27-10 49TH AVENUE

QUEENS, NEW YORK

Remedial Action Work Plan

NYSDEC BCP Number: C241219

Prepared for:

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Certifications

I, David Kaiser, certify that I am currently a NYS registered professional engineer and that this Remedial Action Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10) and DER Green Remediation (DER-31).

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.

David Kaiser	September 17, 2024	
NYS Professional Engineer # 097317	Date	Signature

It is a violation of Article 145 of New York State Education Law for any person to alter this document in any way without the express written verification of adoption by any New York State licensed engineer in accordance with Section 7209(2), Article 145, New York State Education Law.

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List of Acronyms

Acronym	Definition
ASP	Analytical Services Protocol
AWQSGVs	Ambient Water Quality Standards and Guidance Values
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
bcs	Below Cellar Slab
bsg	Below Surface Grade
CAMP	Community Air Monitoring Program
CCR	Construction Completion Report
CFR	Code of Federal Regulations
COC	Certificate of Completion
CPP	Citizen's Participation Plan
CVOC	Chlorinated Volatile Organic Compound
CY	Cubic Yards
DER	Division of Environmental Remediation
EC	Engineering Control
ECL	Environmental Conservation Law
ELAP	Environmental Laboratory Accreditation Program
ESA	Environmental Site Assessment
EWP	Excavation Work Plan
FER	Final Engineering Report
HASP	Health and Safety Plan
IC	Institutional Control
IRMWP	Interim Remedial Measure Work Plan
MCL	Maximum contaminant level
mg/kg	Milligrams per kilogram
MSL	Mean sea level
NFA	No Further Action
NYCRR	New York Codes, Rules and Regulations
NYCDEP	New York City Department of Environmental Protection
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
O&M	Operation and Maintenance
OSHA	United States Occupational Safety and Health Administration
ORP	Oxidation Reduction Potential
PAH	Polycyclic aromatic hydrocarbons
PCB	Polychlorinated Biphenyls

Acronym	Definition
PCE	Tetrachloroethene
PID	Photoionization Detector
PPE	Personal Protective Equipment
QAPP	Quality Assurance Project Plan
QEP	Qualified Environmental Professional
RAO	Remedial Action Objective
RAWP	Remedial Action Work Plan
RCA	Recycled Concrete Aggregate
RCRA	Resource Conservation and Recovery Act
REC	Recognized Environmental Condition
RI	Remedial Investigation
RIR	Remedial Investigation Report
SCG	Standards Criteria and Guidance
SCO	Soil Cleanup Objective
SIM	Selective Ion Monitoring
SMP	Site Management Plan
SMMP	Soil/ Materials Management Plan
SSDS	Sub-Slab Depressurization System
SVOC	Semivolatile Organic Compound
TAL	Target Analyte List
TCE	Trichloroethene
TCL	Target Compound List
TICs	Tentatively Identified Compounds
TOGS	Technical and Operational Guidance Series
µg/kg	Micrograms per Kilogram
µg/m^3	Micrograms per Liter
µg/m^3	Micrograms per Cubic Meter
USEPA	United States Environmental Protection Agency
USGS	United States Geologic Survey
UST	Underground Storage Tank
VI	Vapor Intrusion
VOC	Volatile Organic Compound

Executive Summary

Roux Environmental Engineering and Geology, D.P.C. (Roux) was retained by Hunters Point SG, LLC (Volunteer) to prepare this Remedial Action Work Plan (RAWP) for a 0.879-acre property located at 27-10 49th Avenue in the Long Island City section of the Borough of Queens, New York (Site). The Volunteer entered into a Brownfield Cleanup Agreement (BCA) for Brownfield Cleanup Program (BCP) Site No. C241219 with the New York State Department of Environmental Conservation (NYSDEC) on October 23, 2018, to investigate and remediate the Site under the BCP and BCA. A Track 4 commercial use remedy is proposed for the Site. The remedy includes remediation of source areas as an Interim Remedial Measure, a Site cover system that provides a cap over the property and provides a protective barrier from residual contamination, while the expanded soil vapor extraction system (SVES) will provide enhanced mitigation protection against soil vapor intrusion (SVI) into the building and further prevent off-Site migration of soil vapor. The Site is currently occupied by Lyft (Tenant) who operates the Site as an office and storage space. Much of the physical work to achieve the proposed Track 4 commercial use remedy at the Site was implemented in accordance with the NYSDEC and New York State Department of Health (NYSDOH)-approved Interim Remedial Measures Work Plan (IRMWP), prepared by Atlantic Environmental Solutions, Inc. (AESI), dated January 2019 and approved by NYSDEC in March 2019. Expansion of the SVES will be undertaken following approval of this RAWP.

This RAWP summarizes the remaining nature and extent of contamination as determined from data gathered by AESI during the Remedial Investigation (RI) and after implementation of the IRM performed between April 2019 and November 2019. It provides an evaluation of a Track 1 unrestricted remedy as compared to the preferred Track 4 commercial remedy, their associated costs, and the rationale for the recommended and preferred remaining actions required for the Track 4 remedy. The preferred Track 4 remedy described in this document is consistent with the procedures defined in DER-10 and complies with all applicable standards, criteria and guidance. The remedy described in this document also complies with all applicable Federal, State and local laws, regulations and requirements. The NYSDEC and NYSDOH have determined that the Site poses a significant threat to human health and the environment. The RI and subsequent inspections did not identify fish and wildlife resources at the Site.

A formal SVES Expansion Pilot Test Summary and Design document for the expansion of the SVES was provided to the NYSDEC and NYSDOH on August 15, 2023 and was deemed acceptable on September 19, 2023. Additional revisions of the SVES Expansion Design were requested by the NYSDEC and NYSDOH which are provided on Drawing 1 dated August 21, 2024. The remedial design for the original SSDS/SVES was provided in the CCR.

Site Description/Physical Setting/Site History

The Site encompasses an area of 0.879 acres. The Site is developed with a two-story commercial building within the western side of the Site and a parking lot located on the eastern side of the Site. The building is currently occupied by a ride share company, Lyft, and is used as an office space and as storage. A Site location map is shown on Figure 1. The areas surrounding the Site are urban and developed with commercial and industrial buildings.

Prior to occupation by Lyft, the Site was most recently used as a warehouse for mixing, repackaging, and distribution of petroleum products. A limousine company utilized the second floor of the building as office space, with a small reception area on the first floor. Prior to these operations, the Site was used by courier companies for distribution.

Summary of the Remedial Investigation

- In October 2017, AESI conducted a Preliminary Remedial Investigation (PRI) at the Site.
    - The investigation was conducted to evaluate potential impacts, and to provide general characterization of the property. Analytical results of the PRI identified the presence of elevated concentrations of tetrachloroethene (PCE) in soil vapor and the presence of elevated concentrations of other volatile organic compounds (VOCs) in soil in the vicinity of the eastern floor drain. Based on the results of the investigation, AESI recommended that additional remedial investigation activities be performed at the Site.
- In September 2018, AESI conducted a Supplemental Remedial Investigation (SRI) at the Site.
    - In order to confirm that PCE contamination identified during previous remedial investigation activities was not migrating away from the Site towards the Dutch Kills, AESI conducted a SRI. The SRI activities were conducted to delineate soil, groundwater, and soil vapor conditions at the Site. Based on the results of the supplemental investigation activities, in September 2018, Hunters Point submitted an application to enter into the BCP as a volunteer.
- In October 2018, AESI conducted additional remedial investigation activities as outlined in the NYSDEC approved Remedial Investigation Work Plan (RIWP) at the Site.
    - Due to the proximity of the Site to the Dutch Kills and Newton Creek, the NYSDEC requested additional investigation to supplement existing data to more fully define the nature and extent of contamination in soil, soil vapor and groundwater identified at the Site. As required by the NYSDEC, a RIWP was prepared by AESI in July 2018 and approved by the NYSDEC in October 2018. The Site was accepted into the BCP in October 2018. Upon being accepted as a volunteer into the BCP, remedial investigation activities outlined in the approved RIWP were implemented to investigate and characterize the extent of environmental impacts on the Site, as well as to define chemical constituent migration pathways, and evaluate the potential feasibility of planned remedial actions for the Site.
- In January 2019, AESI prepared the Remedial Investigation Report (RIR) to summarize the RIs.
    - Based on the investigation data, it was concluded that the nature of contamination present in groundwater was consistent with the historic fill materials used during development of the Site. It was also confirmed that PCE contamination previously identified in soil at the Site was delineated to the Track 4 commercial SCO, consistent with the use of the property. Soil vapor results identified high levels of PCE along the northern property boundary, with concentrations decreasing across the property towards the south and east.
- In May 2024, Roux conducted additional remedial investigation of groundwater for Polycyclic Aromatic Hydrocarbons (PAHs) as requested by the NYSDEC.
    - Five (5) of the existing ten (10) groundwater wells spread across the Site were sampled for PAHs. Analytical groundwater sampling results indicated limited detections of PAHs and no exceedances of AWQSGVs. Based on investigation data, it was concluded that no further PAHs groundwater investigation was necessary at the Site, and no additional remediation is required beyond what is already proposed in this RAWP. PAH concentrations present in groundwater are consistent with historical fill materials and results indicated no source area concerns.

Qualitative Human Health Exposure Assessment

As described in Appendix 3B of DER-10, *"The overall purpose of the Qualitative Human Health Exposure Assessment (or the exposure assessment) is to evaluate and document how people might be exposed to Site related contaminants, and to identify and characterize the potentially exposed population(s) now and under the reasonably anticipated future use of the Site."* The following section details the exposure assessment based on data collected during the RI.

The planned future use of the Site is continued commercial use. The proposed remedy for the Site is a Track 4 cleanup. Many of the required remedial actions were completed as an IRM, including removal of former lifts, oil water separator(s) and associated impacted soil and installation of the original SSDS/SVES components for SVI mitigation. IRM activities are summarized in Section 2.7 and described in greater detail in the IRMCCR dated December 21, 2021.

Soil Exposure

As described above, soil samples collected during the RI indicated the presence of VOCs, SVOCs, metals, and pesticides in concentrations above the NYSDEC Part 375 Unrestricted SCOs and in some cases, Commercial SCOs. Since the Site is completely covered by the Site building and/or asphalt parking lot, the exposure pathway is incomplete and, therefore, the general public is not exposed to direct contact with Site soil. Potential contact with Site soil is restricted to future remedial and construction contract workers at the Site performing ground intrusive activities, but such exposure would be prevented by the use of proper personal protective equipment (PPE). In addition, a community air monitoring program (CAMP) will be implemented during intrusive activities to minimize the potential for off-Site exposures from soil/dust leaving the Site, if any excavation is performed.

Groundwater Exposure

As described, groundwater samples collected during the RI did not indicate significant groundwater contamination. Since groundwater is not used for drinking or irrigation (the area is connected to the public water supply), and since the Site is completely covered by the Site building and/or asphalt parking lot, the exposure pathway is incomplete and therefore, there is no direct contact with or ingestion of groundwater by the general public (on-Site or off-Site). Beyond just a Site restriction, the use of groundwater for drinking or irrigation is prohibited throughout the majority of New York City due to extensive saltwater intrusion. Individuals who perform future groundwater sampling or remedial activities may come into contact with contaminated groundwater which could lead to dermal contact and the potential for incidental ingestion of these compounds, but such exposure would be prevented by the use of proper PPE.

Soil Vapor Exposure

As described in Section 2.4.6, soil vapor samples collected during the RI indicated the presence of VOCs in soil vapor on-Site, and to a lesser degree off-Site. The current and planned future use of the Site is commercial. The existence of the building over the majority of the Site footprint, where contaminants were detected in soil vapor samples, results in the potential for soil vapor intrusion.

In order to proactively address the soil vapor intrusion concerns, the volunteer designed and installed an active SSDS/SVES beneath the entire BCP Site in accordance with the IRMWP. A description of the SSDS/SVES is provided in Section 2.7 of this RAWP. It is also anticipated that operation of the

SSDS/SVES at the Site, coupled with other IRM activities will prevent exposure and will improve soil vapor VOC concentrations over time. Based on recent soil vapor data collected on-Site and off-Site, as described in Section 2.7.2, NYSDEC and NYSDOH determined that additional measures to enhance mitigation are required to further prevent the potential for off-Site migration of soil vapor.

Summary of the Remedy

The following summarizes the Remedial Action Objectives (RAOs) that were met by implementing the IRMWP:

- RAOs for Public Health Protection: Prevent ingestion/direct contact with contaminated soil; and
- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at the Site.

The RAOs were addressed during the IRM remedial activities as summarized below to complete the preferred Alternative 2 Track 4 commercial remedy:

- Exposure, cleaning, removal, and off-Site disposal of hydraulic lifts;
- Exposure, cleaning, removal, and off-Site disposal of oil/water separator;
- Installation of a SSDS and SVES beneath the building and parking lot of the Site to mitigate the potential migration of sub-slab soil vapor;
- Removal and off-Site disposal of approximately 372-tons of soil/fill generated during the removal of hydraulic lifts and the installation of the SSDS and SVES, comingled with impacted petroleum soils surrounding the oil/water separator; and
- Excavation support activities, including:
    - Stockpiling of excavated material and backfill brought to the Site;
    - Waste characterization sampling;
    - Excavation endpoint documentation soil sampling;
    - Transport and disposal of excavated material at a permitted disposal facility; and
    - Backfill and compaction of excavation with acceptable backfill material.

The following summarizes the RAOs that will be met by implementing the RAWP:

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at the Site.

These RAOs will be addressed during the RAWP remedial activities are summarized below to complete the preferred Alternative 2 Track 4 commercial remedy:

- Installation of an expanded SVES beneath the parking lot and building along the northern boundary of the Site to further prevent the potential for off-Site migration of soil vapor.
- Following SVES Expansion commissioning, confirmatory Soil Vapor Intrusion sampling (sub-slab soil vapor and indoor air) will be performed during the heating season to confirm the SSDS is

functioning adequately and mitigating soil vapor intrusion into the Site building. Results of the confirmatory indoor air sampling will be included in the FER.

A remedial program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the site management of the remedy as per DER-31. The major green remediation components are as follows:

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gas and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste; and
- Additionally, to incorporate green remediation principles and techniques to the extent feasible in the future development at this site, any future on-site buildings shall be constructed, at a minimum, to meet the 2020 Energy Conservation Construction Code of New York (or most recent edition) to improve energy efficiency as an element of construction.

As part of the site management program, to promote implementation of green and sustainable remediation principles, an environmental footprint analysis will be completed. The environmental footprint analysis will be completed using an accepted environmental footprint analysis calculator such as SEFA (Spreadsheets for Environmental Footprint Analysis, USEPA), SiteWise™ (available in the Sustainable Remediation Forum [SURF] library) or similar NYSDEC accepted tool. Water consumption, greenhouse gas emissions, renewable and non-renewable energy use, waste reduction and material use will be estimated, and goals for the project related to these green and sustainable remediation metrics, as well as for minimizing community impacts, protecting habitats and natural and cultural resources, and promoting environmental justice, will be established for the site management activities, as appropriate. Further, progress with respect to green and sustainable remediation metrics will be tracked, and reported in periodic reports, as part of the site management program, and opportunities to further reduce the environmental footprint of the project will be identified as appropriate.

Additionally, the site management program will include an evaluation of the impact of climate change on the project site and the engineering controls. Potential vulnerabilities associated with extreme weather events (e.g., hurricanes, lightning, heat stress and drought), flooding, and sea level rise will be identified, and the site management program will include measures to minimize the impact of potential identified vulnerabilities.

1. Introduction

Roux Environmental Engineering and Geology, D.P.C. (Roux) was retained by Hunters Point SG, LLC (Volunteer) to prepare this Remedial Action Work Plan (RAWP) for a 0.879-acre property located at 27-10 49th Avenue in the Long Island City section of the Borough of Queens, New York (Site). The Volunteer entered into a Brownfield Cleanup Agreement (BCA) for Brownfield Cleanup Program (BCP) Site No. C241219 with the New York State Department of Environmental Conservation (NYSDEC) on October 23, 2018, to investigate and remediate the Site under the BCP and BCA. A Track 4 commercial use remedy is proposed for the Site. The remedy includes remediation of source areas as an Interim Remedial Measure, a Site cover system that provides a cap over the property and provides a protective barrier from residual contamination, while the expanded soil vapor extraction system (SVES) will provide enhanced mitigation protection against soil vapor intrusion (SVI) into the building and further prevent off-Site migration of soil vapor. The Site is currently occupied by Lyft (Tenant) who operates the Site as an office and storage space. Much of the physical work to achieve the proposed Track 4 commercial use remedy at the Site was implemented in accordance with the NYSDEC and New York State Department of Health (NYSDOH)-approved Interim Remedial Measures Work Plan (IRMWP), prepared by Atlantic Environmental Solutions, Inc. (AESI), dated January 2019 and approved by NYSDEC in March 2019. Expansion of the SVES will be undertaken following approval of this RAWP.

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A formal SVES Expansion Pilot Test Summary and Design document for the expansion of the SVES was provided to the NYSDEC and NYSDOH on August 15, 2023, and was deemed acceptable on September 19, 2023. Additional revisions of the SVES Expansion Design were requested by the NYSDEC and NYSDOH, which are provided on Drawing 1 dated August 21, 2024. The remedial design for the original SSDS/SVES was provided in the CCR.

1.1 Site Location and Description

The Site is located in the County of Queens, New York, New York and is identified as Block 113, Lot 35 on the New York City Tax Map. A United States Geological Survey (USGS) topographical quadrangle (Figure 1) shows the Site location. The Site is situated on a 0.879-acre area bounded by 49th Avenue to the north, 27th Street to the west, Dutch Kills Creek to the east, and commercial properties and Dutch Kills Creek to the south. A boundary map is attached to the BCA.

1.2 Site Redevelopment

There is no anticipated redevelopment plan for the Site. The Site is currently occupied by Lyft and is used as an office and storage space. Black Bear Lubricants vacated the first floor in December 2017 and Carey Limousine vacated the second-floor office area in June 2018. The current zoning for the Site is M3-2, which allows for the following use groups "as of right" as designated by New York City Department of City Planning:

- Commercial/General Service Use Groups 5 through 16, which include retail and service uses (Use Groups 5–9), regional commercial centers/amusement uses (Use Groups 10–12), waterfront/recreation uses (Use Groups 13–15), heavy automotive uses (Use Group 16); and
- Manufacturing Use Groups 17 and 18, which allow for industrial uses.

The current and proposed use and proposed commercial remedy are consistent with existing zoning for the property.

1.3 Description of Surrounding Property

The Site is located in an urban setting generally characterized by commercial, manufacturing, and institutional buildings. Major infrastructure (storm drains, sewers, and underground utility lines) exists within the streets surrounding the Site. The table below provides details on surrounding property usage adjacent to the Site.

Surrounding Property Uses	
North	49th Avenue (Hunters Point Avenue); followed by warehouse operated by Mana Products, cosmetic manufacturer
South	Warehouse operated by Leadstone, USA, a quartz manufacturing company; followed by Dutch Kills Creek
East	Dutch Kills Creek
West	27th Street; followed by a warehouse operated by UPS

The Site and immediate area surrounding the Site are zoned for M3-2, M3-1 and M1-4, manufacturing districts.

2. Description of Remedial Investigation Findings

The environmental sampling that collectively served as the Remedial Investigation (RI) performed at the Site and which was summarized in the approved Remedial Investigation Report (RIR) dated January 2019 was divided into three investigation periods:

- In October 2017, AESI conducted a Preliminary Remedial Investigation (PRI) at the Site.
    - The investigation was conducted to evaluate potential impacts, and to provide general characterization of the property. Analytical results of the PRI identified the presence of elevated concentrations of tetrachloroethene (PCE) in soil vapor and the presence of elevated concentrations of other volatile organic compounds (VOCs) in soil in the vicinity of the eastern floor drain. Based on the results of the investigation, AESI recommended that additional remedial investigation activities be performed at the Site.
- In September 2018, AESI conducted a Supplemental Remedial Investigation (SRI) at the Site.
    - In order to confirm that PCE contamination identified during previous remedial investigation activities was not migrating away from the Site towards the Dutch Kills, AESI conducted a SRI. The SRI activities were conducted to delineate soil, groundwater, and soil vapor conditions at the Site. Based on the results of the supplemental investigation activities, in September 2018, Hunters Point submitted an application to enter into the BCP as a volunteer.
- In October 2018, AESI conducted additional remedial investigation activities as outlined in the NYSDEC approved Remedial Investigation Work Plan (RIWP) at the Site.
    - Due to the proximity of the Site to the Dutch Kills and Newton Creek, the NYSDEC requested additional investigation to supplement existing data to more fully define the nature and extent of contamination in soil, soil vapor and groundwater identified at the Site. As required by the NYSDEC, a RIWP was prepared by AESI in July 2018 and approved by the NYSDEC in October 2018. The Site was accepted into the BCP in October 2018. Upon being accepted as a volunteer into the BCP, remedial investigation activities outlined in the approved RIWP were implemented to investigate and characterize the extent of environmental impacts on the Site, as well as to define chemical constituent migration pathways, and evaluate the potential feasibility of planned remedial actions for the Site.

Based on the investigation data, it was concluded that the nature of contamination present in groundwater was consistent with the historic fill materials used during development of the Site. It was also confirmed that PCE contamination previously identified in soil at the Site was delineated to the Track 4 commercial SCO, consistent with the use of the property. Soil vapor results identified high levels of PCE along the northern property boundary, with concentrations decreasing across the property towards the south and east.

These three rounds of sampling are collectively referred to herein as the “RI”. The scope of work completed in each phase is described in detail in Section 2.1. All work completed as part of the RI was performed in accordance with NYSDEC DER-10 and the NYSDOH’s Guidance for Evaluating Soil Vapor Intrusion in the State of New York dated October 2006 and updated in May 2017 (NYSDOH SVI Guidance).

2.1 Summary Remedial Investigations Performed

This section provides a summary of the RI activities completed at the Site. RI field activities were conducted in October through December 2017, and September through November 2018.

2.1.1 Borings, Wells and Soil Vapor

During the PRI in October 2017, the following RI activities were completed:

- A GPR survey of the property was completed on October 19, 2017 under the supervision of AESI. The survey identified an area potentially consistent with a 7,500-gallon heating oil UST that had been filled and abandoned in 2005. No other anomalies consistent with USTs were identified during the survey.
- AESI was on-Site on October 23 and 24, 2017 to complete a subsurface investigation of the identified AOCs. During this investigation, AESI installed a total of twenty (20) soil borings (SB-1 through SB-20) in the areas of the identified AOCs.
    - Borings SB-1 through SB-4 were installed in the area of the 7,500-gallon heating oil UST. SB-5, SB-6, and SB-20 were installed in the area of the exterior oil/water separator and waste oil UST located in the southwest corner of the parking lot. SB-7 through SB-9 were installed in the area of the former gasoline USTs. SB-11, SB-12, SB-13, and SB-19 were installed in the areas of the interior floor drains and trenches. SB-14, SB-15, SB-16, SB-17, SB- 18, and SB-19 were installed in the areas of interior oil/water separator, hydraulic lifts, and scales. SB-10 was installed adjacent to the property boundary to the east.
        - The borings were advanced to depths ranging from 12 to 16 feet below ground surface (bgs). Soils were field screened through the use of a photoionization detector (PID) and one (1) sample was collected from each boring at the interval of the highest observable impact. If no impacts were observed, a sample was collected from the interval just above the observable water table. Samples were collected at depths ranging from 7.5 to 16 feet bgs. Petroleum odors and light staining were observed in boring SB-2 at 15.5-16.0 feet bgs and SB-15 at 8.0-12.0 feet bgs.
- AESI returned to the Site on November 10, 2017, in order to further investigate and delineate impacts identified during the initial soil investigation. Five (5) additional soil borings were installed to delineate impacts observed in borings SB-2, SB-7, SB-14, and SB-15. Borings SB-21 and SB-22 were installed to delineate impacts identified in boring SB-15. SB-23 was installed to further delineate impacts identified in boring SB-14. SB-24 and SB-25 were installed to further delineate impacts identified in SB-2 and SB-7.
    - The borings were installed to a depth of 12 feet bgs. One sample was collected from each boring at the interval of greatest observable impact. If no impacts were observed, a sample was collected at the interval of the prior sample being delineated. Slight staining and petroleum odor, along with elevated PID readings, were observed in boring SB- 21 at a depth of 10-12 feet bgs.
- In order to evaluate the potentially compromised drains AESI performed additional investigation activities on December 13, 2017. Five (5) soil borings were installed in the area of the eastern drain (SB-26 through SB-30) and five (5) borings were advanced in the area of the western drain (SB-31A through SB-35A). No observable indications of subsurface contamination were identified during the investigation.
- AESI returned to the Site on December 18 and 20, 2017, to delineate trichloroethene (TCE) and PCE impacts identified in the borings SB-26 through SB-30. A total of ten (10) borings, SB-31 through SB-40 were installed. At least two (2) samples were collected from each boring. A shallow sample was collected from each boring at a depth of 2.0-2.5 feet bgs. A deep sample was also collected at a depth of 8.0-8.5 feet in every boring except SB-38. In SB-38 the deep sample was collected at 12 feet bgs in order to vertically delineate the impact identified in SB-30. In boring SB-32, a third sample was collected at 12 feet bgs to vertically delineate identified impacts.
- Boring logs were submitted to NYSDEC as Appendix B of the RIWP approved in October 2018. A map showing the location of soil borings and monitoring wells is shown in Figures 6A through 7A.

- AESI returned to the Site to install three (3) permanent monitoring wells, MW-1, MW-2, and MW-3, to further investigate groundwater on the subject property. All three (3) wells were 2-inch diameter wells installed to a depth of 20 feet bgs with a screen interval of 5-20 ft bgs. MW-1 was installed in the location of boring/temporary well point SB-15, adjacent to the oil water separator. MW-2 was installed in the location of boring/temporary well point SB-2, outside the eastern wall of the building. MW-3 was installed in the assumed down-gradient direction in the parking lot on the eastern portion of the Site. Monitoring well locations are shown in Figure 7A. In addition to the three (3) permanent monitoring wells, four (4) temporary well points were installed, in borings SB-2, SB-15, SB-38, and SB-9.
- Three (3) soil vapor sampling points were installed throughout the Site with a hammer drill. Each sampling point consisted of a new, dedicated, stainless steel screen implant connected to polyethylene tubing extending to the target depth of 3 feet bgs.
    - Three (3) soil vapor probes were installed and three (3) soil vapor samples were collected for chemical analysis during this RI. Soil vapor sampling locations are shown in Figure 5A. Methodologies used for soil vapor assessment conform to the NYSDOH SVI Guidance.
- Four (4) air samples were collected, three (3) indoor air samples, and one (1) outdoor ambient air sample in 6L Suma Canisters. Air samples were analyzed TO-15. Air sampling locations are shown in Figure 5B.

During the SRI in September 2018, the following RI activities were completed:

- Six (6) additional soil borings were advanced throughout the eastern portion of the parking lot, and one temporary well point was installed.
    - Borings SB-42 and SB-43, temporary well point TW4, and borings SB-53 through SB-55 were installed in the parking lot to determine if contamination was migrating from the Site toward the Dutch Kills on the eastern property boundary. Two additional soil vapor probes were installed in the parking lot and samples SV-4 and SB-5 were collected. Three confirmation soil vapor samples, SV-1A, SV-2A & SV-3A were also collected inside the building.
- Eight (8) additional soil borings, SB-44 through SB-51 were advanced inside the building to further delineate PCE contamination identified in the soil in the vicinity of the eastern drain. Nineteen (19) soil samples were collected for analysis of VOCs.
    - The borings were advanced to depths ranging from 8 to 12 feet bgs. Soils were field screened through the use of a PID. One sample was collected from each boring in the parking lot, and at least two samples were collected from each of the interior borings. Soil sample locations are shown on Figures 6A through 6E.
- Two (2) soil vapor sampling points were installed in the parking lot and three (3) soil vapor sampling points were installed within the building. Each sampling point consisted of a new, dedicated, stainless steel screen implant connected to polyethylene tubing extending to the target depth of 3 feet bgs. Figure 5A shows the vapor sampling locations.

During October through November 2018, the following RI activities outlined in the RIWP were completed:

- Sixty (60) sub-slab soil vapor testing points were installed in a grid pattern throughout the Site and were identified as A1 through A15, B1 through B15, C1 through C15 and D1 through D15. Temporary sub-slab soil vapor probes were installed by drilling a ¼ inch OD hole with a concrete drill. A length of 1/8 inch nylon tubing (~ 2 feet) were inserted into the hole and grouted with bentonite and capped with ~0.5 inches of VOC-free modeling clay. Sub-Slab soil vapor points shown in Figure 5A.
    - Once the sub-slab soil vapor testing points were installed, a 50 cc gas-tight glass syringe was connected to the probe tubing and approximately 50 cc of soil vapor was purged. After purging, 40 cc of soil vapor was withdrawn for analysis.

- Eleven (11) borings identified as SB-56, SB-57, SB-71, and SB-74 through SB-76 were completed within the building of the subject property. Soil boring SB-71 was installed in the loading area adjacent to 27th Street.
    - The borings were advanced to depths ranging between 10 and 15 feet bgs. The concrete ranged in thickness between 0.5 and 1 foot. Soil underlying the concrete consisted of dark brown medium to fine sand and a trace of silt and typical historic fill material. Groundwater was encountered between 10 and 13 feet.
    - Soil in each boring was observed for visual and olfactory indications of contamination, as well as field-screened with a PID. Up to three (3) soil samples were collected for analysis from each boring. One (1) soil sample was collected at approximately 2-2.5 feet below ground surface (bgs). One (1) soil sample was collected from fill material. One (1) soil sample was collected at approximately 8-8.5 feet bgs corresponding to the depth interval where the highest concentrations were identified during previous remedial investigation activities. In locations where fill material extended to 8 feet bgs or greater, only two (2) samples were collected.
- Nine (9) borings identified as SB-64 through SB-70 and SB-72 were completed within the exterior of the subject property. Soil boring SB-72 was installed adjacent to the building, along the sidewalk of 49th Street.
    - The borings were advanced to depths ranging between 10 and 15 feet bgs. The concrete ranged in thickness between 0.5 and 1 foot. Soil underlying the concrete consisted of dark brown medium to fine sand and a trace of silt and typical historic fill material. Groundwater was encountered between 10 and 13 feet.
    - Soil in each boring was observed for visual and olfactory indications of contamination, as well as field-screened with a PID. As stated in the previous section, three (3) samples were collected from each boring. In locations where fill material extended to 8 feet bgs or greater, only two (2) samples were collected.
- Three (3) soil borings identified as SB-62, SB-63, and SB-77 were advanced adjacent to the oil water separator to assess the presence of petroleum product.
    - The borings were advanced to depths ranging between 10 and 15 feet bgs. The concrete ranged in thickness between 0.5 and 1 foot. Soil underlying the concrete consisted of dark brown medium to fine sand and a trace of silt and typical historic fill material. Groundwater was encountered between 10 and 13 feet.
    - Soil in each boring was observed for visual and olfactory indications of contamination, as well as field-screened with a PID. One (1) soil sample was collected from soil borings SB-62 and SB-63 at a depth of approximately 8-8.5 feet. In soil boring SB-77, three (3) samples were collected as described in Section 3.1.1.
- AESI installed seven (7) additional permanent monitoring wells to delineate groundwater along the perimeter of the Site and determine if groundwater contamination was present below the parking lot in the vicinity of the elevated soil vapor sample locations identified during previous RI activities.
    - Monitoring well MW-4 was installed in the exterior of the subject property. MW-5 was installed in the parking lot, adjacent to 49th Avenue. MW-9 was installed in the loading area adjacent to 27th Street. MW-6 was installed in the former location of temporary well point TW-4 to confirm the presence of PCE and PCB contamination in dissolved groundwater. MW7 and MW-8 were installed at the eastern property boundary along the Dutch Kills to investigate whether contamination is migrating off-Site towards the Dutch Kills. MW-10 was installed along the sidewalk of 49th Avenue
    - All seven (7) wells were constructed with 2-inch diameter, schedule 40-pvc riser and 10 feet of schedule 40 0.02-inch slotted screen. Clean sand was used to fill the annulus around the well screen to a height of at least one (1) foot exceeding the top of the screen. The top of the sand

pack was sealed with hydrated bentonite. All wells were finished at grade with a flush mount well cover set into a concrete pad.

- The wells were developed with a submersible pump and were surged to agitate the water and remove fines from the well screen. The wells were pumped after surging until the water became clear and turbidity was less than 50 NTUs. The wells were allowed to stabilize for eight (8) days prior to sampling.

During August through November 2022, the following supplemental RI activities were completed:

- Roux collected 12 sub-slab soil vapor samples, six samples were collected in the offsite sidewalk in August 2022, and six samples were collected in the onsite building and parking area in November 2022. Results were compared to PCE concentrations beneath the Site prior to the installation of the SSDS/SVES. The comparison demonstrated that the general magnitude of the PCE concentrations along the northern border of the Site had significantly reduced as a result of the systems operations, with PCE concentrations reducing by two orders of magnitude. Following submission of this data, the NYSDEC and NYSDOH determined that additional measures are required to further prevent the potential for off-Site migration of soil vapor. Sampling is further discussed in Section 2.7.2 and the SVES Expansion design is discussed in Section 3.2.4.

In May 2024, Roux conducted additional remedial investigation of groundwater for PAHs as requested by the NYSDEC.

- Five (5) of the existing ten (10) groundwater wells spread across the Site were sampled for PAHs. Analytical groundwater sampling results indicated limited detections of PAHs and no exceedances of AWQSGVs. Based on investigation data, it was concluded that no further PAHs groundwater investigation was necessary at the Site, and no additional remediation is required beyond what is already proposed in this RAWP. PAH concentrations present in groundwater are consistent with historical fill materials and results indicated no source area concerns.

2.1.2 Laboratory Analyses

SOIL

During the PRI, samples collected from SB-1 through SB-30 and SB-31A through SB-35A were analyzed for VOCs and SVOCs. Samples collected from SB-5, SB-6, SB-11, SB-12, SB-13, SB-15, and SB-19 were also analyzed for PCBs. Samples collected from SB-31 through SB-40 were analyzed for VOCs, SVOCs, PCBs, pesticides/herbicides, and TAL metals.

During the SRI, samples collected from SB-42 and SB-43 were analyzed for VOCs, SVOCs, PCBs, pesticides/herbicides, and TAL metals. Samples from SB-44 through SB-51 were analyzed for VOCs only. Samples collected from SB-52 through SB-55 were analyzed for VOCs and lead.

During the RIWP implementation, samples collected from SB-56, SB-57, SB-62 through SB-72, and SB-74 through SB-77 were analyzed for part 375 VOCs, SVOCs, PCBs, pesticides/herbicides, TAL metals including hexavalent chromium and per-and polyfluoroalkyl substances (PFAS). Analysis for PFAS was conducted via EPA Method 537.

Soil samples collected for analysis of VOCs were collected using Terra Core® sampling equipment. For analysis of non-volatile parameters, samples were homogenized and placed into glass jars, with the exception of samples for PFAS. Decontamination procedures were used for all non-dedicated sampling equipment. After collection, all sample jars were capped and securely tightened, and placed in iced coolers and maintained at 4°C ±2°C until they were transferred to the laboratory for analysis. All samples were

transferred to the laboratory under a chain-of-custody, provided as part of the laboratory deliverable package.

GROUNDWATER

During the PRI, samples collected for analysis of VOCs were collected using HCl preserved vials. For analysis of non-volatile parameters, samples were homogenized and placed into amber glass jars. Decontamination procedures were used for all non-dedicated sampling equipment. After collection, all sample jars were capped and securely tightened, and placed in iced coolers and maintained at 4°C ±2°C until they were transferred to the laboratory for analysis. All samples were transferred to the laboratory under a chain-of-custody provided as part of the laboratory deliverable package. One (1) field blank and one (1) trip blank sample were collected for laboratory QA/QC purposes. Seven (7) groundwater samples were collected for chemical analysis during this RI. All groundwater were analyzed for VOCs and SVOCs. Samples collected from the permanent monitoring wells were also analyzed for PCBs. Samples collected from the Sampling logs with information on purging and sampling of groundwater monitoring wells were submitted to NYSDEC as Appendix C of the RIWP approved in October 2018.

During the SRI, one (1) groundwater sample was collected for chemical analysis during this supplemental RI and analyzed for VOCs, SVOCs, pesticides/herbicides, PCBs and metals.

During the RIWP, one (1) groundwater sample was collected for chemical analysis during this supplemental RI and was analyzed for part 375 VOCs, SVOCs, PCBs, pesticides, herbicides, TAL metals including hexavalent chromium and PFAS. Analysis for PFAS was conducted via EPA Method 537.

SOIL VAPOR

During the PRI, three (3) soil vapor samples were collected for chemical analysis. Soil vapor sampling locations are shown in Figure 5A. Methodologies used for soil vapor assessment conform to the NYSDOH SVI Guidance.

During the SRI, two (2) soil vapor sampling points were installed in the parking lot and three (3) soil vapor sampling points were installed within the building. Each sampling point consisted of a new, dedicated, stainless steel screen implant connected to polyethylene tubing extending to the target depth of 3 feet bgs. Figure 5A shows the vapor sampling locations.

During the RIWP, eight (8) confirmation samples identified as A10, B6, B12, B14, C3, C5, C11, and D1 were collected using Summa Canisters over a two (2) hour period. Samples B6, C3, C5, and D1 were collected within the building of the subject property. Samples A10, B12, B14, and C11 were collected in the exterior of the subject property.

INDOOR AIR AND AMBIENT AIR

During the PRI, four (4) air samples were collected, three (3) indoor air samples and one (1) outdoor ambient air sample, in 6L Suma Canisters over a period of 24 hours. Air samples were analyzed for TO-15. Air sampling locations are shown in Figure 5B.

During the RIWP, three (3) indoor air samples identified as B2, B4, and C7 were collected within the building in 6L Suma Canisters over a period of 24 hours. One (1) sample identified as AA was collected from the exterior of the property.

Samples were analyzed by York Labs, a NYSDOH Environmental Laboratory Accreditation Program (ELAP)-certified laboratory, and PFAS were analyzed by Con-test Analytical Laboratory of East Longmeadow, MA.

2.1.3 Standards Criteria and Guidance Values

During the PRI and SRI, soil/fill samples collected during the RI were compared to NYSDEC Unrestricted Use Soil Cleanup Objectives (SCOs) and Restricted Residential Use SCOs as presented in 6NYCRR Part 375-6.8. During the RIWP, soil/fill samples collected during the RI were compared to NYSDEC Part 375 Unrestricted Use SCOs, Protection of Groundwater, Commercial and Industrial SCOs.

During the PRI and SRI, groundwater samples collected during the RI were compared to NYSDEC Ambient Water Quality Standards and Guidance Values (AWQSGVs) (referred to as 6NYCRR 703.5 Groundwater Quality Standards [GQS] by AESI in previous reports). During the RIWP, groundwater samples were compared to NYSDEC AWQSGVs (referred to as TOGS Standards and Guidance Values [TOGS] by AESI in previous reports) and analysis for PFAS was conducted via EPA Method 537.

Soil vapor, indoor air and ambient air samples collected during the RI were evaluated in accordance with the NYSDOH SVI Guidance.

Figures 5A through 7A present the locations of soil borings, temporary wells, soil vapor, indoor air and ambient air points at the Site. The RI analytical laboratory data is summarized on Figures 5A through 7A. Tables summarizing the RI laboratory analytical results can be found in Tables 1 through 15 and have been uploaded to Equis by AESI.

2.2 Significant Threat

The NYSDEC and NYSDOH have determined that this Site poses a significant threat to human health and the environment as stated on the NYSDEC Fact Sheet dated February 2024. Notice of that determination has been provided for public review. A copy of the notice is included in Appendix E.

2.3 Site History

The Site history is summarized in the following sections.

2.3.1 Past Uses and Ownership

Prior to occupation by Lyft, the Site was most recently used as a warehouse for mixing, repackaging and distribution of petroleum products. A limousine company utilized the second floor of the building as office space, with a small reception area on the first floor. Prior to these operations, the Site was used by courier companies for distribution.

2.3.2 Phase I and Subsurface Investigation Reports

In November 2017, AESI conducted a Phase I Environmental Site Assessment (ESA) for the Site. AESI identified multiple recognized environmental conditions (RECs) based on the operations of the Site at the time and recommended additional investigation.

Multiple subsurface investigations were conducted by AESI, as described in Section 2. In January 2019, AESI submitted an IRM Work Plan to NYSDEC, which was approved in March 2019.

2.4 Geology and Hydrogeology

According to the 2013 United State Geological Survey (USGS) Brooklyn, NY 7.5 Minute Series Topographic Quadrangle Map, the Site is at an elevation of about 14 feet above mean sea level. The property is generally flat and slopes gently to the east towards the Dutch Kills.

According to the USGS, the area is underlain by the Harrison Gneiss, biotite-hornblende-quartz-plagioclase gneiss with accessory garnet and sphene. The formation is known to be up to 4,000 feet thick in places. The surficial geology of the area is comprised mainly of glacial till of varying texture. The till layer varies in thickness from 3-150 feet. The nearest body of water is the Dutch Kills Creek, located adjacent to the east of the subject property. The Dutch Kills Creek flows into the Newtown Creek approximately 0.25 miles to the south of the subject property. Groundwater has been observed at depths of 9-13 feet at the subject property. Groundwater flow direction map is provided as Figure 7B.

The shallow soils at the Site are classified by the U.S. Department of Agriculture Soil Conservation Service as urban land. The soil surface textures include silt loam, loamy sand, sandy loam, and fine sandy loam. Deeper soils consist of stratified sandy loams, and gravels underlain by metamorphic rock. Soils on the Site consisted of approximately 9 feet of fill material containing brick, concrete, fly ash, slag, fine silty sands, clay, and fine gravels. Native material consisting of fine to medium sands with some silt was observed at depths greater than 9 feet below ground surface (bgs).

2.5 Contamination Conditions

2.5.1 Soil/Fill Contamination

Soil samples were collected by AESI from soil boring locations and submitted for laboratory analysis as part of the RI, as described above. Site-wide analytical soil data was compared to the following NYSDEC 6 NYCRR Subpart 375-6.8(a-b) SCOs in order to evaluate Site-wide soil quality and to determine contamination in soil:

- NYSDEC Part 375 Unrestricted Use SCOs;
- NYSDEC Part 375 Commercial Use SCOs; and
- NYSDEC Part 375 Protection of Groundwater (PGW) SCOs.

A summary of soil quality results is provided in the sections below. All soils with residual contamination are already under a Site Cover System (concrete or asphalt), and there is no dermal exposure pathway to the soil at the Site.

Table 1 through Table 6 shows exceedances of Commercial Use SCOs for all soil/fill at the Site. Figures 6A through 6E are spider maps that show the locations and summarizes exceedances from Unrestricted Use SCOs and Commercial Use SCOs for all soil/fill.

VOCs

A summary of the VOC soil exceedances in the soil samples analyzed is provided below:

VOC Exceedances of SCOs in Soil

Analyte	NYSDEC Unrestricted Use SCOs (mg/kg)	Detections above NYSDEC Unrestricted Use SCOs	NYSDEC Commercial Use SCOs (mg/kg)	Detections above NYSDEC Commercial Use SCOs	NYSDEC PGW SCOs (mg/kg)	Detections above NYSDEC PGW SCOs	Range in Concentration Above NYSDEC SCOs (mg/kg)	Soil Sample with Maximum Detection
1,4-Dioxane	0.1	1	130	0	0.1	1	0.110	SB-50C (6.5-7')
Acetone	0.05	12	500	0	0.05	12	0.0510 – 0.337	SB-2 (15.5-16')
Benzene	0.06	1	44	0	0.06	1	0.065	SB-8 (10-10.5')
Methyl ethyl ketone (2-Butanone) (MEK)	0.12	1	500	0	0.12	1	0.389	SB-7 (10-10.5')
Tetrachloroethene (PCE)	1.3	16	150	0	1.3	16	1.84 – 61.6	SB-30 (8')
Trichloroethene (TCE)	0.47	3	200	0	0.47	3	0.625 – 0.956	SB-14 (3.5-4')

SVOCs

A summary of the SVOC soil exceedances in the soil samples analyzed is provided below:

SVOC Exceedances of SCOs in Soil

Analyte	NYSDEC Unrestricted Use SCOs (mg/kg)	Detections above NYSDEC Unrestricted Use SCOs	NYSDEC Commercial Use SCOs (mg/kg)	Detections above NYSDEC Commercial Use SCOs	NYSDEC PGW SCOs (mg/kg)	Detections above NYSDEC PGW SCOs	Range in Concentration Above NYSDEC SCOs (mg/kg)	Soil Sample with Maximum Detection
Benzo[a]anthracene	1	38	5.6	7	1	38	1.01 – 49.1	SB-58 (9.5-10')
Benzo[a]pyrene	1	31	1	31	22	3	1.060 – 47.3	SB-58 (9.5-10')
Benzo[b]fluoranthene	1	26	5.6	6	1.7	19	1.02 – 39.4	SB-58 (9.5-10')
Benzo[k]fluoranthene	0.8	30	56	0	1.7	17	0.806 – 29.1	SB-58 (9.5-10')
Chrysene	1	40	56	0	1	40	1.09 – 48.4	SB-58 (9.5-10')
Dibenzo[a,h]anthracene	0.33	22	0.56	14	1,000	0	0.332 – 8.71	SB-58 (9.5-10')
Indeno[1,2,3-cd]pyrene	0.5	24	5.6	5	8.2	5	0.528 – 29.5	SB-58 (9.5-10')

Metals

A summary of the metals soil exceedances in the soil samples analyzed is provided below:

Metal Exceedances of SCOs in Soil

Analyte	NYSDEC Unrestricted Use SCOs (mg/kg)	Detections above NYSDEC Unrestricted Use SCOs	NYSDEC Commercial Use SCOs (mg/kg)	Detections above NYSDEC Commercial Use SCOs	NYSDEC PGW SCOs (mg/kg)	Detections above NYSDEC PGW SCOs	Range in Concentration Above NYSDEC SCOs (mg/kg)	Soil Sample with Maximum Detection
Arsenic	13	8	16	7	16	7	14.3 - 78.4	SB-35 (2-2.5')
Barium	350	29	400	28	820	5	385 - 1,540	SB-56 (2-2.5')
Cadmium	2.5	1	9.3	1	7.5	1	22.6	SB-74 (4-4.5')
Copper	50	22	270	8	1,720	1	54.1 - 1,870	SB-77 (2-2.5')
Lead	63	52	1,000	24	450	36	98.7 - 5,760	SB-54 (8-12')
Mercury	0.18	17	2.8	0	0.73	12	0.241 - 1.75	SB-65 (2-2.5')
Nickel	30	8	310	2	130	2	34.7 - 12,500	SB-42B (10-10.5')
Selenium	3.9	2	1,500	0	4	2	11.2 - 11.2	SB-64 & 68 (2-2.5')
Zinc	109	24	10,000	1	2,480	2	119 - 14,600	SB-77A (10-10.5')

PCBs

There were no exceedances of PCBs in the soil samples.

