substances Portal: <https://wwwn.cdc.gov/TSP/index.aspx>

Find & contact your ATSDR Regional Representative at http://www.atsdr.cdc.gov/DRO/dro_org.html

Methyl *tert*-Butyl Ether (MTBE)-ToxFAQs™

What is MTBE?

Methyl *tert*-butyl ether (MTBE) is a flammable, colorless liquid with a disagreeable odor.

MTBE was added to gasoline in the 1980s to increase fuel efficiency and decrease pollution. When MTBE started to be detected in groundwater, several states banned its use in gasoline and it has not been added to gasoline in the United States since 2005. However, MTBE is still made in the United States and exported to other countries.

MTBE can also be used to dissolve gallstones in patients for which surgical options are too risky. Patients treated in this way have MTBE delivered directly to their gall bladders through special tubes that are surgically inserted. MTBE has not been approved for medical use in the United States since 2015, but is still used as a non-surgical option in some countries.



What happens to MTBE in the environment?

MTBE quickly evaporates from open containers and surface water, so it is commonly found as a vapor in the air. Small amounts of MTBE may dissolve in water and get into underground water. MTBE can quickly move through the soil; therefore, once in the soil, it can also make its way to underground water. MTBE breaks down quickly in the air and it does not significantly build up in plants or animals.

How can I be exposed to MTBE?

When MTBE stopped being added to gasoline, the amount found in the environment dramatically decreased. Most people are therefore not likely to come in contact with this chemical. The most likely way that you could be exposed to MTBE is by breathing contaminated air or drinking contaminated water or living near a hazardous waste site. If your water has MTBE in it, activities such as showering or bathing can expose you to this chemical. Workers who produce MTBE for export may also be exposed.

How can MTBE affect my health?

MTBE is quickly taken in by your body after breathing or eating it. The liver rapidly breaks most of it down and it is released into the urine. Breathing gasoline with MTBE in it has caused some people to experience headaches, nausea or vomiting, dizziness, a feeling of spaciness, and coughing.

Since gasoline contains many chemicals, it is not clear if the effects were due only to MTBE. In other studies, people exposed to low levels of MTBE for a short period of time did not have any of these effects. Studies using animals to look at possible health effects found that animals that breathed high levels of MTBE were less active and showed reduced reflexes and coordination, difficulty breathing, and liver effects.

There is no information on how drinking water or bathing in water that is contaminated with MTBE will affect a person's health. In studies where rats and mice ate high amounts of MTBE, the animals had gastrointestinal irritation and damage to the liver and male reproductive organs.

Since MTBE is no longer added to gasoline in the United States, your risk of exposure is low.

Methyl *tert*-Butyl Ether (MTBE)

Can MTBE cause cancer?

There are no studies that show that MTBE causes cancer in people. Breathing high levels of MTBE for a long period of time caused liver cancer in mice. Eating high levels of MTBE for a long period of time caused testicular cancer, lymphomas, and leukemia in rats. Drinking high levels of MTBE dissolved in water for long periods did not cause cancer in mice.

The International Agency for Research on Cancer (IARC) determined that MTBE was not classifiable as to its ability to cause cancer in people. The Department of Health and Human Services and U.S. Environmental Protection Agency (EPA) have not classified MTBE's cancer-causing risk.

Can I get a medical test to check for MTBE?

There are tests available to measure MTBE and its breakdown product in your breath, blood, and urine. MTBE does not stay in your body long, so these tests need to be done soon after exposure (up to 1–2 days). These tests cannot predict whether you will have health problems from the exposure to MTBE. Doctor's offices do not routinely offer these tests. If you think you have been exposed to this or any other chemical, talk to your doctor or nurse or call poison control.

How can I protect myself and my family from MTBE?

If your drinking water is supplied by a public water system, you can contact them for information on MTBE levels in the water. If you have a private well for water, your local health department may be able to tell you if MTBE has been found in water in your area. You may also want to get your water tested by a certified laboratory.

Children should avoid playing near industrial or hazardous waste sites to prevent exposures to chemicals including MTBE.

For more information:

Call **CDC-INFO** at 1-800-232-4636, or submit your question online at <https://wwwn.cdc.gov/dcs/ContactUs/Form>

Go to ATSDR's Toxicological Profile for MTBE: <https://wwwn.cdc.gov/TSP/ToxProfiles/ToxProfiles.aspx?id=228&tid=41>

Go to ATSDR's Toxic Substances Portal: <https://wwwn.cdc.gov/TSP/index.aspx>

Find & contact your ATSDR Regional Representative at http://www.atsdr.cdc.gov/DRO/dro_org.html



Polycyclic Aromatic Hydrocarbons (PAHs) - ToxFAQs™

This fact sheet answers the most frequently asked health questions (FAQs) about polycyclic aromatic hydrocarbons (PAHs). For more information, call the CDC Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to polycyclic aromatic hydrocarbons usually occurs by breathing air contaminated by wild fires or coal tar, or by eating foods that have been grilled. PAHs have been found in at least 600 of the 1,430 National Priorities List (NPL) sites identified by the Environmental Protection Agency (EPA).

What are polycyclic aromatic hydrocarbons?

(Pronounced pŏl'ī-sī'klīk ä'r'ə-mät'īk hī'drə-kar'bənz)

Polycyclic aromatic hydrocarbons (PAHs) are a group of over 100 different chemicals that are formed during the incomplete burning of coal, oil and gas, garbage, or other organic substances like tobacco or charbroiled meat. PAHs are usually found as a mixture containing two or more of these compounds, such as soot.

Some PAHs are manufactured. These pure PAHs usually exist as colorless, white, or pale yellow-green solids. PAHs are found in coal tar, crude oil, creosote, and roofing tar, but a few are used in medicines or to make dyes, plastics, and pesticides.

What happens to PAHs when they enter the environment?

- PAHs enter the air mostly as releases from volcanoes, forest fires, burning coal, and automobile exhaust.
- PAHs can occur in air attached to dust particles.
- Some PAH particles can readily evaporate into the air from soil or surface waters.
- PAHs can break down by reacting with sunlight and other chemicals in the air, over a period of days to weeks.
- PAHs enter water through discharges from industrial and wastewater treatment plants.

- Most PAHs do not dissolve easily in water. They stick to solid particles and settle to the bottoms of lakes or rivers.
- Microorganisms can break down PAHs in soil or water after a period of weeks to months.
- In soils, PAHs are most likely to stick tightly to particles; certain PAHs move through soil to contaminate underground water.
- PAH contents of plants and animals may be much higher than PAH contents of soil or water in which they live.

How might I be exposed to PAHs?

- Breathing air containing PAHs in the workplace of coking, coal-tar, and asphalt production plants; smokehouses; and municipal trash incineration facilities.
- Breathing air containing PAHs from cigarette smoke, wood smoke, vehicle exhausts, asphalt roads, or agricultural burn smoke.
- Coming in contact with air, water, or soil near hazardous waste sites.
- Eating grilled or charred meats; contaminated cereals, flour, bread, vegetables, fruits, meats; and processed or pickled foods.
- Drinking contaminated water or cow's milk.
- Nursing infants of mothers living near hazardous waste sites may be exposed to PAHs through their mother's milk.

Polycyclic Aromatic Hydrocarbons

How can PAHs affect my health?

Mice that were fed high levels of one PAH during pregnancy had difficulty reproducing and so did their offspring. These offspring also had higher rates of birth defects and lower body weights. It is not known whether these effects occur in people.

Animal studies have also shown that PAHs can cause harmful effects on the skin, body fluids, and ability to fight disease after both short- and long-term exposure. But these effects have not been seen in people.

How likely are PAHs to cause cancer?

The Department of Health and Human Services (DHHS) has determined that some PAHs may reasonably be expected to be carcinogens.

Some people who have breathed or touched mixtures of PAHs and other chemicals for long periods of time have developed cancer. Some PAHs have caused cancer in laboratory animals when they breathed air containing them (lung cancer), ingested them in food (stomach cancer), or had them applied to their skin (skin cancer).

Is there a medical test to show whether I've been exposed to PAHs?

In the body, PAHs are changed into chemicals that can attach to substances within the body. There are special tests that can detect PAHs attached to these substances in body tissues or blood. However, these tests cannot tell whether any health effects will occur or find out the extent or source of your exposure to the PAHs. The tests aren't usually available in your doctor's office because special equipment is needed to conduct them.

Where can I get more information?

For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Human Health Sciences, 1600 Clifton Road NE, Mailstop F-57, Atlanta, GA 30329-4027.

Phone: 1-800-232-4636.

ToxFAQs™ Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaqs/index.asp>.

ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

Has the federal government made recommendations to protect human health?

The Occupational Safety and Health Administration (OSHA) has set a limit of 0.2 milligrams of PAHs per cubic meter of air (0.2 mg/m³). The OSHA Permissible Exposure Limit (PEL) for mineral oil mist that contains PAHs is 5 mg/m³ averaged over an 8-hour exposure period.

The National Institute for Occupational Safety and Health (NIOSH) recommends that the average workplace air levels for coal tar products not exceed 0.1 mg/m³ for a 10-hour workday, within a 40-hour workweek. There are other limits for workplace exposure for things that contain PAHs, such as coal, coal tar, and mineral oil.

Glossary

Carcinogen: A substance that can cause cancer.

Ingest: Take food or drink into your body.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1995. Toxicological profile for polycyclic aromatic hydrocarbons. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Tetrachloroethylene - ToxFAQs™

CAS # 127-18-4

This fact sheet answers the most frequently asked health questions (FAQs) about tetrachloroethylene. For more information, call the ATSDR Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Tetrachloroethylene is a manufactured chemical used for dry cleaning and metal degreasing and in the aerospace industry. Exposure to very high concentrations of tetrachloroethylene can cause dizziness, headaches, sleepiness, incoordination, confusion, nausea, unconsciousness, and even death. Tetrachloroethylene has been found in at least 949 of the 1,854 National Priorities List sites identified by U.S. Environmental Protection Agency (EPA).

What is tetrachloroethylene?

Tetrachloroethylene is a nonflammable colorless liquid. Other names for tetrachloroethylene include perchloroethylene, PCE, perc, tetrachloroethene, and perchlor. Most people can smell tetrachloroethylene when it is present in the air at a level of 1 part in 1 million parts of air (1 ppm) or more.

Tetrachloroethylene is used as a dry cleaning agent and metal degreasing solvent. It is also used as a starting material (building block) for making other chemicals and is used in some consumer products.

What happens to tetrachloroethylene when it enters the environment?

- Tetrachloroethylene can be released into air, water, and soil at places where it is produced or used.
- Tetrachloroethylene breaks down very slowly in the air and so it can be transported long distances in the air. Half of the amount in the air will degrade in approximately 100 days.
- Tetrachloroethylene evaporates quickly from water into air. It is generally slow to break down in water.
- Tetrachloroethylene may evaporate quickly from shallow soils or may filter through the soil and into the groundwater below. It is generally slow to break down in soil.

How might I be exposed to tetrachloroethylene?

- When you bring clothes from the dry cleaners, they will release small amounts of tetrachloroethylene into the air.
- When you drink water containing tetrachloroethylene, you are exposed to it. You might also be exposed to tetrachloroethylene that is released into the air during showering and bathing.
- People residing near contaminated sites or dry cleaning locations may be exposed to higher levels than the general population.
- People working in the dry cleaning industries or using metal degreasing products may be exposed to elevated levels of tetrachloroethylene.

How can tetrachloroethylene affect my health?

Breathing high levels of tetrachloroethylene for a brief period may cause dizziness or drowsiness, headache, and incoordination; higher levels may cause unconsciousness and even death.

Exposure for longer periods to low levels of tetrachloroethylene may cause changes in mood, memory, attention, reaction time, and vision.

Studies in animals exposed to tetrachloroethylene have shown liver and kidney effects, and changes in brain chemistry, but we do not know what these findings mean for humans.

Tetrachloroethylene

CAS # 127-18-4

How likely is tetrachloroethylene to cause cancer?

Studies in humans suggest that exposure to tetrachloroethylene might lead to a higher risk of getting bladder cancer, multiple myeloma, or non-Hodgkin's lymphoma.

In animals, tetrachloroethylene has been shown to cause cancers of the liver, kidney, and blood system.

The Department of Health and Human Services (DHHS) considers tetrachloroethylene to be reasonably anticipated to be a human carcinogen. EPA considers tetrachloroethylene likely to be carcinogenic to humans by all routes of exposure. The International Agency for Research on Cancer (IARC) considers tetrachloroethylene probably carcinogenic to humans.

How can tetrachloroethylene affect children?

It is not known whether children are more susceptible than adults to the effects of tetrachloroethylene.

A few studies in humans have suggested that exposure to tetrachloroethylene increased the numbers of babies with birth defects, but these studies were not large enough to clearly answer the question. Studies in animals exposed by inhalation or stomach tube have not shown clear evidence of specific birth defects.

How can families reduce the risk of exposure to tetrachloroethylene?

- Tetrachloroethylene has been found in low levels in some food. You can minimize the risk of your family's exposure by peeling and thoroughly washing fruits and vegetables before cooking.
- Use bottled water if you have concerns about the presence of tetrachloroethylene in your tap water. You may also contact local drinking water authorities and follow their advice.

- Prevent children from playing in dirt or eating dirt if you live near a waste site that has tetrachloroethylene.
- Tetrachloroethylene is widely used as a scouring solvent that removes oils from fabrics, as a carrier solvent, as a fabric finish or water repellent, and as a metal degreaser/cleaner. Follow instructions on product labels to minimize exposure to tetrachloroethylene.

Is there a medical test to determine whether I've been exposed to tetrachloroethylene?