Pesticides and Herbicides

A summary of the pesticides/herbicides exceedances in the soil samples analyzed is provided below:

Pesticide and Herbicide Exceedances of SCOs in Soil

Analyte	NYSDEC Unrestricted Use SCOs (mg/kg)	Detections above NYSDEC Unrestricted Use SCOs	NYSDEC Commercial Use SCOs (mg/kg)	Detections above NYSDEC Commercial Use SCOs	NYSDEC PGW SCOs (mg/kg)	Detections above NYSDEC PGW SCOs	Range in Concentration Above NYSDEC SCOs (mg/kg)	Soil Sample with Maximum Detection
4,4'-DDD	0.0033	5	92	0	14	0	0.00473 – 0.030	SB-32S (2-2.5')
4,4'-DDE	0.0033	8	62	0	17	0	0.00688 – 0.100	SB-37S (2-2.5')
4,4'-DDT	0.0033	10	47	0	136	0	0.00891 – 0.201	SB-37S (2-2.5')

PFAS

A summary of the PFAS detections in the soil samples analyzed is provided below. Currently, there are no SCOs for PFAS compounds, however there are NYSDEC guidance values. Soil cleanup objectives for PFOA and PFOS will be proposed in an upcoming revision to 6 NYCRR Part 375-6. Until SCOs are in effect, in accordance with NYSDEC Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) dated April 2023, 0.66 parts per billion (ppb) for PFOA and 0.88 ppb for PFOS are to be used as guidance values for unrestricted use, 500 ppb for PFOA and 440 ppb for PFOS are to be used as guidance values for commercial use, and 0.8 ppb for PFOA and 1.0 ppb for PFOS are to be used as guidance values for Protection of Groundwater. There were no exceedances of either of these guidance values in the soil samples collected at the Site.

Analytical results identified only one PFAS compound, Perfluorodecanesulfonic Acid (PFDS), slightly in excess of the laboratory reporting level of 2 ppb in SB-77A at 2.6 ppb, SB-57B at 6.7 ppb. PFASs were not identified in any other samples.

2.5.2 On-Site Groundwater Contamination

The following subsections summarize the groundwater quality based on laboratory analytical data that was generated during the RI. Groundwater samples collected during the RI were compared to NYSDEC AWQSGVs. No PCBs were detected above their AWQSGVs in the groundwater samples. One VOC, Isopropylbenzene (at 26 µg/L), was detected above its AWQSGVs. SVOCs including anthracene (max. of 305 µg/L), benzo(a)anthracene (max. of 218 µg/L), benzo(b)fluoranthene (max. of 40.7 µg/L), benzo(k)fluoranthene (max. of 48.1 µg/L), bis(2-ethylhexyl)phthalate (at 11.4 µg/L), chrysene (max. of 123 µg/L), fluoranthene (max. of 652 µg/L), fluorine (max. if 272 µg/L), indeno(1,2,3-cd)pyrene (max. of 24.4 µg/L), phenanthrene (max. of 1,010 µg/L), and pyrene (max. of 721 µg/L) were detected above their respective AWQSGVs.

Based upon the RI data collected, groundwater contamination is not a concern for this Site and does not require remediation.

Laboratory analytical data generated during the RI for groundwater is summarized in Table 8 through Table 12. Monitoring well locations with groundwater sample exceedances are shown on Figure 7A.

2.5.3 Pre-IRM On-Site Soil Vapor Contamination

Soil vapor samples collected during the RI were evaluated in accordance with the NYSDOH SVI Guidance. Soil vapor results indicated relatively low levels of petroleum-related compounds (maximum BTEX concentrations 840 ug/m3) and low to high levels of chlorinated volatile organic compounds (CVOCs), as summarized below, in the soil vapor samples.

Laboratory analytical data generated during the RI for soil vapor is summarized in Table 14 and Table 15. Soil vapor point locations with soil vapor sample detections are shown on Figure 5A.

There are currently no formal regulatory standards for soil vapor established by either NYSDEC or the NYSDOH. The NYSDOH established ambient air guidance values for TCE and PCE of 2 ug/m3 and 30 ug/m3 in indoor air in 2013 and 2015 updates to Table 3.1 of the NYSDOH SVI Guidance. TCE exceeded this guidance value in 1 sample collected during the RI prior to SSDS/SVES operation. PCE exceeded this guidance value in 1 sample collected during the RI prior to SSDS/SVES operation.

The NYSDOH has also established soil vapor intrusion screening matrices that require a comparison of the results of sub-slab soil vapor samples to corresponding indoor air quality results for selected CVOCs. There are no matrices or guidance values for petroleum-related VOCs.

Matrix A, Matrix B, and Matrix C in the NYSDOH SVI Guidance provide guidance relative to carbon tetrachloride, cis-1,2-dichloroethene, 1,1-dichloroethene, TCE, PCE, 1,1,1-trichloroethane, methylene chloride, and vinyl chloride.

The following is a summary of CVOC data relative to the NYSDOH SVI Guidance based on data collected prior to installation and operation of the SSDS/SVES.

Matrix A Compounds: carbon tetrachloride, cis-1,2-dichloroethene, 1,1-dichloroethene, TCE

- Carbon tetrachloride was detected in indoor air samples at concentrations ranging from 0.38 to 0.38 micrograms per cubic meter (µg/m3). Carbon tetrachloride was detected in sub-slab soil vapor samples at concentrations ranging from 0.21 to 2.7 µg/m3. Therefore, according to Matrix A, no further action is required.
- Cis-1,2-dichloroethene was detected in indoor air samples at concentrations ranging from 0.0770 to 0.120 µg/m3. Cis-1,2-dichloroethene was detected in sub-slab soil vapor samples at concentrations ranging from 0.160 to 3,000 µg/m3. Therefore, according to Matrix A, mitigative actions were required.
- 1,1-Dichloroethene was detected in indoor air samples at concentrations ranging from 0.0770 to 0.430 µg/m3. 1,1-Dichloroethene was detected in sub-slab soil vapor samples at concentrations ranging from 0.140 to 1.7 µg/m3. Therefore, according to Matrix A, no further action is required.
- TCE was detected in indoor air samples at concentrations ranging from 0.1 to 11 µg/m3. TCE was detected in the sub-slab soil vapor samples at concentrations ranging from 0.55 to 4,200 µg/m3. Therefore, according to Matrix A, mitigative actions were required.

Matrix B Compounds: PCE, 1,1,1-trichloroethane, methylene chloride

- PCE was detected in indoor air samples at concentrations ranging from 1.1 to 96 µg/m3. PCE was detected in sub-slab soil vapor at concentrations ranging from 15 to 42,000 µg/m3. Therefore, according to Matrix B, mitigative actions were required.

- 1,1,1-Trichloroethane was detected in indoor air samples at concentrations ranging from 0.42 to 6.6 µg/m3. 1,1,1-Trichloroethane was detected in sub-slab soil vapor at concentrations ranging from 0.81 to 33 µg/m3. Therefore, according to Matrix B, no further action is required.
- Methylene chloride was detected in indoor air samples at concentrations ranging from 2.3 to 12 µg/m3. Methylene chloride was detected in sub-slab soil vapor at concentrations ranging from 0.95 to 19 µg/m3. Therefore, according to Matrix B, either identifying the source and resampling or mitigative actions were required.

Matrix C Compound: vinyl chloride

- Vinyl chloride was detected in indoor air samples at concentrations ranging from 0.05 to 0.063 µg/m3. Vinyl chloride was detected in sub-slab soil vapor at concentrations ranging from 0.087 to 40 µg/m3 in sub-slab soil vapor samples. Therefore, according to Matrix C, monitoring was required.

In February 2024, the NYSDOH SVI Guidance added Matrices D, E, and F including additional contaminants.

Matrix D Compounds: benzene, ethylbenzene, naphthalene, cyclohexane, isooctane (2,2,4-trimethylpentane), 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, o-xylene

- Benzene was detected in indoor air samples at concentrations ranging from 0.33 to 1.4 µg/m3. Benzene was detected in sub-slab soil vapor samples at concentrations ranging from 0.84 to 160 µg/m3. Therefore, according to Matrix D, no further action is required.
- Ethylbenzene was detected in indoor air samples at concentrations ranging from 0.41 to 2.2 µg/m3. Ethylbenzene was detected in sub-slab soil vapor samples at concentrations ranging from 1.2 to 2.7 µg/m3. Therefore, according to Matrix D, no further action is required.
- Cyclohexane was detected in indoor air samples at concentrations ranging from 0.69 to 19 µg/m3. Cyclohexane was detected in sub-slab soil vapor samples at concentrations ranging from 0.60 to 160 µg/m3. Therefore, according to Matrix D, mitigative actions were required.
- Isooctane (2,2,4-trimethylpentane) was detected in indoor air samples at concentrations ranging from 0.93 to 2.5 µg/m3. Isooctane (2,2,4-trimethylpentane) was not detected in the sub-slab soil vapor samples. Therefore, according to Matrix D, no further action required.
- 1,2,4-trimethylbenzene was detected in indoor air samples at concentrations ranging from 0.98 to 3.6 µg/m3. 1,2,4-trimethylbenzene was detected in sub-slab soil vapor samples at concentrations ranging from 4.7 to 9.0 µg/m3. Therefore, according to Matrix D, no further action is required.
- 1,3,5-trimethylbenzene was detected in one indoor air sample at a concentration 1.9 µg/m3. 1,3,5-trimethylbenzene was detected in sub-slab soil vapor samples at concentrations ranging from 1.1 to 3.0 µg/m3. Therefore, according to Matrix D, no further action is required.
- O-xylene was detected in indoor air samples at concentrations ranging from 0.47 to 8.7 µg/m3. O-xylene was detected in sub-slab soil vapor samples at concentrations ranging from 1.6 to 6.2 µg/m3. Therefore, according to Matrix D, no further action is required.

Matrix E Compounds: m-xylene, p-xylene, heptane, hexane

- M+p-xylene was detected in indoor air samples at concentrations ranging from 0.77 to 24 µg/m3. M+p-xylene was detected in sub-slab soil vapor samples at concentrations ranging from 4.0 to 12 µg/m3. Therefore, according to Matrix E, either identifying the source and resampling or mitigative actions were required.

- N-heptane was detected in indoor air samples at concentrations ranging from 0.39 to 24 µg/m3. N-heptane was detected in sub-slab soil vapor samples at concentrations ranging from 2.5 to 35 µg/m3. Therefore, according to Matrix E, either identifying the source and resampling or mitigative actions were required.
- N-hexane was detected in indoor air samples at concentrations ranging from 0.42 to 52 µg/m3. N-hexane was detected in sub-slab soil vapor samples at concentrations ranging from 2.3 to 42 µg/m3. Therefore, according to Matrix E, either identifying the source and resampling or mitigative actions were required.

Matrix F Compounds: toluene

- Toluene was detected in indoor air samples at concentrations ranging from 2.1 to 27 µg/m3. Toluene was detected in sub-slab soil vapor samples at concentrations ranging from 2.0 to 31 µg/m3. Therefore, according to Matrix F, no further action is required.

The SSDS/SVES, as described in the IRMCCR, was designed, installed and is being operated to mitigate the potential for soil vapor intrusion into the building.

Laboratory analytical data generated during the RI for soil vapor is summarized in Table 14 and Table 15. Soil vapor point locations with soil vapor sample detections are shown on Figure 5A.

2.6 Qualitative Human Health Exposure Assessment

As described in Appendix 3B of DER-10, *"The overall purpose of the Qualitative Human Health Exposure Assessment (or the exposure assessment) is to evaluate and document how people might be exposed to Site related contaminants, and to identify and characterize the potentially exposed population(s) now and under the reasonably anticipated future use of the Site."* The following section details the exposure assessment based on data collected during the RI.

The planned future use of the Site is continued commercial use. The proposed remedy for the Site is a Track 4 cleanup. Many of the required remedial actions were completed as an IRM, including removal of former lifts, oil water separator(s) and associated impacted soil and installation of the original SSDS/SVES components for SVI mitigation. IRM activities are summarized in Section 2.7 and described in greater detail in the IRMCCR dated December 21, 2021.

2.6.1 Soil Exposure

As described above, soil samples collected during the RI indicated the presence of VOCs, SVOCs, metals, and pesticides in concentrations above the NYSDEC Part 375 Unrestricted SCOs and in some cases, Commercial SCOs. Since the Site is completely covered by the Site building and/or asphalt parking lot, the exposure pathway is incomplete and therefore, the general public is not exposed to direct contact with Site soil. Potential contact with Site soil is restricted to future remedial and construction contract workers at the Site performing ground intrusive activities, but such exposure would be prevented by the use of proper personal protective equipment (PPE). In addition, a community air monitoring program (CAMP) will be implemented during intrusive activities to minimize the potential for off-Site exposures from soil/dust leaving the Site, if any excavation is performed.

2.6.2 Groundwater Exposure

As described, groundwater samples collected during the RI did not indicate significant groundwater contamination. Since groundwater is not used for drinking or irrigation (the area is connected to the public water supply), and since the Site is completely covered by the Site building and/or asphalt parking lot, the exposure pathway is incomplete and therefore, there is no direct contact with or ingestion of groundwater by the general public (on-Site or off-Site). Beyond just a Site restriction, the use of groundwater for drinking or irrigation is prohibited throughout the majority of New York City due to extensive saltwater intrusion. Individuals who perform future groundwater sampling or remedial activities may come into contact with contaminated groundwater which could lead to dermal contact and the potential for incidental ingestion of these compounds, but such exposure would be prevented by the use of proper PPE.

2.6.3 Soil Vapor Exposure

As described in Section 2.4.6, soil vapor samples collected during the RI indicated the presence of VOCs in soil vapor on-Site, and to a lesser degree off-Site. The current and planned future use of the Site is commercial. The existence of the building over the majority of the Site footprint, where contaminants were detected in soil vapor samples, results in the potential for soil vapor intrusion.

In order to proactively address the soil vapor intrusion concerns, the volunteer designed and installed an active SSDS/SVES beneath the entire BCP Site in accordance with the IRMWP. A description of the SSDS/SVES is provided in Section 2.7 of this RAWP. It is also anticipated that operation of the SSDS/SVES at the Site, coupled with other IRM activities will prevent exposure and will improve soil vapor VOC concentrations over time. Based on recent soil vapor data collected on-Site and off-Site, as described in Section 2.7.2, NYSDEC and NYSDOH determined that additional measures are required to further prevent the potential for off-Site migration of soil vapor.

2.7 Interim Remedial Measure

The 2019 IRMWP, approved by NYSDEC in March 2019, was implemented between April 2019 and November 2019 by AESI. The following interim remedial measures were implemented:

- Exposure, cleaning, removal, and off-Site disposal of hydraulic lifts;
- Exposure, cleaning, removal, and off-Site disposal of oil/water separator;
- Installation of a SSDS and SVES beneath the building and parking lot of the Site to mitigate the potential migration of sub-slab soil vapor;
- Removal and off-Site disposal of approximately 372-tons of soil/fill generated during the removal of hydraulic lifts and the installation of the SSDS and SVES, comingled with impacted petroleum soils surrounding the oil/water separator; and
- Excavation support activities, including:
    - Stockpiling of excavated material and backfill brought to the Site;
    - Waste characterization sampling;
    - Excavation endpoint documentation soil sampling;
    - Transport and disposal of excavated material at a permitted disposal facility; and
    - Backfill and compaction of excavation with acceptable backfill material.

A figure showing the SSDS plan and details is provided as Figure 8 and 9. The implemented IRM actions are described and documented in the NYSDEC-approved December 2021 IRMCCR.

2.7.1 Post-IRM On-Site Soil Vapor Contamination

Following the construction and start-up of the SSDS/SVES, in June 2021, AESI collected confirmatory indoor air samples for analysis for indoor air locations A1 through A4. Confirmatory indoor air samples showed an overall significant decrease in TCE and PCE concentrations. An inventory of existing and commonly used chemicals and products will be performed for the building followed by an additional round of confirmatory indoor air samples to assess soil vapor conditions. A table of Pre-IRM and Post-IRM concentrations for NYSDOH SVI Matrix compounds is provided below.

Pre-IRM and Post-IRM Indoor Air Sample Results

NYSDOH SVI Matrix Compounds	Pre-IRM – A1 (ug/m3)	Post-IRM – A1 (ug/m3)	Pre-IRM – A2 (ug/m3)	Post-IRM – A2 (ug/m3)	Pre-IRM – A3 (ug/m3)	Post-IRM – A3 (ug/m3)	Pre-IRM – A4 (ug/m3)	Post-IRM – A4 (ug/m3)
Carbon tetrachloride	0.38	0.42 D	0.38	0.34 D	0.38	0.41 D	0.38	0.37 D
Cis-1,2-dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND
1,1-dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene (TCE)	0.38	ND	0.38	ND	0.48	ND	ND	ND
Tetrachloroethene (PCE)	12	0.78 D	8.3	0.61 J	16	0.64 J	ND	ND
1,1,1-trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	3.2	21 D	3.1	6.2 D	4.2	3.4 D	4.2	1.4 D
Vinyl chloride	ND	ND	ND	ND	ND	ND	ND	ND

ND – Not Detected

D – Result is from an analysis that required a dilution

J – Analyte detected at or above the MDL but below the RL – data is estimated

2.7.2 On-Site and Off-Site Soil Vapor Sampling

Following Roux's initial submittal of the Remedial Action Work Plan to the NYSDEC in February 2022, the NYSDEC and NYSDOH requested additional soil vapor sampling activities to be completed within the Site and along the sidewalk that is present along the northern boundary of the Site.

A total of 12 sub-slab soil vapor samples were collected as part of additional sampling efforts in August 2022 and November 2022. Each sub-slab soil vapor location was installed directly beneath the ground surface (i.e., building foundation, parking lot asphalt, or concrete sidewalk) using a hammer drill and prefabricated, stainless-steel vapor pin, attached to Teflon-lined polyurethane tubing. Following installation of each soil vapor point, the integrity of each sampling point was checked via a helium gas tracer test. This step was conducted as a quality assurance/quality control (QA/QC) measure to verify that the sub-slab soil vapor sample was not compromised by inadvertent introduction of ambient air into the sample. Prior to sample collection, each sub-slab soil vapor point was purged of approximately three volumes of soil vapor using

an air pump calibrated to approximately 0.2 liters per minute. All sub-slab soil vapor samples were collected using batch certified vacuum 6-liter summa canisters equipped with laboratory-supplied, two-hour regulators and were analyzed for VOCs using United States Environmental Protection Agency (USEPA) Method TO-15. Of the 12 sub-slab soil vapor samples collected, six samples were collected in the offsite sidewalk in August 2022. Six sub-slab samples were collected in the onsite building and parking area in November 2022.

Results were compared to PCE concentrations beneath the Site prior to the installation of the SSDS/SVES. The comparison demonstrated that the general magnitude of the PCE concentrations along the northern border of the Site had significantly reduced as a result of the systems operations, with PCE concentrations reducing by two orders of magnitude. Following submission of this data, the NYSDEC and NYSDOH determined that additional measures are required to further prevent the potential for off-Site migration of soil vapor.

2.8 Remedial Action Objectives

Based on the results of the Remedial Investigation, the following Remedial Action Objectives (RAOs) have been identified for this Site.

2.8.1 Groundwater

RAOs for Public Health Protection

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.
- Prevent contact with, or inhalation of volatiles, from contaminated groundwater.

2.8.2 Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil.

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.

2.8.3 Soil Vapor

RAOs for Public Health Protection

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at the Site.

3. Description of Remedial Action Plan

This section of the RAWP was prepared in accordance with 6 NYCRR Subpart 375 – 3.8(f), Subpart 375 – 1.8(f), and Section 4.3 of DER-10. As required, a minimum of two remedial alternatives (one being an unrestricted use scenario) are evaluated.

Two remedial action alternatives were analyzed. The first alternative analyzed is a Track 1 unrestricted use cleanup; the second alternative is a Track 4 commercial alternative. Both alternatives take into account the completion of the remedial measures described in the NYSDEC-approved IRMWP and CCR.

3.1 Technical Description of Alternative 1: Track 1 Remedy

Following IRMWP implementation, Alternative 1, a Track 1 remedy could only be achieved by completing the following tasks:

- Excavation and off-Site disposal of historic fill material and soil exceeding Unrestricted Use SCOs, which would require the removal of the current building and asphalt parking lot. It is assumed for the purposes of evaluating the Track 1 remedy that after removal of all soil exceeding UUSCOs, soil vapor quality would improve and active soil vapor intrusion mitigation measures would not be required.
- Design and installation of support of excavation to protect adjacent structures during excavation.
- Collection and analysis of confirmation soil samples to confirm Unrestricted Use SCOs were achieved.
- Dewatering the excavation to accommodate remedial excavation, and treatment, as necessary of dewatered groundwater.
- Installation of a new vapor barrier system (minimum thickness 20 mil) under a new building foundation slab and up the foundation walls to prevent exposure from soil vapor from off-Site exposure pathways.
- Backfilling and compaction of excavated areas to development grade with certified-clean material (meeting Unrestricted Use SCOs) or virgin, native crushed stone.
- Development and execution of a HASP and CAMP for the protection of on-Site workers, the general public, and the environment during remediation and construction activities.

The requirements for each of the tasks listed above is described below. The Alternative 1 remedial extent includes the entire Site area. The remedial extent is based on data presented in the RIR.

3.1.1 Historic Fill Material and Soil Removal

VOCs, SVOCs, metals, and pesticides were reported in historic fill material and native soil at concentrations that exceed the Part 375 Unrestricted Use SCOs. To achieve Track 1, soil removal and disposal would need to extend to about 14 feet below grade (2 feet below the deepest interval where exceedances of Track 1 SCOs were encountered). The estimated volume of fill and soil requiring removal and off-Site disposal for a Track 1 cleanup is about 19,900 cubic yards (CY). This estimate is based on vertical excavation limits derived from the laboratory analytical results in the RIR. However, building demolition and parking lot removal would be first required. The final excavation depth would extend below the water table and would require Site-wide support of excavation and dewatering, and extensive measures (e.g., underpinning) to protect adjacent buildings and roadways.

3.1.2 Confirmation Soil Sampling

In accordance with DER-10, confirmation soil sample collection would be completed from the excavation base at a frequency of one sample per 900 square feet of base. Sidewall samples would not be collected, since the excavation would extend Site-wide. Based on these criteria, approximately 43 bottom confirmation samples, plus required quality assurance/quality control samples, would be collected. Confirmation soil samples would be analyzed for Part 375 VOCs, SVOCs, PCBs, pesticides/herbicides, metals and emerging contaminants. Over-excavation would be required to remove soil that does not meet Unrestricted Use SCOs. If over-excavation is completed, additional confirmation samples would be required and it is not known if even after this effort, whether Unrestricted Use SCOs could be reached in all confirmatory samples.

3.1.3 Excavation Dewatering

Construction dewatering would be required to reach the proposed remedial excavation depths. Dewatering would be conducted using a well point system. Extracted groundwater would be treated on-Site under a permit from New York City Department of Environmental Protection to meet pretreatment requirements prior to discharge to the sewer system or under a NYSDEC State Pollution Discharge Elimination System permit.

3.1.4 Excavation Backfill

After confirmation samples demonstrated that remedial excavation is complete, the excavation would be backfilled to bring the Site to the grade required for installation of the new foundation slab. About 19,900 CY of fill material would be anticipated to restore the Site to the bottom elevation of the new slab and parking lot. Backfill material would consist of clean fill (meeting the Unrestricted Use SCOs) or other acceptable fill material such as virgin, native stone from a permitted mine or quarry with less than 10 percent passing a number 80 sieve, which could be approved for import without sampling.

The clean fill would be segregated at a source/facility that is free of environmental contaminants. Qualified environmental personnel would collect representative samples at a frequency consistent with NYSDEC DER-10 Table 5.4(e)10, if necessary. The samples would be analyzed for Part 375 VOCs, SVOCs, pesticides/herbicides, PCBs, metals and emerging contaminants by an NYSDOH Environmental Laboratory Approval Program- certified laboratory. Acceptable backfill material would not exceed Unrestricted Use SCOs. Upon meeting these criteria, the certified-clean fill would be transported to the Site and segregated from impacted material, as necessary, on plastic sheeting until it is used as backfill.

3.1.5 On-Site Worker, Public Health and Environmental Protection

A Site-specific HASP would be developed and enforced to protect on-Site workers from accidents and acute and chronic exposures from the identified contaminated media. Public health would be protected by implementing and enforcing dust, odor, and organic vapor control and monitoring procedures included in the CAMP. The CAMP would include continuous perimeter monitoring of dust and organic vapor utilizing aerosol monitors and PIDs capable of recording data and calculating 15-minute averages. Field personnel would monitor Site perimeters for visible dust and odors. The environment would be protected by implementing and enforcing the appropriate soil erosion prevention measures.

3.2 Technical Description of Remedial Alternative 2: Track 4 Commercial Remedy - Previous IRM Activities, Existing Site Cover System and Expansion of SSDS/SVES

Alternative 2 Track 4 Commercial remedy includes the following:

- Previous remedial efforts that were undertaken as an IRM, which were successful in addressing on-Site source areas are described in Section 2.7;
- Continued implementation of the existing cover system as a long-term engineering control (EC);
- Continued operation of the SSDS/SVES installed as an IRM as a long-term EC, which has effectively addressed on-Site soil vapor intrusion concerns;
- Expansion of the SVES along the northern border of the Site to further prevent the potential for off-Site soil vapor migration as a long term EC;
- Following SVES Expansion commissioning, confirmatory Soil Vapor Intrusion sampling (sub-slab soil vapor and indoor air) will be performed during the heating season to confirm the SSDS is functioning adequately and mitigating soil vapor intrusion into the Site building. Results of the confirmatory indoor air sampling will be included in the FER.
- Establishment of institutional controls (ICs), including restricting the use of the Site to commercial and industrial uses and required implementation of a Site Management Plan (SMP) for the ECs through an enforceable environmental easement;
- Recording of an environmental easement requiring maintenance of the ECs and ICs to keep the Site safe for occupancy;
- Preparation of the SMP for long-term management of remaining contamination as required by the environmental easement, including plans for: 1) IC/ECs; 2) soil vapor intrusion monitoring; 3) operation and maintenance; and 4) reporting.

The requirements for each of the above tasks are described below.

3.2.1 Previous IRM

Previous remedial measures undertaken as an IRM are described in Section 2.7 and were successful at addressing on-Site source areas.

3.2.2 Existing Site Cover System

The existing Site cover system consists of a minimum of 4-inch-thick concrete pavement, 4-inch-thick asphalt pavement or concrete building slabs. The Site cover system will continue to serve as an EC for the protection of human health and to prevent dermal contact with remaining Site soil under the building.

3.2.3 Existing SSDS and SVES

The SSDS/SVES, including suction trenches, extraction point, perforated piping, riser pipes, in-line fans and monitoring points, were installed during implementation of the IRMWP, as documented in the NYSDEC-approved IRMCCR. The SSDS was designed in general accordance with NYSDOH Guidance and the New York City Mechanical Code Section MC 512 (2014). The SMP will require the continued operation, maintenance and monitoring of the SSDS/SVES.

3.2.4 Expansion of the SVES

The intention of the SVES Expansion Design is to provide enhanced mitigation to further prevent the potential for off-Site soil vapor migration. The remaining soil vapor concentrations of concern exist along the northern edge of the existing parking lot and building along 49th Avenue. The proposed SVES Expansion Design includes eight SVE points along the northern edge of the parking lot and building of the Site (including the SVE point installed during the Pilot Test). Additionally, the existing previously installed SVE point within the building will be connected to the new blower system. Following SVES Expansion commissioning, confirmatory Soil Vapor Intrusion sampling (sub-slab soil vapor and indoor air) will be performed during the heating season to confirm the SSDS is functioning adequately and mitigating soil vapor intrusion into the Site building. Results of the confirmatory indoor air sampling will be included in the FER.

The SVES Expansion will include the following components as shown on the attached Soil Vapor Extraction System Expansion Plan and Details drawing (Drawing 1) and SVES Blower System Submittal Package (Appendix D):

- Four 4-inch diameter PVC SVE points. Each SVE point will be screened from 1.5 feet to 10 feet below grade.
- The SVE points in the parking lot will be interconnected via a 6-inch diameter solid PVC header pipe and will be transitioned to a 6-inch diameter steel riser pipe at the northeast corner of the building up to the adjacent roof and to the blower.
- The SVE points in the building will be interconnected via a 6-inch diameter steel header pipe along the ceiling of the building internally and connect to the external steel riser pipe at the northeast corner of the building up to the adjacent roof and to the blower.
- The existing SVE point inside the building will be interconnected to the new blower system on the roof.
- The SVES will be connected to a 10 HP, Atlantic Blowers Model AB-850 or approved equal.

3.2.5 Environmental Easement

An IC in the form of an Environmental Easement will be implemented at the Site to make compliance with the SMP enforceable. An Environmental Easement will be recorded and will be binding upon all subsequent owners and occupants of the Site. The Environmental Easement will:

- Allow the use and development of the Site for commercial and industrial use as defined in Part 375-1.8(g) pursuant to local zoning laws; and
- Require compliance with the NYSDEC-approved SMP, which will include operation, maintenance and monitoring of the Site cover system and the expanded SSDS/SVES.

Require the current Volunteer-Site Owner and all future owners to complete and submit periodic certifications of ICs/ECs to the NYSDEC in accordance with Part 375-1.8(h)(3) demonstrating compliance with the SMP. The SMP will include an IC/EC Plan, an Operation and Maintenance (O&M) Plan, as well as reporting requirements.

The IC/EC Plan will identify all use restrictions and ECs for the Site and detail the steps and media-specific requirements necessary to ensure the IC and/or ECs remain in place and are effective. It will include, but may not be limited to:

- An Excavation Plan that details the provisions for management of future excavations in areas of remaining contamination;
- Descriptions of the provisions of the Environmental Easement including any land use, and/or groundwater use restrictions;
- Provision for the decommissioning of the expanded SSDS/SVES if future Site use changes justify such actions;
- Provision for evaluation of the potential for soil vapor intrusion for the existing building and any buildings developed on the Site in the future if the SSDS is discontinued, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- Provisions for the installation of a cover system compliant with this RAWP if the existing cover system is removed in the future;
- Provisions for the management and inspection of the identified ECs;
- A requirement to maintain Site access controls and NYSDEC/NYSDOH notification;
- A Monitoring Plan to assess the performance and effectiveness of the remedy, which will include, but may not be limited to:
    - Monitoring for vapor intrusion for any buildings developed on the Site, as may be required by the IC/EC Plan discussed above;
    - Monitoring the expanded SSDS/SVES including, but not limited to, vapor concentrations and vacuums, to assess the performance and effectiveness of the system; and
    - A schedule of monitoring and frequency of submittals to the NYSDEC.

An O&M Plan will be included to ensure continued operation, maintenance, optimization, monitoring, inspection, and reporting of any mechanical or physical components of the remedy. It will include, but may not be limited to:

- Procedures for inspecting and maintaining the Site cover;
- Compliance monitoring of the expanded SSDS/SVES to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting;
- Maintaining Site access controls and NYSDEC/NYSDOH notification.

The SMP will also detail requirements for the submittal of data, information, recommendations, and certifications to the NYSDEC.

3.3 Evaluation of Remedial Alternatives

The goal of the remedy selection process under the BCP is to select a remedy that is protective of human health and the environment taking into consideration the current, intended, and reasonably anticipated future use of the property and each of the following factors listed below:

- Protection of human health and the environment;
- Compliance with standards, criteria, and guidelines (SCGs);
- Short-term effectiveness and impacts;

- Long-term effectiveness and permanence;
- Reduction of toxicity, mobility, or volume of contaminated material;
- Implementability;
- Cost effectiveness;
- Community Acceptance; and
- Land use.

The first two criteria are considered "threshold criteria" and the remaining criteria are "balancing criteria." A remedial alternative must meet the threshold criteria in order to be considered and evaluated further under the balancing criteria.

3.3.1 Overall Protection of Human Health and the Environment

This criterion is an evaluation of the ability of each alternative to protect public health and the environment.

Remedial Alternative 1 (Site-Wide Track 1 Remedy) would be protective of human health and the environment by removing the soil at the Site that exceeds the Unrestricted Use SCOs and backfilling the area with material meeting the Unrestricted Use SCOs. However, a Track 1 remedy would essentially require building removal, which would be a hardship for the Volunteer and tenants of the building. Installation of extensive support of excavation would be required to reach the proposed remedial excavation depths and clean end-point samples. Groundwater in Long Island City is not used as a source of drinking water; therefore, there is no potential for groundwater ingestion.

Remedial Alternative 2 (Track 4 Remedy – Previous IRM Activities, Existing Site Cover System and Expansion of SSDS/SVES), the majority of remedy has already been approved by NYSDEC and implemented in accordance with the IRMWP. The expansion of the SVES will be completed following approval of this RAWP. **Remedial Alternative 2** will provide similar overall protection to public health and the environment to Alternative 1 since there is already a Site cover and sealing layer present at the Site, which prevents dermal or ingestion exposure, and the existing SSDS/SVES has already been installed and is operational to address soil vapor intrusion on-Site. The proposed expanded SVES will further prevent the potential for off-Site soil vapor migration. Groundwater in Long Island City is not used as a source of drinking water; therefore, there is no potential for groundwater ingestion.

3.3.2 Standards, Criteria, and Guidance

The remedy must conform to officially promulgated standards and criteria that are directly applicable or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance as appropriate.

Remedial Alternative 1 would achieve compliance with the Track 1 Unrestricted Use SCOs by removing all contaminated soils and would therefore result in a permanent remedy. However, the effort to achieve Track 1 SCOs on an already developed Site would require demolition of a perfectly sound on-Site building already serving as a Site cover system, only to then remove soil exceeding Unrestricted Use SCOs would be a hardship for the Volunteer and building tenants.

Remedial Alternative 2 will achieve compliance with the Track 4 cleanup criteria. The current Site cover system (including the building slab and concrete and asphalt paving) prevents exposure to remaining contaminated media, and serves as the sealing layer for the existing SSDS/SVES to prevent soil vapor intrusion. The proposed expanded SVES will further prevent the potential for off-Site soil vapor migration.

3.3.3 Long-Term Effectiveness and Permanence

This criterion is an evaluation of the long-term effectiveness and permanence of an alternative or remedy after implementation.

Remedial Alternative 1 would achieve long-term effectiveness by providing a permanent cleanup of on-Site contamination through removal of all impacted soil/ fill material in excess of the Unrestricted Use SCOs.

Remedial Alternative 2 will achieve long-term effectiveness through the implementation of an SMP that will require ongoing proper operation, maintenance and monitoring of the expanded SSDS/SVES and Site cover system to prevent exposures to on-Site soil and soil vapor and further prevent the potential for off-Site soil vapor migration in perpetuity or until such time as it is no longer needed, as determined by the NYSDEC and NYSDOH. The SMP will ensure long-term effectiveness of all ECs and ICs by requiring periodic inspection and certification that these controls and restrictions continue to be in place and are functioning as intended by the current and all future owners and operators at the Site.

3.3.4 Short-Term Impacts and Effectiveness

This criterion is an evaluation of the potential short-term adverse environmental impacts and human exposures during the construction and/or implementation of an alternative or remedy.

Remedial Alternative 1 would require a significantly longer length of demolition, extensive excavation/support of excavation, reconstruction and construction related traffic than **Remedial Alternative 2** and has the potential to cause exposure during such activities if not properly implemented pursuant to a HASP. Thus, **Remedial Alternative 1** has higher potential exposure risks to the community and construction workers. These potential risks would be addressed in the Site-specific HASP and CAMP and the Excavation Work Plan (EWP), which detail monitoring during the construction and describe ECs to be implemented as necessary (e.g., dust suppression and traffic control).

Under Remedial Alternative 1, it is estimated that the demolition would take 6 months and approximately 995 truckloads of soil above Unrestricted Use SCOs would be exported from the Site and approximately 995 truckloads of clean fill would be transported to the Site for backfilling and placement of the new final surface cover, not to mention extensive demolition debris and water that would also be created.

Overall sustainability of this remedy would be considered unfavorable due to the large carbon footprint, high emissions resulting from equipment and truck traffic and high volume of waste generated during implementation of this remedy.

Remedial Alternative 2 (Track 4 remedy) would cause limited worker exposure since the majority of the remedy has already been implemented pursuant to a HASP, which protected workers from on-Site contaminants during existing SSDS/SVES installation. Only limited subsurface work is required for

implementation of the expanded SVES, which will be undertaken in accordance with the procedures outlined in this RAWP and associated Site-specific HASP and CAMP (Appendix C).

Sustainability of this remedy, relative to Track 1, would be considered favorable due to the lower carbon footprint and energy requirements for completion of this remedy.

3.3.5 Reduction in Toxicity, Mobility, or Volume of Contamination Through Treatment

This criterion is an evaluation of the ability of an alternative or remedy to reduce the toxicity, mobility, and volume of Site contamination. Preference should be given to remedies that permanently or significantly reduce the toxicity, mobility, or volume of the contamination at the Site. The ways to achieve this include:

- Removal and/or treatment;
- Containment;
- Elimination of exposure; and
- Treatment of source at the point of exposure.

Remedial alternatives that use treatment or removal to eliminate contaminants at a Site, reduce the total mass of toxic contaminants, cause irreversible reduction in contaminants mobility, or reduce of total volume of contaminated media are preferable.

Remedial Alternative 1 permanently eliminates the toxicity, mobility, and volume of contaminants within the Site by removing all soil with concentrations that exceeded the Unrestricted Use SCOs.

Remedial Alternative 2 addresses the toxicity and mobility of remaining on-Site soil and soil vapor contamination through the presence of the existing Site cover system and the installation of the expanded SSDS/SVES. Implementation of the SMP (enforced via the Environmental Easement) will ensure the continued operation, maintenance and monitoring of the expanded SSDS/SVES and the long-term maintenance of the cover system.

3.3.6 Implementability

This criterion is an evaluation of the technical and administrative feasibility of implementing an alternative or remedy.

Remedial Alternative 1 – Implementing Alternative 1 will be technically infeasible without demolition of the on-Site active building foundation and parking lot due to material under the existing Site cover exceeding Unrestricted Use SCOs to about 14 feet below grade (2 feet beneath the deepest interval where exceedances of Unrestricted Use SCOs were encountered), with contaminated areas extending below the water table. Removal of the existing active building would be a hardship for the Volunteer and the building's tenants. Extensive excavation support, dewatering, and underpinning of the nearby buildings, and roadways will be required to remove material exceeding Unrestricted Use SCOs without any significant environmental or public health benefits beyond those already implemented with the preferred Track 4 remedy. The risk of damage to adjacent property buildings and impact to occupants is highest for the Alternative 1 remedy.

Remedial Alternative 2 – The technical feasibility of implementing Alternative 2 has been proven, since the majority of the remedy was already implemented as an IRM and the remaining work to expand the SVES requires only standard construction techniques that are readily implemented. This remedy uses typical ECs at the Site (Site cover and expanded SSDS/SVES) to mitigate risks. The risk of damage to adjacent property buildings and impacts to occupants is lowest for the **Remedial Alternative 2**.

3.3.7 Cost Effectiveness

Remedial Alternative 1 – Based on the assumptions detailed for Alternative 1, including but not limited to, demolition of the building, removal and disposal of all building materials and historic fill material and soil exceeding Unrestricted Use SCOs, support of excavation, dewatering, community air monitoring, and dust, odor, and vapor control measures, and then reconstruction of the building, the estimated remediation cost of a Track 1 cleanup is about $9 MM, plus the $500,000 that was incurred during the implementation of the IRM. Alternative 1 is prohibitively expensive and not technically justified since it is not likely to result in significantly greater environmental or public health benefits than the Track 4 selected remedy.

Remedial Alternative 2 – Based on the assumptions detailed for Alternative 2, the estimated remediation cost of the Track 4 remedy is the $500,000 that was incurred during the implementation of the IRM, approximately $480,000 for expansion of the SVES, plus about $35,000 per year in annual OM&M costs. Alternative 2 presents the most cost-effective alternative for achieving the remediation goals and objectives.

3.3.8 Community Acceptance

This criterion is evaluated after the public review of the remedy selection process as part of the final DER selection/approval of a remedy for a Site.

1. Any public comment relative to these criteria will be considered by DER after the close of the public comment period.
2. Documentation of the public comments received is to be consistent with the Citizen Participation Plan (CPP) identified for a remedial program in accordance with applicable DEC policy.

Remedial Alternative 1 – Even though Remedial Alternative 1 would attempt to achieve an unrestricted remedy, it would eliminate the current building cover system and create more exposure to the public and environment.

Remedial Alternative 2 – The public will likely prefer Remedial Alternative 2 as this remedy will result in far less neighborhood disruption as a result of building demolition and truck traffic associated with soil removal and backfill import. In addition, there would be no disruption to the current operations for the Tenant or hardship for the Volunteer. Under Remedial Alternative 1, it is estimated that the demolition would take 6 months and approximately 995 truckloads of soil above Unrestricted Use SCOs would be exported from the Site and approximately 995 truckloads of clean fill would be transported to the Site for backfilling and placement of the new final surface cover, not to mention extensive demolition debris and water that would also be created. Likely less than one truckload of waste or soil would be necessary under Alternative 2.

The community is likely to be less accepting of the short-term risks of exposure and safety concerns associated with Alternative 1 including increased truck traffic, noise, and dust and odors during the

implementation of the remedial action and construction-related health and safety issues. These concerns would not be applicable to Alternative 2.

3.3.9 Land Use

This criterion is an evaluation of the current, intended, and reasonably anticipated future use of the Site and its surroundings, as it relates to an alternative or remedy, when unrestricted levels would not be achieved.

Remedial Alternative 1 – The permitted land uses at the Site include industrial and commercial; therefore, Remedial Alternative 1 provides an unnecessary level of remediation relative to zoning and land use.

Remedial Alternative 2 – The current, intended, and reasonably anticipated future land use of the Site and its surroundings are compatible with Remedial Alternative 2. There are no redevelopment plans for the Site since the on-Site building has already been renovated for the current tenant. Review of previous environmental and public documents for the Site has led to the following conclusions:

1. The current, intended, and reasonably anticipated future land use of the Site and its surroundings will be compatible with the Remedial Alternative 2. The reasonably anticipated future use of the Site and the use of its surroundings have been documented by the Volunteer in the BCP application.
2. The current, intended, and reasonably anticipated future use for the Site conforms to applicable zoning laws or maps or the reasonably anticipated future use of the Site.
3. The current, intended, and reasonably anticipated future use for the Site conforms to historical and/or recent development patterns in the area.
4. The Site does not fall within the boundaries of an existing Brownfield Opportunity Area, but in an area of other suspect brownfield sites.
5. The Site is located in an urban setting that is characterized by industrial, commercial office, and commercial retail developments. There are no areas zoned for agricultural use in the proximity of the Site.
6. The Site is not located in a potential environmental justice area.
7. There are no federal or state land designations.
8. The population growth patterns and projections support the proposed land use.
9. The Site is accessible to existing infrastructure.
10. The Site is not in close proximity to important cultural resources, including federal or state historic or heritage sites or Native American religious sites.
11. The Site is not located in close proximity to important federal, state or local natural resources, including waterways, wildlife refuges, wetlands, or critical habitats of endangered or threatened species.
12. Municipal water supply wells are not present in New York City; therefore, groundwater from the Site cannot affect municipal water supply wells or recharge areas.
13. The current use is compatible with local land use laws.

3.4 Selection of the Preferred Remedy

Both alternatives will be protective of human health and the environment and will meet the remedy selection criteria. However, implementation of Alternative 1 is technically complicated and economically excessive

and adds unnecessary risk and community impacts. The additional excavation required to achieve a Track 1 cleanup is expected to extend below the water table and would require demolition of current building and parking lot, require complicated support of excavation design, increase truck traffic, and prolong potential exposure to noise and contaminated dust and vapors associated with additional excavation.

Under Alternative 2, the exposure pathways have already been largely addressed/controlled through targeted removal of former lifts/oil water separator and soil, the existence of a Site cover system and the installation of the existing SSDS/SVES to mitigate potential vapor intrusion issues. The proposed expanded SVES will further prevent the potential for off-Site soil vapor migration. The Tenant will be able to continue operations with only limited disruption during expansion of the SVES, and there will be no disruption to the surrounding community. Following SVES Expansion commissioning, confirmatory Soil Vapor Intrusion sampling (sub-slab soil vapor and indoor air) will be performed during the heating season to confirm the SSDS is functioning adequately and mitigating soil vapor intrusion into the Site building. Results of the confirmatory indoor air sampling will be included in the FER. Alternative 2 does not have the exposure and safety concerns associated with Alternative 1, including increased truck traffic, noise, and dust and odors during the implementation of the remedial action.

Unlike Alternative 1, Alternative 2 can be practically implemented in a cost-effective manner while providing a similar level of overall protection to human health and the environment. Therefore, Alternative 2 is the preferred remedial alternative for this Site.

Figures and appendices depicting the Alternative 2 remedy are included as follows:

- Figure 8 – Existing Site SSDS and SVES Plan
- Figure 9 – Existing Site SSDS and SVES Details
- Figure 11 – Site Cover System Plan
- Figure 12 – Site Cover System Details
- Drawing 1 – SVES Expansion Plan and Details
- Appendix D – SVES Blower System Submittal Package

Remaining remedial activities will include the preparation of an SMP and recording of an environmental easement. All deviations from the RAWP and/or Decision Document will be promptly reported to NYSDEC for approval and fully explained in the Final Engineering Report (FER).

4. Remedial Action Program

4.1 Governing Documents

The primary documents governing the remedial action are summarized in this section.

4.1.1 Green and Sustainable Remediation and Climate Resiliency

Green remediation principles and techniques will be implemented to the extent feasible in the site management of the remedy as per DER-31. The major green remediation components are as follows:

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gas and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste; and
- Additionally, to incorporate green remediation principles and techniques to the extent feasible in the future development at this site, any future on-site buildings shall be constructed, at a minimum, to meet the 2020 Energy Conservation Construction Code of New York (or most recent edition) to improve energy efficiency as an element of construction.

As part of the site management program, to promote implementation of green and sustainable remediation principles, an environmental footprint analysis will be completed. The environmental footprint analysis will be completed using an accepted environmental footprint analysis calculator such as SEFA (Spreadsheets for Environmental Footprint Analysis, USEPA), SiteWise™ (available in the Sustainable Remediation Forum [SURF] library) or similar NYSDEC accepted tool. Water consumption, greenhouse gas emissions, renewable and non-renewable energy use, waste reduction and material use will be estimated, and goals for the project related to these green and sustainable remediation metrics, as well as for minimizing community impacts, protecting habitats and natural and cultural resources, and promoting environmental justice, will be established for the site management activities, as appropriate. Further, progress with respect to green and sustainable remediation metrics will be tracked, and reported in periodic reports, as part of the site management program, and opportunities to further reduce the environmental footprint of the project will be identified as appropriate.

Additionally, the site management program will include an evaluation of the impact of climate change on the project site and the engineering controls. Potential vulnerabilities associated with extreme weather events (e.g., hurricanes, lightning, heat stress and drought), flooding, and sea level rise will be identified, and the site management program will include measures to minimize the impact of potential identified vulnerabilities.

4.1.2 Site Specific Health & Safety Plan (HASP)

The IRMWP included a Site-specific HASP that applied to all work completed during the IRM. Additional remedial work as summarized in this RAWP will be performed in accordance with the HASP in Appendix C.

4.1.3 Quality Assurance Project Plan (QAPP)

The IRMWP included a QAPP in Appendix C that applied to all work completed during the IRM. A QAPP will be included in the SMP for any remedial work that occurs after issuance of the Certificate of Completion (COC). The QAPP will describe the quality control components that will ensure that the proposed remedy continues to meet the remedial goals and the remedial action objectives. The QAPP will include all requirements outlined in DER-10 Section 2.4 and will be included in the SMP.

4.1.3.1 Organization/Personnel

The project team is comprised of the Owner/ Volunteer (Hunters Point SG, LLC), contractors, and consultants specializing in one or more critical aspects of the project. The project team and associated responsibilities are as follows.

1. Christopher Proce, P.G. – Project Principal/Qualified Environmental Professional (QEP)
2. David Kaiser, P.E. – Senior Engineer/Remedial Engineer of Record/Project Manager
3. Nevin Pahlad – Roux's Islandia, NY Health & Safety Manager
4. Noelle Clarke, P.E. – Quality Assurance Officer
5. TBD – Field Manager/ Site Safety Officer (SSO)

4.1.4 Soil/Materials Management Plan (SoMP)

The SoMP is included in Section 5.2 of this RAWP.

4.1.5 Erosion Controls and Stormwater Pollution Prevention Plan (SWPPP)

The need for erosion control measures during the remedial action will be limited since the only soil disturbance planned is for installation of SVE wells and pipe trenches for the expanded SVES. Limited erosion control measures may be required at street level immediately adjacent to the Site and are described in Section 5.2

The erosion and sediment controls will be in conformance with requirements presented in the latest edition of the New York State Guidelines for Urban Erosion and Sediment Control.

A stormwater pollution prevention plan (SWPPP) is not required for the remedial action due to the small size of proposed disturbance.

4.1.6 Community Air Monitoring Plan (CAMP)

CAMP is required during all ground intrusive activities, including those that are proposed in the RAWP. The NYSDOH Generic CAMP is included as Appendix A and will be included in the SMP for any remedial work that occurs after issuance of the COC.

4.1.7 Contractors Site Operations Plan (SOP)

The Remedial Engineer has reviewed all plans and submittals for this remedial project (including those listed above and contractor and sub-contractor document submittals) and confirms that they are in compliance with this RAWP. The Remedial Engineer is responsible to ensure that all later document submittals for this remedial project, including contractor and sub-contractor document submittals, are in

compliance with this RAWP. All remedial documents will be submitted to NYSDEC and NYSDOH in a timely manner and prior to the start of work.

4.1.8 Citizen Participation Plan

The approved Citizen Participation Plan for this project is attached in Appendix B.

Document repositories have been established at the following locations and contain all applicable project documents:

Queens Library Long Island City
37-44 21st Street
Long Island City, NY
(718) 752-3700

Queens Community Board No. 2
43-22 50th Street
Woodside, NY 11377
(718) 533-8773

4.2 General Remedial Construction Information

4.2.1 Project Organization

This Section presents the anticipated project organization and associated roles, including key personnel, descriptions of duties, and lines of authority in the management of the RAWP. Information regarding the organization/personnel and their associated responsibilities is provided below.

4.2.2 Remedial Engineer

The Remedial Engineer for this project is Mr. David Kaiser. The Remedial Engineer is a registered professional engineer licensed by the State of New York. The Remedial Engineer has primary direct responsibility for implementation of the remedial program for the 27-10 49th Avenue Site (NYSDEC BCP Site No. C241219). The Remedial Engineer will certify in the FER that the remedial activities performed in accordance with the IRMWP were observed by AESI and that future remedial activities were observed by qualified environmental professionals under his supervision and that the remediation requirements set forth in the RAWP and any other relevant provisions of ECL 27-1419 have been achieved in full conformance with that Plan. Other Remedial Engineer certification requirements are listed later in this RAWP.

The Remedial Engineer will be responsible for all appropriate communication with NYSDEC and NYSDOH. The Remedial Engineer will provide the certifications listed in Section 9.1 of this RAWP in the FER.

4.2.3 Remedial Action Construction Schedule

A schedule for the implementation of the SVES Expansion and preparation of the SMP, Environmental Easement and FER is presented below in Section 10 of this RAWP. The NYSDEC will be promptly notified of any proposed changes, delays or deviations.

4.2.4 Work Hours

The hours for operation of any future remedial activities (i.e., maintenance, monitoring, etc.) will conform to the New York City Department of Buildings construction code requirements or according to specific variances issued by that agency. DEC will be notified by the Volunteer of any variances issued by the Department of Buildings. NYSDEC reserves the right to deny alternate remedial construction hours.

4.2.5 Site Security

Access to the existing Site building and parking lot is restricted to authorized personnel who have keys and access codes to the locked entrances.

4.2.6 Traffic Control

Site traffic will be controlled through designated points of access along 49th Avenue. Any contractors operating on the Site will be responsible for providing all necessary personnel and materials (i.e., traffic lanes, safety cones, etc.) to control traffic entering and exiting the Site and for coordinating traffic control measures with the New York City Police Department, as necessary. Contractors operating on the Site shall be responsible for all applicable New York City Department of Transportation traffic control and notification requirements and incorporating those elements into this Traffic Control Plan.

Limited trucking of impacted materials off-Site will be required during the expansion of the SVES. In addition, limited trucking of backfill materials into the Site will also be needed. For any trucking required, the proposed truck routes for ingress and egress to the Site are shown in Figure 13.

All trucks loaded with Site materials will exit the vicinity of the Site using only approved truck routes. The routes take into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) prohibiting off-Site queuing of trucks entering the facility, to the extent practicable; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport.

Trucks will be prohibited from stopping and idling outside the project Site.

Egress points for truck and equipment transport from the Site will be kept clean of dirt and other materials during the on-Site Remedial Action.

4.2.7 Worker Training and Monitoring

Worker training and monitoring will be conducted in accordance with the HASP.

4.2.8 Agency Approvals

All permits or government approvals required for remedial construction were obtained by AESI prior to the start of remedial construction or will be obtained prior to additional remedial work. The planned end use for the Site is in conformance with the current zoning for the property as determined by New York City Department of Planning. A Certificate of Completion will not be issued for the project unless conformance

with zoning designation is demonstrated. The current zoning for the Site is M3-2, which allows for the following use groups "as of right" as designated by New York City Department of City Planning:

- Commercial/General Service Use Groups 5 through 16, which include retail and service uses (Use Groups 5–9), regional commercial centers/amusement uses (Use Groups 10–12), waterfront/recreation uses (Use Groups 13–15), heavy automotive uses (Use Group 16); and
- Manufacturing Use Groups 17 and 18, which allow for industrial uses.

The current and proposed use and proposed commercial remedy is consistent with existing zoning for the property.

4.2.9 Emergency Contact Information

An emergency contact sheet with names and phone numbers is included below and in the HASP. This document will define the specific project contacts for use by NYSDEC and NYSDOH in the case of a day or night emergency.

Emergency Contact Information			
Site Personnel			
Title	**Contact**		**Telephone**
Operations Manager (OM)	Jeff Wills		516-637-0213
Project Principal (PP)	Chris Proce		516-250-0356
Project Manager (PM)	David Kaiser		516-849-0562
Site Supervisor (SS)	TBD		
Site Health and Site Safety Officer (SHSO)	TBD		
Office Health and Safety Manager (OHSM)	Nevin Pahlad, CSP, CHMM		347-885-6930
Corporate Health and Safety Director (CHSD)	Brian Hobbs, CIH, CSP		631-807-0193
WorkCare, Inc. (Formally AllOne Health)	Occupational Health Care Management Provider		800-350-4511
Client Emergency Contact	Zach McHugh		561-302-7937
Outside Assistance			
Agency	**Contact**	**Telephone**	**Address/Location**
Ambulance/emergency medical services (EMS)	Mount Sinai Queens	(718) 932-1000	25-10 30th Ave Queens, NY 11102
Police	New York City Police Department	(718) 361-1021	4707 Pearson Place Queens, NY 11101
Fire	FDNY Engine 258/Ladder 115	(718) 999-2000	10-40 47th Ave Queens, NY 11101
Site Address	27-10 49th Avenue, Long Island City, New York 11101		

4.2.10 Remedial Action Costs

The total estimated cost to implement the Track 4 remedy is approximately $480,000 to implement the SVES expansion and $35,000 per year in annual OM&M costs. An additional $0.5 MM has been spent to date on the implementation of the IRM, which was completed previously. This will be revised based on actual costs and submitted as an Appendix to the FER.

4.2.11 Contingency Plan

The Contingency Plan is described in Section 5.2.8.

4.3 Site Preparation

4.3.1 Mobilization

Mobilization and Site preparation activities include:

1. Mobilization of equipment to the work area;
2. Installation of temporary fencing and traffic barricades to delineate the work zone and act as a work site security measure, as needed;
3. Installation of erosion and sediment control measures; and
4. Set-up of decontamination facilities, which are expected to be limited due to the nature of the project.

4.3.2 Utility Marker and Easements Layout

The Volunteer and its contractors are solely responsible for the identification of utilities that might be affected by work under the RAWP and implementation of all required, appropriate, or necessary health and safety measures during performance of work under this RAWP. The Volunteer 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 RAWP. Approval of this RAWP by NYSDEC does not constitute satisfaction of these requirements.

4.3.3 Structural Stability

It is understood that appropriate management of structural stability of nearby structures during remedial activities including excavation, is the sole responsibility of the Volunteer and its contractors.

4.3.4 Equipment and Material Staging

Equipment and materials for the on-Site remedial construction will be staged on-Site in a designated, secure area.

4.3.5 Stabilized Construction Entrance(s)/Decontamination Area

Due to the nature of the project, with limited excavation occurring only in a small area within an active parking lot or inside the existing building, trucks will not drive through impacted soil. Therefore, a stabilized construction entrance is not required for this Site. Care will be taken to avoid spillage of soil onto the asphalt in the work area, to the extent practicable. Once excavation is complete any soil spilled will be removed and the asphalt will be restored. Any soil spilled on the sidewalk or street immediately adjacent to the Site will be promptly removed and the street will be cleaned.

4.3.6 Site Fencing

Temporary fencing and traffic barricades will be installed, as needed, during Site preparation activities to delineate the work zone and act as a work site security measure. This fencing will be maintained throughout the completion of the on-Site Remedial Action.

The fences and gates will be closed and locked when there is no activity on the Site and any breaks or gaps will be repaired immediately. Cones or other portable barricades will supplement the perimeter fencing to delineate and secure the area of ongoing remediation activities within the Site such as soil stockpiles and health and safety exclusion zones.

4.3.7 Demobilization

Demobilization from the Site will include:

- Removal of equipment and materials storage areas from the Site;
- Removal of all fencing and barricades;
- Equipment decontamination, as required; and
- General refuse disposal.

4.4 Reporting

The Remedial Engineer responsible for certifying all reports will be an individual licensed to practice engineering in the State of New York; David Kaiser, P.E. of Roux, will have this responsibility. Should Mr. Kaiser become unable to fulfill this responsibility, another suitably qualified New York State professional engineer will take his place. All daily and monthly reports will be included in the FER. In addition to the periodic reports and the FER, copies of all relevant contractor documents will be submitted to the NYSDEC.

4.4.1 Weekly Reports

Weekly reports will be submitted to NYSDEC and NYSDOH Project Managers during the implementation of the SVES expansion by the first day of the following week and will include:

- An update of progress made during the reporting week;
- Locations of work and quantities of material imported and exported from the Site;
- A summary of any and all complaints with relevant details (names, phone numbers);
- A summary of CAMP finding, including exceedances;
- An explanation of notable Site conditions.

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

Weekly Reports will include a description of weekly activities. These reports will include a summary of air sampling results, odor and dust problems and corrective actions, and all complaints received from the public.

The NYSDEC assigned project number will appear on all reports.

4.4.2 Monthly Reports

Monthly reports will be submitted to NYSDEC and NYSDOH Project Managers by the 10th of the month following the end of the month of the reporting period until the COC is issued 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., tons of 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.

4.4.3 Deviations from the Remedial Action Work Plan or IRMWP

Deviations from the RAWP or that occurred during implementation of the IRMWP, if any, will be documented in the FER.

5. Remedial Action Implementation

The elements of the NYSDEC preferred on-Site Remedial Action for the Site are discussed in Sections 3 and 4 of this RAWP. The following sections provide additional detail.

5.1 Estimated Material Removal Quantities

Soil will be removed during installation of the horizontal piping and SVE points for the expanded SVES. This soil will be excavated from the area shown on the SVES Expansion Plan and Details drawing (Drawing 1) to a maximum depth of approximately two feet below grade for piping and 10 feet below grade for SVE points.

The excavation will be performed by the Soil Remediation Contractor. The excavation will be conducted in a manner that protects the integrity of the existing site features. If necessary, SOE (e.g., trench boxes or other temporary means) will be used to support the excavations and protect existing Site features to remain.

No dewatering will be required. Soil will be stored temporarily in lined and covered piles or roll off containers. Excavated material slated for off-Site disposal will be temporarily staged on-Site and disposed in accordance with the Soil and Materials Management Plan discussed in Section 5.2.

Approximately 30 CY of soil are scheduled to be excavated and transported off-Site for disposal. All material transport and disposal will be performed in accordance with all local, State, and Federal laws and requirements.

5.2 Soil/Materials Management Plan

The following sections provide the SoMP, which will be implemented during the on-Site Remedial Action.

5.2.1 Soil Screening Methods

Visual, olfactory and PID soil screening and assessment will be performed by a qualified environmental professional or experienced field scientist under the direction of the Remedial Engineer during all remedial excavations into known or potentially contaminated material. Soil screening will be performed regardless of when the invasive work is done and will include all excavation and invasive work performed during the remedy phase, such as excavations for utility work, prior to issuance of the Certificate of Completion.

5.2.2 Temporary Excavated Soil Storage Methods

Although the quantity of soil to be excavated is very small and direct-loading of trucks will be performed to the extent practical, excavated soil may be stored temporarily in stockpiles or roll-off containers. Stockpiles, if any, will be inspected at a minimum once each week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by NYSDEC. Stockpiles will be lined and covered with polyethylene sheeting and continuously encircled with silt fences or hay bales (except where material is being loaded or removed). Hay bales or inlet protection covers will be used as needed near catch basins and other discharge points. Water will be available on-Site at suitable supply and pressure for use in dust control. Roll-off containers will be covered.

5.2.3 Materials Excavation and Load-Out, Transportation, and Off-Site Disposal

The total quantity of soil expected to be disposed off-Site is approximately 30 CY during installation of the expanded SVES piping and points. The Remedial Engineer or a qualified environmental professional under his/her supervision will oversee all invasive work, including the excavation and load-out of all excavated material.

The Volunteer and its contractors are solely responsible for safe performance of all invasive work, the structural integrity of excavations, and the stability of structures that may be affected by the excavations (e.g., sidewalks, drainage structures, parking lot islands, electrical service, etc.). Though not anticipated to be required, SOE (e.g., trench boxes or other temporary means) will be used to support the excavations and protect existing Site features to remain.

All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded. Trucks will be prohibited from stopping and idling in the neighborhood outside the project Site. Off-Site queuing will be avoided to the extent practicable. Truck transport routes are as described in Section 4.2.6. All trucks loaded with Site materials will exit the vicinity of the Site using only these approved truck routes.

Locations where vehicles enter or exit the Site shall be inspected daily for evidence of tracking soil off the Site. Egress points for truck and equipment transport from the Site will be kept clean of dirt and other materials during Site remediation and development. If necessary, a truck wash will be operated on-Site.

The disposal locations will be determined prior to implementation of the on-Site Remedial Action and will be reported to the NYSDEC Project Manager.

Unregulated off-Site management of materials from this Site is prohibited without formal NYSDEC approval.

Material that does not meet Track 1 UUSCOs is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility).

The following documentation will be obtained and reported by the Remedial Engineer for each disposal location used in this project to fully demonstrate and document that the disposal of material derived from the Site conforms with all applicable laws: (1) a completed disposal facility application for each receiving facility describing the material to be disposed and requesting formal written acceptance of the material. This application will state that material to be disposed is contaminated material generated at an environmental remediation Site in New York State. The application will provide the project identity. The application will include as an attachment a summary of all chemical data for the material being transported (including Site Characterization data); and (2) a letter from all receiving facilities stating it is in receipt of the correspondence (above) and is approved to accept the material. These documents will be included in the FER.

The FER will include an accounting of the destination of all material removed from the Site during this on-Site Remedial Action, including excavated soil, solid waste, hazardous waste (if any), non-regulated material, and fluids. Documentation associated with disposal of all material must also include records and approvals for receipt of the material. This information will also be presented in a tabular form in the FER.

Bill of Lading system or equivalent will be used for off-Site movement of non-hazardous wastes and contaminated soils. This information will be reported in the FER.

Hazardous wastes (if any), derived from on-Site will be stored, transported, and disposed of in full compliance with applicable local, State, and Federal regulations.

5.2.4 Materials Reuse On-Site

Reuse of on-Site materials is not anticipated.

5.2.5 Fluids Management

Dewatering is not anticipated. If any are generated, liquids to be removed from the Site will be handled, transported, and disposed in accordance with applicable local, State, and Federal regulations.

5.2.6 Demarcation

The underside of the asphalt pavement will serve as the demarcation layer.

5.2.7 Backfill from Off-Site Sources

Materials proposed for import onto the Site will be approved by the Remedial Engineer and NYSDEC and will be in compliance with provisions in this RAWP prior to receipt at the Site. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) may be brought in to establish the designed grades at the Site. Sampling of backfill material will be completed in accordance with the QAPP.

Select types of backfill may be imported to the site without sampling as described in Part 375 (i.e., virgin stone). If sampling is required, all imported soils will meet NYSDEC approved soil quality objectives for this Site. The NYSDEC-approved soil quality objectives for the on-Site Remedial Action are the lower of the PGWSCOs or the CSCOs. Testing for PFAS should be included any time a full TAL/TCL analyte list is required. Results for PFOA and PFOS should be compared to the applicable guidance values. If PFOA or PFOS is detected in any sample at or above the guidance values then the source of backfill should be rejected, unless a site-specific exemption is provided by DER based on Synthetic Precipitation Leaching Procedure (SPLP) testing, for example. If the concentrations of PFOA and PFOS in leachate are at or above 10 ppt (the Maximum Contaminant Levels established for drinking water by the New York State Department of Health), then the soil is not acceptable. PFOA, PFOS and 1,4-dioxane are all considered semi-volatile compounds, so composite samples are appropriate for these compounds when sampling in accordance with DER-10, Table 5.4(e)10. Category B deliverables should be submitted for backfill samples, though a DUSR is not required. Non-compliant soils will not be imported onto the Site without prior approval by NYSDEC.

Material from industrial sites, spill sites, other environmental remediation sites or other potentially contaminated sites will not be imported to the Site without prior approval by NYSDEC.

Soils that meet ‘exempt’ fill requirements under 6 NYCRR Part 360 (i.e., soils from another construction Site outside of New York City), but do not meet backfill or cover soil objectives for this Site, will not be imported onto the Site without prior approval by NYSDEC.

Solid waste will not be imported onto the Site.

5.2.8 Contingency Plan

In the unlikely event that USTs or other previously unidentified contaminant sources are found during remedial excavation, sampling will be performed on surrounding soils. Chemical analytical work will be for full scan parameters (TAL metals, TCL VOCs and SVOCs, TCL pesticides, PCBs, and emerging contaminants). These analyses will not be limited to CP-51/Soil Cleanup Guidance parameters where tanks are identified without prior approval by NYSDEC.

Identification of unknown or unexpected contaminated media identified by screening during invasive Site work will be promptly communicated by phone to NYSDEC's Project Manager. These findings will also be included in weekly reports.

5.2.9 Odor, Dust and Nuisance Control Plan

The FER will include the following certification by the Remedial Engineer: *"I certify that all invasive work during the remediation and all invasive development work were conducted in accordance with dust and odor suppression methodology defined in the On-Site Remedial Action Work Plan."*

5.2.9.1 Odor Control Plan

Although the proposed soil disturbance is limited, this odor control plan is capable of controlling emissions of nuisance odors off-Site and on-Site. Specific odor control methods to be used on a routine basis will include limiting open excavation areas and covering excavated soil (i.e., with polyethylene sheeting or in covered roll off containers). If nuisance odors are identified, work will be halted, and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of all other complaints about the project. Implementation of all odor controls, including the halt of work, will be the responsibility of the Remedial Engineer, who is responsible for certifying the Final Engineering Report.

All necessary means will be employed to prevent on- and off-Site nuisances. At a minimum, procedures will include: (a) limiting the area of open excavations; (b) shrouding open excavations with tarps and other covers; and (c) using foams to cover exposed odorous soils. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: (d) use of chemical odorants in spray or misting systems; and (e) use of staff to monitor odors in surrounding neighborhoods.

5.2.9.2 Dust Control Plan

Although the proposed soil disturbance is limited, a dust suppression plan that addresses dust management during invasive on-Site work, will include, at a minimum, the items listed below and will comply with NYSDEC DER-10 Appendix 1B – Fugitive Dust Control:

- Dust suppression will be achieved through applying water on haul roads; wetting equipment and excavation faces; spraying water on buckets during excavation and dumping; hauling materials in properly tarped or watertight containers; restricting vehicle speeds to 10 mph; covering excavated areas and material after excavation activity ceases; and reducing the excavation size.

6. Residual Contamination to Remain On-Site

Since residual contaminated soil and soil vapor will exist beneath the Site after the remedy is complete, ECs and ICs are required to protect human health and the environment. These ECs and ICs are described hereafter. Long-term management of EC/ICs and of residual contamination will be executed under a Site specific SMP that will be developed and included in the FER.

ECs will be implemented to protect public health and the environment by appropriately managing residual contamination. The Controlled Property (the Site) will have two primary EC systems: (1) a Site cover system consisting of 4-inch-thick concrete pavement, 4-inch-thick asphalt pavement or concrete building slabs; and (2) an active expanded SSDS/SVES.

The FER will report residual contamination on the Site in tabular and map form. This will include presentation of any exceedances that remain on Site.

7. Engineering Controls

ECs will be employed to prevent exposure to contamination remaining at the Site. The ECs that will be used at the Site will be comprised of:

- Site Cover System; and
- Active expanded SSDS/SVES.

Each of these ECs is described in the following sections.

7.1 Site Cover System

Exposure to residual contaminated soils will be prevented by a Site cover system that will be maintained on the Site. This existing Site cover system is comprised of 4-inch-thick concrete pavement, 4-inch-thick asphalt pavement and concrete building slabs. A map showing the aerial distribution of each of the cover types built at the Site is included in Figure 11 and Drawing 1.

An Excavation Work Plan will be included in the SMP and will outline the procedures to be followed in the event that the Site cover system and underlying residual contamination are disturbed after the Remedial Action is complete. Maintenance of this Site cover system will be described in the SMP in the FER.

7.2 Expanded SSDS/SVES

As a protective measure to mitigate potential soil vapor intrusion into the building, an active SSDS/SVES was installed under the building slab and parking lot during the implementation of the IRMWP. The SSDS/SVES was developed in general accordance with NYSDOH SVI Guidance. The system consists of sub-slab collection trenches, soil vapor extraction points and vapor conveyance piping. The piping risers are connected to five RadonAway RP265 in-line fans that ensure an acceptable vacuum influence is present to mitigate potential vapor intrusion under the entire building and in the parking lot. The installation of the active SSDS/SVES is fully described in the NYSDEC-approved IRMCCR. The as-built drawings for the SSDS are provided as Figure 8. The as-built drawings and specifications of installed SSDS will also be presented in the FER.

In addition to the existing SSDS/SVES, an expanded SVES will be installed along the northern border of the Site in accordance with this RAWP, detailed in Section 3.2.4. The intent of the expanded SVES is to prevent off-Site migration of vapor phase contaminants. Modifications may be made to the SVES expansion as needed based on field conditions. Start up and system performance verification procedures will be completed and described in FER. Upon installation and start up, the need for treatment of effluent vapors will be evaluated in accordance with the "Guidance on Air Emissions of VOCs at DER Remediation Sites" developed by the DER and DAR. During start-up of the SVES expansion, an effluent air sample will be collected from the discharge of the system using a Summa canister and analyzed for VOCs via USEPA TO-15 to determine if vapor treatment would be needed. If the sample results indicate that treatment is required, appropriate treatment options will be evaluated and installed.

Additionally, following SVES Expansion commissioning, confirmatory Soil Vapor Intrusion sampling (sub-slab soil vapor and indoor air) will be performed during the heating season to confirm the SSDS is functioning adequately and mitigating soil vapor intrusion into the Site building. Results of the confirmatory indoor air sampling will be included in the FER. Confirmatory Soil Vapor intrusion samples will be collected throughout the building using Summa canisters and analyzed for VOCs via USEPA TO-15.

The SMP will include the necessary provisions for system operation, maintenance and monitoring. The SMP will also describe procedures to be followed if the expanded SSDS/SVES is disturbed as part of any future construction, including startup procedures, if necessary. Maintenance of the expanded SSDS/SVES will be described in the SMP.

8. Criteria for Completion of Remediation / Termination of Remedial Systems

8.1 Site Cover System

The existing Site cover system is a permanent control, and the quality and integrity of this system will be inspected at defined, regular intervals in perpetuity. The frequency of inspections will be defined in the SMP.

8.2 Expanded SSDS/SVES

The active expanded SSDS/SVES will not be discontinued without written approval by NYSDEC and NYSDOH. A proposal to discontinue the active expanded SSDS/SVES may be submitted by the property owner based on confirmatory data that justifies such request. Systems will remain in place and operational until permission to discontinue use is granted in writing by NYSDEC and NYSDOH.

9. Institutional Controls

After the remedy is complete, the Site will have residual contamination remaining in place. ECs for the residual contamination have been incorporated into the remedy to render the overall Site remedy protective of public health and the environment. Two elements have been designed to ensure continual and proper management of residual contamination in perpetuity: an Environmental Easement and a SMP.

All as-built drawings, diagrams, calculation and manufacturer documentation for treatment systems will be presented in the FER. A Site-specific Environmental Easement will be recorded with Queens County to provide an enforceable means of ensuring the continual and proper management of residual contamination and protection of public health and the environment in perpetuity or until released in writing by NYSDEC. It requires that the grantor of the Environmental Easement and the grantor's successors and assigns adhere to all ECs/ICs placed on this Site by this NYSDEC-approved remedy. ICs provide restrictions on Site usage and mandate operation, maintenance, monitoring and reporting measures for all ECs and ICs. The SMP describes appropriate methods and procedures to ensure compliance with all ECs and ICs that are required by the Environmental Easement. Once the SMP has been approved by the NYSDEC, compliance with the SMP is required by the grantor of the Environmental Easement and grantor's successors and assigns.

9.1 Environmental Easement

An Environmental Easement, as defined in Article 71 Title 36 of the ECL, is required when residual contamination is left on-Site after the Remedial Action is complete. As part of this remedy, an Environmental Easement approved by NYSDEC will be filed and recorded with the Queens County Office of the City Register. The Environmental Easement is being developed in conjunction with the NYSDEC, and a final copy with be included as part of the FER.

The Environmental Easement renders the Site a Controlled Property. The Environmental Easement must be recorded with the Queens County Office of the City Register before the Certificate of Completion can be issued by NYSDEC. A series of ICs are required under this remedy to implement, maintain and monitor these EC systems, prevent future exposure to residual contamination by controlling disturbances of the subsurface soil and restricting the use of the Site to Commercial and Industrial uses only. These ICs are requirements or restrictions placed on the Site that are listed in, and required by, the Environmental Easement. ICs can, generally, be subdivided between controls that support ECs, and those that place general restrictions on Site usage or other requirements. ICs in both of these groups are closely integrated with the SMP, which provides all of the methods and procedures to be followed to comply with this remedy.

The ICs that support ECs are:

- Compliance with the Environmental Easement by the Grantee and the Grantee's successors and adherence of all elements of the SMP is required;
- All ECs must be operated and maintained as specified in the SMP;
- The Site cover system must be inspected, certified and maintained as required in the SMP;
- Any disturbance of the Site cover system and underlying residual contamination must be performed in accordance with the procedures outlined in the Excavation Work Plan in the SMP;

- A soil vapor mitigation system consisting of an expanded SSDS/SVES under all building structures must be inspected, certified, operated and maintained as required by the SMP;
- All ECs on the Controlled Property must be inspected and certified at a frequency and in a manner defined in the SMP;
- Data and information pertinent to Site Management for the Controlled Property must be reported at the frequency and in a manner defined in the SMP;
- On-Site environmental monitoring devices, including but not limited to, and soil vapor monitoring probes, must be protected and replaced as necessary to ensure proper functioning in the manner specified in the SMP; and
- ECs may not be discontinued without an amendment or extinguishment of the Environmental Easement.

Adherence to these ICs for the Site will be enforced through the Environmental Easement and will be implemented under the SMP (discussed in the next section). The Controlled Property (Site) will also have a series of ICs in the form of Site restrictions and requirements. The Site restrictions that apply to the Controlled Property are:

- Vegetable gardens and farming on the Controlled Property are prohibited;
- Use of groundwater underlying the Controlled Property is prohibited without treatment rendering it safe for intended purpose;
- All future activities on the Controlled Property that will disturb residual contaminated material are prohibited unless they are conducted in accordance with the soil management provisions in the SMP;
- The Controlled Property may be used for commercial or industrial use only, provided the long-term ECs and ICs included in the SMP are employed; and
- The Controlled Property may not be used for a higher level of use, such as restricted residential use, without an amendment or extinguishment of this Environmental Easement.

Grantor agrees to submit to NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the Controlled Property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; and (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. NYSDEC retains the right to access such Controlled Property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that NYSDEC may allow. This statement must be certified by an expert that the NYSDEC finds acceptable.

9.2 Site Management Plan

Site Management is the last phase of remediation and begins with the approval of the FER and issuance of the Certificate of Completion (COC) for the Remedial Action. The SMP is submitted as an independent document. Site Management continues in perpetuity or until released in writing by NYSDEC. The property owner is responsible to ensure that all Site Management responsibilities defined in the Environmental Easement and the SMP are performed.

The SMP is intended to provide a detailed description of the procedures required to manage residual contamination left in place at the Site following completion of the Remedial Action in accordance with the

BCA with the NYSDEC. This includes: (1) development, implementation, and management of all ECs and ICs; (2) development and implementation of monitoring systems and a Monitoring Plan; (3) development of a plan to operate and maintain any treatment, collection, containment, or recovery systems (including, where appropriate, preparation of an Operation and Maintenance Manual); (4) submittal of Site Management Reports, performance of inspections and certification of results, and demonstration of proper communication of Site information to NYSDEC; and (5) defining criteria for termination of treatment system operation.

To address these needs, this SMP will include four plans: (1) an IC/EC Plan for implementation and management of EC/ICs; (2) a Monitoring Plan for implementation of Site Monitoring; (3) an Operation and Maintenance Plan for implementation of remedial collection, containment, treatment, and recovery systems; and (4) a Site Management Reporting Plan for submittal of data, information, recommendations, and certifications to NYSDEC. The SMP will be prepared in accordance with the requirements in NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation and the guidelines provided by NYSDEC.

Site management activities, reporting, and EC/IC certification will be scheduled on a certification period basis. The certification period will be annually. The first certification will be due 16 months after issuance of the COC and annually (or at another frequency as approved by NYSDEC) thereafter.

No exclusions for handling of residual contaminated soils will be provided in the SMP. All handling of residual contaminated material will be subject to provisions contained in the SMP.

10. Final Engineering Report

A FER will be submitted to NYSDEC following approval of this RAWP. The FER provides the documentation that the remedial work required under this RAWP has been completed and has been performed in compliance with this plan. The FER will provide a description of the changes in the Remedial Action from the elements provided in the RAWP and associated design documents, if necessary. The FER will be prepared in conformance with DER-10. Before approval of a FER and issuance of a Certificate of Completion, all project reports must be submitted in digital form on electronic media (PDF).

10.1 Certifications

The following certification will appear in front of the Executive Summary of the Final Engineering Report. The certification will be signed by the Remedial Engineer, David Kaiser, who is a Professional Engineer registered in New York State. This certification will be appropriately signed and stamped. The certification will include the following statements:

I, _____, am currently a registered professional engineer licensed by the State of New York. Remedial activities performed in accordance with the IRMWP were under the supervision of AESI. I had primary direct responsibility for inspection and confirmation of the remedial program for the 27-10 49th Avenue Site (NYSDEC BCP Site No. C241242).

I certify that the Site description presented in this FER is identical to the Site descriptions presented in the Environmental Easement, the Site Management Plan, and the Brownfield Cleanup Agreement for 27-10 49th Avenue Site and related amendments.

I certify that the Remedial Action Work Plan dated August 26, 2024 and approved by the NYSDEC were implemented and that all requirements in those documents have been substantively complied with.

I certify that all use restrictions, Institutional Controls, Engineering Controls, and all operation and maintenance requirements applicable to the Site are contained in an Environmental Easement created and recorded pursuant ECL 71-3605 and that all affected local governments, as defined in ECL 71-3603, have been notified that such easement has been recorded. A Site Management Plan has been submitted by the Volunteer for the continual and proper operation, maintenance, and monitoring of all Engineering Controls employed at the Site, including the proper maintenance of all remaining monitoring wells, and that such plan has been approved by the NYSDEC.

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.

It is a violation of Article 130 of New York State Education Law for any person to alter this document in any way without the express written verification of adoption by any New York State licensed engineer in accordance with Section 7209(2), Article 130, New York State Education Law.

11. Schedule

A proposed schedule of the Remedial Action is presented below.

Task Name	Start Date	End Date	Duration (Calendar Days)
Submit RAWP to DEC	8/26/24	8/26/24	1
DEC Review	8/26/24	10/25/24	60
Submit Draft SMP to DEC	10/7/24	10/7/24	1
DEC Approval of RAWP	10/25/24	10/25/24	1
Installation of SVES Expansion	10/25/24	12/9/24	45
Submit draft FER and final SMP to DEC	12/9/24	12/9/24	1
Environmental Easement Recorded and Notices	1/9/25	1/9/25	1
Submit final FER to DEC	1/23/25	1/23/25	1
Obtain COC	1/23/25	3/10/25	46

TABLES

Notes Utilized Throughout Tables	
Soil Tables	
J -	Estimated value
U -	Indicates that the compound was analyzed for but not detected
D -	A secondary analysis after dilution due to exceedance of the calibration range in the original sample.
C -	Result confirmed by reanalysis
ft bls -	Feet below land surface
DUP -	Duplicate sample
NA -	Compound was not analyzed for by laboratory
mg/kg -	Milligrams per kilogram
NYSDEC -	New York State Department of Environmental Conservation
SCO -	Soil Cleanup Objectives
--	No SCO available
Bold data indicates that parameter was detected above the NYSDEC Part 375 Commercial SCO	
TCLP Tables	
mg/L -	Milligrams per liter
USEPA -	United States Environmental Protection Agency
TCLP -	Toxicity Characteristic Leaching Procedure
USEPA Regulatory Levels - United States Environmental Protection	
	Agency Limits for RCRA Characteristic Waste for Toxicity
RCRA -	Resource Conservation and Recovery Act
Bold -	Parameter was detected above USEPA Regulatory Levels
Groundwater Tables	
J -	Estimated Value
U -	Compound was analyzed for but not detected
DUP -	Duplicate
NA -	Compound was not analyzed for by laboratory
µg/L -	Micrograms per liter
ng/L -	Nanogram per liter
NYSDEC -	New York State Department of Environmental Conservation
AWQSGVs -	Ambient Water-Quality Standards and Guidance Values
--	No NYSDEC AWQSGV available
Bold data indicates that parameter was detected above the NYSDEC AWQSGVs	
Emerging Contaminants (Per- and Polyfluoroalkyl Substances and 1,4-Dioxane)	
Soil Vapor/Ambient Air	
J -	Estimated value
U -	Indicates that the compound was analyzed for but not detected
D -	Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte
DUP -	Duplicate sample
ppbv -	Parts per billion/volume
ug/m3 -	Micrograms per cubic meter
Bold data indicates that parameter was detected	

Table 1. Summary of Volatile Organic Compounds in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	COMPOSITE	Dup 1114	OWS-PE-1	OWS-PE-2	OWS-PE-3	OWS-PE-4	OWS-PE-5	SB-1	SB-2	SB-3	SB-4	SB-5	SB-6	SB-7	SB-8	SB-9
			Sample Date:	12/20/2017	11/15/2018	5/29/2019	5/29/2019	5/29/2019	5/29/2019	5/29/2019	10/23/2017	10/23/2017	10/23/2017	10/23/2017	10/23/2017	10/23/2017	10/23/2017	10/23/2017	10/23/2017
			Sample Depth (ft bls):	-	-	-	-	-	-	-	7.5 - 8	15.5 - 16	15 - 15.5	15.5 - 16	15 - 15.5	11 - 11.5	-	-	-
1,1,1,2-Tetrachloroethane	--	mg/kg		NA	NA	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	500	mg/kg		0.00566 U	0.0027 U	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.068 U	0.00218 U	0.00123 U	0.00165 U	0.0012 U	0.00133 U	0.075 U	0.025 U	0.00118 U
1,1,2,2-Tetrachloroethane	--	mg/kg		0.00566 U	NA	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.068 U	0.00218 U	0.00123 U	0.00165 U	0.0012 U	0.00133 U	0.075 U	0.025 U	0.00118 U
1,1,2-Trichloroethane	--	mg/kg		0.00566 U	NA	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.068 U	0.00218 U	0.00123 U	0.00165 U	0.0012 U	0.00133 U	0.075 U	0.025 U	0.00118 U
1,1-Dichloroethane	240	mg/kg		0.00566 U	0.0027 U	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.068 U	0.00218 U	0.00123 U	0.00165 U	0.0012 U	0.00133 U	0.075 U	0.025 U	0.00118 U
1,1-Dichloroethene	500	mg/kg		0.00566 U	0.0027 U	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.068 U	0.00218 U	0.00123 U	0.00165 U	0.0012 U	0.00133 U	0.075 U	0.025 U	0.00118 U
1,2,3-Trichlorobenzene	--	mg/kg		0.00566 U	NA	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.137 U	0.00218 U	0.00123 U	0.00165 U	0.0012 U	0.00133 U	0.151 U	0.05 U	0.00118 U
1,2,3-Trichloropropane	--	mg/kg		NA	NA	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	--	mg/kg		0.00566 U	NA	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.137 U	0.00218 U	0.00123 U	0.00165 U	0.0012 U	0.00133 U	0.151 U	0.05 U	0.00118 U
1,2,4-Trimethylbenzene	190	mg/kg		NA	0.0027 U	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	--	mg/kg		0.00566 U	NA	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.068 U	0.00218 U	0.00123 U	0.00165 U	0.0012 U	0.00133 U	0.075 U	0.025 U	0.00118 U
1,2-Dichlorobenzene	500	mg/kg		0.00566 U	0.0027 U	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.068 U	0.00218 U	0.00123 U	0.00165 U	0.0012 U	0.00133 U	0.075 U	0.025 U	0.00118 U
1,2-Dichloroethane	30	mg/kg		0.00566 U	0.0027 U	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.068 U	0.00218 U	0.00123 U	0.00165 U	0.0012 U	0.00133 U	0.075 U	0.025 U	0.00118 U
1,2-Dichloropropane	--	mg/kg		0.00566 U	NA	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.068 U	0.00218 U	0.00123 U	0.00165 U	0.0012 U	0.00133 U	0.075 U	0.025 U	0.00118 U
1,3,5-Trimethylbenzene	190	mg/kg		NA	0.0027 U	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	280	mg/kg		0.00566 U	0.0027 U	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.068 U	0.00218 U	0.00123 U	0.00165 U	0.0012 U	0.00133 U	0.075 U	0.025 U	0.00118 U
1,3-Dichloropropene	--	mg/kg		0.00566 U	NA	NA	NA	NA	NA	NA	0.068 U	0.00218 U	0.00123 U	0.00165 U	0.0012 U	0.00133 U	0.075 U	0.025 U	0.00118 U
1,4-Dichlorobenzene	130	mg/kg		0.00566 U	0.0027 U	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.068 U	0.00218 U	0.00123 U	0.00165 U	0.0012 U	0.00133 U	0.075 U	0.025 U	0.00118 U
1,4-Dioxane	130	mg/kg		1.13 U	0.054 U	0.062 U	0.074 U	0.058 U	0.052 U	0.058 U	13.7 U	0.436 U	0.246 U	0.33 U	0.24 U	0.266 U	15.1 U	5.02 U	0.236 U
2-Butanone (MEK)	500	mg/kg		0.011 U	0.0027 U	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.273 U	0.072	0.00805	0.019	0.0024 U	0.00266 U	0.389	0.1 U	0.00541
2-Hexanone	--	mg/kg		0.011 U	NA	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.273 U	0.00436 U	0.00246 U	0.0033 U	0.0024 U	0.00266 U	0.301 U	0.1 U	0.00236 U
4-Methyl-2-pentanone (MIBK)	--	mg/kg		0.011 U	NA	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.273 U	0.00436 U	0.00246 U	0.0033 U	0.0024 U	0.00266 U	0.301 U	0.1 U	0.00236 U
Acetone	500	mg/kg		0.057 U	0.014	0.0062 U	0.0074 U	0.0068 J	0.015	0.0084 J	0.273 U	0.337	0.06	0.115	0.00894 J	0.013 J	0.301 U	0.1 U	0.033
Acrolein	--	mg/kg		NA	NA	0.0062 U	0.0074 U	0.0058 U	0.0052 U	0.0058 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acrylonitrile	--	mg/kg		NA	NA	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	44	mg/kg		0.00566 U	0.0027 U	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.068 U	0.00218 U	0.00123 U	0.00165 U	0.0012 U	0.00133 U	0.075 U	0.065	0.000811 J
Bromochloromethane	--	mg/kg		0.00566 U	NA	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.137 U	0.00218 U	0.00123 U	0.00165 U	0.0012 U	0.00133 U	0.151 U	0.05 U	0.00118 U
Bromodichloromethane	--	mg/kg		0.00566 U	NA	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.068 U	0.00218 U	0.00123 U	0.00165 U	0.0012 U	0.00133 U	0.075 U	0.025 U	0.00118 U
Bromoform	--	mg/kg		0.00566 U	NA	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.068 U	0.00218 U	0.00123 U	0.00165 U	0.0012 U	0.00133 U	0.075 U	0.025 U	0.00118 U
Bromomethane	--	mg/kg		0.00566 U	NA	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.137 U	0.00218 U	0.00123 U	0.00165 U	0.0012 U	0.00133 U	0.151 U	0.05 U	0.00118 U
Carbon disulfide	--	mg/kg		0.00566 U	NA	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.068 U	0.0041	0.0019	0.099	0.00132	0.00222	0.075 U	0.025 U	0.00118 U
Carbon tetrachloride	22	mg/kg		0.00566 U	0.0027 U	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.137 U	0.00218 U	0.00123 U	0.00165 U	0.0012 U	0.00133 U	0.151 U	0.05 U	0.00118 U
Chlorobenzene	500	mg/kg		0.00566 U	0.0027 U	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.068 U	0.00218 U	0.00123 U	0.00165 U	0.0012 U	0.00133 U	0.075 U	0.025 U	0.00118 U
Chloroethane	--	mg/kg		0.00566 U	NA	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.068 U	0.00218 U	0.00123 U	0.00165 U	0.0012 U	0.00133 U	0.075 U	0.025 U	0.00118 U
Chloroform	350	mg/kg		0.00566 U	0.0027 U	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.068 U	0.00218 U	0.00123 U	0.00165 U	0.0012 U	0.00133 U	0.075 U	0.025 U	0.00118 U
Chloromethane	--	mg/kg		0.00566 U	NA	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.068 U	0.00218 U	0.00123 U	0.00165 U	0.0012 U	0.00133 U	0.075 U	0.025 U	0.00118 U
cis-1,2-Dichloroethene	500	mg/kg		0.00566 U	0.0027 U	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.068 U	0.00218 U	0.00123 U	0.00304	0.0012 U	0.00133 U	0.075 U	0.025 U	0.00118 U
cis-1,3-Dichloropropene	--	mg/kg		0.00566 U	NA	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.068 U	0.00218 U	0.00123 U	0.00165 U	0.0012 U	0.00133 U	0.075 U	0.025 U	0.00118 U
Cyclohexane	--	mg/kg		0.00566 U	NA	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.137 U	0.00218 U	0.00123 U	0.00165 U	0.0012 U	0.00133 U	0.151 U	0.05 U	0.00118 U
Dibromochloromethane	--	mg/kg		0.00566 U	NA	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.068 U	0.00218 U	0.00123 U	0.00165 U	0.0012 U	0.00133 U	0.075 U	0.025 U	0.00118 U
Dibromochloropropane	--	mg/kg		0.00566 U	NA	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.137 U	0.00218 U	0.00123 U	0.00165 U	0.0012 U	0.00133 U	0.151 U	0.05 U	0.00118 U
Dibromomethane	--	mg/kg		NA	NA	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	--	mg/kg		0.00566 U	NA	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.137 U	0.00218 U	0.00123 U	0.00165 U	0.0012 U	0.00133 U	0.151 U	0.05 U	0.00118 U
Ethylbenzene	390	mg/kg		0.00566 U	0.0027 U	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.068 U	0.00218 U	0.00123 U	0.00165 U	0.0012 U	0.00133 U	0.075 U	0.025 U	0.00118 U
Freon 113	--	mg/kg		0.00566 U	NA	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.137 U	0.00436 U	0.00246 U	0.0033 U	0.0024 U	0.00266 U	0.151 U	0.05 U	0.00236 U
Hexachlorobutadiene	--	mg/kg		NA	NA	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	--	mg/kg		0.00566 U	NA	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.068 U	0.00218 U	0.00123 U	0.00165 U	0.0012 U	0.00133 U	0.075 U	0.025 U	0.00118 U
m+p-Xylene	--	mg/kg		NA	0.0054 U	0.0062 U	0.0074 U	0.0058 U	0.0052 U	0.0058 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	--	mg/kg		0.00566 U	NA	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.068 U	0.00218 U	0.00123 U	0.00165 U	0.0012 U	0.00133 U	0.075 U	0.025 U	0.00118 U
Methylcyclohexane	--	mg/kg		0.00566 U	NA	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.068 U	0.00218 U	0.00123 U	0.00165 U	0.0012 U	0.00133 U	0.075 U	0.025 U	0.00118 U
Methylene chloride	500	mg/kg		0.011 U	0.0054 U	0.0062 U	0.0074 U	0.0058 U	0.0058 J	0.0058 U	0.137 U	0.00436 U	0.00246 U	0.0033 U	0.0024 U	0.00266 U	0.151 U	0.05 U	0.00236 U
MTBE	500	mg/kg		0.00566 U	0.0027 U	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.068 U	0.00218 U	0.00123 U	0.00165 U	0.0012 U	0.00133 U	0.075 U	0.025 U	0.00118 U