Tetrachloroethylene and its breakdown products (metabolites) can be measured in blood and urine. However, the detection of tetrachloroethylene or its metabolites cannot predict the kind of health effects that might develop from that exposure. Because tetrachloroethylene and its metabolites leave the body fairly rapidly, the tests need to be conducted within days after exposure.

Has the federal government made recommendations to protect human health?

The Occupational Safety and Health Administration (OSHA) has set an 8-hour time weighted average permissible exposure limit of 100 ppm, an acceptable ceiling exposure limit of 200 ppm, and a maximum peak of 300 ppm (not to be exceeded for more than 5 minutes of any 3-hour period).

The National Institute for Occupational Safety and Health (NIOSH) recommends that workplace exposure to tetrachloroethylene be minimized due to concerns about its carcinogenicity.

Reference

This ToxFAQs™ information is taken from the 2019 Toxicological Profile for Tetrachloroethylene produced by the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services, Public Health Service in Atlanta, GA.

Where can I get more information?

For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Human Health Sciences, 1600 Clifton Road NE, Mailstop F-57, Atlanta, GA 30329-4027.

Phone: 1-800-232-4636

ToxFAQs™ on the web: www.atsdr.cdc.gov/ToxFAQs

ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

Trichloroethylene - ToxFAQs™

CAS # 79-01-6

This fact sheet answers the most frequently asked health questions (FAQs) about trichloroethylene. For more information, call the ATSDR Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Trichloroethylene is used as a solvent for cleaning metal parts. Exposure to very high concentrations of trichloroethylene can cause dizziness, headaches, sleepiness, incoordination, confusion, nausea, unconsciousness, and even death. Trichloroethylene has been found in at least 1,051 of the 1,854 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is trichloroethylene?

Trichloroethylene is a colorless, volatile liquid. Liquid trichloroethylene evaporates quickly into the air. It is nonflammable and has a sweet odor.

The two major uses of trichloroethylene are as a solvent to remove grease from metal parts and as a chemical that is used to make other chemicals, especially the refrigerant, HFC-134a.

What happens to trichloroethylene when it enters the environment?

- Trichloroethylene can be released to air, water, and soil at places where it is produced or used.
- Trichloroethylene is broken down quickly in air.
- Trichloroethylene breaks down very slowly in soil and water and is removed mostly through evaporation to air.
- It is expected to remain in groundwater for long time since it is not able to evaporate.
- Trichloroethylene does not build up significantly in plants or animals.

How might I be exposed to trichloroethylene?

- Breathing trichloroethylene in contaminated air.
- Drinking contaminated water.
- Workers at facilities using this substance for metal degreasing are exposed to higher levels of trichloroethylene.
- If you live near such a facility or near a hazardous waste site containing trichloroethylene, you may also have higher exposure to this substance.

How can trichloroethylene affect my health?

Trichloroethylene was once used as an anesthetic for surgery. Exposure to moderate amounts of trichloroethylene may cause headaches, dizziness, and sleepiness; large amounts may cause coma and even death. Eating or breathing high levels of trichloroethylene may damage some of the nerves in the face. Exposure to high levels can also result in changes in the rhythm of the heartbeat, liver damage, and evidence of kidney damage. Skin contact with concentrated solutions of trichloroethylene can cause skin rashes. There is some evidence exposure to trichloroethylene in the work place may cause scleroderma (a systemic autoimmune disease) in some people. Some men occupationally-exposed to trichloroethylene and other chemicals showed decreases in sex drive, sperm quality, and reproductive hormone levels.

How likely is trichloroethylene to cause cancer?

There is strong evidence that trichloroethylene can cause kidney cancer in people and some evidence for trichloroethylene-induced liver cancer and malignant lymphoma. Lifetime exposure to trichloroethylene resulted in increased liver cancer in mice and increased kidney cancer and testicular cancer in rats.

The Department of Health and Human Services (DHHS) considers trichloroethylene to be a known human carcinogen. The International Agency for Research on Cancer (IARC) classified trichloroethylene as carcinogenic to humans. The EPA has characterized trichloroethylene as carcinogenic to humans by all routes of exposure.

Trichloroethylene

CAS # 79-01-6

How can trichloroethylene affect children?

It is not known whether children are more susceptible than adults to the effects of trichloroethylene.

Some human studies indicate that trichloroethylene may cause developmental effects such as spontaneous abortion, congenital heart defects, central nervous system defects, and small birth weight. However, these people were exposed to other chemicals as well.

In some animal studies, exposure to trichloroethylene during development caused decreases in body weight, increases in heart defects, changes to the developing nervous system, and effects on the immune system.

How can families reduce the risk of exposure to trichloroethylene?

- Avoid drinking water from sources that are known to be contaminated with trichloroethylene. Use bottled water if you have concerns about the presence of chemicals in your tap water. You may also contact local drinking water authorities and follow their advice.
- Prevent children from playing in dirt or eating dirt if you live near a waste site that has trichloroethylene.
- Trichloroethylene is used in many industrial products. Follow instructions on product labels to minimize exposure to trichloroethylene.

Is there a medical test to determine whether I've been exposed to trichloroethylene?

Trichloroethylene and its breakdown products (metabolites) can be measured in blood and urine. However, the detection of trichloroethylene or its metabolites cannot predict the kind of health effects that might develop from that exposure. Because trichloroethylene and its metabolites leave the body fairly rapidly, the tests need to be conducted within days after exposure.

Has the federal government made recommendations to protect human health?

The EPA set a maximum contaminant goal (MCL) of 0.005 milligrams per liter (mg/L; 5 ppb) as a national primary drinking standard for trichloroethylene.

The Occupational Safety and Health Administration (OSHA) set a permissible exposure limit (PEL) of 100 ppm for trichloroethylene in air averaged over an 8-hour work day, an acceptable ceiling concentration of 200 ppm provided the 8 hour PEL is not exceeded, and an acceptable maximum peak of 300 ppm for a maximum duration of 5 minutes in any 2 hours.

The National Institute for Occupational Safety and Health (NIOSH) considers trichloroethylene to be a potential occupational carcinogen and established a recommended exposure limit (REL) of 2 ppm (as a 60-minute ceiling) during its use as an anesthetic agent and 25 ppm (as a 10-hour TWA) during all other exposures.

Reference

This ToxFAQs™ information is taken from the 2019 Toxicological Profile for Trichloroethylene produced by the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services, Public Health Service in Atlanta, GA.

Where can I get more information?

For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Human Health Sciences, 1600 Clifton Road NE, Mailstop F-57, Atlanta, GA 30329-4027.

Phone: 1-800-232-4636

ToxFAQs™ on the web: www.atsdr.cdc.gov/ToxFAQs

ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

Toluene - ToxFAQs™

What is toluene?

Toluene is a clear, colorless liquid with a distinctive smell. It occurs naturally in crude oil and in the tolu tree. Toluene is produced in the process of making gasoline and other fuels from crude oil and in making coke from coal.



Toluene is a good solvent (a substance that can dissolve other substances). It is used in making paints, paint thinners, fingernail polish, lacquers, adhesives, and rubber and in some printing and leather tanning processes. Toluene is also used in the manufacture of other chemicals, nylon, and plastics. It is also added to gasoline along with benzene and xylene to improve octane ratings.

What happens to toluene in the environment?

Toluene can enter the air from car exhaust or when materials that contain it (such as paints or fingernail polish) are used. It can get into surface waters (like lakes and streams), groundwater, or soil if solvents or petroleum products are accidentally spilled, or from leaking underground storage tanks at gasoline stations and other facilities. When toluene-containing products are placed in landfills or waste disposal sites, toluene can enter the soil or water near the waste site.

Toluene does not usually stay in the environment long. In surface water or soil, it will readily evaporate into the air or be degraded by bacteria. In the air, toluene rapidly breaks down by reacting with other chemicals or oxygen in the air. Below the surface, microorganisms will break down toluene.

How can I be exposed to toluene?

You may be exposed to toluene by breathing contaminated air or touching products that contain this chemical. Car exhaust contains toluene; therefore, if you spend time in or near vehicles or traffic, you may be exposed to this chemical. People who work with gasoline, paint, or dyes may be exposed to higher levels of toluene than most people.

Toluene is not frequently detected in drinking water or food. People that abuse (inhale) certain products such as glue or paint thinner can be exposed to toluene.

How can toluene affect my health?

Toluene may affect the nervous system. Low to moderate levels can cause headaches, dizziness, tiredness, confusion, weakness, drunken-type actions, memory loss, nausea, and loss of appetite. These symptoms usually disappear when exposure stops.

Long-term daily exposure to toluene in the workplace may cause some hearing and color vision loss. Repeatedly breathing toluene from glue or paint thinners may permanently damage the brain.

Exposure to high levels of toluene during pregnancy, such as those associated with solvent abuse, may lead to developmental effects, such as reduced mental abilities and growth in children.

In animal studies, the effects of toluene were similar to those seen in humans. In addition, it was found that animals that drank toluene also had decreased immune responses.

Toluene can be found in gasoline products, paints, stain removers, and fingernail polish. Breathing toluene can cause headaches, dizziness, and nausea.

Toluene

Can toluene cause cancer?

Studies in workers and animals exposed to toluene generally show that toluene does not cause cancer.

The [U.S. Department of Health and Human Services \(DHHS\)](#) has not evaluated the carcinogenicity (ability to cause cancer) of toluene.

The [U.S. Environmental Protection Agency \(EPA\)](#) has determined that there is inadequate information to assess the carcinogenicity of toluene.

The [International Agency for Research on Cancer \(IARC\)](#) has determined that toluene is not classifiable as to its carcinogenicity in humans.

Can I get a medical test to check for toluene?

Toluene and its breakdown products can be measured in blood and urine. These tests are only useful if done within several days after exposure. These tests cannot predict whether you will have health problem from exposure to toluene.

How can I protect myself and my family from toluene?

To reduce exposure to toluene, you should use products that contain it (such as paints, nail polish, glues, inks, and stain removers) in well-ventilated areas. When not in use, these products should be tightly covered to prevent evaporation into the air and, if possible, stored in a shed or an outside location. Always store household chemicals in their original labeled containers.

Have your tap water tested if you are concerned it may have toluene and, if necessary, take steps to protect yourself. Keep children from eating or playing in the dirt if you live near a waste site.

Sometimes, older children sniff household chemicals in an attempt to get high. Talk with children about the dangers of sniffing chemicals.

For more information:



Call **CDC-INFO** at 1-800-232-4636, or submit your question online at <https://wwwn.cdc.gov/dcs/ContactUs/Form>

Go to ATSDR's Toxicological Profile for Toluene: <https://wwwn.cdc.gov/TSP/ToxProfiles/ToxProfiles.aspx?id=161&tid=29>

Go to ATSDR's Toxic Substances Portal: <https://wwwn.cdc.gov/TSP/index.aspx>

Find & contact your ATSDR Regional Representative at http://www.atsdr.cdc.gov/DRO/dro_org.html

This fact sheet answers the most frequently asked health questions (FAQs) about xylene. For more information, call the ATSDR Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to xylene occurs in the workplace and when you use paint, gasoline, paint thinners and other products that contain it. People who breathe high levels may have dizziness, confusion, and a change in their sense of balance. Xylene has been found in at least 840 of the 1,684 National Priority List sites identified by the Environmental Protection Agency (EPA).

What is xylene?

There are three forms of xylene in which the methyl groups vary on the benzene ring: *meta*-xylene, *ortho*-xylene, and *para*-xylene (*m*-, *o*-, and *p*-xylene). These different forms are referred to as isomers.

Xylene is a colorless, sweet-smelling liquid that catches on fire easily. It occurs naturally in petroleum and coal tar. Chemical industries produce xylene from petroleum. It is one of the top 30 chemicals produced in the United States in terms of volume.

Xylene is used as a solvent and in the printing, rubber, and leather industries. It is also used as a cleaning agent, a thinner for paint, and in paints and varnishes. It is found in small amounts in airplane fuel and gasoline.

What happens to xylene when it enters the environment?

- Xylene evaporates quickly from the soil and surface water into the air.
- In the air, it is broken down by sunlight into other less harmful chemicals in a couple of days.
- It is broken down by microorganisms in soil and water.
- Only a small amount of it builds up in fish, shellfish, plants, and other animals living in xylene-contaminated water.

How might I be exposed to xylene?

- Using a variety of consumer products including gasoline, paint varnish, shellac, rust preventatives, and cigarette smoke. Xylene can be absorbed through the respiratory tract and through the skin.
- Ingesting xylene-contaminated food or water, although these levels are likely to be very low.
- Working in a job that involves the use of xylene such as painters, paint industry workers, biomedical laboratory workers, automobile garage workers, metal workers, and furniture refinishers.

How can xylene affect my health?

No health effects have been noted at the background levels that people are exposed to on a daily basis.

High levels of exposure for short or long periods can cause headaches, lack of muscle coordination, dizziness, confusion, and changes in one's sense of balance. Exposure of people to high levels of xylene for short periods can also cause irritation of the skin, eyes, nose, and throat; difficulty in breathing; problems with the lungs; delayed reaction time; memory difficulties; stomach discomfort; and possibly changes in the liver and kidneys. It can cause unconsciousness and even death at very high levels.

ToxFAQs™ Internet address is <http://www.atsdr.cdc.gov/toxfaq.html>

How likely is xylene to cause cancer?

Both the International Agency for Research on Cancer (IARC) and the EPA have found that there is insufficient information to determine whether or not xylene is carcinogenic.

How can xylene affect children?

The effects of xylene have not been studied in children, but it is likely that they would be similar to those seen in exposed adults. Although there is no direct evidence, children may be more sensitive to acute inhalation exposure than adults because their narrower airways would be more sensitive to swelling effects.

Studies of unborn animals indicate that high concentrations of xylene may cause increased numbers of deaths, and delayed growth and development. In many instances, these same concentrations also cause damage to the mothers. We do not know if xylene harms the unborn child if the mother is exposed to low levels of xylene during pregnancy.

How can families reduce the risks of exposure to xylene?

- Exposure to xylene as solvents (in paints or gasoline) can be reduced if the products are used with adequate ventilation and if they are stored in tightly closed containers out of the reach of small children.
- Sometimes older children sniff household chemicals in attempt to get high. Talk with your children about the dangers of sniffing xylene.
- If products containing xylene are spilled on the skin, then the excess should be wiped off and the area cleaned with soap and water.

Is there a medical test to determine whether I've been exposed to xylene?

Laboratory tests can detect xylene or its breakdown products in exhaled air, blood, or urine. There is a high degree of agreement between the levels of exposure to xylene and the levels of xylene breakdown products in the urine. However, a urine sample must be provided very soon after exposure ends because xylene quickly leaves the body. These tests are not routinely available at your doctor's office because they require special equipment.

Has the federal government made recommendations to protect human health?

The EPA set a limit of 10 parts xylene per million parts drinking water (10 ppm).

The Occupational Safety and Health Administration (OSHA) has set limits of 100 parts xylene per million parts of workplace air (100 ppm) for 8 hour shifts and 40 hour work weeks.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2007. Toxicological Profile for Xylene (Update). Atlanta, GA: U.S. Department of Public Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Environmental Medicine, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-800-232-4636, FAX: 770-488-4178. ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html>. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.



Appendix B
Citizen Participation Plan (CPP)



Department of
Environmental
Conservation

Brownfield Cleanup Program

Citizen Participation Plan for 27-45 North Main Street

December 2022

BCP Site No. TBD
27-45 North Main Street and 28 Adee Street
Village of Port Chester
Westchester County, New York

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* * * * *

Note: The information presented in this Citizen Participation Plan was current as of the date of its approval by the New York State Department of Environmental Conservation. Portions of this Citizen Participation Plan may be revised during the site’s investigation and cleanup process.

Applicant: **Abendroth Green LLC (“Applicant”)**
Site Name: **27-45 North Main Street (“Site”)**
Site Address: **27-45 North Main Street and 28 Adee Street, Village of Port Chester, NY 10573**
Site County: **Westchester County**
Site Number: **TBD**

1. What is New York’s Brownfield Cleanup Program?

New York’s Brownfield Cleanup Program (BCP) works with private developers to encourage the voluntary cleanup of contaminated properties known as “brownfields” so that they can be reused and developed. These uses include recreation, housing, and business.

A *brownfield* is any real property that is difficult to reuse or redevelop because of the presence or potential presence of contamination. A brownfield typically is a former industrial or commercial property where operations may have resulted in environmental contamination. A brownfield can pose environmental, legal, and financial burdens on a community. If a brownfield is not addressed, it can reduce property values in the area and affect economic development of nearby properties.

The BCP is administered by the New York State Department of Environmental Conservation (NYSDEC) which oversees Applicants who conduct brownfield site investigation and cleanup activities. An Applicant is a person who has requested to participate in the BCP and has been accepted by NYSDEC. The BCP contains investigation and cleanup requirements, ensuring that cleanups protect public health and the environment. When NYSDEC certifies that these requirements have been met, the property can be reused or redeveloped for the intended use.

For more information about the BCP, go online at:
<http://www.dec.ny.gov/chemical/8450.html> .

2. Citizen Participation Activities

Why NYSDEC Involves the Public and Why It Is Important

NYSDEC involves the public to improve the process of investigating and cleaning up contaminated sites, and to enable citizens to participate more fully in decisions that affect their health, environment, and social well-being. NYSDEC provides opportunities for citizen involvement and encourages early two-way communication with citizens before decision makers form or adopt final positions.

Involving citizens affected and interested in site investigation and cleanup programs is important for many reasons. These include:

- Promoting the development of timely, effective site investigation and cleanup programs that protect public health and the environment
- Improving public access to, and understanding of, issues and information related to a particular site and that site's investigation and cleanup process
- Providing citizens with early and continuing opportunities to participate in NYSDEC's site investigation and cleanup process
- Ensuring that NYSDEC makes site investigation and cleanup decisions that benefit from input that reflects the interests and perspectives found within the affected community
- Encouraging dialogue to promote the exchange of information among the affected/interested public, State agencies, and other interested parties that strengthens trust among the parties, increases understanding of site and community issues and concerns, and improves decision making.

This Citizen Participation (CP) Plan provides information about how NYSDEC will inform and involve the public during the investigation and cleanup of the site identified above. The public information and involvement program will be carried out with assistance, as appropriate, from the Applicant.

Project Contacts

Appendix A identifies NYSDEC project contact(s) to whom the public should address questions or request information about the site's investigation and cleanup program. The public's suggestions about this CP Plan and the CP program for the site are always welcome. Interested people are encouraged to share their ideas and suggestions with the project contacts at any time.

Locations of Reports and Information

The locations of the reports and information related to the site's investigation and cleanup program also are identified in Appendix A. These locations provide convenient access to important project documents for public review and comment. Some documents may be placed on the NYSDEC web site. If this occurs, NYSDEC will inform the public in fact sheets distributed about the site and by other means, as appropriate.

Site Contact List

Appendix B contains the site contact list. This list has been developed to keep the community informed about, and involved in, the site's investigation and cleanup process. The site contact list will be used periodically to distribute fact sheets that provide updates about the status of the project. These will include notifications of upcoming activities at the site (such as fieldwork), as well as availability of project documents and announcements about public comment periods.

The site contact list includes, at a minimum:

- chief executive officer and planning board chairperson of each county, city, town and village in which the site is located;
- residents, owners, and occupants of the site and properties adjacent to the site;
- the public water supplier which services the area in which the site is located;
- any person who has requested to be placed on the site contact list;
- the administrator of any school or day care facility located on or near the site for purposes of posting and/or dissemination of information at the facility;
- location(s) of reports and information.

The site contact list will be reviewed periodically and updated as appropriate. Individuals and organizations will be added to the site contact list upon request. Such requests should be submitted to the NYSDEC project contact(s) identified in Appendix A. Other additions to the site contact list may be made at the discretion of the NYSDEC project manager, in consultation with other NYSDEC staff as appropriate.

Note: The first site fact sheet (usually related to the draft Remedial Investigation Work Plan) is distributed both by paper mailing through the postal service and through DEC Delivers, its email listserv service. The fact sheet includes instructions for signing up with the appropriate county listserv to receive future notifications about the site. See <http://www.dec.ny.gov/chemical/61092.html> .

Subsequent fact sheets about the site will be distributed exclusively through the listserv, except for households without internet access that have indicated the need to continue to receive site information in paper form. Please advise the NYSDEC site project manager identified in Appendix A if that is the case. Paper mailings may continue during the investigation and cleanup process for some sites, based on public interest and need.

CP Activities

The table at the end of this section identifies the CP activities, at a minimum, that have been and will be conducted during the site's investigation and cleanup program. The

flowchart in Appendix D shows how these CP activities integrate with the site investigation and cleanup process. The public is informed about these CP activities through fact sheets and notices distributed at significant points during the program. Elements of the investigation and cleanup process that match up with the CP activities are explained briefly in Section 5.

- **Notices and fact sheets** help the interested and affected public to understand contamination issues related to a site, and the nature and progress of efforts to investigate and clean up a site.
- **Public forums, comment periods and contact with project managers** provide opportunities for the public to contribute information, opinions and perspectives that have potential to influence decisions about a site's investigation and cleanup.

The public is encouraged to contact project staff at any time during the site's investigation and cleanup process with questions, comments, or requests for information.

This CP Plan may be revised due to changes in major issues of public concern identified in Section 3 or in the nature and scope of investigation and cleanup activities. Modifications may include additions to the site contact list and changes in planned citizen participation activities.

Technical Assistance Grant

NYSDEC must determine if the site poses a significant threat to public health or the environment. This determination generally is made using information developed during the investigation of the site, as described in Section 5.

If the site is determined to be a significant threat, a qualifying community group may apply for a Technical Assistance Grant (TAG). The purpose of a TAG is to provide funds to the qualifying group to obtain independent technical assistance. This assistance helps the TAG recipient to interpret and understand existing environmental information about the nature and extent of contamination related to the site and the development/implementation of a remedy.

An eligible community group must certify that its membership represents the interests of the community affected by the site, and that its members' health, economic well-being or enjoyment of the environment may be affected by a release or threatened release of contamination at the site.

As of the date the declaration (page 2) was signed by the NYSDEC project manager, **the significant threat determination for the site had not yet been made.**

To verify the significant threat status of the site, the interested public may contact the NYSDEC project manager identified in Appendix A.

For more information about TAGs, go online at <http://www.dec.ny.gov/regulations/2590.html>

Note: The table identifying the citizen participation activities related to the site's investigation and cleanup program follows on the next page:

| Citizen Participation Activities | Timing of CP Activity(ies) |
|---|---|
| Application Process: | |
| <ul style="list-style-type: none"> • Prepare site contact list • Establish document repository(ies) | At time of preparation of application to participate in the BCP. |
| <ul style="list-style-type: none"> • Publish notice in Environmental Notice Bulletin (ENB) announcing receipt of application and 30-day public comment period • Publish above ENB content in local newspaper • Mail above ENB content to site contact list • Conduct 30-day public comment period | When NYSDEC determines that BCP application is complete. The 30-day public comment period begins on date of publication of notice in ENB. End date of public comment period is as stated in ENB notice. Therefore, ENB notice, newspaper notice, and notice to the site contact list should be provided to the public at the same time. |
| After Execution of Brownfield Site Cleanup Agreement (BCA): | |
| <ul style="list-style-type: none"> • Prepare Citizen Participation (CP) Plan | Before start of Remedial Investigation Note: Applicant must submit CP Plan to NYSDEC for review and approval within 20 days of the effective date of the BCA. |
| Before NYSDEC Approves Remedial Investigation (RI) Work Plan: | |
| <ul style="list-style-type: none"> • Distribute fact sheet to site contact list about proposed RI activities and announcing 30-day public comment period about draft RI Work Plan • Conduct 30-day public comment period | Before NYSDEC approves RI Work Plan. If RI Work Plan is submitted with application, public comment periods will be combined and public notice will include fact sheet. Thirty-day public comment period begins/ends as per dates identified in fact sheet. |
| After Applicant Completes Remedial Investigation: | |
| <ul style="list-style-type: none"> • Distribute fact sheet to site contact list that describes RI results | Before NYSDEC approves RI Report |
| Before NYSDEC Approves Remedial Work Plan (RWP): | |
| <ul style="list-style-type: none"> • Distribute fact sheet to site contact list about draft RWP and announcing 45-day public comment period • Public meeting by NYSDEC about proposed RWP (if requested by affected community or at discretion of NYSDEC project manager) • Conduct 45-day public comment period | Before NYSDEC approves RWP. Forty-five day public comment period begins/ends as per dates identified in fact sheet. Public meeting would be held within the 45-day public comment period. |
| Before Applicant Starts Cleanup Action: | |
| <ul style="list-style-type: none"> • Distribute fact sheet to site contact list that describes upcoming cleanup action | Before the start of cleanup action. |
| After Applicant Completes Cleanup Action: | |
| <ul style="list-style-type: none"> • Distribute fact sheet to site contact list that announces that cleanup action has been completed and that NYSDEC is reviewing the Final Engineering Report • Distribute fact sheet to site contact list announcing NYSDEC approval of Final Engineering Report and issuance of Certificate of Completion (COC) | At the time the cleanup action has been completed. Note: The two fact sheets are combined when possible if there is not a delay in issuing the COC. |

3. Major Issues of Public Concern

This section of the CP Plan identifies major issues of public concern that relate to the site. Additional major issues of public concern may be identified during the course of the site's investigation and cleanup process.

No shallow groundwater use exists in the area or vicinity of the Site. This eliminates potential wellhead issues, but does not take into account the vapor intrusion issues to which on-Site and adjacent and adjacent buildings may become susceptible since groundwater contamination may include Volatile Organic Compounds (VOCs). Potable water is provided to residents by the Liberty Utilities (New York Water) Corp. There may also be impacts with regards to noise, odor, and truck traffic.

The Site is located within a Potential Environmental Justice Area. Environmental justice is defined as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Based on neighborhood 2020 census data, there is a sizable Hispanic-American community near the Site. Therefore, all future fact sheets will be translated into Spanish.

Environmental justice efforts focus on improving the environment in communities, specifically minority and low-income communities, and addressing the disproportionate adverse environmental impacts that may exist in those communities.

Upon conclusion of the BCP application 30-day public comment period, if issues of public concern are identified, this CP Plan will be amended to address any additional CP activities that may need to be implemented.

4. Site Information

Appendix C contains a map identifying the location of the site.

Site Description

The Site is an irregularly-shaped parcel with approximately 250 feet of frontage along North Main Street, approximately 300 feet of frontage along Abendroth Avenue, and approximately 100 feet of frontage along Adee Street. The Site is identified as Westchester County Tax Section 142.31, Tax Block 1, Lots 7, 11, 12, 13, 14, 15, 16, and 17. The Site is bounded by Adee Street to the northeast, North Main Street to the northwest, Abendroth Avenue to the southeast, and commercial buildings and a parking lot followed by Westchester Avenue to the southwest. The Site is improved with several one- to three-story commercial or mixed-use residential and commercial buildings. Current commercial businesses include a realtor, restaurant, labor union, and non-profit

organizations. The remaining commercial and residential units are vacant. Exterior portions of the Site are largely capped with asphalt and utilized for parking or accessory retail uses. The remainder of the exterior portions of the Site are utilized for landscaping.