Table 1. Summary of Volatile Organic Compounds in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	COMPOSITE	Dup 1114	OWS-PE-1	OWS-PE-2	OWS-PE-3	OWS-PE-4	OWS-PE-5	SB-1	SB-2	SB-3	SB-4	SB-5	SB-6	SB-7	SB-8	SB-9
			Sample Date:	12/20/2017	11/15/2018	5/29/2019	5/29/2019	5/29/2019	5/29/2019	5/29/2019	10/23/2017	10/23/2017	10/23/2017	10/23/2017	10/23/2017	10/23/2017	10/23/2017	10/23/2017	10/23/2017
			Sample Depth (ft bls):	-	-	-	-	-	-	-	7.5 - 8	15.5 - 16	15 - 15.5	15.5 - 16	15 - 15.5	11 - 11.5	-	-	-
Naphthalene	500	mg/kg		NA	0.0048 JB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	500	mg/kg		NA	0.0027 U	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	500	mg/kg		NA	0.0027 U	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	--	mg/kg		NA	0.0027 U	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
P-CYMENE (P-ISOPROPYLTOLUENE)	--	mg/kg		NA	NA	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	500	mg/kg		NA	0.0027 U	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	--	mg/kg		0.00566 U	NA	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.068 U	0.00218 U	0.00123 U	0.00165 U	0.0012 U	0.00133 U	0.075 U	0.025 U	0.00118 U
t-Butyl Alcohol	--	mg/kg		NA	NA	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	500	mg/kg		NA	0.0027 U	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	150	mg/kg		0.00375 DJ	0.0072	0.0031 U	0.0059 J	0.0036 J	0.0033 J	0.014	10.5	0.00218 U	0.00123 U	0.00165 U	0.0012 U	0.00133 U	7.78	0.268	0.00118 U
Toluene	500	mg/kg		0.00566 U	0.0027 U	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.068 U	0.000719 J	0.00123 U	0.00165 U	0.0012 U	0.00133 U	0.174	0.032	0.00118 U
trans-1,2-Dichloroethene	500	mg/kg		0.00566 U	0.0027 U	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.068 U	0.00218 U	0.00123 U	0.00165 U	0.0012 U	0.00133 U	0.075 U	0.025 U	0.00118 U
trans-1,3-Dichloropropene	--	mg/kg		0.00566 U	NA	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.068 U	0.00218 U	0.00123 U	0.00165 U	0.0012 U	0.00133 U	0.075 U	0.025 U	0.00118 U
trans-1,4-Dichloro-2-butene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	200	mg/kg		0.00566 U	0.0027 U	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.088	0.00218 U	0.00123 U	0.00165 U	0.0012 U	0.00133 U	0.272	0.028	0.00118 U
Trichlorofluoromethane	--	mg/kg		0.00566 U	NA	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.068 U	0.00218 U	0.00123 U	0.00165 U	0.0012 U	0.00133 U	0.075 U	0.025 U	0.00118 U
Vinyl chloride	13	mg/kg		0.00566 U	0.0027 U	0.0031 U	0.0037 U	0.0029 U	0.0026 U	0.0029 U	0.137 U	0.00218 U	0.00123 U	0.00165 U	0.0012 U	0.00133 U	0.151 U	0.05 U	0.00118 U
Xylenes (total)	500	mg/kg		0.011 U	0.0081 U	0.0092 U	0.011 U	0.0087 U	0.0077 U	0.0088 U	0.137 U	0.00436 U	0.00246 U	0.0033 U	0.0024 U	0.00266 U	0.166	0.049 J	0.00236 U

Table 1. Summary of Volatile Organic Compounds in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	SB-10	SB-11	SB-12	SB-13	SB-14	SB-15	SB-16	SB-17	SB-18	SB-19	SB-20	SB-21	SB-22	SB-23	SB-24	SB-25
			Sample Date:	10/23/2017	10/24/2017	10/24/2017	10/24/2017	10/24/2017	10/24/2017	10/24/2017	10/24/2017	10/24/2017	10/24/2017	10/24/2017	11/10/2017	11/10/2017	11/10/2017	11/10/2017	11/10/2017
			Sample Depth (ft bls):	-	-	-	-	-	-	-	-	-	-	-	11 - 11.5	11.5 - 12	11.5 - 12	11.5 - 12	10 - 10.5
1,1,1,2-Tetrachloroethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	500	mg/kg		0.00156 U	0.00125 U	0.00157 U	0.00169 U	0.104 U	3.39 U	0.00116 U	0.082 U	0.00187 U	0.036 U	0.00141 U	0.584 U	0.00152 U	0.00104 U	0.00117 U	0.00083 U
1,1,2,2-Tetrachloroethane	--	mg/kg		0.00156 U	0.00125 U	0.00157 U	0.00169 U	0.104 U	3.39 U	0.00116 U	0.082 U	0.00187 U	0.036 U	0.00141 U	0.584 U	0.00152 U	0.00104 U	0.00117 U	0.00083 U
1,1,2-Trichloroethane	--	mg/kg		0.00156 U	0.00125 U	0.00157 U	0.00169 U	0.104 U	3.39 U	0.00116 U	0.082 U	0.00187 U	0.036 U	0.00141 U	0.584 U	0.00152 U	0.00104 U	0.00117 U	0.00083 U
1,1-Dichloroethane	240	mg/kg		0.00156 U	0.00125 U	0.00157 U	0.00169 U	0.104 U	3.39 U	0.00116 U	0.082 U	0.00187 U	0.036 U	0.00141 U	0.584 U	0.00152 U	0.00104 U	0.00117 U	0.00083 U
1,1-Dichloroethene	500	mg/kg		0.00156 U	0.00125 U	0.00157 U	0.00169 U	0.104 U	3.39 U	0.00116 U	0.082 U	0.00187 U	0.036 U	0.00141 U	0.584 U	0.00152 U	0.00104 U	0.00117 U	0.00083 U
1,2,3-Trichlorobenzene	--	mg/kg		0.00156 U	0.00125 U	0.00157 U	0.00169 U	0.208 U	6.79 U	0.00116 U	0.163 U	0.00187 U	0.073 U	0.00141 U	1.17 U	0.00152 U	0.00104 U	0.00117 U	0.00083 U
1,2,3-Trichloropropane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	--	mg/kg		0.00156 U	0.00125 U	0.00157 U	0.00169 U	0.208 U	6.79 U	0.00116 U	0.163 U	0.00187 U	0.073 U	0.00141 U	1.17 U	0.00152 U	0.00104 U	0.00117 U	0.00083 U
1,2,4-Trimethylbenzene	190	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	--	mg/kg		0.00156 U	0.00125 U	0.00157 U	0.00169 U	0.104 U	3.39 U	0.00116 U	0.082 U	0.00187 U	0.036 U	0.00141 U	0.584 U	0.00152 U	0.00104 U	0.00117 U	0.00083 U
1,2-Dichlorobenzene	500	mg/kg		0.00156 U	0.00125 U	0.00157 U	0.00169 U	0.104 U	3.39 U	0.00116 U	0.082 U	0.00187 U	0.036 U	0.00141 U	0.584 U	0.00152 U	0.00104 U	0.00117 U	0.00083 U
1,2-Dichloroethane	30	mg/kg		0.00156 U	0.00125 U	0.00157 U	0.00169 U	0.104 U	3.39 U	0.00116 U	0.082 U	0.00187 U	0.036 U	0.00141 U	0.584 U	0.00152 U	0.00104 U	0.00117 U	0.00083 U
1,2-Dichloropropane	--	mg/kg		0.00156 U	0.00125 U	0.00157 U	0.00169 U	0.104 U	3.39 U	0.00116 U	0.082 U	0.00187 U	0.036 U	0.00141 U	0.584 U	0.00152 U	0.00104 U	0.00117 U	0.00083 U
1,3,5-Trimethylbenzene	190	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	280	mg/kg		0.00156 U	0.00125 U	0.00157 U	0.00169 U	0.104 U	3.39 U	0.00116 U	0.082 U	0.00187 U	0.036 U	0.00141 U	0.584 U	0.00152 U	0.00104 U	0.00117 U	0.00083 U
1,3-Dichloropropene	--	mg/kg		0.00156 U	0.00125 U	0.00157 U	0.00169 U	0.104 U	3.39 U	0.00116 U	0.082 U	0.00187 U	0.036 U	0.00141 U	0.584 U	0.00152 U	0.00104 U	0.00117 U	0.00083 U
1,4-Dichlorobenzene	130	mg/kg		0.00156 U	0.00125 U	0.00157 U	0.00169 U	0.104 U	3.39 U	0.00116 U	0.082 U	0.00187 U	0.036 U	0.00141 U	0.584 U	0.00152 U	0.00104 U	0.00117 U	0.00083 U
1,4-Dioxane	130	mg/kg		0.312 U	0.25 U	0.314 U	0.338 U	20.8 U	679 U	0.232 U	16.3 U	0.374 U	7.25 U	0.282 U	117 U	0.304 U	0.208 U	0.234 U	0.166 U
2-Butanone (MEK)	500	mg/kg		0.00312 U	0.0025 U	0.00314 U	0.00338 U	0.417 U	13.6 U	0.014	0.326 U	0.025	0.218	0.00282 U	2.34 U	0.00304 U	0.00815	0.00234 U	0.00166 U
2-Hexanone	--	mg/kg		0.00312 U	0.0025 U	0.00314 U	0.00338 U	0.417 U	13.6 U	0.00232 U	0.326 U	0.00374 U	0.145 U	0.00282 U	2.34 U	0.00304 U	0.00208 U	0.00234 U	0.00166 U
4-Methyl-2-pentanone (MIBK)	--	mg/kg		0.00312 U	0.0025 U	0.00314 U	0.00338 U	0.417 U	13.6 U	0.00232 U	0.326 U	0.00374 U	0.145 U	0.00282 U	2.34 U	0.00304 U	0.00208 U	0.00234 U	0.00166 U
Acetone	500	mg/kg		0.016 U	0.032	0.06	0.017 U	0.417 U	13.6 U	0.202	0.326 U	0.154	0.145 U	0.00782 J	2.34 U	0.053	0.065	0.018	0.012
Acrolein	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acrylonitrile	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	44	mg/kg		0.00156 U	0.00125 U	0.00157 U	0.00169 U	0.104 U	3.39 U	0.00141	0.082 U	0.00187 U	0.036 U	0.00141 U	0.584 U	0.00152 U	0.000341 J	0.00117 U	0.000257 J
Bromochloromethane	--	mg/kg		0.00156 U	0.00125 U	0.00157 U	0.00169 U	0.208 U	6.79 U	0.00116 U	0.163 U	0.00187 U	0.073 U	0.00141 U	1.17 U	0.00152 U	0.00104 U	0.00117 U	0.00083 U
Bromodichloromethane	--	mg/kg		0.00156 U	0.00125 U	0.00157 U	0.00169 U	0.104 U	3.39 U	0.00116 U	0.082 U	0.00187 U	0.036 U	0.00141 U	0.584 U	0.00152 U	0.00104 U	0.00117 U	0.00083 U
Bromoform	--	mg/kg		0.00156 U	0.00125 U	0.00157 U	0.00169 U	0.104 U	3.39 U	0.00116 U	0.082 U	0.00187 U	0.036 U	0.00141 U	0.584 U	0.00152 U	0.00104 U	0.00117 U	0.00083 U
Bromomethane	--	mg/kg		0.00156 U	0.00125 U	0.00157 U	0.00169 U	0.208 U	6.79 U	0.00116 U	0.163 U	0.00187 U	0.073 U	0.00141 U	1.17 U	0.00152 U	0.00104 U	0.00117 U	0.00083 U
Carbon disulfide	--	mg/kg		0.00156 U	0.00891	0.028	0.00299	0.104 U	3.39 U	0.00401	0.082 U	0.00324	0.036 U	0.00141 U	0.584 U	0.00409	0.00104	0.00117 U	0.00083 U
Carbon tetrachloride	22	mg/kg		0.00156 U	0.00125 U	0.00157 U	0.00169 U	0.208 U	6.79 U	0.00116 U	0.163 U	0.00187 U	0.073 U	0.00141 U	1.17 U	0.00152 U	0.00104 U	0.00117 U	0.00083 U
Chlorobenzene	500	mg/kg		0.00156 U	0.00125 U	0.00157 U	0.00169 U	0.104 U	3.39 U	0.00116 U	0.082 U	0.00187 U	0.036 U	0.00141 U	0.584 U	0.00152 U	0.00104 U	0.00117 U	0.00083 U
Chloroethane	--	mg/kg		0.00156 U	0.00125 U	0.00157 U	0.00169 U	0.104 U	3.39 U	0.00116 U	0.082 U	0.00187 U	0.036 U	0.00141 U	0.584 U	0.00152 U	0.00104 U	0.00117 U	0.00083 U
Chloroform	350	mg/kg		0.00156 U	0.00125 U	0.00157 U	0.00169 U	0.104 U	3.39 U	0.00116 U	0.082 U	0.00187 U	0.036 U	0.00141 U	0.584 U	0.00152 U	0.00104 U	0.00152	0.00083 U
Chloromethane	--	mg/kg		0.00156 U	0.00125 U	0.00157 U	0.00169 U	0.104 U	3.39 U	0.00116 U	0.082 U	0.00187 U	0.036 U	0.00141 U	0.584 U	0.00152 U	0.00104 U	0.00117 U	0.00083 U
cis-1,2-Dichloroethene	500	mg/kg		0.00156 U	0.00125 U	0.00157 U	0.00169 U	0.104 U	3.39 U	0.00116 U	0.118	0.00187 U	0.036 U	0.00141 U	0.584 U	0.00152 U	0.00104 U	0.00117 U	0.00083 U
cis-1,3-Dichloropropene	--	mg/kg		0.00156 U	0.00125 U	0.00157 U	0.00169 U	0.104 U	3.39 U	0.00116 U	0.082 U	0.00187 U	0.036 U	0.00141 U	0.584 U	0.00152 U	0.00104 U	0.00117 U	0.00083 U
Cyclohexane	--	mg/kg		0.00156 U	0.00125 U	0.00157 U	0.00169 U	0.208 U	6.79 U	0.00116 U	0.163 U	0.00187 U	0.073 U	0.00141 U	1.17 U	0.00152 U	0.00104 U	0.00117 U	0.00083 U
Dibromochloromethane	--	mg/kg		0.00156 U	0.00125 U	0.00157 U	0.00169 U	0.104 U	3.39 U	0.00116 U	0.082 U	0.00187 U	0.036 U	0.00141 U	0.584 U	0.00152 U	0.00104 U	0.00117 U	0.00083 U
Dibromochloropropane	--	mg/kg		0.00156 U	0.00125 U	0.00157 U	0.00169 U	0.208 U	6.79 U	0.00116 U	0.163 U	0.00187 U	0.073 U	0.00141 U	1.17 U	0.00152 U	0.00104 U	0.00117 U	0.00083 U
Dibromomethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	--	mg/kg		0.00156 U	0.00125 U	0.00157 U	0.00169 U	0.208 U	6.79 U	0.00116 U	0.163 U	0.00187 U	0.073 U	0.00141 U	1.17 U	0.00152 U	0.00104 U	0.00117 U	0.00083 U
Ethylbenzene	390	mg/kg		0.00156 U	0.00125 U	0.00157 U	0.00169 U	0.104 U	3.39 U	0.000396 J	0.082 U	0.00187 U	0.036 U	0.00141 U	0.584 U	0.00152 U	0.00104 U	0.00117 U	0.00083 U
Freon 113	--	mg/kg		0.00312 U	0.0025 U	0.00314 U	0.00338 U	0.208 U	6.79 U	0.00232 U	0.163 U	0.00374 U	0.073 U	0.00282 U	1.17 U	0.00304 U	0.00208 U	0.00234 U	0.00166 U
Hexachlorobutadiene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	--	mg/kg		0.00156 U	0.00125 U	0.00157 U	0.00169 U	0.104 U	3.39 U	0.00116 U	0.082 U	0.00187 U	0.036 U	0.00141 U	5.02 D	0.00152 U	0.00104 U	0.00117 U	0.00083 U
m+p-Xylene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	--	mg/kg		0.00156 U	0.00125 U	0.00157 U	0.00169 U	0.104 U	3.39 U	0.011	0.082 U	0.00187 U	0.036 U	0.00141 U	0.584 U	0.00152 U	0.00104 U	0.00117 U	0.00083 U
Methylcyclohexane	--	mg/kg		0.00156 U	0.00125 U	0.00157 U	0.00169 U	0.104 U	3.39 U	0.011	0.082 U	0.00187 U	0.036 U	0.00141 U	17.9 D	0.00152 U	0.00301	0.00117 U	0.00083 U
Methylene chloride	500	mg/kg		0.00312 U	0.0025 U	0.00314 U	0.00338 U	0.208 U	6.79 U	0.00232 U	0.163 U	0.00374 U	0.073 U	0.00282 U	1.17 U	0.00474 B	0.0024 B	0.00414 B	0.00202 B
MTBE	500	mg/kg		0.00156 U	0.00125 U	0.00157 U	0.00169 U	0.104 U	3.39 U	0.00116 U	0.082 U	0.00187 U	0.036 U	0.00141 U	0.584 U	0.00152 U	0.00104 U	0.00117 U	0.00083 U

Table 1. Summary of Volatile Organic Compounds in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	SB-10	SB-11	SB-12	SB-13	SB-14	SB-15	SB-16	SB-17	SB-18	SB-19	SB-20	SB-21	SB-22	SB-23	SB-24	SB-25
			Sample Date:	10/23/2017	10/24/2017	10/24/2017	10/24/2017	10/24/2017	10/24/2017	10/24/2017	10/24/2017	10/24/2017	10/24/2017	10/24/2017	11/10/2017	11/10/2017	11/10/2017	11/10/2017	11/10/2017
			Sample Depth (ft bls):	-	-	-	-	-	-	-	-	-	-	-	11 - 11.5	11.5 - 12	11.5 - 12	11.5 - 12	10 - 10.5
Naphthalene	500	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	500	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	500	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
P-CYMENE (P-ISOPROPYLTOLUENE)	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	500	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	--	mg/kg		0.00156 U	0.00125 U	0.00157 U	0.00169 U	0.104 U	3.39 U	0.00116 U	0.082 U	0.00187 U	0.036 U	0.00141 U	0.584 U	0.00152 U	0.00104 U	0.00117 U	0.00083 U
t-Butyl Alcohol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	500	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	150	mg/kg		0.0032	0.015	0.012	0.019	10.9	3.39 U	0.00116 U	2.66	0.00187 U	1.84	0.00181	0.584 U	0.00152 U	0.00104 U	0.038	0.00083 U
Toluene	500	mg/kg		0.00156 U	0.00125 U	0.000507 J	0.00169 U	0.104 U	3.39 U	0.00116 U	0.082 U	0.00187 U	0.036 U	0.00141 U	0.584 U	0.00152 U	0.00104 U	0.00117 U	0.00083 U
trans-1,2-Dichloroethene	500	mg/kg		0.00156 U	0.00125 U	0.00157 U	0.00169 U	0.104 U	3.39 U	0.00116 U	0.082 U	0.00187 U	0.036 U	0.00141 U	0.584 U	0.00152 U	0.00104 U	0.00117 U	0.00083 U
trans-1,3-Dichloropropene	--	mg/kg		0.00156 U	0.00125 U	0.00157 U	0.00169 U	0.104 U	3.39 U	0.00116 U	0.082 U	0.00187 U	0.036 U	0.00141 U	0.584 U	0.00152 U	0.00104 U	0.00117 U	0.00083 U
trans-1,4-Dichloro-2-butene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	200	mg/kg		0.000696 J	0.000523 J	0.00157 U	0.000735 J	0.956	3.39 U	0.00116 U	0.198	0.00187 U	0.036 U	0.00141 U	0.584 U	0.00152 U	0.00104 U	0.000892 J	0.00083 U
Trichlorofluoromethane	--	mg/kg		0.00156 U	0.00125 U	0.00157 U	0.00169 U	0.104 U	3.39 U	0.00116 U	0.082 U	0.00187 U	0.036 U	0.00141 U	0.584 U	0.00152 U	0.00104 U	0.00117 U	0.00083 U
Vinyl chloride	13	mg/kg		0.00156 U	0.00125 U	0.00157 U	0.00169 U	0.208 U	6.79 U	0.00116 U	0.163 U	0.00187 U	0.073 U	0.00141 U	1.17 U	0.00152 U	0.00104 U	0.00117 U	0.00083 U
Xylenes (total)	500	mg/kg		0.00312 U	0.0025 U	0.00314 U	0.00338 U	0.208 U	6.79 U	0.00232 U	0.163 U	0.00374 U	0.073 U	0.00282 U	1.17 U	0.00304 U	0.00208 U	0.00234 U	0.00166 U

Table 1. Summary of Volatile Organic Compounds in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	SB-26	SB-27	SB-28	SB-29	SB-30	SB-31A	SB-31D	SB-31S	SB-32A	SB-32D	SB-32D1	SB-32S	SB-33A	SB-33D	SB-33S	SB-34A
			Sample Date:	12/13/2017	12/13/2017	12/13/2017	12/13/2017	12/13/2017	12/13/2017	12/18/2017	12/18/2017	12/13/2017	12/18/2017	12/18/2017	12/18/2017	12/13/2017	12/18/2017	12/18/2017	12/13/2017
			Sample Depth (ft bls):	-	-	-	-	-	-	8 - 8.5	2 - 2.5	-	8 - 8.5	12 - 12.5	2 - 2.5	-	8 - 8.5	2 - 2.5	-
1,1,1,2-Tetrachloroethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	500	mg/kg		0.138 U	0.076 U	0.092 U	0.081 U	0.076 U	0.00191 U	0.00154 U	0.00106 U	0.001 U	0.00126 U	0.00107 U	0.0014 U	0.00193 U	0.00164 U	0.00173 U	0.00129 U
1,1,2,2-Tetrachloroethane	--	mg/kg		0.138 U	0.076 U	0.092 U	0.081 U	0.076 U	0.00191 U	0.00154 U	0.00106 U	0.001 U	0.00126 U	0.00107 U	0.0014 U	0.00193 U	0.00164 U	0.00173 U	0.00129 U
1,1,2-Trichloroethane	--	mg/kg		0.138 U	0.076 U	0.092 U	0.081 U	0.076 U	0.00191 U	0.00154 U	0.00106 U	0.001 U	0.00126 U	0.00107 U	0.0014 U	0.00193 U	0.00164 U	0.00173 U	0.00129 U
1,1-Dichloroethane	240	mg/kg		0.138 U	0.076 U	0.092 U	0.081 U	0.076 U	0.00191 U	0.00154 U	0.00106 U	0.001 U	0.00126 U	0.00107 U	0.0014 U	0.00193 U	0.00164 U	0.00173 U	0.00129 U
1,1-Dichloroethene	500	mg/kg		0.138 U	0.076 U	0.092 U	0.081 U	0.076 U	0.00191 U	0.00154 U	0.00106 U	0.001 U	0.00126 U	0.00107 U	0.0014 U	0.00193 U	0.00164 U	0.00173 U	0.00129 U
1,2,3-Trichlorobenzene	--	mg/kg		0.276 U	0.152 U	0.184 U	0.163 U	0.152 U	0.00191 U	0.00154 U	0.00106 U	0.001 U	0.00126 U	0.00107 U	0.0014 U	0.00193 U	0.00164 U	0.00173 U	0.00129 U
1,2,3-Trichloropropane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	--	mg/kg		0.276 U	0.152 U	0.184 U	0.163 U	0.152 U	0.00191 U	0.00154 U	0.00106 U	0.001 U	0.00126 U	0.00107 U	0.0014 U	0.00193 U	0.00164 U	0.00173 U	0.00129 U
1,2,4-Trimethylbenzene	190	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	--	mg/kg		0.138 U	0.076 U	0.092 U	0.081 U	0.076 U	0.00191 U	0.00154 U	0.00106 U	0.001 U	0.00126 U	0.00107 U	0.0014 U	0.00193 U	0.00164 U	0.00173 U	0.00129 U
1,2-Dichlorobenzene	500	mg/kg		0.138 U	0.076 U	0.092 U	0.081 U	0.076 U	0.00191 U	0.00154 U	0.00106 U	0.001 U	0.00126 U	0.00107 U	0.0014 U	0.00193 U	0.00164 U	0.00173 U	0.00129 U
1,2-Dichloroethane	30	mg/kg		0.138 U	0.076 U	0.092 U	0.081 U	0.076 U	0.00191 U	0.00154 U	0.00106 U	0.001 U	0.00126 U	0.00107 U	0.0014 U	0.00193 U	0.00164 U	0.00173 U	0.00129 U
1,2-Dichloropropane	--	mg/kg		0.138 U	0.076 U	0.092 U	0.081 U	0.076 U	0.00191 U	0.00154 U	0.00106 U	0.001 U	0.00126 U	0.00107 U	0.0014 U	0.00193 U	0.00164 U	0.00173 U	0.00129 U
1,3,5-Trimethylbenzene	190	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	280	mg/kg		0.138 U	0.076 U	0.092 U	0.081 U	0.076 U	0.00191 U	0.00154 U	0.00106 U	0.001 U	0.00126 U	0.00107 U	0.0014 U	0.00193 U	0.00164 U	0.00173 U	0.00129 U
1,3-Dichloropropene	--	mg/kg		0.138 U	0.076 U	0.092 U	0.081 U	0.076 U	0.00191 U	0.00154 U	0.00106 U	0.001 U	0.00126 U	0.00107 U	0.0014 U	0.00193 U	0.00164 U	0.00173 U	0.00129 U
1,4-Dichlorobenzene	130	mg/kg		0.138 U	0.076 U	0.092 U	0.081 U	0.076 U	0.00191 U	0.00154 U	0.00106 U	0.001 U	0.00126 U	0.00107 U	0.0014 U	0.00193 U	0.00164 U	0.00173 U	0.00129 U
1,4-Dioxane	130	mg/kg		27.6 U	15.2 U	18.4 U	16.3 U	15.2 U	0.382 U	0.308 U	0.212 U	0.2 U	0.252 U	0.214 U	0.28 U	0.386 U	0.328 U	0.346 U	0.258 U
2-Butanone (MEK)	500	mg/kg		0.552 U	0.304 U	0.367 U	0.326 U	0.305 U	0.00382 U	0.00308 U	0.00212 U	0.002 U	0.00252 U	0.00431	0.0028 U	0.00386 U	0.00328 U	0.00346 U	0.00258 U
2-Hexanone	--	mg/kg		0.552 U	0.304 U	0.367 U	0.326 U	0.305 U	0.00382 U	0.00308 U	0.00212 U	0.002 U	0.00252 U	0.00214 U	0.0028 U	0.00386 U	0.00328 U	0.00346 U	0.00258 U
4-Methyl-2-pentanone (MIBK)	--	mg/kg		0.552 U	0.304 U	0.367 U	0.326 U	0.305 U	0.00382 U	0.00308 U	0.00212 U	0.002 U	0.00252 U	0.00214 U	0.0028 U	0.00386 U	0.00328 U	0.00346 U	0.00258 U
Acetone	500	mg/kg		0.552 U	0.304 U	0.367 U	0.326 U	0.305 U	0.023	0.02	0.011 J	0.00764 J	0.025	0.029	0.018	0.044	0.022	0.041	0.015
Acrolein	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acrylonitrile	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	44	mg/kg		0.138 U	0.076 U	0.092 U	0.081 U	0.076 U	0.00191 U	0.00154 U	0.00106 U	0.001 U	0.00126 U	0.00107 U	0.0014 U	0.00193 U	0.00164 U	0.00173 U	0.00129 U
Bromochloromethane	--	mg/kg		0.276 U	0.152 U	0.184 U	0.163 U	0.152 U	0.00191 U	0.00154 U	0.00106 U	0.001 U	0.00126 U	0.00107 U	0.0014 U	0.00193 U	0.00164 U	0.00173 U	0.00129 U
Bromodichloromethane	--	mg/kg		0.138 U	0.076 U	0.092 U	0.081 U	0.076 U	0.00191 U	0.00154 U	0.00106 U	0.001 U	0.00126 U	0.00107 U	0.0014 U	0.00193 U	0.00164 U	0.00173 U	0.00129 U
Bromoform	--	mg/kg		0.138 U	0.076 U	0.092 U	0.081 U	0.076 U	0.00191 U	0.00154 U	0.00106 U	0.001 U	0.00126 U	0.00107 U	0.0014 U	0.00193 U	0.00164 U	0.00173 U	0.00129 U
Bromomethane	--	mg/kg		0.276 U	0.152 U	0.184 U	0.163 U	0.152 U	0.00191 U	0.00154 U	0.00106 U	0.001 U	0.00126 U	0.00107 U	0.0014 U	0.00193 U	0.00164 U	0.00173 U	0.00129 U
Carbon disulfide	--	mg/kg		0.138 U	0.076 U	0.092 U	0.081 U	0.076 U	0.00191 U	0.00154 U	0.00106 U	0.001 U	0.00126 U	0.00107 U	0.0014 U	0.00193 U	0.00164 U	0.00173 U	0.00129 U
Carbon tetrachloride	22	mg/kg		0.138 U	0.076 U	0.092 U	0.081 U	0.076 U	0.00191 U	0.00154 U	0.00106 U	0.001 U	0.00126 U	0.00107 U	0.0014 U	0.00193 U	0.00164 U	0.00173 U	0.00129 U
Chlorobenzene	500	mg/kg		0.138 U	0.076 U	0.092 U	0.081 U	0.076 U	0.00191 U	0.00154 U	0.00106 U	0.001 U	0.00126 U	0.00107 U	0.0014 U	0.00193 U	0.00164 U	0.00173 U	0.00129 U
Chloroethane	--	mg/kg		0.276 U	0.152 U	0.184 U	0.163 U	0.152 U	0.00191 U	0.00154 U	0.00106 U	0.001 U	0.00126 U	0.00107 U	0.0014 U	0.00193 U	0.00164 U	0.00173 U	0.00129 U
Chloroform	350	mg/kg		0.138 U	0.076 U	0.092 U	0.081 U	0.076 U	0.00191 U	0.00154 U	0.00106 U	0.001 U	0.00126 U	0.00107 U	0.0014 U	0.00193 U	0.00164 U	0.00173 U	0.00129 U
Chloromethane	--	mg/kg		0.138 U	0.076 U	0.092 U	0.081 U	0.076 U	0.00382 U	0.00308 U	0.00212 U	0.002 U	0.00252 U	0.00214 U	0.0028 U	0.00386 U	0.00328 U	0.00346 U	0.00258 U
cis-1,2-Dichloroethene	500	mg/kg		0.138 U	0.076 U	0.092 U	0.081 U	0.076 U	0.00191 U	0.00154 U	0.00106 U	0.001 U	0.00126 U	0.00107 U	0.0014 U	0.00193 U	0.00164 U	0.00173 U	0.00129 U
cis-1,3-Dichloropropene	--	mg/kg		0.138 U	0.076 U	0.092 U	0.081 U	0.076 U	0.00191 U	0.00154 U	0.00106 U	0.001 U	0.00126 U	0.00107 U	0.0014 U	0.00193 U	0.00164 U	0.00173 U	0.00129 U
Cyclohexane	--	mg/kg		0.276 U	0.152 U	0.184 U	0.163 U	0.152 U	0.00955 U	0.0077 U	0.0053 U	0.005 U	0.0063 U	0.00535 U	0.007 U	0.00965 U	0.0082 U	0.00865 U	0.00645 U
Dibromochloromethane	--	mg/kg		0.138 U	0.076 U	0.092 U	0.081 U	0.076 U	0.00191 U	0.00154 U	0.00106 U	0.001 U	0.00126 U	0.00107 U	0.0014 U	0.00193 U	0.00164 U	0.00173 U	0.00129 U
Dibromochloropropane	--	mg/kg		0.276 U	0.152 U	0.184 U	0.163 U	0.152 U	0.00191 U	0.00154 U	0.00106 U	0.001 U	0.00126 U	0.00107 U	0.0014 U	0.00193 U	0.00164 U	0.00173 U	0.00129 U
Dibromomethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	--	mg/kg		0.276 U	0.152 U	0.184 U	0.163 U	0.152 U	0.00191 U	0.00154 U	0.00106 U	0.001 U	0.00126 U	0.00107 U	0.0014 U	0.00193 U	0.00164 U	0.00173 U	0.00129 U
Ethylbenzene	390	mg/kg		0.138 U	0.076 U	0.092 U	0.081 U	0.076 U	0.00191 U	0.00154 U	0.00106 U	0.001 U	0.00126 U	0.00107 U	0.0014 U	0.00193 U	0.00164 U	0.00173 U	0.00129 U
Freon 113	--	mg/kg		0.276 U	0.152 U	0.184 U	0.163 U	0.152 U	0.00191 U	0.00154 U	0.00106 U	0.001 U	0.00126 U	0.00107 U	0.0014 U	0.00193 U	0.00164 U	0.00173 U	0.00129 U
Hexachlorobutadiene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	--	mg/kg		0.138 U	0.076 U	0.092 U	0.081 U	0.076 U	0.00191 U	0.00154 U	0.00106 U	0.001 U	0.00126 U	0.00107 U	0.0014 U	0.00193 U	0.00164 U	0.00173 U	0.00129 U
m+p-Xylene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	--	mg/kg		0.138 U	0.076 U	0.092 U	0.081 U	0.076 U	0.00457	0.00154 U	0.00106 U	0.001 U	0.00126 U	0.00107 U	0.0014 U	0.00533	0.00164 U	0.00173 U	0.0017
Methylcyclohexane	--	mg/kg		0.138 U	0.076 U	0.092 U	0.081 U	0.316	0.00191 U	0.00154 U	0.00106 U	0.001 U	0.00126 U	0.00107 U	0.0014 U	0.00193 U	0.00164 U	0.00173 U	0.00129 U
Methylene chloride	500	mg/kg		0.276 U	0.152 U	0.184 U	0.163 U	0.152 U	0.0089 C	0.00512 C	0.00212 U	0.00324 C	0.00252 U	0.00328 C	0.00689 C	0.00904 C	0.00542 C	0.011 C	0.00544 C
MTBE	500	mg/kg		0.138 U	0.076 U	0.092 U	0.081 U	0.076 U	0.00191 U	0.00154 U	0.00106 U	0.001 U	0.00126 U	0.00107 U	0.0014 U	0.00193 U	0.00164 U	0.00173 U	0.00129 U

Table 1. Summary of Volatile Organic Compounds in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	SB-26	SB-27	SB-28	SB-29	SB-30	SB-31A	SB-31D	SB-31S	SB-32A	SB-32D	SB-32D1	SB-32S	SB-33A	SB-33D	SB-33S	SB-34A
			Sample Date:	12/13/2017	12/13/2017	12/13/2017	12/13/2017	12/13/2017	12/13/2017	12/18/2017	12/18/2017	12/13/2017	12/18/2017	12/18/2017	12/18/2017	12/13/2017	12/18/2017	12/18/2017	12/13/2017
			Sample Depth (ft bls):	-	-	-	-	-	-	8 - 8.5	2 - 2.5	-	8 - 8.5	12 - 12.5	2 - 2.5	-	8 - 8.5	2 - 2.5	-
Naphthalene	500	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	500	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	500	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
P-CYMENE (P-ISOPROPYLTOLUENE)	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	500	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	--	mg/kg		0.138 U	0.076 U	0.092 U	0.081 U	0.076 U	0.00191 U	0.00154 U	0.00106 U	0.001 U	0.00126 U	0.00107 U	0.0014 U	0.00193 U	0.00164 U	0.00173 U	0.00129 U
t-Butyl Alcohol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	500	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	150	mg/kg		29 D	14.8	15	45.5 D	61.6 D	0.091	0.012	0.0032	0.027	0.015	0.00107 U	0.019	0.052	0.00817	0.00424	0.029
Toluene	500	mg/kg		0.138 U	0.076 U	0.092 U	0.081 U	0.076 U	0.00191 U	0.00154 U	0.00106 U	0.001 U	0.00126 U	0.00107 U	0.0014 U	0.00193 U	0.00164 U	0.00173 U	0.00129 U
trans-1,2-Dichloroethene	500	mg/kg		0.138 U	0.076 U	0.092 U	0.081 U	0.076 U	0.00191 U	0.00154 U	0.00106 U	0.001 U	0.00126 U	0.00107 U	0.0014 U	0.00193 U	0.00164 U	0.00173 U	0.00129 U
trans-1,3-Dichloropropene	--	mg/kg		0.138 U	0.076 U	0.092 U	0.081 U	0.076 U	0.00191 U	0.00154 U	0.00106 U	0.001 U	0.00126 U	0.00107 U	0.0014 U	0.00193 U	0.00164 U	0.00173 U	0.00129 U
trans-1,4-Dichloro-2-butene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	200	mg/kg		0.449 D	0.26	0.348	0.625	0.946	0.00102 J	0.000507 J	0.00106 U	0.001 U	0.000483 J	0.00107 U	0.000652 J	0.00106 J	0.00164 U	0.000507 J	0.000435 J
Trichlorofluoromethane	--	mg/kg		0.138 U	0.076 U	0.092 U	0.081 U	0.076 U	0.00191 U	0.00154 U	0.00106 U	0.001 U	0.00126 U	0.00107 U	0.0014 U	0.00193 U	0.00164 U	0.00173 U	0.00129 U
Vinyl chloride	13	mg/kg		0.276 U	0.152 U	0.184 U	0.163 U	0.152 U	0.00191 U	0.00154 U	0.00106 U	0.001 U	0.00126 U	0.00107 U	0.0014 U	0.00193 U	0.00164 U	0.00173 U	0.00129 U
Xylenes (total)	500	mg/kg		0.276 U	0.152 U	0.184 U	0.163 U	0.152 U	0.00382 U	0.00308 U	0.00212 U	0.002 U	0.00252 U	0.00214 U	0.0028 U	0.00386 U	0.00328 U	0.00346 U	0.00258 U

Table 1. Summary of Volatile Organic Compounds in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	SB-34D	SB-34S	SB-35A	SB-35D	SB-35S	SB-36D	SB-36S	SB-37D	SB-37S	SB-38(D)	SB-38(S)	SB-39(D)	SB-39(S)	SB-40(D)	SB-40(S)	SB42-A
			Sample Date:	12/18/2017	12/18/2017	12/13/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017	12/20/2017	12/20/2017	12/20/2017	12/20/2017	12/20/2017	12/20/2017	5/15/2018
			Sample Depth (ft bls):	8 - 8.5	2 - 2.5	-	8 - 8.5	2 - 2.5	8 - 8.5	2 - 2.5	8 - 8.5	2 - 2.5	-	-	-	-	-	-	-
1,1,1,2-Tetrachloroethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0028 U
1,1,1-Trichloroethane	500	mg/kg		0.00113 U	0.00122 U	0.00105 U	0.00122 U	0.00158 U	0.00112 U	0.0013 U	0.035 U	0.11 U	0.00088 U	0.105 U	0.00119 U	0.074 U	0.00161 U	0.058 U	0.0028 U
1,1,2,2-Tetrachloroethane	--	mg/kg		0.00113 U	0.00122 U	0.00105 U	0.00122 U	0.00158 U	0.00112 U	0.0013 U	0.035 U	0.11 U	0.00088 U	0.105 U	0.00119 U	0.074 U	0.00161 U	0.058 U	0.0028 U
1,1,2-Trichloroethane	--	mg/kg		0.00113 U	0.00122 U	0.00105 U	0.00122 U	0.00158 U	0.00112 U	0.0013 U	0.035 U	0.11 U	0.00088 U	0.105 U	0.00119 U	0.074 U	0.00161 U	0.058 U	0.0028 U
1,1-Dichloroethane	240	mg/kg		0.00113 U	0.00122 U	0.00105 U	0.00122 U	0.00158 U	0.00112 U	0.0013 U	0.035 U	0.11 U	0.00088 U	0.105 U	0.00119 U	0.074 U	0.00161 U	0.058 U	0.0028 U
1,1-Dichloroethene	500	mg/kg		0.00113 U	0.00122 U	0.00105 U	0.00122 U	0.00158 U	0.00112 U	0.0013 U	0.035 U	0.11 U	0.00088 U	0.105 U	0.00119 U	0.074 U	0.00161 U	0.058 U	0.0028 U
1,2,3-Trichlorobenzene	--	mg/kg		0.00113 U	0.00122 U	0.00105 U	0.00122 U	0.00158 U	0.00112 U	0.0013 U	0.07 U	0.219 U	0.00088 U	0.211 U	0.00119 U	0.148 U	0.00161 U	0.116 U	0.0028 U
1,2,3-Trichloropropane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0028 U
1,2,4-Trichlorobenzene	--	mg/kg		0.00113 U	0.00122 U	0.00105 U	0.00122 U	0.00158 U	0.00112 U	0.0013 U	0.07 U	0.219 U	0.00088 U	0.211 U	0.00119 U	0.148 U	0.00161 U	0.116 U	0.0028 U
1,2,4-Trimethylbenzene	190	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0039
1,2-Dibromoethane	--	mg/kg		0.00113 U	0.00122 U	0.00105 U	0.00122 U	0.00158 U	0.00112 U	0.0013 U	0.035 U	0.11 U	0.00088 U	0.105 U	0.00119 U	0.074 U	0.00161 U	0.058 U	0.0028 U
1,2-Dichlorobenzene	500	mg/kg		0.00113 U	0.00122 U	0.00105 U	0.00122 U	0.00158 U	0.00112 U	0.0013 U	0.035 U	0.11 U	0.00088 U	0.105 U	0.00119 U	0.074 U	0.00161 U	0.058 U	0.0028 U
1,2-Dichloroethane	30	mg/kg		0.00113 U	0.00122 U	0.00105 U	0.00122 U	0.00158 U	0.00112 U	0.0013 U	0.035 U	0.11 U	0.00088 U	0.105 U	0.00119 U	0.074 U	0.00161 U	0.058 U	0.0028 U
1,2-Dichloropropane	--	mg/kg		0.00113 U	0.00122 U	0.00105 U	0.00122 U	0.00158 U	0.00112 U	0.0013 U	0.035 U	0.11 U	0.00088 U	0.105 U	0.00119 U	0.074 U	0.00161 U	0.058 U	0.0028 U
1,3,5-Trimethylbenzene	190	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0028 U
1,3-Dichlorobenzene	280	mg/kg		0.00113 U	0.00122 U	0.00105 U	0.00122 U	0.00158 U	0.00112 U	0.0013 U	0.035 U	0.11 U	0.00088 U	0.105 U	0.00119 U	0.074 U	0.00161 U	0.058 U	0.0028 U
1,3-Dichloropropene	--	mg/kg		0.00113 U	0.00122 U	0.00105 U	0.00122 U	0.00158 U	0.00112 U	0.0013 U	0.035 U	0.11 U	0.00088 U	0.105 U	0.00119 U	0.074 U	0.00161 U	0.058 U	NA
1,4-Dichlorobenzene	130	mg/kg		0.00113 U	0.00122 U	0.00105 U	0.00122 U	0.00158 U	0.00112 U	0.0013 U	0.035 U	0.11 U	0.00088 U	0.105 U	0.00119 U	0.074 U	0.00161 U	0.058 U	0.0028 U
1,4-Dioxane	130	mg/kg		0.226 U	0.244 U	0.21 U	0.244 U	0.316 U	0.224 U	0.26 U	6.98 U	21.9 U	0.176 U	21.1 U	0.238 U	14.8 U	0.322 U	11.6 U	0.057 U
2-Butanone (MEK)	500	mg/kg		0.00246	0.00244 U	0.0021 U	0.00244 U	0.00316 U	0.00224 U	0.0026 U	0.14 U	0.438 U	0.00176 U	0.422 U	0.00238 U	0.296 U	0.00322 U	0.232 U	0.0053
2-Hexanone	--	mg/kg		0.00226 U	0.00244 U	0.0021 U	0.00244 U	0.00316 U	0.00224 U	0.0026 U	0.14 U	0.438 U	0.00176 U	0.422 U	0.00238 U	0.296 U	0.00322 U	0.232 U	0.0028 U
4-Methyl-2-pentanone (MIBK)	--	mg/kg		0.00226 U	0.00244 U	0.0021 U	0.00244 U	0.00316 U	0.00224 U	0.0026 U	0.14 U	0.438 U	0.00176 U	0.422 U	0.00238 U	0.296 U	0.00322 U	0.232 U	0.0028 U
Acetone	500	mg/kg		0.019	0.012 J	0.014	0.086	0.012 J	0.014	0.033	0.14 U	0.438 U	0.015	0.422 U	0.012 U	0.296 U	0.016 U	0.232 U	0.034
Acrolein	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0057 U
Acrylonitrile	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0028 U
Benzene	44	mg/kg		0.000355 J	0.00122 U	0.00105 U	0.00122 U	0.00158 U	0.00112 U	0.0013 U	0.035 U	0.11 U	0.00088 U	0.105 U	0.00119 U	0.074 U	0.00161 U	0.058 U	0.0028 U
Bromochloromethane	--	mg/kg		0.00113 U	0.00122 U	0.00105 U	0.00122 U	0.00158 U	0.00112 U	0.0013 U	0.07 U	0.219 U	0.00088 U	0.211 U	0.00119 U	0.148 U	0.00161 U	0.116 U	0.0028 U
Bromodichloromethane	--	mg/kg		0.00113 U	0.00122 U	0.00105 U	0.00122 U	0.00158 U	0.00112 U	0.0013 U	0.035 U	0.11 U	0.00088 U	0.105 U	0.00119 U	0.074 U	0.00161 U	0.058 U	0.0028 U
Bromoform	--	mg/kg		0.00113 U	0.00122 U	0.00105 U	0.00122 U	0.00158 U	0.00112 U	0.0013 U	0.035 U	0.11 U	0.00088 U	0.105 U	0.00119 U	0.074 U	0.00161 U	0.058 U	0.0028 U
Bromomethane	--	mg/kg		0.00113 U	0.00122 U	0.00105 U	0.00122 U	0.00158 U	0.00112 U	0.0013 U	0.07 U	0.219 U	0.00088 U	0.211 U	0.00119 U	0.148 U	0.00161 U	0.116 U	0.0028 U
Carbon disulfide	--	mg/kg		0.00113 U	0.00122 U	0.00105 U	0.00122 U	0.00158 U	0.00112 U	0.0013 U	0.035 U	0.11 U	0.00134	0.105 U	0.00119 U	0.074 U	0.00161 U	0.058 U	0.0028 U
Carbon tetrachloride	22	mg/kg		0.00113 U	0.00122 U	0.00105 U	0.00122 U	0.00158 U	0.00112 U	0.0013 U	0.07 U	0.219 U	0.00088 U	0.211 U	0.00119 U	0.148 U	0.00161 U	0.116 U	0.0028 U
Chlorobenzene	500	mg/kg		0.00113 U	0.00122 U	0.00105 U	0.00122 U	0.00158 U	0.00112 U	0.0013 U	0.035 U	0.11 U	0.00088 U	0.105 U	0.00119 U	0.074 U	0.00161 U	0.058 U	0.0028 U
Chloroethane	--	mg/kg		0.00113 U	0.00122 U	0.00105 U	0.00122 U	0.00158 U	0.00112 U	0.0013 U	0.035 U	0.11 U	0.00088 U	0.105 U	0.00119 U	0.074 U	0.00161 U	0.058 U	0.0028 U
Chloroform	350	mg/kg		0.00113 U	0.00122 U	0.00105 U	0.00122 U	0.00158 U	0.00112 U	0.0013 U	0.035 U	0.11 U	0.00088 U	0.105 U	0.00119 U	0.074 U	0.00161 U	0.058 U	0.0028 U
Chloromethane	--	mg/kg		0.00226 U	0.00244 U	0.0021 U	0.00244 U	0.00316 U	0.00224 U	0.0026 U	0.035 U	0.11 U	0.00088 U	0.105 U	0.00119 U	0.074 U	0.00161 U	0.058 U	0.0028 U
cis-1,2-Dichloroethene	500	mg/kg		0.00113 U	0.00122 U	0.00105 U	0.00122 U	0.00158 U	0.00112 U	0.0013 U	0.035 U	0.11 U	0.00088 U	0.105 U	0.00119 U	0.074 U	0.00161 U	0.058 U	0.0028 U
cis-1,3-Dichloropropene	--	mg/kg		0.00113 U	0.00122 U	0.00105 U	0.00122 U	0.00158 U	0.00112 U	0.0013 U	0.035 U	0.11 U	0.00088 U	0.105 U	0.00119 U	0.074 U	0.00161 U	0.058 U	0.0028 U
Cyclohexane	--	mg/kg		0.00565 U	0.0061 U	0.00525 U	0.0061 U	0.0079 U	0.0056 U	0.0065 U	0.07 U	0.219 U	0.00088 U	0.29	0.00119 U	0.148 U	0.00161 U	0.116 U	0.0028 U
Dibromochloromethane	--	mg/kg		0.00113 U	0.00122 U	0.00105 U	0.00122 U	0.00158 U	0.00112 U	0.0013 U	0.035 U	0.11 U	0.00088 U	0.105 U	0.00119 U	0.074 U	0.00161 U	0.058 U	0.0028 U
Dibromochloropropane	--	mg/kg		0.00113 U	0.00122 U	0.00105 U	0.00122 U	0.00158 U	0.00112 U	0.0013 U	0.07 U	0.219 U	0.00088 U	0.211 U	0.00119 U	0.148 U	0.00161 U	0.116 U	0.0028 U
Dibromomethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0028 U
Dichlorodifluoromethane	--	mg/kg		0.00113 U	0.00122 U	0.00105 U	0.00122 U	0.00158 U	0.00112 U	0.0013 U	0.07 U	0.219 U	0.00088 U	0.211 U	0.00119 U	0.148 U	0.00161 U	0.116 U	0.0028 U
Ethylbenzene	390	mg/kg		0.00113 U	0.00122 U	0.00105 U	0.00122 U	0.00158 U	0.00112 U	0.0013 U	0.035 U	0.105 DJ	0.00088 U	0.105 U	0.00119 U	0.074 U	0.00161 U	0.058 U	0.0028 U
Freon 113	--	mg/kg		0.00113 U	0.00122 U	0.00105 U	0.00122 U	0.00158 U	0.00112 U	0.0013 U	0.07 U	0.219 U	0.00088 U	0.211 U	0.00119 U	0.148 U	0.00161 U	0.116 U	0.0028 U
Hexachlorobutadiene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0028 U
Isopropylbenzene	--	mg/kg		0.00113 U	0.00122 U	0.00105 U	0.00122 U	0.00158 U	0.00112 U	0.0013 U	0.035 U	0.081 DJ	0.00088 U	0.105 U	0.00119 U	0.074 U	0.00161 U	0.058 U	0.0028 U
m+p-Xylene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0057 U
Methyl acetate	--	mg/kg		0.00113 U	0.00122 U	0.00189	0.00122 U	0.00158 U	0.00112 U	0.0013 U	0.035 U	0.11 U	0.00161	0.478	0.00119 U	0.074 U	0.00161 U	0.058 U	0.0028 U
Methylcyclohexane	--	mg/kg		0.00113 U	0.00122 U	0.00105 U	0.00122 U	0.00158 U	0.00112 U	0.0013 U	0.071	0.573 D	0.00088 U	0.105 U	0.00119 U	0.074 U	0.00161 U	0.058 U	0.0028 U
Methylene chloride	500	mg/kg		0.00226 U	0.00368 C	0.00529 C	0.00382 C	0.00316 U	0.00224 U	0.00671 C	0.07 U	0.219 U	0.00471 C	0.211 U	0.00238 U	0.148 U	0.00878 C	0.116 U	0.0057 U
MTBE	500	mg/kg		0.00113 U	0.00122 U	0.00105 U	0.00122 U	0.00158 U	0.00112 U	0.0013 U	0.035 U	0.11 U	0.00088 U	0.105 U	0.00119 U	0.074 U	0.00161 U	0.058 U	0.0028 U