History of Site Use, Investigation, and Cleanup

Prior to 1890, an inlet of the Byram River extended north through the central portion of the Site. By 1890, a small area of the inlet onsite had been filled, and by 1895 the entire Site was filled. By 1895, the Site area along North Main Street was developed with multiple small buildings and stores. The Site was historically utilized for commercial and residential purposes, with non-residential uses of the Site including dry cleaning, a planing/lumber mill, a roller rink, printers, sign painting, lime and cement storage, plumbing, and a metal works.

Environmental investigations completed at the Site have included analysis of soil, groundwater, soil vapor, and indoor air. The investigations were completed in 2016 and 2022.

Previous Environmental Studies

Phase I Environmental Site Assessments (2016 – 2022)

Six Phase I Environmental Site Assessments (ESAs) were prepared between 2016 and 2022 for the Site or a portion of the Site. The following Recognized Environmental Conditions (RECs) were identified in connection with the Site as having the potential for negative environmental impacts:

- The historical use of the Site for dry cleaning, printing, and metalworking;
- The presence of historical fill material at the Site;
- Open petroleum spill (Spill No. 1708684) associated with the Site, and the historic and current use of the Site for underground oil storage; and,
- Historical use of the east adjoining property for coal storage and a west adjoining property for printing.

Tier II: Soil Vapor Encroachment Screen (August 2016)

Soil vapor sampling was completed at Lots 14 and 16 to further investigate the 2016 Phase I ESA findings. The soil vapor investigation included the installation of two soil vapor points and the collection of two soil vapor samples.

The results of the sample analysis showed elevated concentrations of chlorinated

solvents, specifically tetrachloroethene (PCE), in one soil vapor sample collected from the southeastern portion of the exterior of Lot 16. No other chlorinated solvents were detected in either soil vapor sample.

Indoor Air and Groundwater Survey (October 2016)

Following the Tier II Soil Vapor Encroachment Screen, an indoor air and groundwater samples were collected at Lot 16 to determine if chlorinated solvents detected in soil vapor at the property were impacting indoor air or groundwater beneath the property. The indoor air and groundwater investigation included the installation of three temporary groundwater collection points, the collection of three groundwater samples, and the collection of three indoor air samples.

The results of the sample analysis showed elevated concentrations of VOCs were not detected in any groundwater samples. Elevated concentrations of chlorinated solvents, including PCE, trichloroethene (TCE), carbon tetrachloride, and methylene chloride were detected in all three indoor air samples. In addition, the chlorinated solvents cis-1,2-dichloroethene (cis-1,2-DCE), vinyl chloride, 1,1,1-trichloroethane (1,1,1-TCA), and 1,1-dichloroethene (1,1-DCE) were each detected at elevated concentrations in one indoor air sample.

Limited Due Diligence Environmental Site Investigation (April 2022)

Soil, groundwater, and soil vapor sampling was conducted at the Site to further investigate the 2022 Phase I ESA findings. The investigation included the installation of six soil borings, the collection of six soil samples, the installation of two temporary groundwater monitoring wells, the collection of two groundwater samples, the installation of four soil vapor points, and the collection of four soil vapor samples.

The results of the sample analysis showed elevated concentrations of historic fill-related constituents (semivolatile organic compounds [SVOCs], metals, and pesticides) were detected in one or more soil samples. A variety of historic fill-related SVOCs were also detected at slightly elevated concentrations in one groundwater monitoring well. Chlorinated solvents, specifically PCE, was detected in all four soil vapor samples. In addition, carbon tetrachloride was detected in three soil vapor samples and TCE and cis-1,2-DCE were each detected in one soil vapor sample.

5. Investigation and Cleanup Process

Application

The Applicant has applied for and been accepted into New York's Brownfield Cleanup Program as a **Volunteer**. This means **that the Applicant was not responsible for the**

disposal or discharge of the contaminants or whose ownership or operation of the site took place after the discharge or disposal of contaminants. The Volunteer must fully characterize the nature and extent of contamination onsite, and must conduct a “qualitative exposure assessment,” a process that characterizes the actual or potential exposures of people, fish and wildlife to contaminants on the site and to contamination that has migrated from the site.

The Applicant in its Application proposes that the site will be used for **restricted-residential** purposes.

To achieve this goal, the Applicant will conduct **investigation and cleanup** activities at the site with oversight provided by NYSDEC. The Brownfield Cleanup Agreement executed by NYSDEC and the Applicant sets forth the responsibilities of each party in conducting these activities at the site.

Investigation

The Applicant will conduct an investigation of the site officially called a “remedial investigation” (RI). This investigation will be performed with NYSDEC oversight. The Applicant must develop a remedial investigation workplan, which is subject to public comment.

The site investigation has several goals:

- 1) define the nature and extent of contamination in soil, surface water, groundwater and any other parts of the environment that may be affected;
- 2) identify the source(s) of the contamination;
- 3) assess the impact of the contamination on public health and the environment;
and
- 4) provide information to support the development of a proposed remedy to address the contamination or the determination that cleanup is not necessary.

The Applicant submits a draft “Remedial Investigation Work Plan” to NYSDEC for review and approval. NYSDEC makes the draft plan available to the public review during a 30-day public comment period.

When the investigation is complete, the Applicant will prepare and submit a report that summarizes the results. This report also will recommend whether cleanup action is needed to address site-related contamination. The investigation report is subject to review and approval by NYSDEC.

NYSDEC will use the information in the investigation report to determine if the site poses a significant threat to public health or the environment. If the site is a “significant threat,” it must be cleaned up using a remedy selected by NYSDEC from an analysis of

alternatives prepared by the Applicant and approved by NYSDEC. If the site does not pose a significant threat, the Applicant may select the remedy from the approved analysis of alternatives.

Interim Remedial Measures

An Interim Remedial Measure (IRM) is an action that can be undertaken at a site when a source of contamination or exposure pathway can be effectively addressed before the site investigation and analysis of alternatives are completed. If an IRM is likely to represent all or a significant part of the final remedy, NYSDEC will require a 30-day public comment period.

Remedy Selection

When the investigation of the site has been determined to be complete, the project likely would proceed in one of two directions:

1. The Applicant may recommend in its investigation report that no action is necessary at the site. In this case, NYSDEC would make the investigation report available for public comment for 45 days. NYSDEC then would complete its review, make any necessary revisions, and, if appropriate, approve the investigation report. NYSDEC would then issue a “Certificate of Completion” (described below) to the Applicant.

or

2. The Applicant may recommend in its investigation report that action needs to be taken to address site contamination. After NYSDEC approves the investigation report, the Applicant may then develop a cleanup plan, officially called a “Remedial Work Plan”. The Remedial Work Plan describes the Applicant’s proposed remedy for addressing contamination related to the site.

When the Applicant submits a draft Remedial Work Plan for approval, NYSDEC would announce the availability of the draft plan for public review during a 45-day public comment period.

Cleanup Action

NYSDEC will consider public comments, and revise the draft cleanup plan if necessary, before approving the proposed remedy. The New York State Department of Health (NYSDOH) must concur with the proposed remedy. After approval, the proposed remedy becomes the selected remedy. The selected remedy is formalized in the site Decision Document.

The Applicant may then design and perform the cleanup action to address the site contamination. NYSDEC and NYSDOH oversee the activities. When the Applicant completes cleanup activities, it will prepare a final engineering report that certifies that cleanup requirements have been achieved or will be achieved within a specific time frame. NYSDEC will review the report to be certain that the cleanup is protective of public health and the environment for the intended use of the site.

Certificate of Completion

When NYSDEC is satisfied that cleanup requirements have been achieved or will be achieved for the site, it will approve the final engineering report. NYSDEC then will issue a Certificate of Completion (COC) to the Applicant. The COC states that cleanup goals have been achieved, and relieves the Applicant from future liability for site-related contamination, subject to certain conditions. The Applicant would be eligible to redevelop the site after it receives a COC.

Site Management

The purpose of site management is to ensure the safe reuse of the property if contamination will remain in place. Site management is the last phase of the site cleanup program. This phase begins when the COC is issued. Site management incorporates any institutional and engineering controls required to ensure that the remedy implemented for the site remains protective of public health and the environment. All significant activities are detailed in a Site Management Plan.

An *institutional control* is a non-physical restriction on use of the site, such as a deed restriction that would prevent or restrict certain uses of the property. An institutional control may be used when the cleanup action leaves some contamination that makes the site suitable for some, but not all uses.

An *engineering control* is a physical barrier or method to manage contamination. Examples include: caps, covers, barriers, fences, and treatment of water supplies.

Site management also may include the operation and maintenance of a component of the remedy, such as a system that pumps and treats groundwater. Site management continues until NYSDEC determines that it is no longer needed.

**Appendix A -
Project Contacts and Locations of Reports and Information**

Project Contacts

For information about the site's investigation and cleanup program, the public may contact any of the following project staff:

New York State Department of Environmental Conservation (NYSDEC):

{TBD}

Project Manager
NYSDEC Region 3
Division of Environmental Remediation
21 South Putt Corners Road
New Paltz, NY 12561
Phone: {TBD}
Email: {TBD}

{TBD}

Citizen Participation Specialist
NYSDEC Region 3
21 South Putt Corners Road
New Paltz, NY 12561
Phone: {TBD}
Email: {TBD}

New York State Department of Health (NYSDOH):

{TBD}

Project Manager
NYSDOH
145 Huguenot Street, 6th Floor
New Rochelle, NY 10801-5291
Phone: {TBD}
Email: {TBD}

Locations of Reports and Information

The facilities identified below are being used to provide the public with convenient access to important project documents:

Port Chester-Rye Brook Public Library

1 Haseco Avenue
Port Chester, NY 10573
Attn: Robin Lettieri, Library Director
Phone: (914) 939-6710
Hours: Monday: 9 AM – 9 PM
Tuesday: 9 AM – 8 PM
Wednesday: 9 AM – 12 PM
Friday & Saturday: 9 AM – 5 PM
Thursday & Sunday: Closed

NYSDEC Region 3

21 South Putt Corners Road
New Paltz, NY 12561
Attn: {TBD}
Phone: {TBD}
Hours: (call for appointment)

Appendix B - Site Contact List

Contact List Information

B-1. The Chief Executive Officer And Planning Board Chairperson Of Each County, City, Town And Village In Which The Property Is Located.

Mayor Luis A. Marino
222 Grace Church Street
Port Chester, NY 10573

Curt Lavalla, Director
Planning Commission
222 Grace Church Street, Suite 202
Port Chester, NY 10573

Planning Department
Westchester County
148 Martine Avenue
White Plains, NY 10601

George Latimer, County Executive
Westchester County
148 Martine Avenue
White Plains, NY 10601

Steven Otis
Assembly Member, District 91
222 Grace Church Street
Port Chester, NY 10573

Shelley Mayer
State Senator, District 37
222 Grace Church Street, Suite 300
Port Chester, NY 10573

B-2. Residents, Owners And Occupants Of The Property And Properties Adjacent To The Property.

Site Owner

Port Chester Holdings I LLC
122 East 42nd Street, 18th Floor
New York, NY 10168

Site Occupants

Occupied by: El Palacio De Maria
Occupant Address: 35 North Main Street, Port Chester, NY 10573
Occupied by: PCTGM

Occupant Address: 35 North Main Street, Port Chester, NY 10573
Occupied by: Costa Properties & Management Inc
Occupant Address: 39 North Main Street, Port Chester, NY 10573
Occupied by: Council of Community Services – Port Chester, Town of Rye, Rye Brook
Occupant Address: 28 Adee Street, Port Chester, NY 10573
Occupied by: HOPE House
Occupant Address: 100 Abendroth Avenue, Port Chester, NY 10573
Occupied by: Human Development Services
Occupant Address: 100 Abendroth Avenue, Port Chester, NY 10573

34 Adee Street

Commercial building owned by: 34 Adee Street Realty, LLC
Owner Address: 34 Adee Street, Port Chester, NY 10573
Occupied by: Ronai & Ronai LLP
Occupant Address: 34 Adee Street, Port Chester, NY 10573

49 North Main Street

Commercial building owned by: Nicholas Peter Williams
Owner Address: 49 North Main Street, Port Chester, NY 10573
Occupied by: Mid-Town Cafe
Occupant Address: 49 North Main Street, Port Chester, NY 10573

47 North Main Street

Commercial building owned by: Mile Square Realty, LLC
Owner Address: 634 North Broadway, Yonkers, NY 10701
Occupied by: Sense Esthetics Medical Spa
Occupant Address: 47 North Main Street, Suite 2, Port Chester, NY 10701
Occupied by: Arcely's Hair Salon
Occupant Address: 47 North Main Street, Suite 1, Port Chester, NY 10701

107 North Main Street

Commercial building owned by: Village of Port Chester IDA
Owner Address: 222 Grace Church Street, Port Chester, NY 10573
Occupied by: Walgreens
Occupant Address: 107 North Main Street, Port Chester, NY 10573

35 Abendroth Avenue

Commercial building owned by: Village of Port Chester IDA
Owner Address: 222 Grace Church Street, Port Chester, NY 10573
Occupied by: Colony Grill
Occupant Address: 35 Abendroth Avenue, Port Chester, NY 10573

17 North Main Street

Commercial building owned by: 17-25 North Main Street, LLC
Owner Address: 420 Westchester Avenue, Port Chester, NY 10573
Occupied by: Metro by T-Mobile

Occupant Address: 17 North Main Street, Port Chester, NY 10573
Occupied by: Mary Ann's Mexican
Occupant Address: 23 ½ North Main Street, Port Chester, NY 10573
Occupied by: Svetlana Bridal Couture
Occupant Address: 21 North Main Street, Suite 211, Port Chester, NY 10573
Occupied by: Kevin Nails Spa
Occupant Address: 19 North Main Street, Port Chester, NY 10573
Occupied by: Wingstop
Occupant Address: 110 Abendroth Avenue, Port Chester, NY 10573
Occupied by: Lash 4u
Occupant Address: 112 Abendroth Avenue, Port Chester, NY 10573
Occupied by: Telly's Taverna
Occupant Address: 108 Abendroth Avenue, Port Chester, NY 10573

26 North Main Street

Commercial building owned by: PC 22-28 Main Property, LLC
Owner Address: 909 Third Avenue, New York, NY 10022
Occupied by: Reflex Salon
Occupant Address: 26 North Main Street, Port Chester, NY 10573

28 North Main Street

Commercial building owned by: PC 22-28 Main Property, LLC
Owner Address: 909 Third Avenue, New York, NY 10022
Occupied by: Noble Zule's Beauty Salon & Spa
Occupant Address: 28 North Main Street, Port Chester, NY 10573

30 North Main Street

Commercial building owned by: 30-32 North Main Street, LLC
Owner Address: 420 Westchester Avenue, Port Chester, NY 10573
Occupied by: Waterfront Dental Care PC
Occupant Address: 30 North Main Street, Port Chester, NY 10573
Occupied by: Zoraida's Salon Spa
Occupant Address: 32 North Main Street, Port Chester, NY 10573

34 North Main Street

Commercial building owned by: G.O. Realty Inc.
Owner Address: 515 Madison Avenue, New York, NY 10022
Occupied by: El Patron Barbershop Spa
Occupant Address: 34 North Main Street, Port Chester, NY 10573
Occupied by: Di-Paty Jewelry
Occupant Address: 34 North Main Street, Port Chester, NY 10573
Occupied by: Pizol Brazilian Jiu Jitsu
Occupant Address: 33 King Street, Port Chester, NY 10573

36-40 North Main Street

Commercial building owned by: Salvation Army

Owner Address: 36 North Main Street, Port Chester, NY 10573
Occupied by: The Salvation Army Thrift Store
Occupant Address: 36 North Main Street, Port Chester, NY 10573

42 North Main Street

Commercial building owned by: G.O. Realty Inc.
Owner Address: 515 Madison Avenue, New York, NY 10022
Occupied by: Occhicone Fine Leather Goods
Occupant Address: 42 North Main Street, Port Chester, NY 10573
Occupied by: Liberty Tax
Occupant Address: 42 North Main Street, Suite 1, Port Chester, NY 10573

46-48 North Main Street

Commercial building owned by: 44-48 North Main LLC
Owner Address: 498 Bergen Boulevard, Ridgefield, NJ 07657
Occupied by: Master Cuts 2 Barber Shop
Occupant Address: 44 ½ North Main Street, Port Chester, NY 10573
Occupied by: Cricket Wireless Authorized Retailer
Occupant Address: 48 North Main Street, Port Chester, NY 10573
Occupied by: Roddy's Pizza
Occupant Address: 46 North Main Street, Port Chester, NY 10573
Occupied by: Anyosa Photo Studio, Portrait, Scanning, Restoration
Occupant Address: 106 Adee Street, Port Chester, NY 10573
Occupied by: Salsa Picante
Occupant Address: 110 Adee Street, Port Chester, NY 10573

B-3. Local News Media From Which The Community Typically Obtains Information.

The Journal News
1133 Westchester Avenue, Suite N110
White Plains, NY 10604

Port Chester Westmore News
327 Irving Avenue
Port Chester, NY 10573

New York Daily News
4 New York Plaza
New York, NY 10004

New York Post
1211 Avenue of the Americas
New York, NY 10036

B-4. The Public Water Supplier Which Services The Area In Which The Property Is Located

Liberty Utilities (New York Water) Corp.
60 Brooklyn Avenue
Merrick, NY 11566

The Village of Port Chester receives its water supply from reservoirs operated by the Liberty Utilities (New York Water) Corp.

B-5. Any Person Who Has Requested To Be Placed On The Contact List.

We are unaware of any requests for inclusion on the contact list.

B-6. The Administrator Of Any School Or Day Care Facility Located On Or Near The Property.

There are no day care facilities or schools within 1,000 feet of the site.

B-7. Locations of the Document Repositories

Port Chester-Rye Brook Public Library (see attached repository confirmation)
Attn: Robin Lettieri, Library Director
1 Haseco Avenue
Port Chester, NY 10573

B-8. In Cities With A Population of One Million or More, The Local Community Board, if The Proposed Site is Located Within Such Community Board's Boundaries

The Village of Port Chester has a population of less than one million.

Appendix C - Site Location Map



Appendix C - Site Location Map

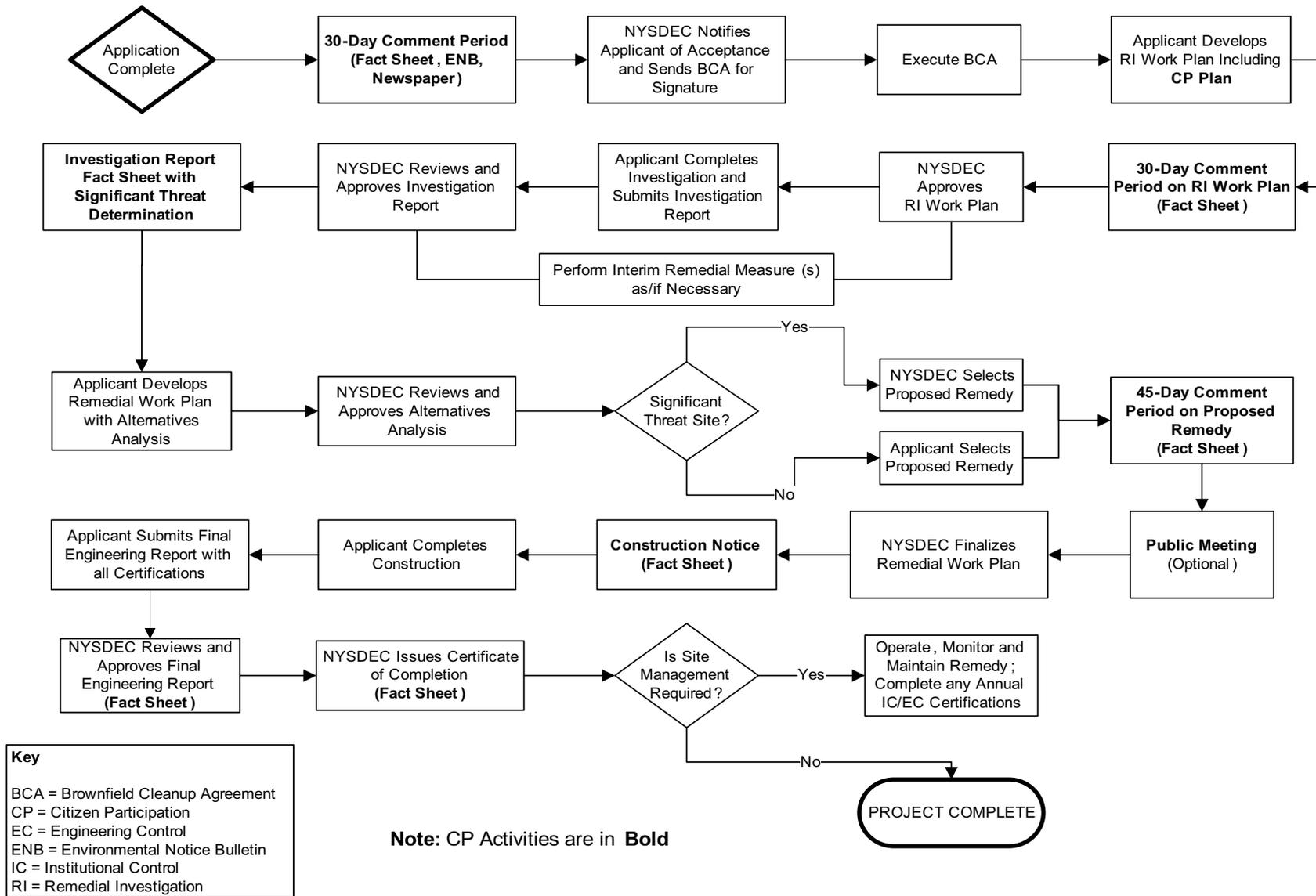
27-45 North Main Street Citizen Participation Plan

Legend

Site
(27-45 North Main Street)

Google Earth

Appendix D– Brownfield Cleanup Program Process





Division of Environmental Remediation

Remedial Programs Scoping Sheet for Major Issues of Public Concern (see instructions)

Site Name: 27-45 North Main Street

Site Number: TBD

Site Address and County: 27-45 North Main Street and 28 Adee Street, Village of Port Chester, Westchester County, NY

Remedial Party(ies): Abendroth Green LLC

Note: For Parts 1. – 3. the individuals, groups, organizations, businesses and units of government identified should be added to the site contact list as appropriate.

Part 1. List major issues of public concern and information the community wants. Identify individuals, groups, organizations, businesses and/or units of government related to the issue(s) and information needs. **Use this information as an aid to prepare or update the Major Issues of Public Concern section of the site Citizen Participation Plan.**

Groundwater contamination may include volatile organic compounds (VOCs) which could pose soil vapor intrusion issues in on-Site and adjacent buildings. The Site is located within a Potential Environmental Justice Area. Environmental justice is defined as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Based on neighborhood 2010 census data, there is a sizable Hispanic-American community near the Site. Therefore, all future fact sheets will be translated into Spanish. There may also be impacts with regards to noise, odor, and truck traffic.

How were these issues and/or information needs identified?

A Tier II Soil Vapor Encroachment Screen and Indoor Air and Groundwater Survey were performed at the Site in 2016 and a Limited Due Diligence Environmental Site Investigation was performed at the Site in April 2016.

Part 2. List important information needed **from** the community, if applicable. Identify individuals, groups, organizations, businesses and/or units of government related to the information needed.

N/A

How were these information needs identified?

N/A

Part 3. List major issues and information that need to be communicated **to** the community. Identify individuals, groups, organizations, businesses and/or units of government related to the issue(s) and/or information.

Possibly commercial and residential tenants of the surrounding community.

How were these issues and/or information needs identified?

A Tier II Soil Vapor Encroachment Screen and Indoor Air and Groundwater Survey were performed at the Site in 2016 and a Limited Due Diligence Environmental Site Investigation was performed at the Site in April 2016.

Part 4. Identify the following characteristics of the affected/interested community. This knowledge will help to identify and understand issues and information important to the community, and ways to

effectively develop and implement the site citizen participation plan (mark all that apply):

a. Land use/zoning at and around site:

Residential Agricultural Recreational Commercial Industrial

b. Residential type around site:

Urban Suburban Rural

c. Population density around site:

High Medium Low

d. Water supply of nearby residences:

Public Private Wells Mixed

e. Is part or all of the water supply of the affected/interested community currently impacted by the site?

Yes No

Provide details if appropriate:

N/A

f. Other environmental issues significantly impacted/impacting the affected community?

Yes No

Provide details if appropriate:

N/A

g. Is the site and/or the affected/interested community wholly or partly in an Environmental Justice Area?

Yes No

h. Special considerations:

Language Age Transportation Other

Explain any marked categories in h:

All future fact sheets will be translated in Spanish.

Part 5. The site contact list must include, at a minimum, the individuals, groups, and organizations identified in Part 2. of the Citizen Participation Plan under 'Site Contact List'. Are *other* individuals, groups, organizations, and units of government affected by, or interested in, the site, or its remedial program? (Mark and identify all that apply, then adjust the site contact list as appropriate.)

Non-Adjacent Residents/Property Owners: See Site Contact List

Local Officials: See Site Contact List

Media: See Site Contact List

Business/Commercial Interests: See Site Contact List

Labor Group(s)/Employees: N/A

Indian Nation: N/A

Citizens/Community Group(s): N/A

Environmental Justice Group(s): N/A

Environmental Group(s): N/A

Civic Group(s): N/A

Recreational Group(s): N/A

Other(s): N/A

Prepared/Updated By: Ashley Platt

Date: 11/21/2022

Reviewed/Approved By: [Click here to enter text.](#)

Date: [Click here to enter text.](#)

Appendix C

Quality Assurance Project Plan (QAPP)

Quality Assurance Project Plan
for
27-45 North Main Street
Interim Remedial Measures Work Plan

27-45 North Main Street and 28 Adee Street
Port Chester, NY
Block 1, Lots 7, 11, 12, 13, 14, 15, 16, and 17
BCP Site # TBD

Submitted to:

New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau B
625 Broadway, 12th Floor
Albany, NY 12233-7016

Prepared for:

Abendroth Green LLC
c/o The Hudson Companies Incorporated
826 Broadway, 11th Floor
New York, NY 10003

Prepared by:



121 West 27th Street, Suite 702
New York, NY 10001

December 2022

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Appendices

Appendix A – Resumes

1.0 INTRODUCTION

This Quality Assurance Project Plan (QAPP) has been developed for the Interim Remedial Measures (IRM) Work Plan prepared for the 27-45 North Main Street property (the Site).

The Site consists of an approximately 48,101-square foot parcel located at 27-45 North Main Street and 28 Adee Street in the Village of Port Chester, New York. The Site is identified by Westchester County as Section 142.31, Tax Block 1, Lots 7, 11, 12, 13, 14, 15, 16 and 17. The Site is an irregularly shaped parcel with approximately 250 feet of frontage along North Main Street, approximately 300 feet of frontage along Abendroth Avenue, and approximately 100 feet of frontage along Adee Street. The Site location is shown on Figure 1. A map of the current site layout is shown on Figure 2.