Table 1. Summary of Volatile Organic Compounds in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	SB-34D	SB-34S	SB-35A	SB-35D	SB-35S	SB-36D	SB-36S	SB-37D	SB-37S	SB-38(D)	SB-38(S)	SB-39(D)	SB-39(S)	SB-40(D)	SB-40(S)	SB42-A
			Sample Date:	12/18/2017	12/18/2017	12/13/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017	12/20/2017	12/20/2017	12/20/2017	12/20/2017	12/20/2017	12/20/2017	5/15/2018
			Sample Depth (ft bls):	8 - 8.5	2 - 2.5	-	8 - 8.5	2 - 2.5	8 - 8.5	2 - 2.5	8 - 8.5	2 - 2.5	-	-	-	-	-	-	-
Naphthalene	500	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	500	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0028 U
n-Propylbenzene	500	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0028 U
o-Xylene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0028 U
P-CYMENE (P-ISOPROPYLTOLUENE)	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0028 U
sec-Butylbenzene	500	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0028 U
Styrene	--	mg/kg		0.00113 U	0.00122 U	0.00105 U	0.00122 U	0.00158 U	0.00112 U	0.0013 U	0.035 U	0.11 U	0.00088 U	0.105 U	0.00119 U	0.074 U	0.00161 U	0.058 U	0.0028 U
t-Butyl Alcohol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0028 U
tert-Butylbenzene	500	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0028 U
Tetrachloroethene	150	mg/kg		0.022	0.019	0.019	0.023	0.026	0.017	0.012	0.429	2.41 D	0.00088 U	1.82	0.00337	2.95	0.011	1.55	0.087
Toluene	500	mg/kg		0.00113 U	0.00122 U	0.00105 U	0.00122 U	0.00158 U	0.00112 U	0.0013 U	0.035 U	0.105 DJ	0.00088 U	0.105 U	0.00119 U	0.074 U	0.000794 J	0.058 U	0.0028 U
trans-1,2-Dichloroethene	500	mg/kg		0.00113 U	0.00122 U	0.00105 U	0.00122 U	0.00158 U	0.00112 U	0.0013 U	0.035 U	0.11 U	0.00088 U	0.105 U	0.00119 U	0.074 U	0.00161 U	0.058 U	0.0028 U
trans-1,3-Dichloropropene	--	mg/kg		0.00113 U	0.00122 U	0.00105 U	0.00122 U	0.00158 U	0.00112 U	0.0013 U	0.035 U	0.11 U	0.00088 U	0.105 U	0.00119 U	0.074 U	0.00161 U	0.058 U	0.0028 U
trans-1,4-Dichloro-2-butene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0028 U
Trichloroethene	200	mg/kg		0.00234	0.00269	0.000447 J	0.00055 J	0.000803 J	0.00109 J	0.000415 J	0.035 U	0.11 U	0.00088 U	0.105 U	0.00272	0.216	0.000586 J	0.058 U	0.0076
Trichlorofluoromethane	--	mg/kg		0.00113 U	0.00122 U	0.00105 U	0.00122 U	0.00158 U	0.00112 U	0.0013 U	0.035 U	0.11 U	0.00088 U	0.105 U	0.00119 U	0.074 U	0.00161 U	0.058 U	0.0028 U
Vinyl chloride	13	mg/kg		0.00113 U	0.00122 U	0.00105 U	0.00122 U	0.00158 U	0.00112 U	0.0013 U	0.07 U	0.219 U	0.00088 U	0.211 U	0.00119 U	0.148 U	0.00161 U	0.116 U	0.0028 U
Xylenes (total)	500	mg/kg		0.00226 U	0.00244 U	0.0021 U	0.00244 U	0.00316 U	0.00224 U	0.0026 U	0.072	0.767 D	0.00176 U	0.211 U	0.00238 U	0.148 U	0.00322 U	0.116 U	0.0085 U

Table 1. Summary of Volatile Organic Compounds in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	SB42-B	SB43-A	SB43-B	SB-44a	SB-44b	SB-45a	SB-45b	SB-46a	SB-46b	SB-47a	SB-47b	SB-48a	SB-48b	SB-49a	SB-49b	SB-49c	SB-50a	SB-50b
			Sample Date:	5/15/2018	5/15/2018	5/15/2018	5/24/2018	5/24/2018	5/24/2018	5/24/2018	5/24/2018	5/24/2018	5/24/2018	5/24/2018	5/24/2018	5/24/2018	5/24/2018	5/24/2018	5/24/2018	5/24/2018	5/24/2018	5/24/2018
			Sample Depth (ft bls):	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1,2-Tetrachloroethane	--	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
1,1,1-Trichloroethane	500	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
1,1,2,2-Tetrachloroethane	--	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
1,1,2-Trichloroethane	--	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
1,1-Dichloroethane	240	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
1,1-Dichloroethene	500	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
1,2,3-Trichlorobenzene	--	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
1,2,3-Trichloropropane	--	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
1,2,4-Trichlorobenzene	--	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
1,2,4-Trimethylbenzene	190	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
1,2-Dibromoethane	--	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
1,2-Dichlorobenzene	500	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
1,2-Dichloroethane	30	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
1,2-Dichloropropane	--	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
1,3,5-Trimethylbenzene	190	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
1,3-Dichlorobenzene	280	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
1,3-Dichloropropene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	130	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
1,4-Dioxane	130	mg/kg		0.052 U	0.053 U	0.045 U	0.051 U	0.047 U	0.068 U	0.056 U	0.043 U	0.047 U	0.043 U	0.058 U	0.064 U	0.042 U	0.065 U	0.048 U	0.056 U	0.1 U	0.05 U
2-Butanone (MEK)	500	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
2-Hexanone	--	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
4-Methyl-2-pentanone (MIBK)	--	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
Acetone	500	mg/kg		0.0052 U	0.0053 U	0.0087	0.0076	0.0047 U	0.0068 U	0.0056 U	0.0043	0.0088	0.0071	0.0082	0.014	0.0092	0.0065 U	0.0056	0.014	0.028	0.006
Acrolein	--	mg/kg		0.0052 U	0.0053 U	0.0045 U	0.0051 U	0.0047 U	0.0068 U	0.0056 U	0.0043 U	0.0047 U	0.0043 U	0.0058 U	0.0064 U	0.0042 U	0.0065 U	0.0048 U	0.0056 U	0.01 U	0.005 U
Acrylonitrile	--	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
Benzene	44	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
Bromochloromethane	--	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
Bromodichloromethane	--	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
Bromoform	--	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
Bromomethane	--	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
Carbon disulfide	--	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
Carbon tetrachloride	22	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
Chlorobenzene	500	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
Chloroethane	--	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
Chloroform	350	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
Chloromethane	--	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
cis-1,2-Dichloroethene	500	mg/kg		0.0026 U	0.0029	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
cis-1,3-Dichloropropene	--	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
Cyclohexane	--	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
Dibromochloromethane	--	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
Dibromochloropropane	--	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
Dibromomethane	--	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
Dichlorodifluoromethane	--	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
Ethylbenzene	390	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
Freon 113	--	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
Hexachlorobutadiene	--	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
Isopropylbenzene	--	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
m+p-Xylene	--	mg/kg		0.0052 U	0.0053 U	0.0045 U	0.0051 U	0.0047 U	0.0068 U	0.0056 U	0.0043 U	0.0047 U	0.0043 U	0.0058 U	0.0064 U	0.0042 U	0.0065 U	0.0048 U	0.0056 U	0.01 U	0.005 U
Methyl acetate	--	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
Methylcyclohexane	--	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0067	0.0025 U
Methylene chloride	500	mg/kg		0.0052 U	0.0053 U	0.0045 U	0.006	0.0077	0.014	0.014	0.01	0.012	0.0048	0.011	0.0095	0.011	0.0099	0.012	0.008	0.013	0.013
MTBE	500	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U

Table 1. Summary of Volatile Organic Compounds in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	SB42-B	SB43-A	SB43-B	SB-44a	SB-44b	SB-45a	SB-45b	SB-46a	SB-46b	SB-47a	SB-47b	SB-48a	SB-48b	SB-49a	SB-49b	SB-49c	SB-50a	SB-50b
			Sample Date:	5/15/2018	5/15/2018	5/15/2018	5/24/2018	5/24/2018	5/24/2018	5/24/2018	5/24/2018	5/24/2018	5/24/2018	5/24/2018	5/24/2018	5/24/2018	5/24/2018	5/24/2018	5/24/2018	5/24/2018	5/24/2018	5/24/2018
			Sample Depth (ft bls):	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	500	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	500	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
n-Propylbenzene	500	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
o-Xylene	--	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
P-CYMENE (P-ISOPROPYLTOLUENE)	--	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
sec-Butylbenzene	500	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
Styrene	--	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
t-Butyl Alcohol	--	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0056	0.0051 U	0.0025 U
tert-Butylbenzene	500	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
Tetrachloroethene	150	mg/kg		0.004	0.22	0.0072	0.07	0.0026	0.019	0.0066	0.021	0.0024 U	0.039	0.017	39	0.0021 U	0.016	0.0026	0.046	21	0.007
Toluene	500	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
trans-1,2-Dichloroethene	500	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
trans-1,3-Dichloropropene	--	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
trans-1,4-Dichloro-2-butene	--	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
Trichloroethene	200	mg/kg		0.0026 U	0.0054	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.021	0.0021 U	0.0033 U	0.0024 U	0.0028 U	NA	0.0025 U
Trichlorofluoromethane	--	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
Vinyl chloride	13	mg/kg		0.0026 U	0.0026 U	0.0022 U	0.0026 U	0.0024 U	0.0034 U	0.0028 U	0.0021 U	0.0024 U	0.0021 U	0.0029 U	0.0032 U	0.0021 U	0.0033 U	0.0024 U	0.0028 U	0.0051 U	0.0025 U
Xylenes (total)	500	mg/kg		0.0078 U	0.0079 U	0.0067 U	0.0077 U	0.0071 U	0.01 U	0.0084 U	0.0064 U	0.0071 U	0.0064 U	0.0087 U	0.0096 U	0.0064 U	0.0098 U	0.0072 U	0.0084 U	0.015 U	0.0074 U

Table 1. Summary of Volatile Organic Compounds in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	SB-50c	SB-51a	SB-51b	SB-51c	SB-52	SB-53	SB-54	SB-55	SB-56A	SB-56B	SB-56C	SB-57A	SB-57B	SB-57C	SB-58A	SB-58B	SB-58C
			Sample Date:	5/24/2018	5/24/2018	5/24/2018	5/24/2018	5/24/2018	5/24/2018	5/24/2018	5/24/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018
			Sample Depth (ft bls):	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1,2-Tetrachloroethane	--	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	500	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	0.0028 U	0.0028 U	0.0029 U	0.0028 U	0.0029 U	0.0029 U	0.0026 U	0.0032 U	0.003 U
1,1,2,2-Tetrachloroethane	--	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	--	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	240	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	0.0028 U	0.0028 U	0.0029 U	0.0028 U	0.0029 U	0.0029 U	0.0026 U	0.0032 U	0.003 U
1,1-Dichloroethene	500	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	0.0028 U	0.0028 U	0.0029 U	0.0028 U	0.0029 U	0.0029 U	0.0026 U	0.0032 U	0.003 U
1,2,3-Trichlorobenzene	--	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichloropropane	--	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	--	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	190	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	0.0028 U	0.0028 U	0.0029 U	0.0028 U	0.0029 U	0.0029 U	0.0026 U	0.0032 U	0.003 U
1,2-Dibromoethane	--	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	500	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	0.0028 U	0.0028 U	0.0029 U	0.0028 U	0.0029 U	0.0029 U	0.0026 U	0.0032 U	0.003 U
1,2-Dichloroethane	30	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	0.0028 U	0.0028 U	0.0029 U	0.0028 U	0.0029 U	0.0029 U	0.0026 U	0.0032 U	0.003 U
1,2-Dichloropropane	--	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	190	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	0.0028 U	0.0028 U	0.0029 U	0.0028 U	0.0029 U	0.0029 U	0.0026 U	0.0032 U	0.003 U
1,3-Dichlorobenzene	280	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	0.0028 U	0.0028 U	0.0029 U	0.0028 U	0.0029 U	0.0029 U	0.0026 U	0.0032 U	0.003 U
1,3-Dichloropropene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	130	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	0.0028 U	0.0028 U	0.0029 U	0.0028 U	0.0029 U	0.0029 U	0.0026 U	0.0032 U	0.003 U
1,4-Dioxane	130	mg/kg		0.11 U	0.05 U	0.053 U	0.06 U	0.066 U	0.056 U	0.056 U	0.065 U	0.057 U	0.057 U	0.057 U	0.056 U	0.059 U	0.058 U	0.051 U	0.064 U	0.059 U
2-Butanone (MEK)	500	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	0.0028 U	0.0028 U	0.0029 U	0.0028 U	0.0029 U	0.0029 U	0.0026 U	0.0032 U	0.003 U
2-Hexanone	--	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone (MIBK)	--	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	500	mg/kg		0.064	0.0068	0.015	0.006 U	0.024	0.011	0.011	0.022	0.011	0.027	0.0082 J	0.01 J	0.0074 J	0.012	0.12	0.011 J	0.012
Acrolein	--	mg/kg		0.011 U	0.005 U	0.0053 U	0.006 U	0.0066 U	0.0056 U	0.0056 U	0.0065 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acrylonitrile	--	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	44	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	0.0028 U	0.0028 U	0.0029 U	0.0028 U	0.0029 U	0.0029 U	0.0026 U	0.0032 U	0.003 U
Bromochloromethane	--	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	--	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	--	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	--	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	--	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	22	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	0.0028 U	0.0028 U	0.0029 U	0.0028 U	0.0029 U	0.0029 U	0.0026 U	0.0032 U	0.003 U
Chlorobenzene	500	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	0.0028 U	0.0028 U	0.0029 U	0.0028 U	0.0029 U	0.0029 U	0.0026 U	0.0032 U	0.003 U
Chloroethane	--	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	350	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	0.0028 U	0.0028 U	0.0029 U	0.0028 U	0.0029 U	0.0029 U	0.0026 U	0.0032 U	0.003 U
Chloromethane	--	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	500	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	0.0028 U	0.0028 U	0.0029 U	0.0028 U	0.0029 U	0.0029 U	0.0026 U	0.0032 U	0.003 U
cis-1,3-Dichloropropene	--	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	--	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	--	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloropropane	--	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromomethane	--	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	--	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	390	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	0.0028 U	0.0028 U	0.0029 U	0.0028 U	0.0029 U	0.0029 U	0.0026 U	0.0032 U	0.003 U
Freon 113	--	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	--	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	--	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
m+p-Xylene	--	mg/kg		0.011 U	0.005 U	0.0053 U	0.006 U	0.0066 U	0.0056 U	0.0056 U	0.0065 U	0.0057 U	0.0057 U	0.0057 U	0.0056 U	0.0059 U	0.0058 U	0.0051 U	0.0064 U	0.0059 U
Methyl acetate	--	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	--	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	500	mg/kg		0.022	0.0096	0.012	0.0065	0.015	0.011	0.0068	0.0081	0.02	0.015	0.0057 U	0.016	0.013	0.0093 J	0.014	0.013	0.018
MTBE	500	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	0.0028 U	0.0028 U	0.0029 U	0.0028 U	0.0029 U	0.0029 U	0.0026 U	0.0032 U	0.003 U

Table 1. Summary of Volatile Organic Compounds in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	SB-50c	SB-51a	SB-51b	SB-51c	SB-52	SB-53	SB-54	SB-55	SB-56A	SB-56B	SB-56C	SB-57A	SB-57B	SB-57C	SB-58A	SB-58B	SB-58C
			Sample Date:	5/24/2018	5/24/2018	5/24/2018	5/24/2018	5/24/2018	5/24/2018	5/24/2018	5/24/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018
			Sample Depth (ft bls):	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	500	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	0.0028 U	0.016 B	0.0059 JB	0.0028 U	0.0038 JB	0.0073 JB	0.0026 U	0.0076 JB	0.0031 JB
n-Butylbenzene	500	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	0.0028 U	0.0028 U	0.0029 U	0.0028 U	0.0029 U	0.0029 U	0.0026 U	0.0032 U	0.003 U
n-Propylbenzene	500	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	0.0028 U	0.0028 U	0.0029 U	0.0028 U	0.0029 U	0.0029 U	0.0026 U	0.0032 U	0.003 U
o-Xylene	--	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	0.0028 U	0.0028 U	0.0029 U	0.0028 U	0.0029 U	0.0029 U	0.0026 U	0.0032 U	0.003 U
P-CYMENE (P-ISOPROPYLTOLUENE)	--	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	500	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	0.0028 U	0.0028 U	0.0029 U	0.0028 U	0.0029 U	0.0029 U	0.0026 U	0.0032 U	0.003 U
Styrene	--	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
t-Butyl Alcohol	--	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0082	0.0028 U	0.0028 U	0.014	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	500	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	0.0028 U	0.0028 U	0.0029 U	0.0028 U	0.0029 U	0.0029 U	0.0026 U	0.0032 U	0.003 U
Tetrachloroethene	150	mg/kg		0.029	0.056	0.013	0.084	0.011	0.13	0.063	0.057	0.017	14 D	0.095	0.013	0.1	12 D	0.0029 J	9.6 D	0.0058 J
Toluene	500	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	0.0028 U	0.0028 U	0.0029 U	0.0028 U	0.0029 U	0.0029 U	0.0026 U	0.0032 U	0.003 U
trans-1,2-Dichloroethene	500	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	0.0028 U	0.0028 U	0.0029 U	0.0028 U	0.0029 U	0.0029 U	0.0026 U	0.0032 U	0.003 U
trans-1,3-Dichloropropene	--	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,4-Dichloro-2-butene	--	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	200	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.006	0.0047	0.0047	0.0028 U	0.032	0.0029 U	0.0028 U	0.003 J	0.011	0.0026 U	0.0074	0.003 U
Trichlorofluoromethane	--	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	13	mg/kg		0.0053 U	0.0025 U	0.0027 U	0.003 U	0.0033 U	0.0028 U	0.0028 U	0.0033 U	0.0028 U	0.0028 U	0.0029 U	0.0028 U	0.0029 U	0.0029 U	0.0026 U	0.0032 U	0.003 U
Xylenes (total)	500	mg/kg		0.016 U	0.0075 U	0.008 U	0.009 U	0.0099 U	0.0084 U	0.0083 U	0.0098 U	0.0085 U	0.0085 U	0.0086 U	0.0084 U	0.0088 U	0.0087 U	0.0077 U	0.0096 U	0.0089 U

Table 1. Summary of Volatile Organic Compounds in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	SB-59A	SB-59B	SB-59C	SB-60A	SB-60B	SB-60C	SB-61A	SB-61B	SB-61C	SB-62	SB-63	SB-64A	SB-64B	SB-65A	SB-65B	SB-66A
			Sample Date:	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018
			Sample Depth (ft bls):	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1,2-Tetrachloroethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	500	mg/kg		0.0027 U	0.0027 U	0.0026 U	0.0026 U	0.0028 U	0.0029 U	0.0027 U	0.0029 U	0.0031 U	0.0028 U	0.0028 U	0.0026 U	0.0028 U	0.0028 U	0.0026 U	0.0027 U
1,1,2,2-Tetrachloroethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	240	mg/kg		0.0027 U	0.0027 U	0.0026 U	0.0026 U	0.0028 U	0.0029 U	0.0027 U	0.0029 U	0.0031 U	0.0028 U	0.0028 U	0.0026 U	0.0028 U	0.0028 U	0.0026 U	0.0027 U
1,1-Dichloroethene	500	mg/kg		0.0027 U	0.0027 U	0.0026 U	0.0026 U	0.0028 U	0.0029 U	0.0027 U	0.0029 U	0.0031 U	0.0028 U	0.0028 U	0.0026 U	0.0028 U	0.0028 U	0.0026 U	0.0027 U
1,2,3-Trichlorobenzene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichloropropane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	190	mg/kg		0.0027 U	0.0027 U	0.0026 U	0.0026 U	0.0028 U	0.0029 U	0.0027 U	0.0029 U	0.0031 U	0.0028 U	1.1 D	0.0026 U	0.0028 U	0.0028 U	0.0026 U	0.0027 U
1,2-Dibromoethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	500	mg/kg		0.0027 U	0.0027 U	0.0026 U	0.0026 U	0.0028 U	0.0029 U	0.0027 U	0.0029 U	0.0031 U	0.0028 U	0.0028 U	0.0026 U	0.0028 U	0.0028 U	0.0026 U	0.0027 U
1,2-Dichloroethane	30	mg/kg		0.0027 U	0.0027 U	0.0026 U	0.0026 U	0.0028 U	0.0029 U	0.0027 U	0.0029 U	0.0031 U	0.0028 U	0.0028 U	0.0026 U	0.0028 U	0.0028 U	0.0026 U	0.0027 U
1,2-Dichloropropane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	190	mg/kg		0.0027 U	0.0027 U	0.0026 U	0.0026 U	0.0028 U	0.0029 U	0.0027 U	0.0029 U	0.0031 U	0.0028 U	0.37 JD	0.0026 U	0.0028 U	0.0028 U	0.0026 U	0.0027 U
1,3-Dichlorobenzene	280	mg/kg		0.0027 U	0.0027 U	0.0026 U	0.0026 U	0.0028 U	0.0029 U	0.0027 U	0.0029 U	0.0031 U	0.0028 U	0.0028 U	0.0026 U	0.0028 U	0.0028 U	0.0026 U	0.0027 U
1,3-Dichloropropene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	130	mg/kg		0.0027 U	0.0027 U	0.0026 U	0.0026 U	0.0028 U	0.0029 U	0.0027 U	0.0029 U	0.0031 U	0.0028 U	0.0028 U	0.0026 U	0.0028 U	0.0028 U	0.0026 U	0.0027 U
1,4-Dioxane	130	mg/kg		0.054 U	0.055 U	0.052 U	0.053 U	0.056 U	0.058 U	0.054 U	0.059 U	0.061 U	0.055 U	0.055 U	0.052 U	0.056 U	0.055 U	0.052 U	0.054 U
2-Butanone (MEK)	500	mg/kg		0.0027 U	0.0027 U	0.0026 U	0.0026 U	0.0028 U	0.0029 U	0.0027 U	0.0029 U	0.0031 U	0.0028 U	0.0028 U	0.0026 U	0.0028 U	0.0028 U	0.0026 U	0.0027 U
2-Hexanone	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone (MIBK)	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	500	mg/kg		0.023	0.01 J	0.0064 J	0.029	0.0056 U	0.0084 J	0.0054 U	0.0059 U	0.0061 U	0.0055 U	0.051	0.007 J	0.0092 J	0.0055 U	0.0052 U	0.0054 U
Acrolein	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acrylonitrile	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	44	mg/kg		0.0027 U	0.0027 U	0.0026 U	0.0026 U	0.0028 U	0.0029 U	0.0027 U	0.0029 U	0.0031 U	0.0028 U	0.0028 U	0.0026 U	0.0028 U	0.0063	0.0026 U	0.0027 U
Bromochloromethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	22	mg/kg		0.0027 U	0.0027 U	0.0026 U	0.0026 U	0.0028 U	0.0029 U	0.0027 U	0.0029 U	0.0031 U	0.0028 U	0.0028 U	0.0026 U	0.0028 U	0.0028 U	0.0026 U	0.0027 U
Chlorobenzene	500	mg/kg		0.0027 U	0.0027 U	0.0026 U	0.0026 U	0.0028 U	0.0029 U	0.0027 U	0.0029 U	0.0031 U	0.0028 U	0.0028 U	0.0026 U	0.0028 U	0.0028 U	0.0026 U	0.0027 U
Chloroethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	350	mg/kg		0.0027 U	0.0027 U	0.0026 U	0.0026 U	0.0028 U	0.0029 U	0.0027 U	0.0029 U	0.0031 U	0.0029 J	0.0028 U	0.0026 U	0.0028 U	0.0028 U	0.0026 U	0.0027 U
Chloromethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	500	mg/kg		0.0027 U	0.0027 U	0.0026 U	0.0026 U	0.0028 U	0.0029 U	0.0027 U	0.0029 U	0.0031 U	0.0028 U	0.0028 U	0.0026 U	0.0028 U	0.0028 U	0.0026 U	0.0027 U
cis-1,3-Dichloropropene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloropropane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromomethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	390	mg/kg		0.0027 U	0.0027 U	0.0026 U	0.0026 U	0.0028 U	0.0029 U	0.0027 U	0.0029 U	0.0031 U	0.0028 U	0.61 D	0.0026 U	0.0028 U	0.0028 U	0.0026 U	0.0027 U
Freon 113	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m+p-Xylene	--	mg/kg		0.0054 U	0.0055 U	0.0052 U	0.0053 U	0.0056 U	0.0058 U	0.0054 U	0.0059 U	0.0061 U	0.0055 U	0.043	0.0052 U	0.0056 U	0.0055 U	0.0052 U	0.0054 U
Methyl acetate	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	500	mg/kg		0.018	0.019	0.021	0.015	0.013	0.013	0.0054 U	0.0072 J	0.014	0.0073 J	0.0055 U	0.011	0.01 J	0.0092 J	0.0052 J	0.0054 U
MTBE	500	mg/kg		0.0027 U	0.0027 U	0.0026 U	0.0026 U	0.0028 U	0.0029 U	0.0027 U	0.0029 U	0.0031 U	0.0028 U	0.0028 U	0.0026 U	0.0028 U	0.0028 U	0.0026 U	0.0027 U

Table 1. Summary of Volatile Organic Compounds in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	SB-59A	SB-59B	SB-59C	SB-60A	SB-60B	SB-60C	SB-61A	SB-61B	SB-61C	SB-62	SB-63	SB-64A	SB-64B	SB-65A	SB-65B	SB-66A
			Sample Date:	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018
			Sample Depth (ft bls):	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	500	mg/kg		0.0027 U	0.004 JB	0.0026 U	0.0027 JB	0.0041 JB	0.0029 U	0.0027 U	0.0073 JB	0.0065 JB	0.0031 JB	0.03 B	0.0026 U	0.0028 U	0.18 B	0.0026 JB	0.0027 U
n-Butylbenzene	500	mg/kg		0.0027 U	0.0027 U	0.0026 U	0.0026 U	0.0028 U	0.0029 U	0.0027 U	0.0029 U	0.0031 U	0.0028 U	0.0028 U	0.0026 U	0.0028 U	0.0028 U	0.0026 U	0.0027 U
n-Propylbenzene	500	mg/kg		0.0027 U	0.0027 U	0.0026 U	0.0026 U	0.0028 U	0.0029 U	0.0027 U	0.0029 U	0.0031 U	0.0028 U	1.1 D	0.0026 U	0.0028 U	0.0028 U	0.0026 U	0.0027 U
o-Xylene	--	mg/kg		0.0027 U	0.0027 U	0.0026 U	0.0026 U	0.0028 U	0.0029 U	0.0027 U	0.0029 U	0.0031 U	0.0028 U	0.037	0.0026 U	0.0028 U	0.0028 U	0.0026 U	0.0027 U
P-CYMENE (P-ISOPROPYLTOLUENE)	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	500	mg/kg		0.0027 U	0.0027 U	0.0026 U	0.0026 U	0.0028 U	0.0029 U	0.0027 U	0.0029 U	0.0031 U	0.0028 U	0.92 D	0.0026 U	0.0028 U	0.0028 U	0.0026 U	0.0027 U
Styrene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
t-Butyl Alcohol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	500	mg/kg		0.0027 U	0.0027 U	0.0026 U	0.0026 U	0.0028 U	0.0029 U	0.0027 U	0.0029 U	0.0031 U	0.0028 U	0.0028 U	0.0026 U	0.0028 U	0.0028 U	0.0026 U	0.0027 U
Tetrachloroethene	150	mg/kg		0.0039 J	0.088	0.0026 U	0.078	0.12	0.01	0.026	0.21	0.056	0.037	0.0069	0.0035 J	0.009	0.031	0.0076	0.025
Toluene	500	mg/kg		0.0027 U	0.0027 U	0.0026 U	0.0026 U	0.0028 U	0.0029 U	0.0027 U	0.0029 U	0.0031 U	0.0028 U	0.0036 J	0.0027 J	0.0028 U	0.0028 U	0.0026 U	0.0027 U
trans-1,2-Dichloroethene	500	mg/kg		0.0027 U	0.0027 U	0.0026 U	0.0026 U	0.0028 U	0.0029 U	0.0027 U	0.0029 U	0.0031 U	0.0028 U	0.0028 U	0.0026 U	0.0028 U	0.0028 U	0.0026 U	0.0027 U
trans-1,3-Dichloropropene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,4-Dichloro-2-butene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	200	mg/kg		0.0027 U	0.0041 J	0.0026 U	0.0026 U	0.0028 U	0.0029 U	0.0027 U	0.0083	0.0031 U	0.0028 U	0.0028 U	0.0026 U	0.0028 U	0.0028 U	0.0026 U	0.0027 U
Trichlorofluoromethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	13	mg/kg		0.0027 U	0.0027 U	0.0026 U	0.0026 U	0.0028 U	0.0029 U	0.0027 U	0.0029 U	0.0031 U	0.0028 U	0.0028 U	0.0026 U	0.0028 U	0.0028 U	0.0026 U	0.0027 U
Xylenes (total)	500	mg/kg		0.0081 U	0.0082 U	0.0077 U	0.0079 U	0.0085 U	0.0087 U	0.0081 U	0.0088 U	0.0092 U	0.0083 U	0.079	0.0078 U	0.0084 U	0.0083 U	0.0077 U	0.0081 U

Table 1. Summary of Volatile Organic Compounds in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	SB-66B	SB-67A	SB-67B	SB-68A	SB-68B	SB-69A	SB-69B	SB-70A	SB-70B	SB-71A	SB-71B	SB-72A	SB-72B	SB-72C	SB-73A	SB-73B
			Sample Date:	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/14/2018	11/14/2018	11/14/2018	11/14/2018	11/14/2018	11/14/2018	11/14/2018	11/14/2018	11/14/2018
			Sample Depth (ft bls):	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1,2-Tetrachloroethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	500	mg/kg		0.0029 U	0.0026 U	0.0028 U	0.0026 U	0.0028 U	0.0025 U	0.0027 U	0.0027 U	0.0028 U	0.0027 U	0.003 U	0.0027 U	0.003 U	0.0031 U	0.0029 U	0.0051 U
1,1,2,2-Tetrachloroethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	240	mg/kg		0.0029 U	0.0026 U	0.0028 U	0.0026 U	0.0028 U	0.0025 U	0.0027 U	0.0027 U	0.0028 U	0.0027 U	0.003 U	0.0027 U	0.003 U	0.0031 U	0.0029 U	0.0051 U
1,1-Dichloroethene	500	mg/kg		0.0029 U	0.0026 U	0.0028 U	0.0026 U	0.0028 U	0.0025 U	0.0027 U	0.0027 U	0.0028 U	0.0027 U	0.003 U	0.0027 U	0.003 U	0.0031 U	0.0029 U	0.0051 U
1,2,3-Trichlorobenzene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichloropropane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	190	mg/kg		0.0029 U	0.0026 U	0.0028 U	0.0026 U	0.0028 U	0.0025 U	0.0027 U	0.0027 U	0.0028 U	0.0027 U	0.003 U	0.0027 U	0.003 U	0.0031 U	0.0029 U	0.0051 U
1,2-Dibromoethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	500	mg/kg		0.0029 U	0.0026 U	0.0028 U	0.0026 U	0.0028 U	0.0025 U	0.0027 U	0.0027 U	0.0028 U	0.0027 U	0.003 U	0.0027 U	0.003 U	0.0031 U	0.0029 U	0.0051 U
1,2-Dichloroethane	30	mg/kg		0.0029 U	0.0026 U	0.0028 U	0.0026 U	0.0028 U	0.0025 U	0.0027 U	0.0027 U	0.0028 U	0.0027 U	0.003 U	0.0027 U	0.003 U	0.0031 U	0.0029 U	0.0051 U
1,2-Dichloropropane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	190	mg/kg		0.0029 U	0.0026 U	0.0028 U	0.0026 U	0.0028 U	0.0025 U	0.0027 U	0.0027 U	0.0028 U	0.0027 U	0.003 U	0.0027 U	0.003 U	0.0031 U	0.0029 U	0.0051 U
1,3-Dichlorobenzene	280	mg/kg		0.0029 U	0.0026 U	0.0028 U	0.0026 U	0.0028 U	0.0025 U	0.0027 U	0.0027 U	0.0028 U	0.0027 U	0.003 U	0.0027 U	0.003 U	0.0031 U	0.0029 U	0.0051 U
1,3-Dichloropropene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	130	mg/kg		0.0029 U	0.0026 U	0.0028 U	0.0026 U	0.0028 U	0.0025 U	0.0027 U	0.0027 U	0.0028 U	0.0027 U	0.003 U	0.0027 U	0.003 U	0.0031 U	0.0029 U	0.0051 U
1,4-Dioxane	130	mg/kg		0.058 U	0.052 U	0.056 U	0.051 U	0.055 U	0.05 U	0.054 U	0.054 U	0.055 U	0.054 U	0.06 U	0.055 U	0.06 U	0.061 U	0.058 U	0.1 U
2-Butanone (MEK)	500	mg/kg		0.0029 U	0.0026 U	0.0028 U	0.0026 U	0.0028 U	0.0025 U	0.0027 U	0.0027 U	0.0028 U	0.0027 U	0.003 U	0.0027 U	0.003 U	0.0031 U	0.0072	0.0051 U
2-Hexanone	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone (MIBK)	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	500	mg/kg		0.0058 U	0.0052 U	0.0056 U	0.0051 U	0.0055 U	0.005 U	0.0054 U	0.0054 U	0.0055 U	0.0054 U	0.006 U	0.0055 U	0.006 U	0.0061 U	0.021	0.014 J
Acrolein	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acrylonitrile	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	44	mg/kg		0.0029 U	0.0026 U	0.0055 J	0.0026 U	0.0028 U	0.0025 U	0.0027 U	0.0027 U	0.0028 U	0.0027 U	0.003 U	0.0027 U	0.003 U	0.0031 U	0.0029 U	0.0051 U
Bromochloromethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	22	mg/kg		0.0029 U	0.0026 U	0.0028 U	0.0026 U	0.0028 U	0.0025 U	0.0027 U	0.0027 U	0.0028 U	0.0027 U	0.003 U	0.0027 U	0.003 U	0.0031 U	0.0029 U	0.0051 U
Chlorobenzene	500	mg/kg		0.0029 U	0.0026 U	0.0028 U	0.0026 U	0.0028 U	0.0025 U	0.0027 U	0.0027 U	0.0028 U	0.0027 U	0.003 U	0.0027 U	0.003 U	0.0031 U	0.0029 U	0.0051 U
Chloroethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	350	mg/kg		0.0029 U	0.0026 U	0.0028 U	0.0026 U	0.0028 U	0.0025 U	0.0027 U	0.0027 U	0.0028 U	0.0027 U	0.003 U	0.0027 U	0.003 U	0.0031 U	0.0029 U	0.0061 J
Chloromethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	500	mg/kg		0.0029 U	0.0026 U	0.0028 U	0.093	0.0028 U	0.0025 U	0.0027 U	0.0027 U	0.0028 U	0.0027 U	0.003 U	0.0027 U	0.003 U	0.0031 U	0.0029 U	0.0051 U
cis-1,3-Dichloropropene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloropropane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromomethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	390	mg/kg		0.0029 U	0.0026 U	0.0028 U	0.0026 U	0.0028 U	0.0025 U	0.0027 U	0.0027 U	0.0028 U	0.0027 U	0.003 U	0.0027 U	0.003 U	0.0031 U	0.0029 U	0.0051 U
Freon 113	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m+p-Xylene	--	mg/kg		0.0058 U	0.0052 U	0.0056 U	0.0051 U	0.0055 U	0.005 U	0.0054 U	0.0054 U	0.0055 U	0.0054 U	0.006 U	0.0055 U	0.006 U	0.0061 U	0.0058 U	0.01 U
Methyl acetate	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	500	mg/kg		0.0098 J	0.0053 J	0.0056 U	0.0071 J	0.0055 U	0.0069 J	0.0096 J	0.0054 U	0.0055 U	0.0056 J	0.006 U	0.0055 U	0.0079 J	0.0061 U	0.0072 J	0.013 J
MTBE	500	mg/kg		0.0029 U	0.0026 U	0.0028 U	0.0026 U	0.0028 U	0.0025 U	0.0027 U	0.0027 U	0.0028 U	0.0027 U	0.003 U	0.0027 U	0.003 U	0.0031 U	0.0029 U	0.0051 U

Table 1. Summary of Volatile Organic Compounds in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	SB-66B	SB-67A	SB-67B	SB-68A	SB-68B	SB-69A	SB-69B	SB-70A	SB-70B	SB-71A	SB-71B	SB-72A	SB-72B	SB-72C	SB-73A	SB-73B
			Sample Date:	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/14/2018	11/14/2018	11/14/2018	11/14/2018	11/14/2018	11/14/2018	11/14/2018	11/14/2018	11/14/2018
			Sample Depth (ft bls):	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	500	mg/kg		0.0029 U	0.0026 U	0.0028 U	0.0026 U	0.0028 U	0.0025 U	0.0027 U	0.0027 U	0.0028 U	0.0027 U	0.003 U	0.0027 U	0.003 U	0.0038 JB	0.0029 U	0.03 B
n-Butylbenzene	500	mg/kg		0.0029 U	0.0026 U	0.0028 U	0.0026 U	0.0028 U	0.0025 U	0.0027 U	0.0027 U	0.0028 U	0.0027 U	0.003 U	0.0027 U	0.003 U	0.0031 U	0.0029 U	0.0051 U
n-Propylbenzene	500	mg/kg		0.0029 U	0.0026 U	0.0028 U	0.0026 U	0.0028 U	0.0025 U	0.0027 U	0.0027 U	0.0028 U	0.0027 U	0.003 U	0.0027 U	0.003 U	0.0031 U	0.0029 U	0.0051 U
o-Xylene	--	mg/kg		0.0029 U	0.0026 U	0.0028 U	0.0026 U	0.0028 U	0.0025 U	0.0027 U	0.0027 U	0.0028 U	0.0027 U	0.003 U	0.0027 U	0.003 U	0.0031 U	0.0029 U	0.0051 U
P-CYMENE (P-ISOPROPYLTOLUENE)	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	500	mg/kg		0.0029 U	0.0026 U	0.0028 U	0.0026 U	0.0028 U	0.0025 U	0.0027 U	0.0027 U	0.0028 U	0.0027 U	0.003 U	0.0027 U	0.003 U	0.0031 U	0.0029 U	0.0051 U
Styrene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
t-Butyl Alcohol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	500	mg/kg		0.0029 U	0.0026 U	0.0028 U	0.0026 U	0.0028 U	0.0025 U	0.0027 U	0.0027 U	0.0028 U	0.0027 U	0.003 U	0.0027 U	0.003 U	0.0031 U	0.0029 U	0.0051 U
Tetrachloroethene	150	mg/kg		0.068	0.1	0.0028 U	1.2 D	0.16	0.0081	0.011	0.0027 U	0.0028 U	0.0027 U	0.003 U	0.0027 U	0.003 U	0.0031 U	0.0029 U	0.02
Toluene	500	mg/kg		0.0029 U	0.0026 U	0.0028 U	0.0026 U	0.0028 U	0.0025 U	0.0027 U	0.0027 U	0.0028 U	0.0027 U	0.003 U	0.0027 U	0.003 U	0.0031 U	0.0029 U	0.0051 U
trans-1,2-Dichloroethene	500	mg/kg		0.0029 U	0.0026 U	0.0028 U	0.0026 U	0.0028 U	0.0025 U	0.0027 U	0.0027 U	0.0028 U	0.0027 U	0.003 U	0.0027 U	0.003 U	0.0031 U	0.0029 U	0.0051 U
trans-1,3-Dichloropropene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,4-Dichloro-2-butene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	200	mg/kg		0.0029 U	0.0026 U	0.0028 U	0.023	0.0041 J	0.0025 U	0.0027 U	0.0027 U	0.0028 U	0.0027 J	0.003 U	0.0027 U	0.003 U	0.0031 U	0.0029 U	0.0051 U
Trichlorofluoromethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	13	mg/kg		0.0029 U	0.0026 U	0.0028 U	0.0026 U	0.0028 U	0.0025 U	0.0027 U	0.0027 U	0.0028 U	0.0027 U	0.003 U	0.0027 U	0.003 U	0.0031 U	0.0029 U	0.0051 U
Xylenes (total)	500	mg/kg		0.0086 U	0.0078 U	0.0084 U	0.0077 U	0.0083 U	0.0075 U	0.0081 U	0.0081 U	0.0083 U	0.0081 U	0.0091 U	0.0082 U	0.0089 U	0.0092 U	0.0087 U	0.015 U

Table 1. Summary of Volatile Organic Compounds in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	SB-73C	SB-74A	SB-74B	SB-75A	SB-75B	SB-76A	SB-76B	SB-77A	SB-77B	SB-77C
			Sample Date:	11/14/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018
			Sample Depth (ft bls):	-	-	-	-	-	-	-	-	-	-
1,1,1,2-Tetrachloroethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	500	mg/kg		0.0021 U	0.0041 U	0.0032 U	0.0026 U	0.0027 U	0.003 U	0.0028 U	0.0027 U	0.003 U	0.0024 U
1,1,2,2-Tetrachloroethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	240	mg/kg		0.0021 U	0.0041 U	0.0032 U	0.0026 U	0.0027 U	0.003 U	0.0028 U	0.0027 U	0.003 U	0.0024 U
1,1-Dichloroethene	500	mg/kg		0.0021 U	0.0041 U	0.0032 U	0.0026 U	0.0027 U	0.003 U	0.0028 U	0.0027 U	0.003 U	0.0024 U
1,2,3-Trichlorobenzene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichloropropane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	190	mg/kg		0.0021 U	0.0041 U	0.0032 U	0.0026 U	0.0027 U	0.003 U	0.0028 U	0.0027 U	0.003 U	0.0024 U
1,2-Dibromoethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	500	mg/kg		0.0021 U	0.0041 U	0.0032 U	0.0026 U	0.0027 U	0.003 U	0.0028 U	0.0027 U	0.003 U	0.0024 U
1,2-Dichloroethane	30	mg/kg		0.0021 U	0.0041 U	0.0032 U	0.0026 U	0.0027 U	0.003 U	0.0028 U	0.0027 U	0.003 U	0.0024 U
1,2-Dichloropropane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	190	mg/kg		0.0021 U	0.0041 U	0.0032 U	0.0026 U	0.0027 U	0.003 U	0.0028 U	0.0027 U	0.003 U	0.0024 U
1,3-Dichlorobenzene	280	mg/kg		0.0021 U	0.0041 U	0.0032 U	0.0026 U	0.0027 U	0.003 U	0.0028 U	0.0027 U	0.003 U	0.0024 U
1,3-Dichloropropene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	130	mg/kg		0.0021 U	0.0041 U	0.0032 U	0.0026 U	0.0027 U	0.003 U	0.0028 U	0.0027 U	0.003 U	0.0024 U
1,4-Dioxane	130	mg/kg		0.042 U	0.082 U	0.064 U	0.053 U	0.054 U	0.059 U	0.057 U	0.054 U	0.061 U	0.048 U
2-Butanone (MEK)	500	mg/kg		0.0021 U	0.0041 U	0.0032 U	0.0026 U	0.0027 U	0.008	0.0028 U	0.0027 U	0.003 U	0.0024 U
2-Hexanone	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone (MIBK)	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	500	mg/kg		0.0042 U	0.0082 U	0.038	0.011	0.012	0.023	0.0099 J	0.0079 J	0.0061 U	0.0096
Acrolein	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acrylonitrile	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	44	mg/kg		0.0021 U	0.0041 U	0.0032 U	0.0026 U	0.0027 U	0.003 U	0.0028 U	0.0027 U	0.003 U	0.0024 U
Bromochloromethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	22	mg/kg		0.0021 U	0.0041 U	0.0032 U	0.0026 U	0.0027 U	0.003 U	0.0028 U	0.0027 U	0.003 U	0.0024 U
Chlorobenzene	500	mg/kg		0.0021 U	0.0041 U	0.0032 U	0.0026 U	0.0027 U	0.003 U	0.0028 U	0.0027 U	0.003 U	0.0024 U
Chloroethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	350	mg/kg		0.0021 U	0.0041 U	0.011	0.0026 U	0.0027 U	0.003 U	0.0028 U	0.0027 U	0.003 U	0.0024 U
Chloromethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	500	mg/kg		0.0021 U	0.0041 U	0.0032 U	0.0026 U	0.0027 U	0.003 U	0.0028 U	0.0027 U	0.003 U	0.0024 U
cis-1,3-Dichloropropene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloropropane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromomethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	390	mg/kg		0.0021 U	0.0041 U	0.0032 U	0.0026 U	0.0027 U	0.003 U	0.0028 U	0.0027 U	0.003 U	0.0024 U
Freon 113	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m+p-Xylene	--	mg/kg		0.0042 U	0.0082 U	0.0064 U	0.0053 U	0.0054 U	0.0059 U	0.0057 U	0.0054 U	0.0061 U	0.0048 U
Methyl acetate	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	500	mg/kg		0.0079 J	0.0082 U	0.019	0.0091 J	0.027	0.0059 U	0.019	0.0065 J	0.014	0.026
MTBE	500	mg/kg		0.0021 U	0.0041 U	0.0032 U	0.0026 U	0.0027 U	0.003 U	0.0028 U	0.0027 U	0.003 U	0.0024 U