The Site is zoned C2, denoting a commercial district of Main Street Business. The Site lot is currently occupied by one- to three-story commercial or mixed-use residential and commercial buildings. Exterior portions of the Site are largely capped with asphalt. The remainder of the exterior portions of the Site are utilized for landscaping. Currently, the entirety of the Site is vacant. The most recent commercial businesses to operate at the Site include a realtor, restaurant, hardware store, ice cream shop, a jeweler, and non-profit organizations.

The ground level of the building on Lot 11 contains an active 1,500-gallon UST that contains #2 fuel oil. The UST is located in a subterranean vault. Lot 11 is identified on the Petroleum Bulk Storage (PBS) database as PBS #3-801942. The UST on Lot 11 is associated with an open spill (Spill No. 1708684) which was reported on December 15, 2017 due to equipment failure. The spill record indicates the UST was repaired and retested. No further information was provided and the spill case remains open.

1.1 Project Scope and QAPP Objective

The proposed scope of work includes the following:

- Implementation of the Interim Remedial Measures Work Plan (IRMWP) and remedial oversight.

The objective of the QAPP is to detail the policies, organization, objectives, functional activities and specific quality assurance/quality control activities designed to achieve the data quality goals or objectives of the Remedial Action Work Plan. This QAPP addresses how the acquisition and handling of samples and the review and reporting of data will be documented for quality control (QC) purposes. Specifically, this QAPP addresses the following:

- The procedures to be used to collect, preserve, package, and transport samples;
- Field data collection and record keeping;
- Data management;
- Chain-of-custody procedures; and,

- Determination of precision, accuracy, completeness, representativeness, decision rules, comparability and level of quality control effort.

2.0 PROJECT ORGANIZATION

The personnel detailed are responsible for the implementation of the QAPP. Tenen Environmental, LLC (Tenen) will implement the IRMWP on behalf of The Hudson Companies Incorporated (the Requestor) once it has been approved by the New York State Department of Environmental Conservation (NYSDEC).

The Project Manager and Qualified Environmental Professional (QEP) will be Mrs. Alana Carroll, CPG, managing scientist at Tenen. Mrs. Carroll is a certified professional geologist with experience in all aspects of site assessment, development and implementation of remedial strategies. Her experience involves projects from inception through investigation, remediation and closure. Her expertise includes soil, soil vapor and groundwater remediation; remedial selection and design; field/health and safety oversight and preparation of work plans and reports to satisfy the requirements of various regulatory agencies. Mrs. Carroll received her BS in Geology from Hofstra University; her resume is included in Appendix A.

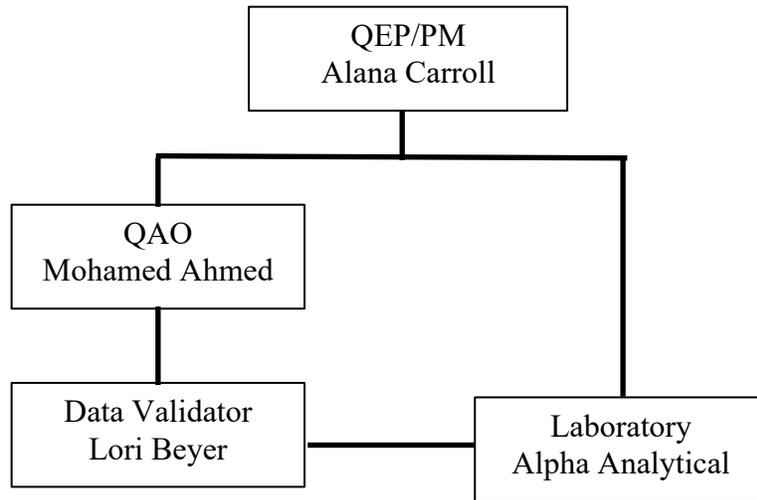
The Quality Assurance Officer will be Mohamed Ahmed, Ph.D., CPG, principal at Tenen. Dr. Ahmed is a certified professional geologist with over 20 years of experience in the New York City metropolitan area. He has designed and implemented subsurface investigations and is proficient in groundwater modeling, design of groundwater treatment systems, and soil remediation. He has managed numerous projects focused on compliance with the requirements of the New York State Brownfield Cleanup Program and spills programs and the New York City E-designation program. Dr. Ahmed also has extensive experience in conducting regulatory negotiations with the New York State Department of Environmental Conservation, the New York City Department of Environmental Protection, the NYC Office of Housing Preservation and Development, and the Mayor's Office of Environmental Remediation. Dr. Ahmed holds advanced degrees in geology and Earth and Environmental Sciences from Brooklyn College and the Graduate Center of the City University of New York; his resume is included in Appendix A.

In addition, Tenen will utilize subcontractors for laboratory services (Alpha Analytical of Westborough, MA) and data validation (L.A.B. Validation Corp. of East Northport, NY). The resume for the DUSR preparer, Ms. Lori Beyer, is included in Appendix A.

Contact Information

Remedial Party (The Hudson Companies Incorporated), Mallory Warner, 212.710.6029
Tenen Environmental, Mohammed Ahmed or Alana Carroll, 646.606.2332

An organization chart for the implementation of the IRM Work Plan and QAPP is below.



3.0 SAMPLING AND DECONTAMINATION PROCEDURES

A detailed description of the procedures to be used during this program for collection of confirmation soil samples is provided below. An Analytical Methods/Quality Assurance Summary is provided in Table 1, included in Section 3.8.

3.1 Level of Effort for QC Samples

Field blank, trip blank, field duplicate and matrix spike (MS) / matrix spike duplicate (MSD) samples will be analyzed to assess the quality of the data resulting from the field sampling and analytical programs. Each type of QC sample is discussed below.

- Field and trip blanks consisting of distilled water will be submitted to the analytical laboratories to provide the means to assess the quality of the data resulting from the field-sampling program. Field (equipment) blank samples are analyzed to check for procedural chemical constituents that may cause sample contamination. Trip blanks are used to assess the potential for contamination of samples due to contaminant migration during sample shipment and storage.
- Duplicate samples are analyzed to check for sampling and analytical reproducibility.
- MS/MSD samples provide information about the effect of the sample matrix on the digestion and measurement methodology.

The general level of QC effort will be one field duplicate and one field blank for every 20 or fewer investigative samples of a given matrix. Additional sample volume will also be provided to the laboratory to allow one site-specific MS/MSD for every 20 or fewer investigative samples of a given matrix. One trip blank will be included along with each sample delivery group of volatile organic compound (VOC) samples. One equipment blank will be collected at a frequency of one per day that PFAS samples are collected for a given matrix.

The analytical laboratory, Alpha Analytical, is certified under the New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) as Lab IDs 11148 and 11627. NYSDEC Analytical Services Protocol (ASP) Category B deliverables will be prepared by the laboratory.

3.2 Sample Handling

Samples will either be picked up by the laboratory, delivered to the laboratory in person by the sampler, or transported to the laboratory by overnight courier. All samples will be shipped to the laboratory to arrive within 48 hours after collection, and the laboratory will adhere to the analytical holding times for these analyses, as listed in the current version of the New York State ASP.

3.3 Custody Procedures

Sample custody will be controlled and maintained through the chain-of-custody procedures. The chain of custody is the means by which the possession and handling of samples is tracked from the site to the laboratory. Sample containers will be cleaned and preserved at the laboratory before shipment to the Site. The following sections (Sections 3.4 and 3.5) describe procedures for maintaining sample custody from the time samples are collected to the time they are received by the analytical laboratory.

3.4 Sample Storage

Samples will be stored in secure limited-access areas. Walk-in coolers or refrigerators will be maintained at 4°C, +/- 2°C, or as required by the applicable regulatory program. The temperatures of all refrigerated storage areas are monitored and recorded a minimum of once per day. Deviations of temperature from the applicable range require corrective action, including moving samples to another storage location, if necessary.

3.5 Sample Custody

Sample custody is defined by this QAPP as the following:

- The sample is in someone's actual possession;
- The sample is in someone's view after being in his or her physical possession;
- The sample was in someone's possession and then locked, sealed, or secured in a manner that prevents unsuspected tampering; or,
- The sample is placed in a designated and secured area.

Samples will be removed from storage areas by the sample custodian or laboratory personnel and transported to secure laboratory areas for analysis. Access to the laboratory and sample storage areas is restricted to laboratory personnel and escorted visitors only; all areas of the laboratory are therefore considered secure.

Laboratory documentation used to establish chain of custody and sample identification may include the following:

- Field chains of custody or other paperwork that arrives with the sample;
- Laboratory chain of custody;
- Sample labels or tags attached to each sample container;
- Sample custody seals;
- Sample preparation logs (i.e., extraction and digestion information) recorded in hardbound laboratory books, filled out in legible handwriting, and signed and dated by the chemist;
- Sample analysis logs (e.g., metals, GC/MS, etc.) information recorded in hardbound laboratory books that are filled out in legible handwriting, and signed and dated by the chemist;
- Sample storage log (same as the laboratory chain of custody); and,

- Sample disposition log, which documents sample disposal by a contracted waste disposal company.

3.6 Sample Tracking

All samples will be maintained in the appropriate coolers prior to and after analysis. Laboratory analysts will remove and return their samples, as needed. Samples that require internal chain of custody procedures will be relinquished to the analysts by the sample custodians. The analyst and sample custodian will sign the original chain of custody relinquishing custody of the samples from the sample custodian to the analyst. When the samples are returned, the analyst will sign the original chain of custody returning sample custody to the sample custodian. Sample extracts will be relinquished to the instrumentation analysts by the preparatory analysts. Each preparation department will track internal chain of custody through their logbooks/spreadsheets.

Any change in the sample during the time of custody will be noted on the chain of custody (e.g., sample breakage or depletion).

3.7 Confirmation Soil Sampling Methodology

In accordance with DER-10, following UST removal, confirmation soil samples will be collected from the bottom and sidewalls of the excavation to demonstrate soil remaining in place meets applicable SCGs. Bottom of excavation samples will be collected at a frequency equal to the total length of the tank divided by five, rounded up to the nearest whole number. The outermost bottom samples will be collected at least 2.5 feet from each respective end of the tank. Sidewall excavation samples will be collected at a frequency of one for every 30 linear feet (LF) of sidewall (minimum one sample per sidewall of excavation). At a minimum, five confirmation soil samples will be collected from each UST excavation: one bottom sample, and four sidewall samples (one from each sidewall of the excavation).

All confirmation soil samples will be analyzed for the following analytes on the Part 375 list with a Category B deliverable package:

- Target Compound List (TCL) VOCs by EPA Method 8260C; and,
- TCL Semivolatile Organic Compounds (SVOCs) by EPA Method 8270C.

3.8 Analytical Methods/Quality Assurance Summary Table

A summary of the analytical methods and quality assurance methods are included in Table 1, below.

Table 1
 Analytical Methods/Quality Assurance Summary

| Matrix | Proposed Samples | QA/QC Samples | | | | Total # Samples | Analytical Parameter | Method | Preservative | Holding Times | Container |
|--------|------------------|---------------|----|-----|--------|-----------------|----------------------|--------|---------------------------|---------------|--|
| | | TB | FB | DUP | MS/MSD | | | | | | |
| Soil | 5 (minimum) | 1 | 1 | 1 | 1 / 1 | 10 | VOCs | 8260C | Cool to 4°C, No Headspace | 14 days | (3) Encore samplers; (1) 2-oz plastic bottle |
| | 5 (minimum) | 0 | 1 | 1 | 1 / 1 | 9 | SVOCs | 8270D | Cool to 4°C | | (1) 4-oz amber glass bottle |

TB – Trip Blank
 FB – Field Blank
 DUP – Duplicate
 °C – degrees Celsius
 mL – milliliter
 L – liter

3.9 Decontamination

Where possible, samples will be collected using new, dedicated sampling equipment so that decontamination is not required. All non-dedicated drilling tools and equipment will be decontaminated between boring locations using potable tap water and a phosphate-free detergent (e.g., Alconox) and/or a steam cleaner. All non-dedicated sampling equipment will also have a final rinse with deionized water. Decontamination water will be collected and disposed as investigation-derived waste (IDW).

3.10 Data Review and Reporting

The NYSDEC ASP Category B data package will be validated by an independent data validation subconsultant and a DUSR summarizing the results of the data validation process will be prepared. All reported analytical results will be qualified as necessary by the data validation and will be reviewed and compared against background concentrations and/or applicable New York State criteria:

Soil – Unrestricted Use, Protection of Groundwater and Restricted-Residential Use Soil Cleanup Objectives (SCOs) as listed in 6NYCRR Part 375.

All confirmation soil sample analytical results will be documented in the Final Engineering Report (FER), and will describe Site conditions and document applicable observations made during the sample collection. In addition, the FER will include a description of the sampling procedures, tabulated sample results and an assessment of the data and conclusions. The laboratory data packages, DUSR, and field notes will be included in the FER as appendices. All data will also be submitted electronically to NYSDEC via the Environmental Information Management System (EIMS) in EqUIS format.

Appendix A
Resumes

Alana M. Carroll, PG
Senior Project Manager

PROFESSIONAL PROFILE

Ms. Alana Carroll is a professional geologist with experience managing a variety of environmental consulting projects in the New York metropolitan area and specializing in remedial investigations, conceptual site modeling, and remedial design and implementation. She provides analytical, technical, and regulatory guidance to clients, including developers and environmental attorneys, on a variety of projects in various stages of investigation, remediation, and redevelopment. Ms. Carroll has managed projects from inception through investigation, remediation, and closure in the New York State Brownfield Cleanup Program, the New York State Department of Environmental Conservation (NYSDEC) Spills and Voluntary Cleanup Programs, the New York State Superfund Program, and the New York City E-Designation Program.