Table 1. Summary of Volatile Organic Compounds in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	SB-73C	SB-74A	SB-74B	SB-75A	SB-75B	SB-76A	SB-76B	SB-77A	SB-77B	SB-77C
			Sample Date:	11/14/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018
			Sample Depth (ft bls):	-	-	-	-	-	-	-	-	-	-
Naphthalene	500	mg/kg		0.0021 JB	0.0041 U	0.0032 U	0.0026 U	0.003 JB	0.0033 JB	0.0042 JB	0.0049 JB	0.003 U	0.0024 U
n-Butylbenzene	500	mg/kg		0.0021 U	0.0041 U	0.0032 U	0.0026 U	0.0027 U	0.003 U	0.0028 U	0.0027 U	0.003 U	0.0024 U
n-Propylbenzene	500	mg/kg		0.0021 U	0.0041 U	0.0032 U	0.0026 U	0.0027 U	0.003 U	0.0028 U	0.0027 U	0.003 U	0.0024 U
o-Xylene	--	mg/kg		0.0021 U	0.0041 U	0.0032 U	0.0026 U	0.0027 U	0.003 U	0.0028 U	0.0027 U	0.003 U	0.0024 U
P-CYMENE (P-ISOPROPYLTOLUENE)	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	500	mg/kg		0.0021 U	0.0041 U	0.0032 U	0.0026 U	0.0027 U	0.003 U	0.0028 U	0.0027 U	0.003 U	0.0024 U
Styrene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
t-Butyl Alcohol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	500	mg/kg		0.0021 U	0.0041 U	0.0032 U	0.0026 U	0.0027 U	0.003 U	0.0028 U	0.0027 U	0.003 U	0.0024 U
Tetrachloroethene	150	mg/kg		0.0021 U	0.0041 U	0.0032 U	0.0026 U	0.0027 U	0.0051 J	0.022	0.16	0.02	0.0024 U
Toluene	500	mg/kg		0.0021 U	0.0041 U	0.0032 U	0.0026 U	0.0027 U	0.003 U	0.0028 U	0.0027 U	0.003 U	0.0024 U
trans-1,2-Dichloroethene	500	mg/kg		0.0021 U	0.0041 U	0.0032 U	0.0026 U	0.0027 U	0.003 U	0.0028 U	0.0027 U	0.003 U	0.0024 U
trans-1,3-Dichloropropene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,4-Dichloro-2-butene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	200	mg/kg		0.0021 U	0.0041 U	0.0032 U	0.0026 U	0.0027 U	0.003 U	0.0028 U	0.0049 J	0.003 U	0.0024 U
Trichlorofluoromethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	13	mg/kg		0.0021 U	0.0041 U	0.0032 U	0.0026 U	0.0027 U	0.003 U	0.0028 U	0.0027 U	0.003 U	0.0024 U
Xylenes (total)	500	mg/kg		0.0063 U	0.012 U	0.0096 U	0.0079 U	0.0081 U	0.0089 U	0.0085 U	0.0081 U	0.0091 U	0.0072 U

Table 2. Summary of Semivolatile Organic Compounds in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	COMPOSITE	Dup 1114	OWS-PE-1	OWS-PE-2	OWS-PE-3	OWS-PE-4	OWS-PE-5	SB-1	SB-2	SB-3	SB-4	SB-5	SB-6	SB-7	SB-8	SB-9
			Sample Date:	12/20/2017	11/15/2018	6/3/2019	6/3/2019	6/3/2019	6/3/2019	6/3/2019	10/23/2017	10/23/2017	10/23/2017	10/23/2017	10/23/2017	10/23/2017	10/23/2017	10/23/2017	10/23/2017
			Sample Depth (ft bls):	-	-	-	-	-	-	-	7.5 - 8	15.5 - 16	15 - 15.5	15.5 - 16	15 - 15.5	11 - 11.5	-	-	-
1,1'-Biphenyl	--	mg/kg		NA	NA	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	0.037 U	0.048 U	0.049 U	0.053 U	0.039 U	0.038 U	0.076 U	0.038 U	0.078 U
1,2,4,5-Tetrachlorobenzene	--	mg/kg		NA	NA	0.086 U	0.0912 U	0.0934 U	0.0902 U	0.0915 U	0.037 U	0.048 U	0.049 U	0.053 U	0.039 U	0.038 U	0.076 U	0.038 U	0.078 U
1,2,4-Trichlorobenzene	--	mg/kg		NA	NA	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	500	mg/kg		NA	NA	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Diphenylhydrazine	--	mg/kg		NA	NA	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	280	mg/kg		NA	NA	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	130	mg/kg		NA	NA	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	--	mg/kg		NA	NA	0.086 U	0.0912 U	0.0934 U	0.0902 U	0.0915 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	--	mg/kg		NA	NA	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	--	mg/kg		NA	NA	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	--	mg/kg		NA	NA	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	--	mg/kg		NA	NA	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	--	mg/kg		NA	NA	0.086 U	0.0912 U	0.0934 U	0.0902 U	0.0915 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	--	mg/kg		NA	NA	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	0.037 U	0.048 U	0.049 U	0.053 U	0.039 U	0.038 U	0.076 U	0.038 U	0.078 U
2,6-Dinitrotoluene	--	mg/kg		NA	NA	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	0.037 U	0.048 U	0.049 U	0.053 U	0.039 U	0.038 U	0.076 U	0.038 U	0.078 U
2-Chloronaphthalene	--	mg/kg		NA	NA	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	0.037 U	0.048 U	0.049 U	0.053 U	0.039 U	0.038 U	0.076 U	0.038 U	0.078 U
2-Chlorophenol	--	mg/kg		NA	NA	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	--	mg/kg		0.065	NA	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	0.047	0.048 U	0.049 U	0.053 U	0.039 U	0.038 U	0.158 D	0.038 U	0.078 U
2-Methylphenol	500	mg/kg		NA	0.045 U	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	--	mg/kg		NA	NA	0.086 U	0.0912 U	0.0934 U	0.0902 U	0.0915 U	0.037 U	0.048 U	0.049 U	0.053 U	0.039 U	0.038 U	0.076 U	0.038 U	0.078 U
2-Nitrophenol	--	mg/kg		NA	NA	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
3&4-Methylphenol	500	mg/kg		NA	0.045 U	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	--	mg/kg		NA	NA	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	0.037 U	0.048 U	0.049 U	0.053 U	0.039 U	0.038 U	0.076 U	0.038 U	0.078 U
3-Nitroaniline	--	mg/kg		NA	NA	0.086 U	0.0912 U	0.0934 U	0.0902 U	0.0915 U	0.037 U	0.048 U	0.049 U	0.053 U	0.039 U	0.038 U	0.076 U	0.038 U	0.078 U
4,6-Dinitro-2-methylphenol	--	mg/kg		NA	NA	0.086 U	0.0912 U	0.0934 U	0.0902 U	0.0915 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	--	mg/kg		NA	NA	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	0.037 U	0.048 U	0.049 U	0.053 U	0.039 U	0.038 U	0.076 U	0.038 U	0.078 U
4-Chloro-3-methylphenol	--	mg/kg		NA	NA	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	--	mg/kg		NA	NA	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	0.037 U	0.048 U	0.049 U	0.053 U	0.039 U	0.038 U	0.076 U	0.038 U	0.078 U
4-Chlorophenyl phenyl ether	--	mg/kg		NA	NA	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	0.037 U	0.048 U	0.049 U	0.053 U	0.039 U	0.038 U	0.076 U	0.038 U	0.078 U
4-Nitroaniline	--	mg/kg		NA	NA	0.086 U	0.0912 U	0.0934 U	0.0902 U	0.0915 U	0.037 U	0.048 U	0.049 U	0.053 U	0.039 U	0.038 U	0.076 U	0.038 U	0.078 U
4-Nitrophenol	--	mg/kg		NA	NA	0.086 U	0.0912 U	0.0934 U	0.0902 U	0.0915 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	500	mg/kg		0.14	0.113 D	0.0431 U	0.0457 U	0.0468 U	0.0454 JD	0.0458 U	0.219	0.19	0.049 U	0.053 U	0.039 U	0.038 U	0.162 D	0.038 U	0.078 U
Acenaphthylene	500	mg/kg		0.25	0.159 D	0.0431 U	0.0875 JD	0.122 D	0.242 D	0.0458 U	0.233	0.09	0.049 U	0.053 U	0.039 U	0.038 U	1.61 D	0.038 U	0.441 D
Acetophenone	--	mg/kg		NA	NA	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	0.037 U	0.048 U	0.049 U	0.053 U	0.039 U	0.038 U	0.076 U	0.038 U	0.078 U
Aniline	--	mg/kg		NA	NA	0.172 U	0.183 U	0.187 U	0.181 U	0.183 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	500	mg/kg		0.4	0.305 D	0.0431 U	0.0649 JD	0.231 D	0.254 D	0.0458 U	0.818	0.369	0.049 U	0.053 U	0.039 U	0.041	1.16 D	0.038 U	0.485 D
Atrazine	--	mg/kg		NA	NA	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	0.037 U	0.048 U	0.049 U	0.053 U	0.039 U	0.038 U	0.076 U	0.038 U	0.078 U
Benzaldehyde	--	mg/kg		NA	NA	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	0.037 U	0.048 U	0.049 U	0.053 U	0.039 U	0.038 U	0.076 U	0.038 U	0.078 U
Benzidine	--	mg/kg		NA	NA	0.172 U	0.183 U	0.187 U	0.181 U	0.183 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo[a]anthracene	5.6	mg/kg		1.01	1.11 D	0.0431 U	0.222 D	0.502 D	0.764 D	0.123 D	2.29	1.72	0.072	0.053 U	0.039 U	0.088	5.03 D	0.102	**5.92 D**
Benzo[a]pyrene	1	mg/kg		**1.06**	**1.1 D**	0.0431 U	0.245 D	0.467 D	0.794 D	0.124 D	**1.2**	0.6	0.049 U	0.053 U	0.039 U	0.049	**3.42 D**	0.067	**4.31 D**
Benzo[b]fluoranthene	5.6	mg/kg		0.881	0.984 D	0.0431 U	0.242 D	0.56 D	0.717 D	0.109 D	1	0.707	0.049 U	0.053 U	0.039 U	0.034 J	3.11 D	0.053	3.59 D
Benzo[g,h,i]perylene	500	mg/kg		0.686	0.639 D	0.0431 U	0.184 D	0.376 D	0.484 D	0.0943 D	0.831	0.792	0.049 U	0.053 U	0.039 U	0.038 U	3.35 D	0.044	2.98 D
Benzo[k]fluoranthene	56	mg/kg		0.897	0.91 D	0.0431 U	0.203 D	0.405 D	0.646 D	0.0987 D	1.09	0.524	0.049 U	0.053 U	0.039 U	0.045	3.27 D	0.064	3.56 D
Benzoic Acid	--	mg/kg		NA	NA	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzyl Alcohol	--	mg/kg		NA	NA	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloro-1-methylethyl)ether	--	mg/kg		NA	NA	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	0.037 U	0.048 U	0.049 U	0.053 U	0.039 U	0.038 U	0.076 U	0.038 U	0.078 U
Bis(2-chloroethoxy)methane	--	mg/kg		NA	NA	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	0.037 U	0.048 U	0.049 U	0.053 U	0.039 U	0.038 U	0.076 U	0.038 U	0.078 U
Bis(2-chloroethyl) ether	--	mg/kg		NA	NA	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	0.037 U	0.048 U	0.049 U	0.053 U	0.039 U	0.038 U	0.076 U	0.038 U	0.078 U
Bis(2-ethylhexyl) phthalate	--	mg/kg		NA	NA	0.0983 D	0.13 D	0.0468 U	0.115 D	0.16 D	0.037 U	0.048 U	0.049 U	0.053 U	0.039 U	0.038 U	0.076 U	0.038 U	0.078 U
Butylbenzyl phthalate	--	mg/kg		NA	NA	0.0431 U	0.0838 JD	0.0468 U	0.14 D	0.0819 JD	0.037 U	0.048 U	0.049 U	0.053 U	0.039 U	0.038 U	0.076 U	0.038 U	0.078 U
Caprolactam	--	mg/kg		NA	NA	0.086 U	0.0912 U	0.0934 U	0.0902 U	0.0915 U	0.037 U	0.048 U	0.049 U	0.053 U	0.039 U	0.038 U	0.076 U	0.038 U	0.078 U

Table 2. Summary of Semivolatile Organic Compounds in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	COMPOSITE	Dup 1114	OWS-PE-1	OWS-PE-2	OWS-PE-3	OWS-PE-4	OWS-PE-5	SB-1	SB-2	SB-3	SB-4	SB-5	SB-6	SB-7	SB-8	SB-9
			Sample Date:	12/20/2017	11/15/2018	6/3/2019	6/3/2019	6/3/2019	6/3/2019	6/3/2019	10/23/2017	10/23/2017	10/23/2017	10/23/2017	10/23/2017	10/23/2017	10/23/2017	10/23/2017	10/23/2017
			Sample Depth (ft bls):	-	-	-	-	-	-	-	7.5 - 8	15.5 - 16	15 - 15.5	15.5 - 16	15 - 15.5	11 - 11.5	-	-	-
Carbazole	--	mg/kg		NA	NA	0.0431 U	0.0457 U	0.0903 JD	0.116 D	0.0458 U	0.264	0.048 U	0.049 U	0.053 U	0.039 U	0.038 U	0.713 D	0.038 U	0.072 DJ
Chrysene	56	mg/kg		1.06	1.11 D	0.0431 U	0.216 D	0.476 D	0.688 D	0.102 D	2.04	2.89	0.074	0.053 U	0.039 U	0.091	5.16 D	0.103	5.13 D
Dibenzo[a,h]anthracene	0.56	mg/kg		0.208	0.176 D	0.0431 U	0.0634 JD	0.128 D	0.131 D	0.0458 U	0.332	0.477	0.049 U	0.053 U	0.039 U	0.038 U	**0.74 D**	0.038 U	**1.03 D**
Dibenzofuran	350	mg/kg		NA	0.0617 JD	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	0.129	0.048 U	0.049 U	0.053 U	0.039 U	0.038 U	0.182 D	0.038 U	0.078 U
Diethyl phthalate	--	mg/kg		NA	NA	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	0.037 U	0.048 U	0.049 U	0.053 U	0.039 U	0.038 U	0.076 U	0.038 U	0.078 U
Dimethyl phthalate	--	mg/kg		NA	NA	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	0.037 U	0.048 U	0.049 U	0.053 U	0.039 U	0.038 U	0.076 U	0.038 U	0.078 U
Di-n-butyl phthalate	--	mg/kg		NA	NA	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	0.037 U	0.048 U	0.049 U	0.053 U	0.039 U	0.038 U	0.076 U	0.038 U	0.078 U
Di-n-octyl phthalate	--	mg/kg		NA	NA	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	0.037 U	0.048 U	0.049 U	0.053 U	0.039 U	0.038 U	0.076 U	0.038 U	0.078 U
Fluoranthene	500	mg/kg		2.85	2.17 D	0.0431 U	0.449 D	1.18 D	1.73 D	0.27 D	4.01	1.49	0.072	0.053 U	0.039 U	0.145	8.13 D	0.196	6.37 D
Fluorene	500	mg/kg		0.131	0.111 D	0.0431 U	0.0457 U	0.059 JD	0.0577 JD	0.0458 U	0.209	0.052	0.049 U	0.053 U	0.039 U	0.038 U	0.233 D	0.038 U	0.075 DJ
Hexachlorobenzene	6	mg/kg		NA	0.045 U	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	0.037 U	0.048 U	0.049 U	0.053 U	0.039 U	0.038 U	0.076 U	0.038 U	0.078 U
Hexachlorobutadiene	--	mg/kg		NA	NA	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	0.037 U	0.048 U	0.049 U	0.053 U	0.039 U	0.038 U	0.076 U	0.038 U	0.078 U
Hexachlorocyclopentadiene	--	mg/kg		NA	NA	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	0.037 U	0.048 U	0.049 U	0.053 U	0.039 U	0.038 U	0.076 U	0.038 U	0.078 U
Hexachloroethane	--	mg/kg		NA	NA	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	0.037 U	0.048 U	0.049 U	0.053 U	0.039 U	0.038 U	0.076 U	0.038 U	0.078 U
Indeno[1,2,3-cd]pyrene	5.6	mg/kg		0.637	0.591 D	0.0431 U	0.205 D	0.418 D	0.557 D	0.0972 D	0.707	0.418	0.049 U	0.053 U	0.039 U	0.038 U	2.85 D	0.035 J	2.65 D
Isophorone	--	mg/kg		NA	NA	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	0.037 U	0.048 U	0.049 U	0.053 U	0.039 U	0.038 U	0.076 U	0.038 U	0.078 U
Naphthalene	500	mg/kg		0.105	0.0495 JD	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	0.08	0.044 J	0.049 U	0.053 U	0.039 U	0.038 U	0.171 D	0.038 U	0.133 D
Nitrobenzene	--	mg/kg		NA	NA	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	0.037 U	0.048 U	0.049 U	0.053 U	0.039 U	0.038 U	0.076 U	0.038 U	0.078 U
n-Nitrosodimethylamine	--	mg/kg		NA	NA	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Nitrosodi-n-propylamine	--	mg/kg		NA	NA	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	0.037 U	0.048 U	0.049 U	0.053 U	0.039 U	0.038 U	0.076 U	0.038 U	0.078 U
n-Nitrosodiphenylamine	--	mg/kg		NA	NA	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	0.037 U	0.048 U	0.049 U	0.053 U	0.039 U	0.038 U	0.076 U	0.038 U	0.078 U
Pentachlorophenol	6.7	mg/kg		1.69	0.045 U	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	500	mg/kg		NA	1.26 D	0.0431 U	0.203 D	0.776 D	0.926 D	0.151 D	2.92	0.233	0.053	0.053 U	0.039 U	0.121	4.82 D	0.111	0.59 D
Phenols (Total)	--	mg/kg		NA	0.045 U	0.0431 U	0.0457 U	0.0468 U	0.0452 U	0.0458 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	500	mg/kg		1.58	2.32 D	0.0431 U	0.315 D	0.762 D	1.21 D	0.199 D	3.9	2.32	0.095	0.053 U	0.039 U	0.143	6.89 D	0.206	8.2 D

Table 2. Summary of Semivolatile Organic Compounds in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	SB-10	SB-11	SB-12	SB-13	SB-14	SB-15	SB-16	SB-17	SB-18	SB-19	SB-20	SB-21	SB-22	SB-23	SB-24	SB-25
			Sample Date:	10/23/2017	10/24/2017	10/24/2017	10/24/2017	10/24/2017	10/24/2017	10/24/2017	10/24/2017	10/24/2017	10/24/2017	10/24/2017	11/10/2017	11/10/2017	11/10/2017	11/10/2017	11/10/2017
			Sample Depth (ft bls):	-	-	-	-	-	-	-	-	-	-	-	11 - 11.5	11.5 - 12	11.5 - 12	11.5 - 12	10 - 10.5
1,1'-Biphenyl	--	mg/kg		0.036 U	0.041 U	0.037 U	0.036 U	0.073 U	0.072 U	0.041 U	0.04 U	0.053 U	0.036 U	0.073 U	0.039 U	0.041 U	0.04 U	0.036 U	0.035 U
1,2,4,5-Tetrachlorobenzene	--	mg/kg		0.036 U	0.041 U	0.037 U	0.036 U	0.073 U	0.072 U	0.041 U	0.04 U	0.053 U	0.036 U	0.073 U	0.039 U	0.041 U	0.04 U	0.036 U	0.035 U
1,2,4-Trichlorobenzene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	500	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Diphenylhydrazine	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	280	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	130	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	--	mg/kg		0.036 U	0.041 U	0.037 U	0.036 U	0.073 U	0.072 U	0.041 U	0.04 U	0.053 U	0.036 U	0.073 U	0.039 U	0.041 U	0.04 U	0.036 U	0.035 U
2,6-Dinitrotoluene	--	mg/kg		0.036 U	0.041 U	0.037 U	0.036 U	0.073 U	0.072 U	0.041 U	0.04 U	0.053 U	0.036 U	0.073 U	0.039 U	0.041 U	0.04 U	0.036 U	0.035 U
2-Chloronaphthalene	--	mg/kg		0.036 U	0.041 U	0.037 U	0.036 U	0.073 U	0.072 U	0.041 U	0.04 U	0.053 U	0.036 U	0.073 U	0.039 U	0.041 U	0.04 U	0.036 U	0.035 U
2-Chlorophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	--	mg/kg		0.053	0.041 U	0.037 U	0.033 J	0.125 D	0.133	0.041 U	0.04 U	0.053 U	0.104	0.06 DJ	15.7 D	0.041 U	0.04 U	0.036 U	0.035 U
2-Methylphenol	500	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	--	mg/kg		0.036 U	0.041 U	0.037 U	0.036 U	0.073 U	0.072 U	0.041 U	0.04 U	0.053 U	0.036 U	0.073 U	0.039 U	0.041 U	0.04 U	0.036 U	0.035 U
2-Nitrophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3&4-Methylphenol	500	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	--	mg/kg		0.036 U	0.041 U	0.037 U	0.036 U	0.073 U	0.072 U	0.041 U	0.04 U	0.053 U	0.036 U	0.073 U	0.039 U	0.041 U	0.04 U	0.036 U	0.035 U
3-Nitroaniline	--	mg/kg		0.036 U	0.041 U	0.037 U	0.036 U	0.073 U	0.072 U	0.041 U	0.04 U	0.053 U	0.036 U	0.073 U	0.039 U	0.041 U	0.04 U	0.036 U	0.035 U
4,6-Dinitro-2-methylphenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	--	mg/kg		0.036 U	0.041 U	0.037 U	0.036 U	0.073 U	0.072 U	0.041 U	0.04 U	0.053 U	0.036 U	0.073 U	0.039 U	0.041 U	0.04 U	0.036 U	0.035 U
4-Chloro-3-methylphenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	--	mg/kg		0.036 U	0.041 U	0.037 U	0.036 U	0.073 U	0.072 U	0.041 U	0.04 U	0.053 U	0.036 U	0.073 U	0.039 U	0.041 U	0.04 U	0.036 U	0.035 U
4-Chlorophenyl phenyl ether	--	mg/kg		0.036 U	0.041 U	0.037 U	0.036 U	0.073 U	0.072 U	0.041 U	0.04 U	0.053 U	0.036 U	0.073 U	0.039 U	0.041 U	0.04 U	0.036 U	0.035 U
4-Nitroaniline	--	mg/kg		0.036 U	0.041 U	0.037 U	0.036 U	0.073 U	0.072 U	0.041 U	0.04 U	0.053 U	0.036 U	0.073 U	0.039 U	0.041 U	0.04 U	0.036 U	0.035 U
4-Nitrophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	500	mg/kg		0.122	0.041 U	0.037 U	0.042	0.536 D	0.069 J	0.073	0.04 U	0.053 U	0.174	0.158 D	0.401	0.041 U	0.04 U	0.065	0.035 U
Acenaphthylene	500	mg/kg		0.14	0.131	0.065	0.215	0.223 D	0.123	0.041 U	0.04 U	0.053 U	0.186	0.323 D	0.149	0.041 U	0.04 U	0.036 U	0.035 U
Acetophenone	--	mg/kg		0.036 U	0.041 U	0.037 U	0.036 U	0.073 U	0.072 U	0.041 U	0.04 U	0.053 U	0.036 U	0.073 U	0.039 U	0.041 U	0.04 U	0.036 U	0.035 U
Aniline	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	500	mg/kg		0.332	0.112	0.049	0.268	1.15 D	0.287	0.063	0.04 U	0.053 U	0.508	0.655 D	0.279	0.041 U	0.04 U	0.12	0.035 U
Atrazine	--	mg/kg		0.036 U	0.041 U	0.037 U	0.036 U	0.073 U	0.072 U	0.041 U	0.04 U	0.053 U	0.036 U	0.073 U	0.039 U	0.041 U	0.04 U	0.036 U	0.035 U
Benzaldehyde	--	mg/kg		0.036 U	0.041 U	0.037 U	0.036 U	0.073 U	0.072 U	0.041 U	0.04 U	0.053 U	0.036 U	0.073 U	0.039 U	0.041 U	0.04 U	0.036 U	0.035 U
Benzidine	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo[a]anthracene	5.6	mg/kg		1.12	0.584	0.218	1.07	2.87 D	0.793	0.135	0.046	0.053 U	1.66	1.82 D	0.164	0.041 U	0.04 U	0.418	0.067
Benzo[a]pyrene	1	mg/kg		0.752	0.428	0.14	0.722	**1.97 D**	0.563	0.088	0.04 U	0.053 U	**1.09**	**1.39 D**	0.113	0.041 U	0.04 U	0.303	0.043
Benzo[b]fluoranthene	5.6	mg/kg		0.687	0.366	0.16	0.584	1.55 D	0.453	0.069	0.04 U	0.053 U	0.98	1.29 D	0.091	0.041 U	0.04 U	0.264	0.045
Benzo[g,h,i]perylene	500	mg/kg		0.619	0.326	0.168	0.647	1.52 D	0.335	0.073	0.04 U	0.053 U	0.862	1.35 D	0.05	0.041 U	0.04 U	0.238	0.035 U
Benzo[k]fluoranthene	56	mg/kg		0.708	0.435	0.157	0.806	1.67 D	0.538	0.066	0.04 U	0.053 U	0.943	1.31 D	0.089	0.041 U	0.04 U	0.245	0.035 U
Benzoic Acid	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzyl Alcohol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloro-1-methylethyl)ether	--	mg/kg		0.036 U	0.041 U	0.037 U	0.036 U	0.073 U	0.072 U	0.041 U	0.04 U	0.053 U	0.036 U	0.073 U	0.039 U	0.041 U	0.04 U	0.036 U	0.035 U
Bis(2-chloroethoxy)methane	--	mg/kg		0.036 U	0.041 U	0.037 U	0.036 U	0.073 U	0.072 U	0.041 U	0.04 U	0.053 U	0.036 U	0.073 U	0.039 U	0.041 U	0.04 U	0.036 U	0.035 U
Bis(2-chloroethyl) ether	--	mg/kg		0.036 U	0.041 U	0.037 U	0.036 U	0.073 U	0.072 U	0.041 U	0.04 U	0.053 U	0.036 U	0.073 U	0.039 U	0.041 U	0.04 U	0.036 U	0.035 U
Bis(2-ethylhexyl) phthalate	--	mg/kg		0.044	0.041 U	0.037 U	0.036 U	0.073 U	1.36	0.041 U	0.04 U	0.053 U	0.678	0.073 U	0.276	0.041 U	0.04 U	0.036 U	0.035 U
Butylbenzyl phthalate	--	mg/kg		0.036 U	0.041 U	0.037 U	0.036 U	0.073 U	0.072 U	0.041 U	0.04 U	0.053 U	0.09	0.073 U	0.039 U	0.041 U	0.04 U	0.036 U	0.035 U
Caprolactam	--	mg/kg		0.036 U	0.041 U	0.037 U	0.036 U	0.073 U	0.072 U	0.041 U	0.04 U	0.053 U	0.036 U	0.073 U	0.039 U	0.041 U	0.04 U	0.036 U	0.035 U

Table 2. Summary of Semivolatile Organic Compounds in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	SB-10	SB-11	SB-12	SB-13	SB-14	SB-15	SB-16	SB-17	SB-18	SB-19	SB-20	SB-21	SB-22	SB-23	SB-24	SB-25
			Sample Date:	10/23/2017	10/24/2017	10/24/2017	10/24/2017	10/24/2017	10/24/2017	10/24/2017	10/24/2017	10/24/2017	10/24/2017	10/24/2017	11/10/2017	11/10/2017	11/10/2017	11/10/2017	11/10/2017
			Sample Depth (ft bls):	-	-	-	-	-	-	-	-	-	-	-	11 - 11.5	11.5 - 12	11.5 - 12	11.5 - 12	10 - 10.5
Carbazole	--	mg/kg		0.118	0.064	0.037 U	0.162	0.498 D	0.12	0.041 U	0.04 U	0.053 U	0.191	0.291 D	0.039 U	0.041 U	0.04 U	0.042	0.035 U
Chrysene	56	mg/kg		1.13	0.711	0.235	1.13	2.77 D	0.84	0.129	0.05	0.053 U	1.71	1.91 D	0.192	0.041 U	0.04 U	0.466	0.069
Dibenzo[a,h]anthracene	0.56	mg/kg		0.169	0.106	0.049	0.143	0.37 D	0.098	0.041 U	0.04 U	0.053 U	0.212	0.363 D	0.039 U	0.041 U	0.04 U	0.073	0.035 U
Dibenzofuran	350	mg/kg		0.07	0.047	0.037 U	0.076	0.339 D	0.077	0.041 U	0.04 U	0.053 U	0.136	0.125 D	0.613	0.041 U	0.04 U	0.034 J	0.035 U
Diethyl phthalate	--	mg/kg		0.036 U	0.041 U	0.037 U	0.036 U	0.073 U	0.072 U	0.041 U	0.04 U	0.053 U	0.036 U	0.073 U	0.039 U	0.041 U	0.04 U	0.036 U	0.035 U
Dimethyl phthalate	--	mg/kg		0.036 U	0.041 U	0.037 U	0.036 U	0.073 U	0.072 U	0.041 U	0.04 U	0.053 U	0.036 U	0.073 U	0.039 U	0.041 U	0.04 U	0.036 U	0.035 U
Di-n-butyl phthalate	--	mg/kg		0.036 U	0.041 U	0.037 U	0.036 U	0.073 U	0.066 J	0.041 U	0.04 U	0.053 U	0.099	0.073 U	0.039 U	0.041 U	0.04 U	0.036 U	0.035 U
Di-n-octyl phthalate	--	mg/kg		0.036 U	0.041 U	0.037 U	0.036 U	0.073 U	0.072 U	0.041 U	0.04 U	0.053 U	0.048	0.073 U	0.039 U	0.041 U	0.04 U	0.036 U	0.035 U
Fluoranthene	500	mg/kg		2.02	1.24	0.39	2.55	5.81 D	1.66	0.227	0.076	0.053 U	3.56	2.76 D	0.382	0.041 U	0.04 U	0.653	0.088
Fluorene	500	mg/kg		0.095	0.043	0.037 U	0.095	0.311 D	0.089	0.041 U	0.04 U	0.053 U	0.159	0.155 D	0.733	0.041 U	0.04 U	0.052	0.035 U
Hexachlorobenzene	6	mg/kg		0.036 U	0.041 U	0.037 U	0.036 U	0.073 U	0.072 U	0.041 U	0.04 U	0.053 U	0.036 U	0.073 U	0.039 U	0.041 U	0.04 U	0.036 U	0.035 U
Hexachlorobutadiene	--	mg/kg		0.036 U	0.041 U	0.037 U	0.036 U	0.073 U	0.072 U	0.041 U	0.04 U	0.053 U	0.036 U	0.073 U	0.039 U	0.041 U	0.04 U	0.036 U	0.035 U
Hexachlorocyclopentadiene	--	mg/kg		0.036 U	0.041 U	0.037 U	0.036 U	0.073 U	0.072 U	0.041 U	0.04 U	0.053 U	0.036 U	0.073 U	0.039 U	0.041 U	0.04 U	0.036 U	0.035 U
Hexachloroethane	--	mg/kg		0.036 U	0.041 U	0.037 U	0.036 U	0.073 U	0.072 U	0.041 U	0.04 U	0.053 U	0.036 U	0.073 U	0.039 U	0.041 U	0.04 U	0.036 U	0.035 U
Indeno[1,2,3-cd]pyrene	5.6	mg/kg		0.498	0.317	0.128	0.484	1.22 D	0.287	0.059	0.04 U	0.053 U	0.674	1.04 D	0.064	0.041 U	0.04 U	0.19	0.035 U
Isophorone	--	mg/kg		0.036 U	0.041 U	0.037 U	0.036 U	0.073 U	0.072 U	0.041 U	0.04 U	0.053 U	0.036 U	0.073 U	0.039 U	0.041 U	0.04 U	0.036 U	0.035 U
Naphthalene	500	mg/kg		0.066	0.055	0.037 U	0.056	0.229 D	0.089	0.041 U	0.04 U	0.053 U	0.104	0.091 D	0.797	0.041 U	0.04 U	0.036 U	0.035 U
Nitrobenzene	--	mg/kg		0.036 U	0.041 U	0.037 U	0.036 U	0.073 U	0.072 U	0.041 U	0.04 U	0.053 U	0.036 U	0.073 U	0.039 U	0.041 U	0.04 U	0.036 U	0.035 U
n-Nitrosodimethylamine	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Nitrosodi-n-propylamine	--	mg/kg		0.036 U	0.041 U	0.037 U	0.036 U	0.073 U	0.072 U	0.041 U	0.04 U	0.053 U	0.036 U	0.073 U	0.039 U	0.041 U	0.04 U	0.036 U	0.035 U
n-Nitrosodiphenylamine	--	mg/kg		0.036 U	0.041 U	0.037 U	0.036 U	0.073 U	0.072 U	0.041 U	0.04 U	0.053 U	0.036 U	0.073 U	0.039 U	0.041 U	0.04 U	0.036 U	0.035 U
Pentachlorophenol	6.7	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	500	mg/kg		1.43	0.877	0.219	1.76	5.45 D	0.932	0.229	0.068	0.053 U	2.71	1.96 D	1.55	0.041 U	0.04 U	0.616	0.06
Phenols (Total)	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	500	mg/kg		1.89	1.19	0.366	2.06	5.44 D	1.59	0.224	0.072	0.053 U	3.04	3.3 D	0.397	0.041 U	0.04 U	0.686	0.095

Table 2. Summary of Semivolatile Organic Compounds in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	SB-26	SB-27	SB-28	SB-29	SB-30	SB-31A	SB-31D	SB-31S	SB-32A	SB-32D	SB-32D1	SB-32S	SB-33A	SB-33D	SB-33S	SB-34A
			Sample Date:	12/13/2017	12/13/2017	12/13/2017	12/13/2017	12/13/2017	12/13/2017	12/18/2017	12/18/2017	12/13/2017	12/18/2017	12/18/2017	12/18/2017	12/13/2017	12/18/2017	12/18/2017	12/13/2017
			Sample Depth (ft bls):	-	-	-	-	-	-	8 - 8.5	2 - 2.5	-	8 - 8.5	12 - 12.5	2 - 2.5	-	8 - 8.5	2 - 2.5	-
1,1'-Biphenyl	--	mg/kg		0.039 U	0.035 U	0.038 U	0.038 U	0.038 U	0.423 U	0.039 U	0.038 U	0.039 U	0.036 U	0.042 U	0.037 U	0.039 U	0.039 U	0.038 U	0.042 U
1,2,4,5-Tetrachlorobenzene	--	mg/kg		0.039 U	0.035 U	0.038 U	0.038 U	0.038 U	0.423 U	0.039 U	0.038 U	0.039 U	0.036 U	0.042 U	0.037 U	0.039 U	0.039 U	0.038 U	0.042 U
1,2,4-Trichlorobenzene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	500	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Diphenylhydrazine	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	280	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	130	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	--	mg/kg		0.039 U	0.035 U	0.038 U	0.038 U	0.038 U	0.423 U	0.039 U	0.038 U	0.039 U	0.036 U	0.042 U	0.037 U	0.039 U	0.039 U	0.038 U	0.042 U
2,6-Dinitrotoluene	--	mg/kg		0.039 U	0.035 U	0.038 U	0.038 U	0.038 U	0.423 U	0.039 U	0.038 U	0.039 U	0.036 U	0.042 U	0.037 U	0.039 U	0.039 U	0.038 U	0.042 U
2-Chloronaphthalene	--	mg/kg		0.039 U	0.035 U	0.038 U	0.038 U	0.038 U	0.423 U	0.039 U	0.038 U	0.039 U	0.036 U	0.042 U	0.037 U	0.039 U	0.039 U	0.038 U	0.042 U
2-Chlorophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	--	mg/kg		0.039 U	0.035 U	0.058	0.029 J	0.049	0.423 U	0.078	0.052	0.086	0.036 U	0.042 U	0.03 J	0.063	0.039 U	0.064	0.042 U
2-Methylphenol	500	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	--	mg/kg		0.039 U	0.035 U	0.038 U	0.038 U	0.038 U	0.423 U	0.039 U	0.038 U	0.039 U	0.036 U	0.042 U	0.037 U	0.039 U	0.039 U	0.038 U	0.042 U
2-Nitrophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3&4-Methylphenol	500	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	--	mg/kg		0.039 U	0.035 U	0.038 U	0.038 U	0.038 U	0.423 U	0.039 U	0.038 U	0.039 U	0.036 U	0.042 U	0.037 U	0.039 U	0.039 U	0.038 U	0.042 U
3-Nitroaniline	--	mg/kg		0.039 U	0.035 U	0.038 U	0.038 U	0.038 U	0.423 U	0.039 U	0.038 U	0.039 U	0.036 U	0.042 U	0.037 U	0.039 U	0.039 U	0.038 U	0.042 U
4,6-Dinitro-2-methylphenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	--	mg/kg		0.039 U	0.035 U	0.038 U	0.038 U	0.038 U	0.423 U	0.039 U	0.038 U	0.039 U	0.036 U	0.042 U	0.037 U	0.039 U	0.039 U	0.038 U	0.042 U
4-Chloro-3-methylphenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	--	mg/kg		0.039 U	0.035 U	0.038 U	0.038 U	0.038 U	0.423 U	0.039 U	0.038 U	0.039 U	0.036 U	0.042 U	0.037 U	0.039 U	0.039 U	0.038 U	0.042 U
4-Chlorophenyl phenyl ether	--	mg/kg		0.039 U	0.035 U	0.038 U	0.038 U	0.038 U	0.423 U	0.039 U	0.038 U	0.039 U	0.036 U	0.042 U	0.037 U	0.039 U	0.039 U	0.038 U	0.042 U
4-Nitroaniline	--	mg/kg		0.039 U	0.035 U	0.038 U	0.038 U	0.038 U	0.423 U	0.039 U	0.038 U	0.039 U	0.036 U	0.042 U	0.037 U	0.039 U	0.039 U	0.038 U	0.042 U
4-Nitrophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	500	mg/kg		0.097	0.035 U	0.064	0.058	0.13	0.792 D	0.131	0.077	0.228	0.077	0.042 U	0.123	0.266	0.039 U	0.049	0.102
Acenaphthylene	500	mg/kg		0.044	0.035 U	0.038 U	0.053	0.038 U	4.78 D	0.291	0.614	0.106	0.113	0.042 U	0.245	0.177	0.113	0.262	0.057
Acetophenone	--	mg/kg		0.039 U	0.035 U	0.038 U	0.038 U	0.038 U	0.423 U	0.039 U	0.038 U	0.039 U	0.036 U	0.042 U	0.037 U	0.039 U	0.039 U	0.038 U	0.042 U
Aniline	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	500	mg/kg		0.274	0.035 U	0.117	0.173	0.274	6.82 D	0.631	0.523	0.564	0.237	0.039 J	0.384	0.601	0.119	0.163	0.222
Atrazine	--	mg/kg		0.039 U	0.035 U	0.038 U	0.038 U	0.038 U	0.423 U	0.039 U	0.038 U	0.039 U	0.036 U	0.042 U	0.037 U	0.039 U	0.039 U	0.038 U	0.042 U
Benzaldehyde	--	mg/kg		0.039 U	0.035 U	0.038 U	0.038 U	0.038 U	0.423 U	0.039 U	0.038 U	0.039 U	0.036 U	0.042 U	0.037 U	0.039 U	0.039 U	0.038 U	0.042 U
Benzidine	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo[a]anthracene	5.6	mg/kg		1.01	0.035 U	0.526	1.33	1.22	**41.2 D**	2.54	2.63	2.2	0.973	0.133	1.86	3.64	0.418	0.572	0.949
Benzo[a]pyrene	1	mg/kg		0.668	0.035 U	0.351	0.93	0.926	**26.1 D**	**1.54**	**1.73**	**1.62**	0.587	0.074	**1.18**	**3.17**	0.304	0.423	0.738
Benzo[b]fluoranthene	5.6	mg/kg		0.691	0.035 U	0.42	0.895	0.852	**25.7 D**	1.62	1.94	1.45	0.534	0.081	1.24	2.68	0.302	0.439	0.611
Benzo[g,h,i]perylene	500	mg/kg		0.295	0.035 U	0.357	0.663	0.884	15 D	0.883	0.993	1.23	0.264	0.08	0.622	2.39	0.181	0.214	0.576
Benzo[k]fluoranthene	56	mg/kg		0.487	0.035 U	0.328	0.79	0.682	20.8 D	1.43	1.98	1.27	0.556	0.058	0.995	2.28	0.291	0.446	0.672
Benzoic Acid	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzyl Alcohol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloro-1-methylethyl)ether	--	mg/kg		0.039 U	0.035 U	0.038 U	0.038 U	0.038 U	0.423 U	0.039 U	0.038 U	0.039 U	0.036 U	0.042 U	0.037 U	0.039 U	0.039 U	0.038 U	0.042 U
Bis(2-chloroethoxy)methane	--	mg/kg		0.039 U	0.035 U	0.038 U	0.038 U	0.038 U	0.423 U	0.039 U	0.038 U	0.039 U	0.036 U	0.042 U	0.037 U	0.039 U	0.039 U	0.038 U	0.042 U
Bis(2-chloroethyl) ether	--	mg/kg		0.039 U	0.035 U	0.038 U	0.038 U	0.038 U	0.423 U	0.039 U	0.038 U	0.039 U	0.036 U	0.042 U	0.037 U	0.039 U	0.039 U	0.038 U	0.042 U
Bis(2-ethylhexyl) phthalate	--	mg/kg		0.039 U	0.035 U	0.038 U	0.038 U	0.038 U	0.423 U	0.039 U	0.038 U	0.079	0.036 U	0.042 U	0.037 U	0.089	0.061	0.038 U	0.042 U
Butylbenzyl phthalate	--	mg/kg		0.039 U	0.035 U	0.038 U	0.038 U	0.038 U	0.423 U	0.039 U	0.038 U	0.039 U	0.036 U	0.042 U	0.037 U	0.039 U	0.039 U	0.038 U	0.042 U
Caprolactam	--	mg/kg		0.039 U	0.035 U	0.038 U	0.038 U	0.038 U	0.423 U	0.039 U	0.038 U	0.039 U	0.036 U	0.042 U	0.037 U	0.039 U	0.039 U	0.038 U	0.042 U