CREDENTIALS AND PROFESSIONAL HONORS

New York State Licensed Professional Geologist #000979
Adjunct Professor, Manhattan College, School of Engineering
M.A., Earth and Environmental Sciences, Brooklyn College, New York
B.S., Geology, Hofstra University, Uniondale, New York

CONTINUING EDUCATION AND TRAINING

OSHA 10-Hour Construction Training (2015)
Hazardous Waste Operations and Emergency Response 40-Hour Certification
(2004; refreshers 2005, 2006, 2007, 2009, 2010, 2011, 2012, 2013, 2014, and 2015)
First Aid and CPR Certified (2012)
Amtrak Contractor Safety Training (2010 and 2011)

PROFESSIONAL AFFILIATIONS

Member of Geologic Society of America
Member of New Partners for Community Revitalization

RELEVANT EXPERIENCE

New York State Brownfield Cleanup Program, Former West 18th Street MGP Site, Block 690, Lots 20 and 29, West Chelsea, Manhattan, New York—Successfully guided the client into the Brownfield Cleanup Program at the remediation stage. Prepared detailed remedial cost estimates for several redevelopment scenarios. Assisted in negotiating cleanup costs on behalf of the developer with the entity responsible for onsite contamination from former manufactured gas plant (MGP) operations. Designed and managed a pre-design investigation that delineated onsite coal tar impacts and differentiated petroleum impacts. Served on a team that designed an *in situ* stabilization treatability study. Prepared the Remedial Action Work Plan and Alternatives Analysis that included the excavation and removal of coal tar source material within two MGP gas holders and the encapsulation of residual coal tar. Performed an essential role on the construction and design team, coordinating with the structural, foundation, mechanical, and architectural contractors.

New York State Brownfield Cleanup Program, 520 West 28th Street, West Chelsea, Manhattan, New York—Managed several investigations to address New York State Spills, New York City E-Designation, and New York State Brownfield Cleanup programs. Prepared scopes of work to address requirements of both State and City regulatory agencies. Served as an essential member of the construction and design team, coordinating with the structural, foundation, mechanical, and architectural contractors. Managed access with adjacent property owners for full-scale excavation. Coordinated with State and City agencies for the satisfaction of air, noise, and hazardous waste requirements. Coordinated and managed the characterization and disposal of over 35,000 tons of hazardous material and historic fill. Designed and managed the remedial action necessary to obtain a successful Track 1 Cleanup. Assisted in negotiating a nuanced approach to support excavation that allowed for a Track 1 Cleanup. Prepared the final engineering report that expedited the certificate of completion.

New York State Brownfield Cleanup Program, Teitelbaum Dry Cleaner, Long Island City, New York—Designed and managed multiple onsite and offsite investigations to address NYSDEC and New York State Department of Health (NYSDOH) regulatory requirements with respect to chlorinated solvent impacts to groundwater and soil vapor. Designed and managed chlorinated solvent plume delineation and remediation in both groundwater and soil vapor. Prepared a technical memorandum on the fate and transport of the onsite chlorinated solvent groundwater plume that established limited liability for downgradient impacts and identified a secondary source. Coordinated with multiple adjacent parties for access. Designed a remedial approach for the site building that included source removal, groundwater injection, and a retro-fitted sub-slab depressurization system (SSDS).

Confidential Project, Steuben County, NY—Performed a forensic review and analysis of environmental records associated with five parcels of land that the State deemed as illegal solid waste dumps. Prepared and presented two technical arguments to NYSDEC and NYSDOH detailing illegal dumping, historic fill material, human health exposure pathways, bioavailability of historic fill constituents and remedial alternatives. Designed a full-scale remedial investigation of soil, groundwater and sediments for five parcels of historically industrial land.

New York City Voluntary Cleanup Program, Gallery Row, West Chelsea, Manhattan, New York—Managed multiple investigations over five tax lots to address New York City E-Designation and Voluntary Cleanup Program requirements. Designed a remedial action that incorporates a phased and targeted excavation below Highline Park. Coordinated with State and City agencies for the satisfaction of air, noise, and hazardous waste requirements. Served as an integral part of the construction and design team.

New York State Brownfield Cleanup Program, Former Nu-Brite Dry Cleaner, 1299 First Avenue, East Side, Manhattan, New York—Designed and managed multiple investigations to address onsite chlorinated solvent impacts to soil, groundwater, and soil vapor. Site challenges included investigation and remedial action within existing, occupied building sites. Designed and managed a bedrock fracture investigation to address potential impacts to bedrock. Designed and managed offsite delineation of chlorinated solvent plume in soil vapor. Directed multiple offsite soil vapor investigations within adjacent properties; assisted in negotiating several nuanced access agreements. Managed an onsite interim remedial measure including the installation of a retro coat vapor barrier and retro-fitted SSDS within the site building.

New York State Brownfield Cleanup Program, 34th Street and 42nd Street, West Side, Manhattan, New York—Designed and managed multiple investigations to address New York State Spills and Brownfield Cleanup programs. Prepared scopes of work to address requirements of both state regulations and those agreed to by the former owner. Coordinated

with NYSDEC to modify scopes based on field observations and limitations, which resulted in not having to mobilize for additional investigations. Coordinated with multiple entities for access to perform investigations, including Javits Convention Center, Amtrak, New York City Department of Transportation, Metropolitan Transit Authority, and their contractors. Developed a three-phase analysis plan with the laboratory to determine the minimum required extent of excavation next to an Amtrak line while limiting analytical costs, decreasing in the extent of excavation, and lowering disposal and structural support requirement costs.

New York State Brownfield Cleanup Program, 388 Bridge Street, Downtown Brooklyn, New York—Designed and managed all onsite and offsite investigations of soil, soil gas, groundwater, and indoor air, including coordination of staff and subcontractors. Prepared investigation reports for submittal to client, project team, NYSDEC, and NYSDOH. Participated in project team decision making with clients, lawyers, construction manager, and other consultants. Managed New York City Transit approvals for subsurface investigations near subway lines. Coordinated offsite access in residences, commercial spaces, and a private school. Participated in soil vapor extraction pilot test implementation and reporting. Assisted with implementation of an offsite SSDS in an existing building; activities included system design/layout, installation oversight, testing, and long-term operation and maintenance. Responsible for NYSDEC/NYSDOH coordination and reporting for all investigations. Tracked project activities for inclusion in NYSDEC/NYSDOH programmatic submittals, including monthly reports and remedial schedules.

New York Department of Environmental Remediation, Class 2 State Superfund, Laurel Hill Site, Queens, New York—Managed multiphase, multiparcel project involving design, installation, and ongoing operation, maintenance, and monitoring of six remedial caps. Site challenges included the division of the site into individual parcels that were independent of one another; subsequently, each parcel had a stormwater management design individual to the surrounding parcels. Other challenges included the site's position in a wetlands area fronting Newtown Creek, and working with the New York City Department of Transportation to facilitate its schedule for the adjacent Kosciusko Bridge restoration.

New York State Brownfield Cleanup Program, Willets Point Development, Queens, New York—Managed the Brownfield Cleanup Program application and Phase I environmental site assessment effort for 45 parcels of industrialized land. Coordinated with multiple interested parties, including New York City Department of Housing Preservation and Development and the Economic Development Corporation for access and contracting.

New York State Brownfield Cleanup Program, Uniforms for Industry, Queens, New York—Designed and managed an alternative approach to the offsite soil vapor intrusion investigation. Utilized soil vapor modeling to evaluate potential human health risks and migration probabilities. Provided support for the design of a retrofitted passive venting system.

New York State Spills Program, Gotham Center, Queens, New York—Responsible for proposal and budget development, subcontractor selection and coordination, negotiation, and preparation of subcontractor terms and agreements, budget, and invoice review for a comprehensive subsurface investigation. Prepared and implemented scope of work for delineation of soil contamination and calculation of contaminant mass estimates. Subsequent to interpretation of site data and subgrade characteristics, developed and presented remedial alternatives and associated costs for internal and client project teams. Prepared remedial investigation report in coordination with the New York City Economic Development Corporation and the client for submittal to state regulators.

Matthew Carroll, P.E.
Environmental Engineer/Principal

Experience Summary

Matthew Carroll is an environmental engineer experienced in all aspects of site assessment and development and implementation of remedial strategies. He has managed projects from inception through investigation, remediation and closure. His expertise includes soil, soil gas, and groundwater remediation, preparation of cost estimates, remedial alternative selection and design, soil characterization for disposal, field safety oversight, and preparation of work plans and reports to satisfy New York and New Jersey state requirements, and New York City "e" designation and restrictive declarations. Mr. Carroll's project management experience includes past management of a New York City School Construction Authority hazardous materials contract. He is responsible for all engineering work performed by Tenen and is currently the project manager and remedial engineer for several New York State Brownfield Cleanup Program sites.

Selected Project Experience

470 Kent Avenue, Brooklyn

As project manager, supported the client in due diligence and transactional activities, including a Phase I ESA, preliminary site investigation, and remedial cost estimate; preparation of BCP application and remedial investigation work plan. The former manufactured gas plant, sugar refinery and lumberyard will be developed as a mixed-use project with market rate and affordable housing and public waterfront access. As remedial engineer, will be responsible for development of remedial alternatives and oversight and certification of all remedial activities.

500 Exterior Street, Bronx

Designed and implemented the investigation of this former lumberyard and auto repair shop that will be redeveloped as mixed use development with an affordable housing component; prepared BCP application and subsequent work plans and reports. Designed a remedial strategy incorporating both interim remedial measures (IRMs) and remediation during the development phase.

Gateway Elton I and II, Brooklyn

Conducted soil disposal characterization, prepared Remedial Action Work Plans and designed methane mitigation systems for two phases of a nine-building residential development and commercial space; prepared and oversaw implementation of a Stormwater Pollution Prevention Plan during construction and prepared and certified the remedial closure reports for the project.

Affordable Housing Development, Rye, NY

Consultant to the City of Rye on environmental issues pertaining to a county-owned development site slated for an afford senior housing; reviewed environmental documentation for the project and prepared summary memorandum for City Council review; recommended engineering controls to address potential exposure to petroleum constituents, presented report findings at public meetings and currently providing ongoing environmental support during project implementation.

Matthew Carroll, Environmental Engineer/Principal
Tenen Environmental

Queens West Development BCP Site, Long Island City, New York

Assistant Project Manager for two developers involved in the site.

- Responsible for oversight of remediation under the New York State Brownfield Cleanup Program
- Technical review of work plans and reports and coordination of the Applicant's investigation and oversight efforts
- Provided input for mass calculations and well placement for an in-situ oxidation remedy implemented on a proposed development parcel and within a City street
- Conducted technical review of work pertaining to a former refinery. Documents reviewed included work plans for characterization and contaminant delineation; pilot test (chemical oxidation); remediation (excavation and groundwater treatment). Managed field personnel conducting full time oversight and prepared progress summaries for distribution to project team
- Following implementation of remedial action, implemented the Site Management Plan and installation/design of engineering controls (SSDS, vapor barrier/concrete slab, NAPL recovery). Also responsible for coordination with NYSDEC

Brownfield Cleanup Program Redevelopment Sites – West Side, New York City

Managed remediation of a development consisting of four parcels being addressed under one or more State and city regulatory programs (NYS Brownfield Cleanup Program, NYS Spills, and NYC "e" designation program). Remediation includes soil removal, screening and disposal; treatment of groundwater during construction dewatering and implementation of a worker health and safety plan and community air monitoring plan (HASP/CAMP)

Managed an additional BCP site, supported the Applicant in coordination with MTA to create station access for the planned No. 7 subway extension; also provided support the client in coordination with Amtrak to obtain access for remedial activities on the portion of the site that is within an Amtrak easement. The site will eventually be used for construction of a mixed-use high-rise building.

BCP Site, Downtown Brooklyn, New York

Performed investigation on off-site properties and designed an SSDS for an adjacent building, retrofitting the system within the constraints of the existing structure; coordinated the installation of the indoor HVAC controls and vapor barrier; provided input to the design of a SVE system to address soil vapor issues on the site.

West Chelsea Brownfield Cleanup Program Site

Designed an in-situ remediation program and sub-slab depressurization system to address contamination remaining under the High Line Viaduct; SSDS design included specification of sub-grade components, fan modeling and selection, identifying exhaust location within building constraints and performance modeling; prepared the Operations Maintenance and Monitoring Plan and Site Management Plan sections pertaining to the SSDS.

Historic Creosote Spill Remediation – Queens, New York – New York State Voluntary Cleanup Program

Modeled contamination volume and extent and prepared mass estimates of historic fill constituents and creosote-related contamination; designed a soil vapor extraction (SVE) and dewatering system to address historic creosote release both above and below static

Matthew Carroll, Environmental Engineer/Principal
Tenen Environmental

water table; coordinated with the Metropolitan Transit Authority and prepared drawings to secure approval to drill in the area of MTA subway tunnels.

NYSDEC Spill Site- Far West Side, Manhattan

Provided support to client during negotiations with a major oil company regarding allocation of remedial costs. Worked with client's attorney to develop a regulatory strategy to address the client's obligations under the NYSDEC Spills Program and the New York City "e" designation requirements.

Affordable Housing Site, Brooklyn, New York

Modified prior work plans for soil, soil vapor and groundwater investigation to address requirements for site entry into the New York City Brownfield Cleanup Program. Prepared technical basis for use of prior data previously disallowed by OER. Currently conducting site investigation.

New York City School Construction Authority Hazardous Materials Contract

Provided work scopes and cost estimates, managed and implemented concurrent projects, including Phase I site assessments, Phase II soil, groundwater and soil gas investigations, review of contractor bid documents, preparation of SEQR documents, specifications and field oversight for above- and underground storage tank removal, and emergency response and spill control.