Table 2. Summary of Semivolatile Organic Compounds in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	SB-26	SB-27	SB-28	SB-29	SB-30	SB-31A	SB-31D	SB-31S	SB-32A	SB-32D	SB-32D1	SB-32S	SB-33A	SB-33D	SB-33S	SB-34A
			Sample Date:	12/13/2017	12/13/2017	12/13/2017	12/13/2017	12/13/2017	12/13/2017	12/18/2017	12/18/2017	12/13/2017	12/18/2017	12/18/2017	12/18/2017	12/13/2017	12/18/2017	12/18/2017	12/13/2017
			Sample Depth (ft bls):	-	-	-	-	-	-	8 - 8.5	2 - 2.5	-	8 - 8.5	12 - 12.5	2 - 2.5	-	8 - 8.5	2 - 2.5	-
Carbazole	--	mg/kg		0.086	0.035 U	0.043	0.051	0.115	2.01 D	0.342	0.475	0.236	0.092	0.042 U	0.166	0.173	0.066	0.208	0.072
Chrysene	56	mg/kg		1.09	0.06	0.779	1.41	1.32	36.8 D	2.53	3.13	2.18	0.963	0.124	1.82	3.46	0.469	0.736	0.971
Dibenzo[a,h]anthracene	0.56	mg/kg		0.108	0.035 U	0.128	0.203	0.246	**5.63 D**	0.23	0.403	0.378	0.065	0.042 U	0.204	**0.693**	0.039 U	0.063	0.16
Dibenzofuran	350	mg/kg		0.057	0.035 U	0.039	0.038 U	0.08	0.481 D	0.173	0.202	0.174	0.042	0.042 U	0.06	0.12	0.039	0.119	0.042
Diethyl phthalate	--	mg/kg		0.039 U	0.035 U	0.038 U	0.038 U	0.038 U	0.423 U	0.039 U	0.038 U	0.039 U	0.036 U	0.042 U	0.037 U	0.039 U	0.039 U	0.038 U	0.042 U
Dimethyl phthalate	--	mg/kg		0.039 U	0.035 U	0.038 U	0.038 U	0.038 U	0.423 U	0.039 U	0.038 U	0.039 U	0.036 U	0.042 U	0.037 U	0.039 U	0.039 U	0.038 U	0.042 U
Di-n-butyl phthalate	--	mg/kg		0.039 U	0.035 U	0.038 U	0.049	0.038 U	0.423 U	0.039 U	0.038 U	0.039 U	0.036 U	0.042 U	0.037 U	0.039 U	0.039 U	0.038 U	0.042 U
Di-n-octyl phthalate	--	mg/kg		0.039 U	0.035 U	0.038 U	0.038 U	0.038 U	0.423 U	0.039 U	0.038 U	0.039 U	0.036 U	0.042 U	0.037 U	0.039 U	0.039 U	0.038 U	0.042 U
Fluoranthene	500	mg/kg		1.74	0.037	0.77	1.72	1.8	60.9 D	4.9	6.09	3.5	1.83	0.224	3.22	4.52	0.908	1.52	1.36
Fluorene	500	mg/kg		0.066	0.035 U	0.044	0.049	0.101	1.06 D	0.143	0.147	0.194	0.063	0.042 U	0.101	0.186	0.039 J	0.124	0.085
Hexachlorobenzene	6	mg/kg		0.039 U	0.035 U	0.038 U	0.038 U	0.038 U	0.423 U	0.039 U	0.038 U	0.039 U	0.036 U	0.042 U	0.037 U	0.039 U	0.039 U	0.038 U	0.042 U
Hexachlorobutadiene	--	mg/kg		0.039 U	0.035 U	0.038 U	0.038 U	0.038 U	0.423 U	0.039 U	0.038 U	0.039 U	0.036 U	0.042 U	0.037 U	0.039 U	0.039 U	0.038 U	0.042 U
Hexachlorocyclopentadiene	--	mg/kg		0.039 U	0.035 U	0.038 U	0.038 U	0.038 U	0.423 U	0.039 U	0.038 U	0.039 U	0.036 U	0.042 U	0.037 U	0.039 U	0.039 U	0.038 U	0.042 U
Hexachloroethane	--	mg/kg		0.039 U	0.035 U	0.038 U	0.038 U	0.038 U	0.423 U	0.039 U	0.038 U	0.039 U	0.036 U	0.042 U	0.037 U	0.039 U	0.039 U	0.038 U	0.042 U
Indeno[1,2,3-cd]pyrene	5.6	mg/kg		0.292	0.035 U	0.279	0.528	0.613	**14.1 D**	0.788	1.04	0.982	0.248	0.044	0.573	1.84	0.158	0.212	0.474
Isophorone	--	mg/kg		0.039 U	0.035 U	0.038 U	0.038 U	0.038 U	0.423 U	0.039 U	0.038 U	0.039 U	0.036 U	0.042 U	0.037 U	0.039 U	0.039 U	0.038 U	0.042 U
Naphthalene	500	mg/kg		0.038 J	0.035 U	0.041	0.04	0.066	0.423 U	0.162	0.048	0.189	0.032 J	0.042 U	0.057	0.116	0.06	0.211	0.042 U
Nitrobenzene	--	mg/kg		0.039 U	0.035 U	0.038 U	0.038 U	0.038 U	0.423 U	0.039 U	0.038 U	0.039 U	0.036 U	0.042 U	0.037 U	0.039 U	0.039 U	0.038 U	0.042 U
n-Nitrosodimethylamine	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Nitrosodi-n-propylamine	--	mg/kg		0.039 U	0.035 U	0.038 U	0.038 U	0.038 U	0.423 U	0.039 U	0.038 U	0.039 U	0.036 U	0.042 U	0.037 U	0.039 U	0.039 U	0.038 U	0.042 U
n-Nitrosodiphenylamine	--	mg/kg		0.039 U	0.035 U	0.038 U	0.038 U	0.038 U	0.423 U	0.039 U	0.038 U	0.039 U	0.036 U	0.042 U	0.037 U	0.039 U	0.039 U	0.038 U	0.042 U
Pentachlorophenol	6.7	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	500	mg/kg		1.3	0.035 U	0.656	0.908	1.38	20.8 D	3	4.08	2.61	1.02	0.15	1.48	2.4	0.531	1.24	0.897
Phenols (Total)	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	500	mg/kg		1.8	0.046	0.763	2.15	1.96	60.8 D	3.72	4.43	3.52	1.54	0.186	2.74	4.82	0.759	1.09	1.44

Table 2. Summary of Semivolatile Organic Compounds in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	SB-34D	SB-34S	SB-35A	SB-35D	SB-35S	SB-36D	SB-36S	SB-37D	SB-37S	SB42-A	SB42-B	SB43-A	SB43-B	SB-56A	SB-56B	SB-56C	SB-57A
			Sample Date:	12/18/2017	12/18/2017	12/13/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017	5/15/2018	5/15/2018	5/15/2018	5/15/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018
			Sample Depth (ft bls):	8 - 8.5	2 - 2.5	-	8 - 8.5	2 - 2.5	8 - 8.5	2 - 2.5	8 - 8.5	2 - 2.5	-	-	-	-	-	-	-	-
1,1'-Biphenyl	--	mg/kg		0.037 U	0.037 U	0.041 U	0.038 U	0.037 U	0.037 U	0.036 U	0.037 U	0.174	0.0695 U	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	--	mg/kg		0.037 U	0.037 U	0.041 U	0.038 U	0.037 U	0.037 U	0.036 U	0.037 U	0.039 U	0.139 U	0.14 U	0.141 U	0.143 U	NA	NA	NA	NA
1,2,4-Trichlorobenzene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0695 U	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
1,2-Dichlorobenzene	500	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0695 U	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
1,2-Diphenylhydrazine	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0695 U	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
1,3-Dichlorobenzene	280	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0695 U	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
1,4-Dichlorobenzene	130	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0695 U	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	0.139 U	0.14 U	0.141 U	0.143 U	NA	NA	NA	NA
2,4,5-Trichlorophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0695 U	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
2,4,6-Trichlorophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0695 U	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
2,4-Dichlorophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0695 U	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
2,4-Dimethylphenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0695 U	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
2,4-Dinitrophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	0.139 U	0.14 U	0.141 U	0.143 U	NA	NA	NA	NA
2,4-Dinitrotoluene	--	mg/kg		0.037 U	0.037 U	0.041 U	0.038 U	0.037 U	0.037 U	0.036 U	0.037 U	0.039 U	0.0695 U	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
2,6-Dinitrotoluene	--	mg/kg		0.037 U	0.037 U	0.041 U	0.038 U	0.037 U	0.037 U	0.036 U	0.037 U	0.039 U	0.0695 U	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
2-Chloronaphthalene	--	mg/kg		0.037 U	0.037 U	0.041 U	0.038 U	0.037 U	0.037 U	0.036 U	0.037 U	0.039 U	0.0695 U	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
2-Chlorophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0695 U	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
2-Methylnaphthalene	--	mg/kg		0.037 U	0.038	0.041 U	0.038 U	0.036 J	0.037 U	0.036 U	0.037 U	1.07	0.0695 U	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
2-Methylphenol	500	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0695 U	0.07 U	0.0709 U	0.0719 U	0.0472 U	0.0473 U	0.048 U	0.0464 U
2-Nitroaniline	--	mg/kg		0.037 U	0.037 U	0.041 U	0.038 U	0.037 U	0.037 U	0.036 U	0.037 U	0.039 U	0.139 U	0.14 U	0.141 U	0.143 U	NA	NA	NA	NA
2-Nitrophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0695 U	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
3&4-Methylphenol	500	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0695 U	0.07 U	0.0709 U	0.0719 U	0.0472 U	0.0473 U	0.048 U	0.0464 U
3,3'-Dichlorobenzidine	--	mg/kg		0.037 U	0.037 U	0.041 U	0.038 U	0.037 U	0.037 U	0.036 U	0.037 U	0.039 U	0.0695 U	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
3-Nitroaniline	--	mg/kg		0.037 U	0.037 U	0.041 U	0.038 U	0.037 U	0.037 U	0.036 U	0.037 U	0.039 U	0.139 U	0.14 U	0.141 U	0.143 U	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	0.139 U	0.14 U	0.141 U	0.143 U	NA	NA	NA	NA
4-Bromophenyl phenyl ether	--	mg/kg		0.037 U	0.037 U	0.041 U	0.038 U	0.037 U	0.037 U	0.036 U	0.037 U	0.039 U	0.0695 U	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
4-Chloro-3-methylphenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0695 U	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
4-Chloroaniline	--	mg/kg		0.037 U	0.037 U	0.041 U	0.038 U	0.037 U	0.037 U	0.036 U	0.037 U	0.039 U	0.0695 U	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	--	mg/kg		0.037 U	0.037 U	0.041 U	0.038 U	0.037 U	0.037 U	0.036 U	0.037 U	0.039 U	0.0695 U	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
4-Nitroaniline	--	mg/kg		0.037 U	0.037 U	0.041 U	0.038 U	0.037 U	0.037 U	0.036 U	0.037 U	0.039 U	0.139 U	0.14 U	0.141 U	0.143 U	NA	NA	NA	NA
4-Nitrophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	0.139 U	0.14 U	0.141 U	0.143 U	NA	NA	NA	NA
Acenaphthene	500	mg/kg		0.037 U	0.086	0.041 U	0.038 U	0.213	0.037 U	0.036 U	0.037 U	0.211	0.0695 U	0.07 U	0.153	0.0719 U	0.0685 JD	0.0566 JD	0.048 U	0.0464 U
Acenaphthylene	500	mg/kg		0.037 U	0.232	0.233	0.046	0.112	0.037 U	0.048	0.037 U	0.209	0.346	0.07 U	0.66	0.0719 U	0.37 D	0.0473 U	0.048 U	0.147 D
Acetophenone	--	mg/kg		0.037 U	0.037 U	0.041 U	0.038 U	0.037 U	0.037 U	0.036 U	0.037 U	0.039 U	0.0695 U	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
Aniline	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	0.278 U	0.28 U	0.283 U	0.287 U	NA	NA	NA	NA
Anthracene	500	mg/kg		0.037 U	0.315	0.41	0.038 U	0.377	0.037 U	0.052	0.038	0.487	0.305	0.07 U	0.68	0.0803	0.304 D	0.151 D	0.048 U	0.108 D
Atrazine	--	mg/kg		0.037 U	0.037 U	0.041 U	0.038 U	0.037 U	0.037 U	0.036 U	0.037 U	0.039 U	0.0695 U	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
Benzaldehyde	--	mg/kg		0.037 U	0.037 U	0.041 U	0.038 U	0.037 U	0.037 U	0.036 U	0.037 U	0.039 U	0.0695 U	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
Benzidine	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	0.278 U	0.28 U	0.283 U	0.287 U	NA	NA	NA	NA
Benzo[a]anthracene	5.6	mg/kg		0.055	1.81	0.775	0.095	1.14	0.142	0.227	0.134	1.55	1.17	0.124	2.89	0.226	1.59 D	0.415 D	0.0957 D	0.486 D
Benzo[a]pyrene	1	mg/kg		0.037 U	**1.12**	**1.44**	0.057	0.665	0.091	0.121	0.082	0.38	**1.06**	0.0827	**2.47**	0.178	**1.53 D**	0.37 D	0.0865 JD	0.478 D
Benzo[b]fluoranthene	5.6	mg/kg		0.037 U	1.21	1.83	0.048	0.552	0.08	0.114	0.074	0.944	0.985	0.0782	2.17	0.162	1.38 D	0.34 D	0.075 JD	0.462 D
Benzo[g,h,i]perylene	500	mg/kg		0.121	0.416	3.45	0.099	0.23	0.04	0.069	0.197	0.126	0.802	0.0715	1.62	0.107	1.09 D	0.278 D	0.0605 JD	0.376 D
Benzo[k]fluoranthene	56	mg/kg		0.037 U	1.22	1.14	0.068	0.721	0.083	0.157	0.082	1.07	0.944	0.0827	2.15	0.162	1.23 D	0.289 D	0.0673 JD	0.419 D
Benzoic Acid	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0695 U	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
Benzyl Alcohol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0695 U	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
Bis(2-chloro-1-methylethyl)ether	--	mg/kg		0.037 U	0.037 U	0.041 U	0.038 U	0.037 U	0.037 U	0.036 U	0.037 U	0.039 U	0.0695 U	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
Bis(2-chloroethoxy)methane	--	mg/kg		0.037 U	0.037 U	0.041 U	0.038 U	0.037 U	0.037 U	0.036 U	0.037 U	0.039 U	0.0695 U	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
Bis(2-chloroethyl) ether	--	mg/kg		0.037 U	0.037 U	0.041 U	0.038 U	0.037 U	0.037 U	0.036 U	0.037 U	0.039 U	0.0695 U	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
Bis(2-ethylhexyl) phthalate	--	mg/kg		0.037 U	0.037 U	0.041 U	0.038 U	0.037 U	0.037 U	0.036 U	0.202	5.61	0.104	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
Butylbenzyl phthalate	--	mg/kg		0.037 U	0.037 U	0.041 U	0.038 U	0.037 U	0.037 U	0.036 U	0.037 U	0.039 U	0.0695 U	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
Caprolactam	--	mg/kg		0.037 U	0.037 U	0.041 U	0.038 U	0.037 U	0.037 U	0.036 U	0.037 U	0.039 U	0.139 U	0.14 U	0.141 U	0.143 U	NA	NA	NA	NA

Table 2. Summary of Semivolatile Organic Compounds in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	SB-34D	SB-34S	SB-35A	SB-35D	SB-35S	SB-36D	SB-36S	SB-37D	SB-37S	SB42-A	SB42-B	SB43-A	SB43-B	SB-56A	SB-56B	SB-56C	SB-57A
			Sample Date:	12/18/2017	12/18/2017	12/13/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017	5/15/2018	5/15/2018	5/15/2018	5/15/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018
			Sample Depth (ft bls):	8 - 8.5	2 - 2.5	-	8 - 8.5	2 - 2.5	8 - 8.5	2 - 2.5	8 - 8.5	2 - 2.5	-	-	-	-	-	-	-	-
Carbazole	--	mg/kg		0.037 U	0.147	0.114	0.038 U	0.176	0.037 U	0.03 J	0.037 U	0.184	0.133	0.07 U	0.224	0.0719 U	NA	NA	NA	NA
Chrysene	56	mg/kg		0.048	2.08	1.12	0.101	1.14	0.142	0.252	0.131	1.36	1.14	0.122	2.61	0.22	1.56 D	0.434 D	0.0987 D	0.513 D
Dibenzo[a,h]anthracene	0.56	mg/kg		0.037 U	0.206	**0.911**	0.038 U	0.105	0.037 U	0.036 U	0.037 U	0.079	0.27	0.07 U	0.545	0.0719 U	0.356 D	0.0701 JD	0.048 U	0.129 D
Dibenzofuran	350	mg/kg		0.037 U	0.057	0.041 U	0.038 U	0.105	0.037 U	0.036 U	0.037 U	0.151	0.0695 U	0.07 U	0.0712	0.0719 U	0.0474 JD	0.0473 U	0.048 U	0.0464 U
Diethyl phthalate	--	mg/kg		0.037 U	0.037 U	0.041 U	0.038 U	0.037 U	0.037 U	0.036 U	0.037 U	0.039 U	0.0695 U	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
Dimethyl phthalate	--	mg/kg		0.037 U	0.037 U	0.041 U	0.038 U	0.037 U	0.037 U	0.036 U	0.037 U	0.039 U	0.0695 U	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
Di-n-butyl phthalate	--	mg/kg		0.037 U	0.037 U	0.048	0.038 U	0.037 U	0.037 U	0.036 U	0.037 U	0.1	0.0921	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
Di-n-octyl phthalate	--	mg/kg		0.037 U	0.037 U	0.041 U	0.038 U	0.037 U	0.037 U	0.036 U	0.037 U	0.403	0.0695 U	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
Fluoranthene	500	mg/kg		0.086	3.65	0.789	0.136	2.31	0.24	0.561	0.231	3.04	2.16	0.23	4.83	0.452	2.99 D	0.926 D	0.191 D	0.984 D
Fluorene	500	mg/kg		0.037 U	0.096	0.041 U	0.038 U	0.147	0.037 U	0.036 U	0.037 U	0.328	0.081	0.07 U	0.192	0.0719 U	0.0851 JD	0.0588 JD	0.048 U	0.0464 U
Hexachlorobenzene	6	mg/kg		0.037 U	0.037 U	0.041 U	0.038 U	0.037 U	0.037 U	0.036 U	0.037 U	0.039 U	0.0695 U	0.07 U	0.0709 U	0.0719 U	0.0472 U	0.0473 U	0.048 U	0.0464 U
Hexachlorobutadiene	--	mg/kg		0.037 U	0.037 U	0.041 U	0.038 U	0.037 U	0.037 U	0.036 U	0.037 U	0.039 U	0.0695 U	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
Hexachlorocyclopentadiene	--	mg/kg		0.037 U	0.037 U	0.041 U	0.038 U	0.037 U	0.037 U	0.036 U	0.037 U	0.039 U	0.0695 U	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
Hexachloroethane	--	mg/kg		0.037 U	0.037 U	0.041 U	0.038 U	0.037 U	0.037 U	0.036 U	0.037 U	0.039 U	0.0695 U	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
Indeno[1,2,3-cd]pyrene	5.6	mg/kg		0.06	0.407	2.3	0.05	0.242	0.041	0.067	0.102	0.174	0.694	0.07 U	1.44	0.0837	1.01 D	0.21 D	0.0513 JD	0.345 D
Isophorone	--	mg/kg		0.037 U	0.037 U	0.041 U	0.038 U	0.037 U	0.037 U	0.036 U	0.037 U	0.039 U	0.0695 U	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
Naphthalene	500	mg/kg		0.037 U	0.058	0.041 U	0.038 U	0.069	0.037 U	0.036 U	0.037 U	0.377	0.0695 U	0.07 U	0.0709 U	0.0719 U	0.0472 U	0.0473 U	0.048 U	0.0464 U
Nitrobenzene	--	mg/kg		0.037 U	0.037 U	0.041 U	0.038 U	0.037 U	0.037 U	0.036 U	0.037 U	0.039 U	0.0695 U	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
n-Nitrosodimethylamine	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0695 U	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
n-Nitrosodi-n-propylamine	--	mg/kg		0.037 U	0.037 U	0.041 U	0.038 U	0.037 U	0.037 U	0.036 U	0.037 U	0.039 U	0.0695 U	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
n-Nitrosodiphenylamine	--	mg/kg		0.037 U	0.037 U	0.041 U	0.038 U	0.037 U	0.037 U	0.036 U	0.037 U	0.039 U	0.0695 U	0.07 U	0.0709 U	0.0719 U	NA	NA	NA	NA
Pentachlorophenol	6.7	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0695 U	0.07 U	0.0709 U	0.0719 U	0.0472 U	0.0473 U	0.048 U	0.0464 U
Phenanthrene	500	mg/kg		0.06	1.62	0.319	0.071	1.72	0.11	0.315	0.138	2.08	0.983	0.163	2.37	0.281	1.47 D	0.826 D	0.144 D	0.489 D
Phenols (Total)	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0695 U	0.07 U	0.0709 U	0.0719 U	0.0472 U	0.0473 U	0.048 U	0.0464 U
Pyrene	500	mg/kg		0.076	2.93	0.899	0.121	2.03	0.239	0.416	0.21	1.99	2.11	0.261	5.89	0.399	2.72 D	0.952 D	0.195 D	0.935 D

Table 2. Summary of Semivolatile Organic Compounds in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	SB-57B	SB-57C	SB-58A	SB-58B	SB-58C	SB-59A	SB-59B	SB-59C	SB-60A	SB-60B	SB-60C	SB-61A	SB-61B	SB-61C	SB-64A	SB-64B
			Sample Date:	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018
			Sample Depth (ft bls):	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1'-Biphenyl	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	500	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Diphenylhydrazine	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	280	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	130	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	500	mg/kg		0.0489 U	0.0488 U	0.0429 U	0.0531 U	0.0495 U	0.0449 U	0.0459 U	0.0433 U	0.044 U	0.0469 U	0.0487 U	0.0445 U	0.0488 U	0.0509 U	0.327 U	0.047 U
2-Nitroaniline	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3&4-Methylphenol	500	mg/kg		0.0489 U	0.0488 U	0.0429 U	0.13 D	0.0495 U	0.0449 U	0.0459 U	0.0433 U	0.044 U	0.0469 U	0.0487 U	0.0445 U	0.0488 U	0.0509 U	0.327 U	0.047 U
3,3'-Dichlorobenzidine	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	500	mg/kg		0.0489 U	0.0488 U	0.0429 U	6.35 D	0.098 JD	1.21 D	0.132 D	0.0433 U	0.14 D	0.141 D	0.0487 U	0.27 D	2.15 D	0.348 D	0.327 U	0.278 D
Acenaphthylene	500	mg/kg		0.0489 U	0.0488 U	0.0429 U	1.98 D	0.231 D	0.529 D	0.369 D	0.0433 U	0.133 D	0.114 D	0.0512 JD	0.339 D	0.459 D	0.572 D	0.327 U	0.409 D
Acetophenone	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aniline	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	500	mg/kg		0.0569 JD	0.115 D	0.0429 U	18.5 D	0.325 D	2.52 D	0.588 D	0.0433 U	0.323 D	0.364 D	0.0598 JD	0.711 D	3.88 D	1.11 D	0.327 U	0.748 D
Atrazine	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzidine	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo[a]anthracene	5.6	mg/kg		0.222 D	0.285 D	0.0429 U	**49.1 D**	1.16 D	**19.1 D**	0.526 D	0.0433 U	0.874 D	0.88 D	0.345 D	1.84 D	**7.94 D**	3.93 D	0.327 U	1.95 D
Benzo[a]pyrene	1	mg/kg		0.214 D	0.268 D	0.0429 U	**47.3 D**	**1.18 D**	**21 D**	0.528 D	0.0433 U	0.793 D	0.925 D	0.404 D	**1.78 D**	**7.46 D**	**4.21 D**	0.327 U	**1.98 D**
Benzo[b]fluoranthene	5.6	mg/kg		0.207 D	0.217 D	0.0429 U	**39.4 D**	1.15 D	**17.3 D**	0.572 D	0.0433 U	0.742 D	0.771 D	0.325 D	1.65 D	**5.89 D**	3.67 D	0.327 U	1.7 D
Benzo[g,h,i]perylene	500	mg/kg		0.166 D	0.17 D	0.0429 U	26.5 D	0.804 D	10.1 D	0.717 D	0.0433 U	0.487 D	0.579 D	0.274 D	0.962 D	5.29 D	2.66 D	0.327 U	1.4 D
Benzo[k]fluoranthene	56	mg/kg		0.185 D	0.206 D	0.0429 U	29.1 D	1.17 D	13.3 D	0.497 D	0.0433 U	0.662 D	0.78 D	0.321 D	1.46 D	6.18 D	3.61 D	0.327 U	1.73 D
Benzoic Acid	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzyl Alcohol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloro-1-methylethyl)ether	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroethoxy)methane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroethyl) ether	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl) phthalate	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzyl phthalate	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 2. Summary of Semivolatile Organic Compounds in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	SB-57B	SB-57C	SB-58A	SB-58B	SB-58C	SB-59A	SB-59B	SB-59C	SB-60A	SB-60B	SB-60C	SB-61A	SB-61B	SB-61C	SB-64A	SB-64B
			Sample Date:	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018
			Sample Depth (ft bls):	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbazole	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	56	mg/kg		0.243 D	0.306 D	0.0429 U	48.4 D	1.43 D	18.1 D	0.505 D	0.0433 U	0.918 D	0.888 D	0.338 D	1.82 D	8.43 D	4.51 D	0.327 U	2.18 D
Dibenzo[a,h]anthracene	0.56	mg/kg		0.0489 U	0.0488 U	0.0429 U	**8.71 D**	0.282 D	**2.53 D**	0.146 D	0.0433 U	0.171 D	0.132 D	0.0512 JD	0.238 D	**1.58 D**	**1.01 D**	0.327 U	0.493 D
Dibenzofuran	350	mg/kg		0.0489 U	0.0488 U	0.0429 U	2.27 D	0.107 D	1.23 D	0.223 D	0.0433 U	0.0751 JD	0.111 D	0.0487 U	0.227 D	0.0488 U	0.212 D	0.327 U	0.221 D
Diethyl phthalate	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butyl phthalate	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	500	mg/kg		0.423 D	0.594 D	0.0429 U	80.3 D	2.55 D	32.4 D	1.38 D	0.0433 U	1.75 D	1.77 D	0.482 D	NA	20.2 D	9.2 D	0.448 JD	5.87 D
Fluorene	500	mg/kg		0.0489 U	0.0488 U	0.0429 U	6.24 D	0.133 D	1.12 D	0.124 D	0.0433 U	0.117 D	0.126 D	0.0487 U	0.29 D	1.89 D	0.31 D	0.327 U	0.35 D
Hexachlorobenzene	6	mg/kg		0.0489 U	0.0488 U	0.0429 U	0.0531 U	0.0495 U	0.0449 U	0.0459 U	0.0433 U	0.044 U	0.0469 U	0.0487 U	0.0445 U	0.0488 U	0.0509 U	0.327 U	0.047 U
Hexachlorobutadiene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno[1,2,3-cd]pyrene	5.6	mg/kg		0.162 D	0.188 D	0.0429 U	**29.5 D**	0.878 D	**12.8 D**	0.629 D	0.0433 U	0.572 D	0.624 D	0.252 D	1.19 D	4.62 D	2.47 D	0.327 U	1.3 D
Isophorone	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	500	mg/kg		0.0489 U	0.0654 JD	0.0429 U	1.9 D	0.134 D	0.941 D	0.3 D	0.0433 U	0.0597 JD	0.0957 D	0.0487 U	0.205 D	1.26 D	0.195 D	0.327 U	0.364 D
Nitrobenzene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Nitrosodimethylamine	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Nitrosodi-n-propylamine	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Nitrosodiphenylamine	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	6.7	mg/kg		0.0489 U	0.0488 U	0.0429 U	0.0531 U	0.0495 U	0.0449 U	0.0459 U	0.0433 U	0.044 U	0.0469 U	0.0487 U	0.0445 U	0.0488 U	0.0509 U	0.327 U	0.047 U
Phenanthrene	500	mg/kg		0.319 D	0.537 D	0.0429 U	78.3 D	2.09 D	24.7 D	1.35 D	0.0433 U	1.6 D	1.55 D	0.204 D	2.16 D	23.1 D	5.55 D	0.327 U	5.03 D
Phenols (Total)	--	mg/kg		0.0489 U	0.0488 U	0.0429 U	0.0531 U	0.0495 U	0.0449 U	0.0459 U	0.0433 U	0.044 U	0.0469 U	0.0487 U	0.0445 U	0.0488 U	0.0509 U	0.327 U	0.047 U
Pyrene	500	mg/kg		0.452 D	0.593 D	0.0429 U	110 D	2.24 D	35.5 D	1.11 D	0.0433 U	1.74 D	1.78 D	0.529 D	2.81 D	17 D	7.22 D	0.443 JD	4.6 D

Table 2. Summary of Semivolatile Organic Compounds in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	SB-65A	SB-65B	SB-66A	SB-66B	SB-67A	SB-67B	SB-68A	SB-68B	SB-69A	SB-69B	SB-70A	SB-70B	SB-71A	SB-71B	SB-72A	SB-72B
			Sample Date:	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/14/2018	11/14/2018	11/14/2018	11/14/2018	11/14/2018	11/14/2018
			Sample Depth (ft bls):	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1'-Biphenyl	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	500	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Diphenylhydrazine	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	280	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	130	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	500	mg/kg		0.231 U	0.0431 U	0.0451 U	0.048 U	0.217 U	0.0468 U	0.326 U	0.0461 U	0.21 U	0.0453 U	0.225 U	0.0461 U	0.045 U	0.0505 U	0.0458 U	0.0462 U
2-Nitroaniline	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3&4-Methylphenol	500	mg/kg		0.231 U	0.0431 U	0.0451 U	0.0934 JD	0.217 U	0.0468 U	0.326 U	0.0461 U	0.21 U	0.0453 U	0.225 U	0.0461 U	0.045 U	0.0505 U	0.0458 U	0.0462 U
3,3'-Dichlorobenzidine	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	500	mg/kg		2.7 D	0.0431 U	0.0451 U	5.27 D	0.217 U	0.0807 JD	0.326 U	0.0461 U	0.21 U	0.073 JD	0.225 U	0.0654 JD	0.132 D	0.452 D	0.0458 U	0.0462 U
Acenaphthylene	500	mg/kg		3.53 D	0.0431 U	0.0504 JD	1.21 D	0.217 U	0.068 JD	0.326 U	0.0461 U	0.21 U	0.561 D	0.225 U	0.0461 U	0.281 D	0.241 D	0.196 D	0.108 D
Acetophenone	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aniline	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	500	mg/kg		7.22 D	0.064 JD	0.0497 JD	16.8 D	0.505 D	0.279 D	0.326 U	0.112 D	0.21 U	0.478 D	0.225 U	0.156 D	0.357 D	1.17 D	0.191 D	0.132 D
Atrazine	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzidine	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo[a]anthracene	5.6	mg/kg		**20.3 D**	0.292 D	0.178 D	**31.6 D**	3.52 D	0.982 D	0.665 D	0.973 D	0.969 D	1.47 D	0.616 D	0.357 D	1.11 D	**12.5 D**	0.721 D	0.551 D
Benzo[a]pyrene	1	mg/kg		**18.7 D**	0.371 D	0.237 D	**32 D**	**3.9 D**	**1.04 D**	0.784 D	**1.08 D**	**1.4 D**	**2.16 D**	0.609 D	0.341 D	**1.15 D**	**12.2 D**	0.737 D	0.528 D
Benzo[b]fluoranthene	5.6	mg/kg		**14.4 D**	0.303 D	0.204 D	**26.5 D**	4.21 D	0.83 D	0.987 D	1.37 D	1.73 D	2.35 D	0.551 D	0.259 D	1.02 D	**11.2 D**	0.662 D	0.442 D
Benzo[g,h,i]perylene	500	mg/kg		10.5 D	0.239 D	0.176 D	20.4 D	3.08 D	0.653 D	0.665 D	0.891 D	1.22 D	1.86 D	0.405 JD	0.184 D	0.749 D	6.24 D	0.492 D	0.346 D
Benzo[k]fluoranthene	56	mg/kg		17.2 D	0.329 D	0.197 D	26.8 D	3.88 D	0.902 D	0.805 D	1.08 D	1.37 D	2.08 D	0.555 D	0.289 D	1 D	10.5 D	0.624 D	0.468 D
Benzoic Acid	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzyl Alcohol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloro-1-methylethyl)ether	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroethoxy)methane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroethyl) ether	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl) phthalate	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzyl phthalate	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 2. Summary of Semivolatile Organic Compounds in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	SB-65A	SB-65B	SB-66A	SB-66B	SB-67A	SB-67B	SB-68A	SB-68B	SB-69A	SB-69B	SB-70A	SB-70B	SB-71A	SB-71B	SB-72A	SB-72B
			Sample Date:	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/14/2018	11/14/2018	11/14/2018	11/14/2018	11/14/2018	11/14/2018
			Sample Depth (ft bls):	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbazole	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	56	mg/kg		20.8 D	0.336 D	0.211 D	32.6 D	4.81 D	1.12 D	0.899 D	1.29 D	1.44 D	1.91 D	0.634 D	0.365 D	1.2 D	13.5 D	0.755 D	0.55 D
Dibenzo[a,h]anthracene	0.56	mg/kg		**4.28 D**	0.0791 JD	0.0451 U	**6.96 D**	**0.886 D**	0.232 D	0.326 U	0.348 D	0.466 D	**0.691 D**	0.225 U	0.047 JD	0.197 D	**2.78 D**	0.128 D	0.0892 JD
Dibenzofuran	350	mg/kg		2.21 D	0.0431 U	0.0451 U	3.31 D	0.217 U	0.0468 U	0.326 U	0.0461 U	0.21 U	0.0453 U	0.225 U	0.05 JD	0.1 D	0.062 JD	0.0458 U	0.0462 U
Diethyl phthalate	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butyl phthalate	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	500	mg/kg		48.3 D	0.713 D	0.386 D	91.2 D	10.1 D	2.21 D	1.6 D	2.43 D	2.16 D	2.96 D	1.11 D	0.74 D	2.06 D	18.1 D	1.28 D	0.928 D
Fluorene	500	mg/kg		3.68 D	0.0431 U	0.0451 U	5.31 D	0.294 JD	0.0926 JD	0.326 U	0.0461 U	0.21 U	0.0997 D	0.225 U	0.075 JD	0.143 D	0.273 D	0.0607 JD	0.0462 U
Hexachlorobenzene	6	mg/kg		0.231 U	0.0431 U	0.0451 U	0.048 U	0.217 U	0.0468 U	0.326 U	0.0461 U	0.21 U	0.0453 U	0.225 U	0.0461 U	0.045 U	0.0505 U	0.0458 U	0.0462 U
Hexachlorobutadiene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno[1,2,3-cd]pyrene	5.6	mg/kg		**10.7 D**	0.219 D	0.156 D	**20.3 D**	2.84 D	0.601 D	0.691 D	0.885 D	1.18 D	1.72 D	0.476 D	0.222 D	0.832 D	**7.71 D**	0.547 D	0.376 D
Isophorone	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	500	mg/kg		2.41 D	0.0431 U	0.0451 U	0.476 D	0.217 U	0.103 D	0.326 U	0.0461 U	0.21 U	0.0453 U	0.225 U	0.0461 U	0.0732 JD	0.0505 U	0.0458 U	0.0462 U
Nitrobenzene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Nitrosodimethylamine	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Nitrosodi-n-propylamine	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Nitrosodiphenylamine	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	6.7	mg/kg		0.231 U	0.0431 U	0.0451 U	0.048 U	0.217 U	0.0468 U	0.326 U	0.0461 U	0.21 U	0.0453 U	0.225 U	0.0461 U	0.045 U	0.0505 U	0.0458 U	0.0462 U
Phenanthrene	500	mg/kg		39.9 D	0.385 D	0.177 D	78 D	4.54 D	1.43 D	0.369 JD	0.642 D	0.429 D	1.16 D	0.759 D	0.707 D	1.6 D	5.17 D	0.807 D	0.541 D
Phenols (Total)	--	mg/kg		0.231 U	0.0431 U	0.0451 U	0.048 U	0.217 U	0.0468 U	0.326 U	0.0461 U	0.21 U	0.0453 U	0.225 U	0.0461 U	0.045 U	0.0505 U	0.0458 U	0.0462 U
Pyrene	500	mg/kg		35.5 D	0.518 D	0.302 D	70.3 D	6.56 D	1.77 D	1.17 D	1.67 D	1.72 D	2.44 D	1.22 D	0.763 D	2.17 D	22.5 D	1.33 D	0.94 D

Table 2. Summary of Semivolatile Organic Compounds in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	SB-72C	SB-73A	SB-73B	SB-73C	SB-74A	SB-74B	SB-75A	SB-75B	SB-76A	SB-76B	SB-77A	SB-77B	SB-77C
			Sample Date:	11/14/2018	11/14/2018	11/14/2018	11/14/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018
			Sample Depth (ft bls):	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1'-Biphenyl	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	500	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Diphenylhydrazine	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	280	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	130	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	500	mg/kg		0.0445 U	0.228 U	0.0473 U	0.0472 U	0.046 U	0.049 U	0.0443 U	0.0499 U	0.044 U	0.0494 U	0.0453 U	0.0477 U	0.0443 U
2-Nitroaniline	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3&4-Methylphenol	500	mg/kg		0.0445 U	0.228 U	0.0473 U	0.0472 U	0.046 U	0.049 U	0.0443 U	0.0499 U	0.044 U	0.0494 U	0.0453 U	0.0477 U	0.0443 U
3,3'-Dichlorobenzidine	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	500	mg/kg		0.0445 U	0.228 U	0.0611 JD	0.0472 U	0.046 U	0.049 U	0.0443 U	0.0499 U	0.0463 JD	0.0494 U	0.0918 D	0.0477 U	0.0443 U
Acenaphthylene	500	mg/kg		0.0445 U	0.228 U	0.144 D	0.0472 U	0.0909 JD	0.049 U	0.0443 U	0.0499 U	0.0625 JD	0.0494 U	0.437 D	0.0477 U	0.0443 U
Acetophenone	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aniline	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	500	mg/kg		0.0445 U	0.228 U	0.263 D	0.0472 U	0.146 D	0.135 D	0.0443 U	0.0685 JD	0.168 D	0.0494 U	0.405 D	0.102 D	0.0443 U
Atrazine	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzidine	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo[a]anthracene	5.6	mg/kg		0.0445 U	0.228 U	1.04 D	0.0472 U	0.581 D	0.316 D	0.155 D	0.222 D	0.573 D	0.126 D	2.55 D	0.408 D	0.0443 U
Benzo[a]pyrene	1	mg/kg		0.0445 U	0.228 U	0.983 D	0.0472 U	0.578 D	0.225 D	0.138 D	0.216 D	0.546 D	0.198 D	**2.87 D**	0.346 D	0.0529 JD
Benzo[b]fluoranthene	5.6	mg/kg		0.0445 U	0.228 U	0.9 D	0.0472 U	0.569 D	0.272 D	0.139 D	0.18 D	0.503 D	0.138 D	2.65 D	0.312 D	0.0459 JD
Benzo[g,h,i]perylene	500	mg/kg		0.0445 U	0.228 U	0.585 D	0.0472 U	0.435 D	0.166 D	0.0997 D	0.138 D	0.318 D	0.173 D	1.59 D	0.225 D	0.0443 U
Benzo[k]fluoranthene	56	mg/kg		0.0445 U	0.228 U	0.796 D	0.0472 U	0.492 D	0.195 D	0.119 D	0.16 D	0.445 D	0.114 D	2.3 D	0.279 D	0.0443 U
Benzoic Acid	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzyl Alcohol	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloro-1-methylethyl)ether	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroethoxy)methane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroethyl) ether	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl) phthalate	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzyl phthalate	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 2. Summary of Semivolatile Organic Compounds in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	SB-72C	SB-73A	SB-73B	SB-73C	SB-74A	SB-74B	SB-75A	SB-75B	SB-76A	SB-76B	SB-77A	SB-77B	SB-77C
			Sample Date:	11/14/2018	11/14/2018	11/14/2018	11/14/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018
			Sample Depth (ft bls):	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbazole	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	56	mg/kg		0.0445 U	0.229 JD	1.11 D	0.0472 U	0.629 D	0.416 D	0.158 D	0.214 D	0.563 D	0.15 D	2.4 D	0.429 D	0.0443 U
Dibenzo[a,h]anthracene	0.56	mg/kg		0.0445 U	0.228 U	0.157 D	0.0472 U	0.121 D	0.049 U	0.0443 U	0.0499 U	0.13 D	0.0497 JD	**0.597 D**	0.0609 JD	0.0443 U
Dibenzofuran	350	mg/kg		0.0445 U	0.228 U	0.0473 U	0.0472 U	0.046 U	0.049 U	0.0443 U	0.0499 U	0.044 U	0.0494 U	0.0453 U	0.0477 U	0.0443 U
Diethyl phthalate	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butyl phthalate	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	500	mg/kg		0.0445 U	0.251 JD	1.67 D	0.0472 U	1.25 D	0.682 D	0.332 D	0.434 D	1.23 D	0.188 D	3.62 D	0.827 D	0.0572 JD
Fluorene	500	mg/kg		0.0445 U	0.228 U	0.0792 JD	0.0472 U	0.0513 JD	0.0547 JD	0.0443 U	0.0499 U	0.0533 JD	0.0494 U	0.0889 JD	0.0477 U	0.0443 U
Hexachlorobenzene	6	mg/kg		0.0445 U	0.228 U	0.0473 U	0.0472 U	0.046 U	0.049 U	0.0443 U	0.0499 U	0.044 U	0.0494 U	0.0453 U	0.0477 U	0.0443 U
Hexachlorobutadiene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno[1,2,3-cd]pyrene	5.6	mg/kg		0.0445 U	0.228 U	0.673 D	0.0472 U	0.383 D	0.143 D	0.0912 D	0.115 D	0.284 D	0.122 D	1.57 D	0.194 D	0.0443 U
Isophorone	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	500	mg/kg		0.0445 U	0.228 U	0.0473 U	0.0472 U	0.046 U	0.0578 JD	0.0443 U	0.0499 U	0.044 U	0.0494 U	0.0453 U	0.0477 U	0.0443 U
Nitrobenzene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Nitrosodimethylamine	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Nitrosodi-n-propylamine	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Nitrosodiphenylamine	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	6.7	mg/kg		0.0445 U	0.228 U	0.0473 U	0.0472 U	0.046 U	0.049 U	0.0443 U	0.0499 U	0.044 U	0.0494 U	0.0453 U	0.0477 U	0.0443 U
Phenanthrene	500	mg/kg		0.0445 U	0.228 U	1.04 D	0.0472 U	0.743 D	0.628 D	0.183 D	0.276 D	0.766 D	0.119 D	1.47 D	0.551 D	0.0443 U
Phenols (Total)	--	mg/kg		0.0445 U	0.228 U	0.0473 U	0.0472 U	0.046 U	0.049 U	0.0443 U	0.0499 U	0.044 U	0.0494 U	0.0453 U	0.0477 U	0.0443 U
Pyrene	500	mg/kg		0.0445 U	0.345 JD	1.82 D	0.0472 U	1.04 D	0.643 D	0.298 D	0.416 D	1.05 D	0.21 D	3.62 D	0.82 D	0.0565 JD

Table 3. Summary of Metals in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	COMPOSITE	Dup 1114	SB-31D	SB-31S	SB-32D	SB-32D1	SB-32S	SB-33D	SB-33S	SB-34D	SB-34S	SB-35D	SB-35S	SB-36D	SB-36S	SB-37D	SB-37S
			Sample Date:	12/20/2017	11/15/2018	12/18/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017
			Sample Depth (ft bls):	-	-	8 - 8.5	2 - 2.5	8 - 8.5	12 - 12.5	2 - 2.5	8 - 8.5	2 - 2.5	8 - 8.5	2 - 2.5	8 - 8.5	2 - 2.5	8 - 8.5	2 - 2.5	8 - 8.5	2 - 2.5
Aluminum	--	mg/kg		9330	6000	9390	6320	7010	10000	10800	8210	5210	10000	7810	10100	9100	9550	7940	8180	8900
Antimony	--	mg/kg		4.31	25.7	0.864	0.831	1.94	0.332 J	1.97	1.86	2.16	0.616	2.36	0.612 U	0.765	0.656	0.695	0.287 J	2.77
Arsenic	16	mg/kg		9.55	9.21	5.53	3.84	6.04	3.44	14.3	**19.2**	**21.7**	5.72	8.42	4.28	**78.4**	1.96	5.38	2.45	11
Barium	400	mg/kg		**718**	**420**	218	385	91	45.6	**935**	**508**	**707**	52.9	283	67.7	**696**	52.6	**524**	84	**680**
Beryllium	590	mg/kg		0.759	0.054 U	0.483 J	0.359 J	0.48 J	0.42 J	1.64	0.349 J	0.607 U	0.495 J	1.76	0.538 J	0.463 J	0.52 J	0.448 J	0.404 J	0.761
Cadmium	9.3	mg/kg		1.11	**11.3**	0.62 U	0.451 J	0.583 U	0.63 U	1.43	1.25	1.3	0.589 U	1.31	0.612 U	0.538 J	0.614 U	0.593	0.588 U	2.01
Calcium	--	mg/kg		26100	17300	19900	54400	5850	1500	40900	72000	59600	2230	11700	4170	54500	3680	41400	6930	45400
Chromium, Hexavalent	400	mg/kg		NA	142	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium, Trivalent	1500	mg/kg		NA	1230	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	1500	mg/kg		66.5	1370	18.6	41.5	12.3	16.3	34.6	19.5	11.6	21.7	39	17.9	19	18.1	21	15.9	44.9
Cobalt	--	mg/kg		10	18	6.99	5.01	8.01	7.04	14	5.4	3.99	7.71	17.4	7.09	5.73	6.18	6.1	6.21	10.8
Copper	270	mg/kg		83.9	191	28.3	14.8	25.4	16.8	172	35.5	22.7	15.1	**322**	14.7	33.5	22.5	27.1	19.3	147
Cyanide	27	mg/kg		NA	0.719	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	--	mg/kg		21300	35800	19700	13200	16200	17300	29400	20000	12100	19700	26400	18400	15200	17400	14900	16000	30900
Lead	1000	mg/kg		745	**2900**	167	566	98.7	38	970	**2360**	**2730**	34.3	592	79.7	620	16.9	**1020**	94.3	751
Magnesium	--	mg/kg		5330	2690	5080	3920	2940	3390	4640	7270	3150	3410	2550	3740	8220	4210	3920	3070	6150
Manganese	10000	mg/kg		351	306	322	237	443	142	366	277	205	171	301	354	295	254	306	353	348
Mercury	2.8	mg/kg		0.327	0.474	0.241	0.346	0.156	0.066	0.65	1.41	1.59	0.063	0.422	0.091	0.421	0.025 U	0.027 U	0.274	0.467
Nickel	310	mg/kg		26.3	134	18.7	14.1	95.2	18.1	28.6	11.2	8.32	17.9	44	16.5	13.1	17.7	16	14.1	27.4
Potassium	--	mg/kg		2090	1730	1880	1610	1170	1200	2250	2370	1250	1500	1100	1650	2330	1620	2270	1400	1650
Selenium	1500	mg/kg		2.04	2.68 U	2.36	1.04	1.12	1.65	1.8	3.12	2.42	2.37	1.54	2.4	0.676	1.55	1.46	1.41	1.62
Silver	1500	mg/kg		0.31 J	15.9	0.62 U	0.617 U	0.583 U	0.63 U	0.311 J	0.254 J	0.338 J	0.589 U	0.255 J	0.612 U	0.571 U	0.614 U	0.588 U	0.588 U	0.357 J
Sodium	--	mg/kg		436	617	468	380	416	174	1050	1150	348	246	483	211	1030	729	342	325	889
Thallium	--	mg/kg		0.31 J	2.68 U	0.62 U	0.315 J	0.583 U	0.63 U	0.273 J	0.617 U	0.607 U	0.589 U	0.58 U	0.612 U	0.571 U	0.614 U	0.588 U	0.588 U	0.617 U
Vanadium	--	mg/kg		31	36.9	26.1	19	19.1	19.4	33.4	27.9	15.8	28.5	28.2	21.9	21.7	23.4	23	22.7	29
Zinc	10000	mg/kg		667	3070	246	1070	119	53.1	1760	963	1260	53.5	2290	58.6	470	53.8	587	71.4	1120