Former Manufacturing Facility, Hoboken, New Jersey

Evaluated site investigation data to support a revision of the current property use to unrestricted; modified the John & Ettinger vapor intrusion model to apply the model to a site-specific, mixed use commercial/residential development; implemented a Remedial Action Work Plan that included the characterization, removal and separation of 9,500 cubic yards of historic fill; designed and implemented a groundwater characterization/delineation program using a real-time Triad approach; designed and implemented an innovative chemical oxidation technology for the property.

Former Varnish Manufacturer - Newark, New Jersey

Prepared a Phase I environmental site assessment; implemented soil and groundwater sampling to assess presence of petroleum and chlorinated compounds; prepared alternate cost remediation scenarios for settlement purposes and implemented a groundwater investigation plan, including pump tests and piezometer installation to assess the effect of subsurface utilities and unique drainage pathways upon contaminant transport.

Education and Certifications

Professional Engineer, New York

Bachelor of Engineering, Environmental; Stevens Institute of Technology, 2002

Bachelor of Science, Chemistry, New York University, 2002

Technical and Regulatory Training in Underground Storage Tanks, Cook College, Rutgers University, 2006

Mohamed Ahmed, Ph.D., C.P.G.
Sr. Geologist/Principal

Experience Summary

Mohamed Ahmed is a certified professional geologist with nearly 23 years of experience in the New York City metropolitan area. He has designed and implemented subsurface investigations and is proficient in groundwater modeling, design of groundwater treatment systems and soil remediation. He has managed numerous projects focused on compliance with the New York State Brownfield Cleanup and Spills programs and the New York City “e” designation program. Dr. Ahmed also has extensive experience in conducting regulatory negotiations with the New York State Department of Environmental Conservation, the NYC Office of Housing Preservation and Development, and the Mayor’s Office of Environmental Remediation.

Selected Project Experience

Willoughby Square, Downtown Brooklyn

As Project Manager, directs all regulatory interaction and investigation on this joint public-private sector redevelopment that will include a public park and four-level underground parking garage. Prepared the remedial investigation work plan and remedial action work plan, conducted investigation activities and waste characterization, and negotiated with the NYC Department of Environmental Protection and the Mayor’s Office of Environmental Remediation to transition the site into the NYC Voluntary Cleanup Program.

School Facility, Borough Park, Brooklyn

Managed all regulatory agency coordination, work plan and report preparation and remedial oversight; worked with OER to determine measures to retroactively address the hazardous materials and air quality E-designations on a previously constructed school building and prepared supporting documentation to justify the use of electrical units rather than natural gas.

LGA Hotel Site, East Elmhurst, Queens

Project manager for all work conducted at this former gasoline service station which is being remediated under the NYS Brownfield Cleanup Program; technical oversight of work plans, reports, and design and implementation of field and soil disposal characterization.

436 10th Avenue, Manhattan

As project manager and technical lead, assisted client in developing remedial cost estimates used for property transaction, developed regulatory strategy to address NYS Spills and NYC E-designation requirements, and currently overseeing remedial activities which include removal and disposal of petroleum-contaminated bedrock and dewatering and disposal of impacted groundwater.

Brownfield Cleanup Program Site, Downtown Brooklyn

Managed investigation and remediation under the BCP program for a proposed mixed-use development; designed the remedial investigation and prepared the remedial action work plan which includes an SVE system monitored natural attenuation. Prepared remedial cost

estimates for several scenarios. The project will include a 53-story mixed-use structure and parking garage.

Queens West Development, Long Island City

Directed project team and subcontractors for soil investigation/remediation studies on multiple properties; provided technical support for negotiations with NYSDEC during investigation and remediation.

Former Creosote Site, Long Island City

Designed and implemented a complex investigation to assess the nature and extent of historic creosote contamination at this former industrial site; conducted studies to optimize recovery of LNAPL and DNAPL and developed strategies using bioremediation and natural attenuation in conjunction with conventional remedial approaches. Performed pilot tests for soil vapor extraction system design and coordinated with NYSDEC and NYSDOH to implement sub-slab soil vapor sampling.

NYSDEC Spill Site – Far West Side, Manhattan

Developed a detailed remedial cost estimate for to support client negotiations with a major oil company. The estimate included costs pertaining to: chipping, removal and disposal of petroleum-impacted bedrock; removal/disposal of recycled concrete; costs for dewatering and disposal of impacted groundwater during construction; and design and installation of a vapor barrier below the redevelopment.

Active Industrial Facility, Newburgh, New York

Designed remedial investigation of soil and groundwater contaminated with trichloroethane; performed soil vapor pilot test and pump test to aid in design of soil and groundwater remediation alternatives; conducted sub-slab vapor sampling in accordance with NYSDOH guidance.

Former Dry Cleaning Facility, New York City

Conducted soil and groundwater investigations, designed and installed a soil vapor extraction system and performed extensive testing of indoor air. Negotiated the scope of the RI and IRM with NYSDEC.

Waterfront Redevelopment, Yonkers, NY

Designed and performed geophysics survey of six parcels to determine locations of subsurface features; supervised test pit excavation to confirm geophysics results and evaluate and classify soil conditions prior to development activities.

Prince's Point, Staten Island, New York

Performed soil, groundwater and sediment sampling to delineate the extent of contamination; used field-screening techniques to control analytical costs and supervised soil excavation and disposal.

Apartment Complex, New York City, New York

Coordinated with Con Edison, the owner of the adjacent property and NYSDEC to determine oil recovery protocol; assessed hydrogeological conditions and conducted pilot tests to design cost-effective recovery system; designed and supervised installation of recovery system.

Publications

“Impact of Toxic Waste Dumping on the Submarine Environment: A Case Study from the New York Bight”. *Northeastern Geology and Environmental Sciences*, V. 21, No. 12, p. 102-120. (With G. Friedman)

Metals Fluxes Across the Water/Sediment Interface and the Influence of pH. *Northeastern Geology and Environmental Sciences*, in press. (With G. Friedman)

“Water and Organic Waste Near Dumping Ground in the New York Bight”. *International Journal of Coal Geology*, volume 43. (With G. Friedman)

Education and Certifications

Ph.D., Earth and Environmental Sciences, Graduate Center of the City of New York (2001)

M.Ph., Earth and Environmental Sciences, City University of New York (1998)

M.A. Geology, Brooklyn College (1993)

B.S. Geology, Alexandria University, Egypt (1982)

American Institute of Professional Geologists, Certified Professional Geologist, 1997-2015

L.A.B. Validation Corp., 14 West Point Drive, East Northport, New York 11731

Lori A. Beyer

SUMMARY:

General Manager/Laboratory Director with a solid technical background combined with Management experience in environmental testing industry. Outstanding organizational, leadership, communication and technical skills. Customer focused, quality oriented professional with consistently high marks in customer/employee satisfaction.

EXPERIENCE:

1998-Present L.A.B. Validation Corporation, 14 West Point Drive, East Northport, NY

President

- Perform Data Validation activities relating to laboratory generated Organic and Inorganic Environmental Data.

1998-Present American Analytical Laboratories, LLC. 56 Toledo Street, Farmingdale, NY

Laboratory Director/Technical Director

- Plan, direct and control the operation, development and implementation of programs for the entire laboratory in order to meet AAL's financial and operational performance standards.
- Ensures that all operations are in compliance with AAL's QA manual and other appropriate regulatory requirements.
- Actively maintains a safe and healthy working environment that is demanded by local laws/regulations.
- Monitors and manages group's performance with respect to data quality, on time delivery, safety, analyst development/goal achievement and any other key performance indices.
- Reviews work for accuracy and completeness prior to release of results to customers.

1996-1998 Nyltest Environmental, Inc. (NEI) Port Washington, New York

General Manager

- Responsible for controlling the operation of an 18,000 square foot facility to meet NEI's financial and operational performance standards.
- Management of 65 FTEs including Sales and Operations
- Ensure that all operations are in compliance with NEI's QA procedures
- Ensures that productivity indicators, staffing levels and other cost factors are held within established guidelines
- Maintains a quantified model of laboratory's capacity and uses this model as the basis for controlling the flow of work into and through the lab so as to ensure that customer requirements and lab's revenue and contribution targets are achieved.

1994-1996 Nyltest Environmental, Inc. (NEI) Port Washington, New York

Technical Project Manager

- Responsible for the coordination and implementation of environmental testing programs requirements between NEI and their customers
- Supervise Customer Service Department
- Assist in the development of major proposals
- Complete management of all Federal and State Contracts and assigned commercial contracts
- Provide technical assistance to the customer, including data validation and interpretation
- Review and Implement Project specific QAPP's.

1995-1996 Nyltest Environmental, Inc. (NEI) Port Washington, New York

Corporate QA/QC Officer

- Responsible for the implementation of QA practices as required in the NJDEP and EPA Contracts
- Primary contact for NJDEP QA/QC issues including SOP preparation, review and approval
- Responsible for review, verification and adherence to the Contract requirements and NEI QA Plan

1992-1994 Nyltest Environmental, Inc. (NEI) Port Washington, New York

Data Review Manager

- Responsible for the accurate compilation, review and delivery of analytical data to the company's customers. Directly and effectively supervised a department of 22 personnel.
- Managed activities of the data processing software including method development, form creation, and production
- Implement new protocol requirements for report and data management formats
- Maintained control of data storage/archival areas as EPA/CLP document control officer

1987-1991 Nyltest Environmental, Inc. (NEI) Port Washington, New York

Data Review Specialist

- Responsible for the review of GC, GC/MS, Metals and Wet Chemistry data in accordance with regulatory requirements
- Proficient with USEPA, NYSDEC, NJDEP and NEESA requirements
- Review data generated in accordance with SW846, NYSDEC ASP, EPA/CLP and 40 CFR Methodologies

1986-1987 Nyltest Environmental, Inc. (NEI) Port Washington, New York

GC/MS VOA Analyst

EDUCATION:

1982-1985 State University of New York at Stony Brook, New York; BS Biology/Biochemistry

1981-1982 University of Delaware; Biology/Chemistry

5/91 Rutgers University; Mass Spectral Data Interpretation Course, GC/MS Training

8/92 Westchester Community College; Organic Data Validation Course

9/93 Westchester Community College; Inorganic Data Validation Course

Westchester Community College

Professional Development Center

Awards this Certificate of Achievement To

LORI BEYER

for Successfully Completing

ORGANIC DATA VALIDATION COURSE (35 HOURS)

Dr. John Samuelian

Date AUGUST 1992



Assistant Dean
Professional Development Center



President



The Professional
Development Center

Westchester Community College

Professional Development Center

Awards this Certificate of Achievement To

LORI BEYER

for Successfully Completing

INORGANIC DATA VALIDATION

Instructor: Dale Boshart

Date MARCH 1993

Richard A. West

Assistant Dean
Professional Development Center

Jule

President



The Professional
Development Center

New York State Department of Environmental Conservation
60 Wolf Road, Albany, New York 12233



Thomas C. Jorling
Commissioner

July 8, 1992

Ms. Elaine Sall
Program Coordinator
Westchester Community College
Valhalla, NY 10595-1698

Dear Elaine,

Thank you for your letter of June 29, 1992. I have reviewed the course outline for organic data validation, qualifications for teachers and qualifications for students. The course that you propose to offer would be deemed equivalent to that which is offered by EPA. The individuals who successfully complete the course and pass the final written exam would be acceptable to perform the task of organic data validation for the Department of Environmental Conservation, Division of Hazardous Waste Remediation.

As we have discussed in our conversation of July 7, 1992, you will forward to me prior to the August course deadline, the differences between the EPA SOW/90 and the NYSDEC ASP 12/91. You stated these differences will be compiled by Mr. John Samulian.

I strongly encourage you to offer an inorganic data validation course. I anticipate the same list of candidates would be interested in an inorganic validation course as well, since most of the data to be validated consists of both organic and inorganic data.

Thank you for your efforts and please contact me if I can be of any further assistance.

Sincerely,

Maureen P. Serafini

Maureen P. Serafini
Environmental Chemist II
Division of Hazardous Waste
Remediation

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October 2, 1992

Ms. Lori Beyer
3 sparkill Drive
East Northport, NY 11731

Dear Ms. Beyer:

Congratulations upon successful completion of the Organic Data Validation course held August 17 - 21, 1992, through Westchester Community College, Professional Development Center. This course has been deemed by New York State Department of Environmental Conservation as equivalent to EPA's Organic Data Validation Course.

Enclosed is your Certificate. Holders of this Certificate are deemed competent to perform organic data validation for the New York State DEC Division of Hazardous Waste Remediation.

The Professional Development Center at Westchester Community College plans to continue to offer courses and seminars which will be valuable to environmental engineers, chemists and related personnel. Current plans include a TCLP seminar on November 17th and a conference on Environmental Monitoring Regulations on November 18th.

We look forward to seeing you again soon at another environmental program or event. Again, congratulations.

Very truly yours,

Passing Grade is 70%
Your Grade is 99%

Elaine Sall
Program Coordinator

ES/bf





June 21, 1993

Dear Ms. Beyer:

Enclosed is your graded final examination in the Inorganic Data Validation course you completed this past March. A score of 70% was required in order to receive a certificate of satisfactory completion. Persons holding this certificate are deemed acceptable to perform Inorganic Data Validation for the New York State Department of Environmental Conservation, Division of Hazardous Waste Remediation.

I am also enclosing a course evaluation for you to complete if you have not already done so. The information you provide will greatly aid us in structuring further courses. We wish to make these course offerings as relevant, targeted and comprehensive as possible. Your evaluation is vital to that end.

Congratulations on your achievement. I look forward to seeing you again at another professional conference or course. We will be co-sponsoring an environmental monitoring conference on October 21, 1993 with the New York Water Pollution Control Association, Lower Hudson Chapter, at IBM's Yorktown Heights, NY site. Information regarding this event will be going out in August.

Very truly yours,

Elaine Sall
Program Coordinator

ES/bf

Enclosures