Table 3. Summary of Metals in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	SB42-A	SB42-B	SB43-A	SB43-B	SB-56A	SB-56B	SB-56C	SB-57A	SB-57B	SB-57C	SB-58A	SB-58B	SB-58C	SB-59A	SB-59B	SB-59C	SB-60A
			Sample Date:	5/15/2018	5/15/2018	5/15/2018	5/15/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018
			Sample Depth (ft bls):	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminum	--	mg/kg		7210	6480	7890	19600	6720	2680	6610	4020	4760	9920	3530	4520	6640	4660	9530	5260	5460
Antimony	--	mg/kg		2.88	0.558 U	2.81	0.573 U	2.83 U	3.33	2.87 U	2.79 U	2.93 U	2.91 U	2.56 U	18.1	2.96 U	2.72	2.74 U	2.58 U	2.63 U
Arsenic	16	mg/kg		9.87	1.12 U	6.26	1.15 U	10	11.8	2.28	13	1.76 U	2.16	1.54 U	12.7	6.01	5.36	7.64	1.55 U	3.33
Barium	400	mg/kg		**465**	46.8	**1410**	141	**1540**	89.9	85.2	**945**	178	73.5	20	**546**	**653**	279	**594**	66.8	244
Beryllium	590	mg/kg		1.8	0.141	0.239	0.115 U	0.683	0.167	0.057 U	0.056 U	0.301	0.058 U	0.051 U	0.064 U	0.059 U	0.054 U	2.36	0.052 U	0.271
Cadmium	9.3	mg/kg		1.68	0.335 U	0.857	0.344 U	1.34	0.783	2.42	0.749	7.19	0.735	0.308 U	3.61	2.34	1.82	1.85	0.31 U	0.981
Calcium	--	mg/kg		27700	978	38300	3260	55100	21100	16100	61100	21400	43000	549	6640	45200	12000	20900	16800	15500
Chromium, Hexavalent	400	mg/kg		NA	NA	NA	NA	2.72	0.567 U	0.574 U	0.557 U	0.586 U	0.582 U	0.513 U	0.637 U	0.593 U	0.537 U	0.548 U	0.516 U	0.527 U
Chromium, Trivalent	1500	mg/kg		NA	NA	NA	NA	22.3	7.81	12.1	9.71	13.1	12.5	6.53	17.6	11.8	110	44	14	15.8
Chromium	1500	mg/kg		121	13.8	20.9	34.7	25	7.81	12.1	9.71	13.1	12.5	6.53	17.6	11.8	110	44	14	15.8
Cobalt	--	mg/kg		19.5	6.77	7.67	15	8.94	4.01	8.14	6.51	12.4	42.1	4.52	8.27	8.93	9.5	19.9	6.51	7.11
Copper	270	mg/kg		229	18	54.1	57.2	76.4	**481**	45	16	116	**855**	7.22	**331**	63.2	181	**280**	9.75	74
Cyanide	27	mg/kg		NA	NA	NA	NA	0.776	1.13	0.574 U	0.607	0.586 U	0.582 U	0.513 U	1.45	0.593 U	0.693	0.548 U	0.516 U	0.527 U
Iron	--	mg/kg		43800	12200	14000	29100	13500	15400	20800	8650	84700	21500	9280	23500	13400	17300	25700	8340	12900
Lead	1000	mg/kg		**3630**	54.6	**1070**	161	896	430	200	627	381	52	2.63	**1220**	**2200**	897	**1050**	4.19	411
Magnesium	--	mg/kg		4090	2680	4490	10600	4540	4660	6450	4380	610	13600	1710	1850	3530	2010	3190	4780	2730
Manganese	10000	mg/kg		370	325	253	383	303	111	360	232	446	657	165	404	326	282	325	559	226
Mercury	2.8	mg/kg		0.782	0.104	1.14	1.31	0.719	0.375	0.298	0.38	0.39	0.253	0.0308 U	1.68	0.572	0.957	0.734	0.031 U	0.339
Nickel	310	mg/kg		48.4	12.5	17.8	39.2	18.3	24.6	20.8	10.4	90.4	**2330**	9.26	24.5	13.2	26.9	42.4	10.1	16.7
Potassium	--	mg/kg		2540	1270	1360	4470	1620	447	1870	937	800	1460	1220	709	1880	1160	2300	921	1370
Selenium	1500	mg/kg		1.11 U	1.12 U	1.13 U	1.15 U	2.83 U	2.84 U	2.87 U	2.79 U	2.93 U	2.91 U	2.56 U	3.19 U	2.96 U	2.69 U	2.74 U	2.58 U	2.63 U
Silver	1500	mg/kg		0.557 U	0.558 U	0.565 U	0.573 U	0.567 U	0.567 U	0.574 U	0.557 U	0.586 U	0.582 U	0.513 U	0.637 U	0.593 U	0.537 U	0.548 U	0.516 U	0.527 U
Sodium	--	mg/kg		411	1200	765	1240	522	816	519	253	867	858	178	995	901	705	1170	491	288
Thallium	--	mg/kg		1.11 U	1.12 U	1.13 U	1.15 U	2.83 U	2.84 U	2.87 U	2.79 U	5.03	2.91 U	2.56 U	3.19 U	2.96 U	2.69 U	2.74 U	2.58 U	2.63 U
Vanadium	--	mg/kg		36.5	16.8	29.9	37.5	20	14.7	19.1	11	25.9	18.5	8.03	20.5	21.4	23.3	31	20.5	19
Zinc	10000	mg/kg		1730	32.5	680	161	1330	315	354	803	874	947	16	1290	1160	897	2240	79	372

Table 3. Summary of Metals in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	SB-60B	SB-60C	SB-61A	SB-61B	SB-61C	SB-64A	SB-64B	SB-65A	SB-65B	SB-66A	SB-66B	SB-67A	SB-67B	SB-68A	SB-68B	SB-69A	SB-69B
			Sample Date:	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018
			Sample Depth (ft bls):	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminum	--	mg/kg		7260	8620	7310	5100	8070	4240	7640	6970 B	3190 B	3540 B	10500 B	3200 B	10200 B	2760 B	6630 B	8220 B	8020 B
Antimony	--	mg/kg		2.82 U	2.91 U	2.69 U	2.93 U	4.56	2.6 U	2.79 U	2.76 U	2.58 U	2.7 U	2.88 U	2.6 U	2.81 U	2.57 U	2.76 U	2.51 U	2.71 U
Arsenic	16	mg/kg		4.87	12.5	3.91	3.96	**19.6**	1.69	8.18	10.8 B	3.54 B	2.65 B	1.73 U	2.03 B	1.69 U	2.63 B	2.33 B	1.51 U	8.33 B
Barium	400	mg/kg		**466**	202	263	**709**	**573**	14.2	**740**	**835**	43.6	67.9	88	19.7	266	115	127	13	**425**
Beryllium	590	mg/kg		0.056 U	0.13	1.42	0.059 U	0.203	0.052 U	0.056 U	0.055 U	0.052 U	0.054 U	0.058 U	0.052 U	0.056 U	0.051 U	0.055 U	0.05 U	0.054 U
Cadmium	9.3	mg/kg		1.39	0.857	1.24	1.24	2.79	0.481	1.42	1.14	0.31 U	0.324 U	0.569	0.312 U	0.437	0.677	0.442	0.304	1.58
Calcium	--	mg/kg		15100	15900	16200	20600	8410	58900	48500	53500	13900	7440	29700	31200	3250	59400	49600	50300	13300
Chromium, Hexavalent	400	mg/kg		0.565 U	0.582 U	0.537 U	0.586 U	0.613 U	0.52 U	0.559 U	0.553 U	0.516 U	0.54 U	0.576 U	4.49	0.562 U	0.514 U	0.551 U	0.503 U	0.542 U
Chromium, Trivalent	1500	mg/kg		20.9	11.2	26.6	24	37.2	3.32	28.8	22	7.82	7.08	19.1	15.8	20.5	9.98	14.4	2.19	43.1
Chromium	1500	mg/kg		20.9	11.2	26.6	24	37.2	3.32	25.8	22	7.82	7.08	19.1	15.8	25	9.98	14.3	2.19	43.1
Cobalt	--	mg/kg		8.9	5.85	15.6	8.98	9.63	5.31	7.33	8.8	3.72	4.43	7.69	4.67	16.8	4.25	7.74	10.2	14.6
Copper	270	mg/kg		176	54.6	231	152	247	25.5	54.7	86	69.5	17.2	43.8	34.4	72.2	56.7	39.6	59.6	144
Cyanide	27	mg/kg		0.565 U	0.582 U	0.543	0.586 U	2.23	0.52 U	0.559 U	0.912	0.516 U	0.54 U	0.576 U	0.519 U	0.742	0.751	0.551 U	25.1	0.726
Iron	--	mg/kg		16600	10600	27200	44500	29100	9550	19900	16200	7620	6260	17000	9490	24300	7880	14700	19300	26000
Lead	1000	mg/kg		772	691	596	**2450**	**1670**	23.9	686	**1910**	19.6	126	533	81.8	160	179	57.5	8.9	**3420**
Magnesium	--	mg/kg		2590	2480	2890	1740	2900	29700	5400	5730	7520	1580	3160	16500	6090	28000	7950	27300	4460
Manganese	10000	mg/kg		240	362	290	323	416	134	299	276	140	223	223	123	468	107	153	205	263
Mercury	2.8	mg/kg		1.02	0.224	0.469	2.53	**4.78**	0.0332	0.493	1.75	0.224	0.0608	0.0897	0.0597	0.228	0.171	0.056	0.0302 U	0.572
Nickel	310	mg/kg		29.5	11.3	46.6	27.3	28.4	5.97	20.7	16.7	11.1	7.71	17.8	8.56	34	9.33	10.5	6.64	39
Potassium	--	mg/kg		1680	808	2380	668	894	591	1600	1470	635	1190	2730	504	6760	504	3680	355	3430
Selenium	1500	mg/kg		2.82 U	2.91 U	2.69 U	2.93 U	3.07 U	11.2	2.79 U	2.76 U	2.58 U	2.7 U	2.88 U	3.3	2.81 U	11.2	2.76 U	2.51 U	2.71 U
Silver	1500	mg/kg		0.565 U	0.582 U	0.537 U	0.586 U	0.613 U	0.52 U	0.559 U	0.553 U	0.516 U	0.54 U	0.576 U	0.519 U	0.562 U	0.514 U	0.551 U	0.503 U	0.542 U
Sodium	--	mg/kg		332	1130	538	1460	1270	746	757	498	494	474	672	396	352	343	879	1110	350
Thallium	--	mg/kg		2.82 U	2.91 U	2.69 U	2.93 U	3.07 U	2.6 U	2.79 U	2.76 U	2.58 U	2.7 U	2.88 U	2.6 U	2.81 U	2.57 U	2.76 U	2.51 U	2.71 U
Vanadium	--	mg/kg		48.5	21.5	31.6	14.6	25.9	36.5	24.7	31.3	10.1	10	24.1	29.6	44	19.1	35.3	54.8	36.6
Zinc	10000	mg/kg		450	354	1330	425	833	23.9	572	594 B	38.1 B	169 B	80.2 B	40.6 B	76.7 B	253 B	79.4 B	13.5 B	860 B

Table 3. Summary of Metals in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	SB-70A	SB-70B	SB-71A	SB-71B	SB-72A	SB-72B	SB-72C	SB-73A	SB-73B	SB-73C	SB-74A	SB-74B	SB-75A	SB-75B	SB-76A	SB-76B	SB-77A
			Sample Date:	11/14/2018	11/14/2018	11/14/2018	11/14/2018	11/14/2018	11/14/2018	11/14/2018	11/14/2018	11/14/2018	11/14/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018
			Sample Depth (ft bls):	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminum	--	mg/kg		6230	8780	7990	10400	8240	6790	3910	8200	5090	7520	6550	2170	5730	10700	6330	5640	15000
Antimony	--	mg/kg		2.69 U	2.77 U	4.32	3.02 U	2.74 U	2.77 U	2.67 U	2.72 U	2.84 U	2.8 U	10.4	34	2.65 U	4.89	2.63 U	2.95 U	5.89
Arsenic	16	mg/kg		4.52	2.01	10.3	8.65	**39.6**	1.66 U	1.6 U	9.18	**42.6**	1.68 U	9.07	3.38	3.57	4.41	4.43	5.98	8.18
Barium	400	mg/kg		**530**	71.3	**717**	283	**433**	134	34	**421**	217	54.7	**587**	159	139	208	309	77.1	**497**
Beryllium	590	mg/kg		0.855	0.055 U	2.03	0.513	4.34	0.484	0.053 U	0.277	0.374	0.081	1.06	0.059 U	0.057	0.06 U	0.211	0.132	10.3
Cadmium	9.3	mg/kg		1.59	0.332 U	3.81	1.62	1.29	0.333 U	0.321 U	0.664	0.42	0.363	1.16	**22.6**	0.627	1.8	0.903	0.464	0.857
Calcium	--	mg/kg		30700	9990	34300	6960	25500	3230	1080	57700	9290	12200	34500	1050	15700	21500	21100	2630	15800
Chromium, Hexavalent	400	mg/kg		0.537 U	0.553 U	12.5	3.04	0.548 U	2.4	0.534 U	0.545 U	0.568 U	0.561 U	0.548 U	0.586 U	0.53 U	0.597 U	0.526 U	0.589 U	0.544 U
Chromium, Trivalent	1500	mg/kg		55.3	14.2	180	223	40.5	15.9	7.55	12.5	14	12.8	22.5	177	11.9	45	15.4	10.6	146
Chromium	1500	mg/kg		55.3	14.2	193	226	40.5	18.3	7.55	12.5	14	12.8	22.5	177	11.9	45	15.4	10.6	146
Cobalt	--	mg/kg		26.2	7.13	21.9	10.1	13.1	7.62	4.15	7.31	6.09	7.08	9.09	24.8	5.42	6.12	5.41	6.19	77.5
Copper	270	mg/kg		**329**	37	**385**	100	232	61.1	9.3	106	141	23.5	170	**1380**	47.3	37.2	69.7	76.6	**1870**
Cyanide	27	mg/kg		0.537 U	0.553 U	0.56	0.604 U	1.26	0.555 U	0.534 U	0.67	0.573	0.561 U	1.18	0.703	0.53 U	0.597 U	0.737	0.589 U	0.914
Iron	--	mg/kg		25500	14600	36000	22100	24100	12100	7290	17300	16000	12200	14000	109000	11800	20100	10500	16200	74200
Lead	1000	mg/kg		944	153	**1830**	531	**1090**	458	3.62	656	283	19.9	**1770**	**2680**	268	**2300**	514	90.6	**1480**
Magnesium	--	mg/kg		4670	2800	3460	2600	5330	2160	1550	9100	1460	2310	2810	308	3180	3280	3790	1830	4920
Manganese	10000	mg/kg		297	179	337	355	343	267	214	273	129	284	263	400	228	110	225	246	663
Mercury	2.8	mg/kg		0.475	0.2	0.52	0.322	0.643	0.0856	0.0321 U	0.259	0.588	0.0538	0.375	0.471	0.203	0.329	0.249	0.313	0.615
Nickel	310	mg/kg		39.9	14.9	71.9	35.2	29.7	16.1	8.08	19.6	17.3	35.7	22.2	76.5	14	33.4	12.6	18	185
Potassium	--	mg/kg		1550 B	1560 B	1650 B	1450 B	1100 B	919 B	837 B	2280 B	756 B	1260 B	1260 B	562 B	1230 B	2590 B	860 B	817 B	1620 B
Selenium	1500	mg/kg		2.69 U	2.77 U	2.69 U	3.02 U	2.74 U	2.77 U	2.67 U	2.72 U	2.84 U	2.8 U	2.74 U	2.93 U	2.65 U	2.99 U	2.63 U	2.95 U	2.72 U
Silver	1500	mg/kg		0.537 U	0.553 U	0.538 U	2.28	0.548 U	3.73	0.534 U	0.545 U	0.568 U	0.561 U	0.548 U	2.76	0.53 U	0.597 U	0.526 U	0.589 U	0.544 U
Sodium	--	mg/kg		851	407	664	1550	874	497	321	2530	889	701	559	1320	458	1110	452	313	2120
Thallium	--	mg/kg		2.69 U	2.77 U	2.69 U	3.02 U	2.74 U	2.77 U	2.67 U	2.72 U	2.84 U	2.8 U	2.74 U	2.93 U	2.65 U	2.99 U	2.63 U	2.95 U	2.72 U
Vanadium	--	mg/kg		37.8	19	41.4	32.2	26.4	16.6	11.3	25.9	17	17	27.4	20.8	20.5	28.1	19.3	16.4	43.4
Zinc	10000	mg/kg		1990	70.6	2570	588	1560	344	51.2	479	275	186	1170	6980 D	190	130	476	365	**14600 D**

Table 3. Summary of Metals in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	**Sample Designation:**	SB-77B	SB-77C
			Sample Date:	11/15/2018	11/15/2018
			Sample Depth (ft bls):	-	-
Aluminum	--	mg/kg		9940	5700
Antimony	--	mg/kg		3.1	2.66 U
Arsenic	16	mg/kg		3.12	1.59 U
Barium	400	mg/kg		166	50.6
Beryllium	590	mg/kg		0.191	0.055
Cadmium	9.3	mg/kg		0.444	0.319 U
Calcium	--	mg/kg		42000	1110
Chromium, Hexavalent	400	mg/kg		0.571 U	0.531 U
Chromium, Trivalent	1500	mg/kg		17.3	9.96
Chromium	1500	mg/kg		17.3	9.96
Cobalt	--	mg/kg		8.13	5.43
Copper	270	mg/kg		82.2	13.2
Cyanide	27	mg/kg		0.571 U	0.531 U
Iron	--	mg/kg		15900	10100
Lead	1000	mg/kg		432	8.95
Magnesium	--	mg/kg		3760	1770
Manganese	10000	mg/kg		255	157
Mercury	2.8	mg/kg		0.467	0.209
Nickel	310	mg/kg		20.8	11.1
Potassium	--	mg/kg		1610 B	1110 B
Selenium	1500	mg/kg		2.85 U	2.66 U
Silver	1500	mg/kg		0.571 U	0.531 U
Sodium	--	mg/kg		1240	331
Thallium	--	mg/kg		2.85 U	2.66 U
Vanadium	--	mg/kg		21.2	15
Zinc	10000	mg/kg		553	22.8

Table 4. Summary of Polychlorinated Biphenyls in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	COMPOSITE	Dup 1114	HL-1	SB-11	SB-12	SB-13	SB-15	SB-19	SB-31D	SB-31S	SB-32D	SB-32D1	SB-32S	SB-33D	SB-33S	SB-34D	SB-34S
			Sample Date:	12/20/2017	11/15/2018	5/22/2019	10/24/2017	10/24/2017	10/24/2017	10/24/2017	10/24/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017
			Sample Depth (ft bls):	-	-	-	-	-	-	-	-	8 - 8.5	2 - 2.5	8 - 8.5	12 - 12.5	2 - 2.5	8 - 8.5	2 - 2.5	8 - 8.5	2 - 2.5
Aroclor-1016	--	mg/kg		0.022 U	0.0179 U	5 U	0.024 U	0.022 U	0.021 U	0.021 U	0.021 U	0.07 U	0.069 U	0.065 U	0.025 U	0.064 U	0.069 U	0.023 U	0.022 U	0.065 U
Aroclor-1221	--	mg/kg		0.022 U	0.0179 U	5 U	0.024 U	0.022 U	0.021 U	0.021 U	0.021 U	0.07 U	0.069 U	0.065 U	0.025 U	0.064 U	0.069 U	0.023 U	0.022 U	0.065 U
Aroclor-1232	--	mg/kg		0.022 U	0.0179 U	5 U	0.024 U	0.022 U	0.021 U	0.021 U	0.021 U	0.07 U	0.069 U	0.065 U	0.025 U	0.064 U	0.069 U	0.023 U	0.022 U	0.065 U
Aroclor-1242	--	mg/kg		0.022 U	0.0179 U	5 U	0.024 U	0.022 U	0.021 U	0.021 U	0.021 U	0.07 U	0.069 U	0.065 U	0.025 U	0.064 U	0.069 U	0.023 U	0.022 U	0.065 U
Aroclor-1248	--	mg/kg		0.022 U	0.0179 U	5 U	0.024 U	0.022 U	0.021 U	0.021 U	0.021 U	0.07 U	0.069 U	0.065 U	0.025 U	0.064 U	0.069 U	0.023 U	0.022 U	0.065 U
Aroclor-1254	--	mg/kg		0.022 U	0.0179 U	5 U	0.024 U	0.022 U	0.021 U	0.021 U	0.021 U	0.07 U	0.069 U	0.065 U	0.025 U	0.064 U	0.069 U	0.023 U	0.022 U	0.065 U
Aroclor-1260	--	mg/kg		0.022 U	0.031	5 U	0.024 U	0.022 U	0.021 U	0.021 U	0.021 U	0.07 U	0.069 U	0.065 U	0.025 U	0.064 U	0.069 U	0.023 U	0.022 U	0.065 U
Aroclor-1262	--	mg/kg		0.022 U	NA	NA	0.024 U	0.022 U	0.021 U	0.021 U	0.021 U	0.07 U	0.069 U	0.065 U	0.025 U	0.064 U	0.069 U	0.023 U	0.022 U	0.065 U
Aroclor-1268	--	mg/kg		0.022 U	NA	NA	0.024 U	0.022 U	0.021 U	0.021 U	0.021 U	0.07 U	0.069 U	0.065 U	0.025 U	0.064 U	0.069 U	0.023 U	0.022 U	0.065 U
Aroclor (Total)	1	mg/kg		0.022 U	0.031	5 U	0.024 U	0.022 U	0.021 U	0.021 U	0.021 U	0.07 U	0.069 U	0.065 U	0.025 U	0.064 U	0.069 U	0.023 U	0.022 U	0.065 U

Table 4. Summary of Polychlorinated Biphenyls in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	SB-35D	SB-35S	SB-36D	SB-36S	SB-37D	SB-37S	SB-38(D)	SB-38(S)	SB-39(D)	SB-39(S)	SB-40(D)	SB-40(S)	SB42-A	SB42-B	SB43-A	SB43-B	SB-5
			Sample Date:	12/18/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017	12/20/2017	12/20/2017	12/20/2017	12/20/2017	12/20/2017	12/20/2017	5/15/2018	5/15/2018	5/15/2018	5/15/2018	10/23/2017
			Sample Depth (ft bls):	8 - 8.5	2 - 2.5	8 - 8.5	2 - 2.5	8 - 8.5	2 - 2.5	-	-	-	-	-	-	-	-	-	-	15 - 15.5
Aroclor-1016	--	mg/kg		0.023 U	0.065 U	0.023 U	0.022 U	0.022 U	0.067 U	0.022 U	0.021 U	0.066 U	0.022 U	0.067 U	0.022 U	0.0186 U	0.0186 U	0.0188 U	0.0191 U	0.047 U
Aroclor-1221	--	mg/kg		0.023 U	0.065 U	0.023 U	0.022 U	0.022 U	0.067 U	0.022 U	0.021 U	0.066 U	0.022 U	0.067 U	0.022 U	0.0186 U	0.0186 U	0.0188 U	0.0191 U	0.047 U
Aroclor-1232	--	mg/kg		0.023 U	0.065 U	0.023 U	0.022 U	0.022 U	0.067 U	0.022 U	0.021 U	0.066 U	0.022 U	0.067 U	0.022 U	0.0186 U	0.0186 U	0.0188 U	0.0191 U	0.047 U
Aroclor-1242	--	mg/kg		0.023 U	0.065 U	0.023 U	0.022 U	0.022 U	0.067 U	0.022 U	0.021 U	0.066 U	0.022 U	0.067 U	0.022 U	0.0186 U	0.0186 U	0.0188 U	0.0191 U	0.047 U
Aroclor-1248	--	mg/kg		0.023 U	0.065 U	0.023 U	0.022 U	0.022 U	0.067 U	0.022 U	0.021 U	0.066 U	0.022 U	0.067 U	0.022 U	0.0186 U	0.0186 U	0.0188 U	0.0191 U	0.047 U
Aroclor-1254	--	mg/kg		0.023 U	0.065 U	0.023 U	0.022 U	0.022 U	0.067 U	0.022 U	0.021 U	0.066 U	0.022 U	0.067 U	0.022 U	0.0186 U	0.0186 U	0.0188 U	0.0191 U	0.047 U
Aroclor-1260	--	mg/kg		0.023 U	0.065 U	0.023 U	0.022 U	0.022 U	0.067 U	0.022 U	0.021 U	0.066 U	0.022 U	0.067 U	0.022 U	0.041	0.0186 U	0.0617	0.0191 U	0.047 U
Aroclor-1262	--	mg/kg		0.023 U	0.065 U	0.023 U	0.022 U	0.022 U	0.067 U	0.022 U	0.021 U	0.066 U	0.022 U	0.067 U	0.022 U	NA	NA	NA	NA	0.047 U
Aroclor-1268	--	mg/kg		0.023 U	0.065 U	0.023 U	0.022 U	0.022 U	0.067 U	0.022 U	0.021 U	0.066 U	0.022 U	0.067 U	0.022 U	NA	NA	NA	NA	0.047 U
Aroclor (Total)	1	mg/kg		0.023 U	0.065 U	0.023 U	0.022 U	0.022 U	0.067 U	0.022 U	0.021 U	0.066 U	0.022 U	0.067 U	0.022 U	0.041	0.0186 U	0.0617	0.0191 U	0.047 U

Table 4. Summary of Polychlorinated Biphenyls in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	**Sample Designation:**	SB-56A	SB-56B	SB-56C	SB-57A	SB-57B	SB-57C	SB-58A	SB-58B	SB-58C	SB-59A	SB-59B	SB-59C	SB-6	SB-60A	SB-60B	SB-60C	SB-61A
			Sample Date:	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	10/23/2017	11/13/2018	11/13/2018	11/13/2018	11/13/2018
			Sample Depth (ft bls):	-	-	-	-	-	-	-	-	-	-	-	-	11 - 11.5	-	-	-	-
Aroclor-1016	--	mg/kg		0.0189 U	0.0189 U	0.0191 U	0.0186 U	0.0195 U	0.0194 U	0.0171 U	0.0212 U	0.0197 U	0.0179 U	0.0182 U	0.0172 U	0.045 U	0.0175 U	0.0188 U	0.0194 U	0.0178 U
Aroclor-1221	--	mg/kg		0.0189 U	0.0189 U	0.0191 U	0.0186 U	0.0195 U	0.0194 U	0.0171 U	0.0212 U	0.0197 U	0.0179 U	0.0182 U	0.0172 U	0.045 U	0.0175 U	0.0188 U	0.0194 U	0.0178 U
Aroclor-1232	--	mg/kg		0.0189 U	0.0189 U	0.0191 U	0.0186 U	0.0195 U	0.0194 U	0.0171 U	0.0212 U	0.0197 U	0.0179 U	0.0182 U	0.0172 U	0.045 U	0.0175 U	0.0188 U	0.0194 U	0.0178 U
Aroclor-1242	--	mg/kg		0.0189 U	0.0189 U	0.0191 U	0.0186 U	0.0195 U	0.0194 U	0.0171 U	0.0212 U	0.0197 U	0.0179 U	0.0182 U	0.0172 U	0.045 U	0.0175 U	0.0188 U	0.0194 U	0.0178 U
Aroclor-1248	--	mg/kg		0.0189 U	0.0189 U	0.0191 U	0.0186 U	0.0195 U	0.0194 U	0.0171 U	0.0212 U	0.0197 U	0.0179 U	0.0182 U	0.0172 U	0.045 U	0.0175 U	0.0188 U	0.0194 U	0.0178 U
Aroclor-1254	--	mg/kg		0.0189 U	0.0189 U	0.0191 U	0.0666	0.0195 U	0.0194 U	0.0171 U	0.0212 U	0.0197 U	0.0179 U	0.0182 U	0.0172 U	0.045 U	0.0175 U	0.0188 U	0.0194 U	0.0178 U
Aroclor-1260	--	mg/kg		0.0189 U	0.0189 U	0.0191 U	0.0186 U	0.0195 U	0.0194 U	0.0171 U	0.0212 U	0.0197 U	0.0179 U	0.0182 U	0.0172 U	0.045 U	0.0175 U	0.0236	0.0194 U	0.0178 U
Aroclor-1262	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.045 U	NA	NA	NA	NA
Aroclor-1268	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.045 U	NA	NA	NA	NA
Aroclor (Total)	1	mg/kg		0.0189 U	0.0189 U	0.0191 U	0.0666	0.0195 U	0.0194 U	0.0171 U	0.0212 U	0.0197 U	0.0179 U	0.0182 U	0.0172 U	0.045 U	0.0175 U	0.0236	0.0194 U	0.0178 U

Table 4. Summary of Polychlorinated Biphenyls in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	SB-61B	SB-61C	SB-64A	SB-64B	SB-65A	SB-65B	SB-66A	SB-66B	SB-67A	SB-67B	SB-68A	SB-68B	SB-69A	SB-69B	SB-70A	SB-70B	SB-71A
			Sample Date:	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/14/2018	11/14/2018	11/14/2018
			Sample Depth (ft bls):	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor-1016	--	mg/kg		0.0195 U	0.0204 U	0.0173 U	0.0186 U	0.0184 U	0.0172 U	0.0179 U	0.0192 U	0.0173 U	0.0187 U	0.0171 U	0.0184 U	0.0168 U	0.018 U	0.0179 U	0.0184 U	0.0179 U
Aroclor-1221	--	mg/kg		0.0195 U	0.0204 U	0.0173 U	0.0186 U	0.0184 U	0.0172 U	0.0179 U	0.0192 U	0.0173 U	0.0187 U	0.0171 U	0.0184 U	0.0168 U	0.018 U	0.0179 U	0.0184 U	0.0179 U
Aroclor-1232	--	mg/kg		0.0195 U	0.0204 U	0.0173 U	0.0186 U	0.0184 U	0.0172 U	0.0179 U	0.0192 U	0.0173 U	0.0187 U	0.0171 U	0.0184 U	0.0168 U	0.018 U	0.0179 U	0.0184 U	0.0179 U
Aroclor-1242	--	mg/kg		0.0195 U	0.0204 U	0.0173 U	0.0186 U	0.0184 U	0.0172 U	0.0179 U	0.0192 U	0.0173 U	0.0187 U	0.0171 U	0.0184 U	0.0168 U	0.018 U	0.0179 U	0.0184 U	0.0179 U
Aroclor-1248	--	mg/kg		0.0195 U	0.0204 U	0.0173 U	0.0186 U	0.0184 U	0.0172 U	0.0179 U	0.0192 U	0.0173 U	0.0187 U	0.0171 U	0.0184 U	0.0168 U	0.018 U	0.0179 U	0.0184 U	0.0179 U
Aroclor-1254	--	mg/kg		0.0195 U	0.0204 U	0.0173 U	0.0186 U	0.0184 U	0.0172 U	0.0179 U	0.0192 U	0.0173 U	0.0187 U	0.0171 U	0.0184 U	0.0168 U	0.018 U	0.0179 U	0.0184 U	0.0179 U
Aroclor-1260	--	mg/kg		0.0195 U	0.0204 U	0.0173 U	0.0186 U	0.0192	0.0172 U	0.0179 U	0.0192 U	0.0173 U	0.0187 U	0.0171 U	0.0184 U	0.0168 U	0.0741	0.0226	0.0184 U	0.0242
Aroclor-1262	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1268	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor (Total)	1	mg/kg		0.0195 U	0.0204 U	0.0173 U	0.0186 U	0.0192	0.0172 U	0.0179 U	0.0192 U	0.0173 U	0.0187 U	0.0171 U	0.0184 U	0.0168 U	0.0741	0.0226	0.0184 U	0.0242

Table 4. Summary of Polychlorinated Biphenyls in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	**Sample Designation:**	SB-71B	SB-72A	SB-72B	SB-72C	SB-73A	SB-73B	SB-73C	SB-74A	SB-74B	SB-75A	SB-75B	SB-76A	SB-76B	SB-77A	SB-77B	SB-77C
			Sample Date:	11/14/2018	11/14/2018	11/14/2018	11/14/2018	11/14/2018	11/14/2018	11/14/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018
			Sample Depth (ft bls):	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor-1016	--	mg/kg		0.0201 U	0.0182 U	0.0185 U	0.0177 U	0.0181 U	0.0189 U	0.0187 U	0.0183 U	0.0195 U	0.0176 U	0.0199 U	0.0175 U	0.0196 U	0.0181 U	0.019 U	0.0176 U
Aroclor-1221	--	mg/kg		0.0201 U	0.0182 U	0.0185 U	0.0177 U	0.0181 U	0.0189 U	0.0187 U	0.0183 U	0.0195 U	0.0176 U	0.0199 U	0.0175 U	0.0196 U	0.0181 U	0.019 U	0.0176 U
Aroclor-1232	--	mg/kg		0.0201 U	0.0182 U	0.0185 U	0.0177 U	0.0181 U	0.0189 U	0.0187 U	0.0183 U	0.0195 U	0.0176 U	0.0199 U	0.0175 U	0.0196 U	0.0181 U	0.019 U	0.0176 U
Aroclor-1242	--	mg/kg		0.0201 U	0.0182 U	0.0185 U	0.0177 U	0.0181 U	0.0189 U	0.0187 U	0.0183 U	0.0195 U	0.0176 U	0.0199 U	0.0175 U	0.0196 U	0.0181 U	0.019 U	0.0176 U
Aroclor-1248	--	mg/kg		0.0201 U	0.0182 U	0.0185 U	0.0177 U	0.0181 U	0.0189 U	0.0187 U	0.0183 U	0.0195 U	0.0176 U	0.0199 U	0.0175 U	0.0196 U	0.0181 U	0.019 U	0.0176 U
Aroclor-1254	--	mg/kg		0.0201 U	0.0182 U	0.0185 U	0.0177 U	0.0181 U	0.0189 U	0.0187 U	0.0183 U	0.0195 U	0.0176 U	0.0199 U	0.0175 U	0.0196 U	0.0181 U	0.019 U	0.0176 U
Aroclor-1260	--	mg/kg		0.0201 U	0.0182 U	0.0185 U	0.0177 U	0.0181 U	0.0189 U	0.0187 U	0.0183 U	0.0195 U	0.0176 U	0.0199 U	0.0186	0.0196 U	0.0181 U	0.019 U	0.0176 U
Aroclor-1262	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1268	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor (Total)	1	mg/kg		0.0201 U	0.0182 U	0.0185 U	0.0177 U	0.0181 U	0.0189 U	0.0187 U	0.0183 U	0.0195 U	0.0176 U	0.0199 U	0.0186	0.0196 U	0.0181 U	0.019 U	0.0176 U

Table 5. Summary of Pesticides and Herbicides in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	Dup 1114	SB-31D	SB-31S	SB-32D	SB-32D1	SB-32S	SB-33D	SB-33S	SB-34D	SB-34S	SB-35D	SB-35S	SB-36D	SB-36S	SB-37D	SB-37S	SB-38(D)
			Sample Date:	11/15/2018	12/18/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017	12/18/2017	12/20/2017
			Sample Depth (ft bls):	-	8 - 8.5	2 - 2.5	8 - 8.5	12 - 12.5	2 - 2.5	8 - 8.5	2 - 2.5	8 - 8.5	2 - 2.5	8 - 8.5	2 - 2.5	8 - 8.5	2 - 2.5	8 - 8.5	2 - 2.5	-
4,4'-DDD	92	mg/kg		0.00165 U	0.00466 U	0.00458 U	0.00473	0.00489 U	0.03	0.00457 U	0.00455 U	0.00447 U	0.021	0.00458 U	0.00431 U	0.00454 U	0.00438 U	0.0044 U	0.027	0.00434 U
4,4'-DDE	62	mg/kg		0.00165 U	0.00466 U	0.00458 U	0.00688	0.00489 U	0.068	0.00457 U	0.00455 U	0.00447 U	0.046	0.00458 U	0.00255 J	0.00454 U	0.00438 U	0.00402 J	0.1	0.00434 U
4,4'-DDT	47	mg/kg		0.0415 D	0.00466 U	0.00458 U	0.015	0.00489 U	0.174	0.00457 U	0.00455 U	0.00447 U	0.081	0.00458 U	0.00736	0.00454 U	0.00338 J	0.00891	0.201	0.00434 U
Aldrin	0.68	mg/kg		0.00165 U	0.00466 U	0.00458 U	0.0043 U	0.00489 U	0.00427 U	0.00457 U	0.00455 U	0.00447 U	0.00431 U	0.00458 U	0.00431 U	0.00454 U	0.00438 U	0.0044 U	0.00448 U	0.00434 U
alpha-BHC	3.4	mg/kg		0.00165 U	0.00466 U	0.00458 U	0.0043 U	0.00489 U	0.00427 U	0.00457 U	0.00455 U	0.00447 U	0.00431 U	0.00458 U	0.00431 U	0.00454 U	0.00438 U	0.0044 U	0.00448 U	0.00434 U
alpha-Chlordane	24	mg/kg		0.00165 U	0.00466 U	0.00458 U	0.0043 U	0.00489 U	0.00427 U	0.00457 U	0.00455 U	0.00447 U	0.00431 U	0.00458 U	0.00431 U	0.00454 U	0.00438 U	0.0044 U	0.00448 U	0.00434 U
beta-BHC	3	mg/kg		0.00165 U	0.00466 U	0.00458 U	0.0043 U	0.00489 U	0.00427 U	0.00457 U	0.00455 U	0.00447 U	0.00431 U	0.00458 U	0.00431 U	0.00454 U	0.00438 U	0.0044 U	0.00448 U	0.00434 U
Chlordane	--	mg/kg		NA	0.00466 U	0.00458 U	0.0043 U	0.00489 U	0.00427 U	0.00457 U	0.00455 U	0.00447 U	0.00431 U	0.00458 U	0.00431 U	0.00454 U	0.00438 U	0.0044 U	0.00448 U	0.00434 U
delta-BHC	500	mg/kg		0.00165 U	0.00466 U	0.00458 U	0.0043 U	0.00489 U	0.00427 U	0.00457 U	0.00455 U	0.00447 U	0.00431 U	0.00458 U	0.00431 U	0.00454 U	0.00438 U	0.0044 U	0.00448 U	0.00434 U
Dieldrin	1.4	mg/kg		0.00165 U	0.00466 U	0.00458 U	0.0043 U	0.00489 U	0.00427 U	0.00457 U	0.00455 U	0.00447 U	0.00431 U	0.00458 U	0.00431 U	0.00454 U	0.00438 U	0.0044 U	0.00448 U	0.00434 U
Endosulfan I	200	mg/kg		0.00165 U	0.00466 U	0.00458 U	0.0043 U	0.00489 U	0.00427 U	0.00457 U	0.00455 U	0.00447 U	0.00431 U	0.00458 U	0.00431 U	0.00454 U	0.00438 U	0.0044 U	0.00448 U	0.00434 U
Endosulfan II	200	mg/kg		0.00165 U	0.00466 U	0.00458 U	0.0043 U	0.00489 U	0.00427 U	0.00457 U	0.00455 U	0.00447 U	0.00431 U	0.00458 U	0.00431 U	0.00454 U	0.00438 U	0.0044 U	0.00448 U	0.00434 U
Endosulfan sulfate	200	mg/kg		0.00165 U	0.00466 U	0.00458 U	0.0043 U	0.00489 U	0.00427 U	0.00457 U	0.00455 U	0.00447 U	0.00431 U	0.00458 U	0.00431 U	0.00454 U	0.00438 U	0.0044 U	0.00448 U	0.00434 U
Endosulfan	--	mg/kg		NA	0.00466 U	0.00458 U	0.0043 U	0.00489 U	0.00427 U	0.00457 U	0.00455 U	0.00447 U	0.00431 U	0.00458 U	0.00431 U	0.00454 U	0.00438 U	0.0044 U	0.00448 U	0.00434 U
Endrin aldehyde	--	mg/kg		NA	0.00466 U	0.00458 U	0.0043 U	0.00489 U	0.00427 U	0.00457 U	0.00455 U	0.00447 U	0.00431 U	0.00458 U	0.00431 U	0.00454 U	0.00438 U	0.0044 U	0.00448 U	0.00434 U
Endrin ketone	--	mg/kg		NA	0.00466 U	0.00458 U	0.0043 U	0.00489 U	0.00427 U	0.00457 U	0.00455 U	0.00447 U	0.00431 U	0.00458 U	0.00431 U	0.00454 U	0.00438 U	0.0044 U	0.00448 U	0.00434 U
Endrin	89	mg/kg		0.00165 U	0.00466 U	0.00458 U	0.0043 U	0.00489 U	0.00427 U	0.00457 U	0.00455 U	0.00447 U	0.00431 U	0.00458 U	0.00431 U	0.00454 U	0.00438 U	0.0044 U	0.00448 U	0.00434 U
gamma-BHC (Lindane)	9.2	mg/kg		0.00165 U	0.00466 U	0.00458 U	0.0043 U	0.00489 U	0.00427 U	0.00457 U	0.00455 U	0.00447 U	0.00431 U	0.00458 U	0.00431 U	0.00454 U	0.00438 U	0.0044 U	0.00448 U	0.00434 U
gamma-Chlordane	--	mg/kg		NA	0.00466 U	0.00458 U	0.0043 U	0.00489 U	0.00427 U	0.00457 U	0.00455 U	0.00447 U	0.00431 U	0.00458 U	0.00431 U	0.00454 U	0.00438 U	0.0044 U	0.00448 U	0.00434 U
Heptachlor epoxide	--	mg/kg		NA	0.00466 U	0.00458 U	0.0043 U	0.00489 U	0.00427 U	0.00457 U	0.00455 U	0.00447 U	0.00431 U	0.00458 U	0.00431 U	0.00454 U	0.00438 U	0.0044 U	0.00448 U	0.00434 U
Heptachlor	15	mg/kg		0.00165 U	0.00466 U	0.00458 U	0.0043 U	0.00489 U	0.00427 U	0.00457 U	0.00455 U	0.00447 U	0.00431 U	0.00458 U	0.00431 U	0.00454 U	0.00438 U	0.0044 U	0.00448 U	0.00434 U
Methoxychlor	--	mg/kg		NA	0.00466 U	0.00458 U	0.0043 U	0.00489 U	0.00427 U	0.00457 U	0.00455 U	0.00447 U	0.00431 U	0.00458 U	0.00431 U	0.00454 U	0.00438 U	0.0044 U	0.00448 U	0.00434 U
Toxaphene	--	mg/kg		NA	0.058 U	0.057 U	0.054 U	0.061 U	0.053 U	0.057 U	0.057 U	0.056 U	0.054 U	0.057 U	0.054 U	0.057 U	0.055 U	0.055 U	0.056 U	0.054 U

Table 5. Summary of Pesticides and Herbicides in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	SB-38(S)	SB-39(D)	SB-39(S)	SB-40(D)	SB-40(S)	SB42-A	SB42-B	SB43-A	SB43-B	SB-56A	SB-56B	SB-56C	SB-57A	SB-57B	SB-57C	SB-58A	SB-58B
			Sample Date:	12/20/2017	12/20/2017	12/20/2017	12/20/2017	12/20/2017	5/15/2018	5/15/2018	5/15/2018	5/15/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018
			Sample Depth (ft bls):	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4,4'-DDD	92	mg/kg		0.00922	0.00436 U	0.00431 U	0.00449 U	0.0043 U	0.00184 U	0.00184 U	0.00187 U	0.00189 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U
4,4'-DDE	62	mg/kg		0.018	0.00436 U	0.00994	0.00449 U	0.00694	0.00184 U	0.00184 U	0.00187 U	0.00189 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U
4,4'-DDT	47	mg/kg		0.061	0.00436 U	0.065	0.00449 U	0.046	0.00184 U	0.00184 U	0.00187 U	0.00189 U	0.124 D	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U
Aldrin	0.68	mg/kg		0.00421 U	0.00436 U	0.00431 U	0.00449 U	0.0043 U	0.00184 U	0.00184 U	0.00187 U	0.00189 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U
alpha-BHC	3.4	mg/kg		0.00421 U	0.00436 U	0.00431 U	0.00449 U	0.0043 U	0.00184 U	0.00184 U	0.00187 U	0.00189 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U
alpha-Chlordane	24	mg/kg		0.00421 U	0.00436 U	0.00431 U	0.00449 U	0.0043 U	0.00184 U	0.00184 U	0.00187 U	0.00189 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U
beta-BHC	3	mg/kg		0.00421 U	0.00436 U	0.00431 U	0.00449 U	0.0043 U	0.00184 U	0.00184 U	0.00187 U	0.00189 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U
Chlordane	--	mg/kg		0.00421 U	0.00436 U	0.00431 U	0.00449 U	0.0043 U	0.0368 U	0.0369 U	0.0373 U	0.0378 U	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC	500	mg/kg		0.00421 U	0.00436 U	0.00431 U	0.00449 U	0.0043 U	0.00184 U	0.00184 U	0.00187 U	0.00189 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U
Dieldrin	1.4	mg/kg		0.00421 U	0.00436 U	0.00431 U	0.00449 U	0.0043 U	0.00184 U	0.00184 U	0.00187 U	0.00189 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U
Endosulfan I	200	mg/kg		0.00421 U	0.00436 U	0.00431 U	0.00449 U	0.0043 U	0.00184 U	0.00184 U	0.00187 U	0.00189 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U
Endosulfan II	200	mg/kg		0.00421 U	0.00436 U	0.00431 U	0.00449 U	0.0043 U	0.00184 U	0.00184 U	0.00187 U	0.00189 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U
Endosulfan sulfate	200	mg/kg		0.00421 U	0.00436 U	0.00431 U	0.00449 U	0.0043 U	0.00184 U	0.00184 U	0.00187 U	0.00189 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U
Endosulfan	--	mg/kg		0.00421 U	0.00436 U	0.00431 U	0.00449 U	0.0043 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde	--	mg/kg		0.00421 U	0.00436 U	0.00431 U	0.00449 U	0.0043 U	0.00184 U	0.00184 U	0.00187 U	0.00189 U	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone	--	mg/kg		0.00421 U	0.00436 U	0.00431 U	0.00449 U	0.0043 U	0.00184 U	0.00184 U	0.00187 U	0.00189 U	NA	NA	NA	NA	NA	NA	NA	NA
Endrin	89	mg/kg		0.00421 U	0.00436 U	0.00431 U	0.00449 U	0.0043 U	0.00184 U	0.00184 U	0.00187 U	0.00189 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U
gamma-BHC (Lindane)	9.2	mg/kg		0.00421 U	0.00436 U	0.00431 U	0.00449 U	0.0043 U	0.00184 U	0.00184 U	0.00187 U	0.00189 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U
gamma-Chlordane	--	mg/kg		0.00421 U	0.00436 U	0.00431 U	0.00449 U	0.0043 U	0.00184 U	0.00184 U	0.00187 U	0.00189 U	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	--	mg/kg		0.00421 U	0.00436 U	0.00431 U	0.00449 U	0.0043 U	0.00184 U	0.00184 U	0.00187 U	0.00189 U	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	15	mg/kg		0.00421 U	0.00436 U	0.00431 U	0.00449 U	0.0043 U	0.00184 U	0.00184 U	0.00187 U	0.00189 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U
Methoxychlor	--	mg/kg		0.00421 U	0.00436 U	0.00431 U	0.00449 U	0.0043 U	0.0092 U	0.00921 U	0.00933 U	0.00946 U	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene	--	mg/kg		0.053 U	0.055 U	0.054 U	0.056 U	0.054 U	0.0931 U	0.0933 U	0.0944 U	0.0957 U	NA	NA	NA	NA	NA	NA	NA	NA

Table 5. Summary of Pesticides and Herbicides in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	SB-58C	SB-59A	SB-59B	SB-59C	SB-60A	SB-60B	SB-60C	SB-61A	SB-61B	SB-61C	SB-64A	SB-64B	SB-65A	SB-65B	SB-66A	SB-66B	SB-67A
			Sample Date:	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018
			Sample Depth (ft bls):	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4,4'-DDD	92	mg/kg		0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U
4,4'-DDE	62	mg/kg		0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U
4,4'-DDT	47	mg/kg		0.00165 U	0.0143 D	0.0204 DP	0.00165 U	0.0153 D	0.0133 D	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U
Aldrin	0.68	mg/kg		0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U
alpha-BHC	3.4	mg/kg		0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U
alpha-Chlordane	24	mg/kg		0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U
beta-BHC	3	mg/kg		0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U
Chlordane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC	500	mg/kg		0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U
Dieldrin	1.4	mg/kg		0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U
Endosulfan I	200	mg/kg		0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U
Endosulfan II	200	mg/kg		0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U
Endosulfan sulfate	200	mg/kg		0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U
Endosulfan	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin	89	mg/kg		0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U
gamma-BHC (Lindane)	9.2	mg/kg		0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U
gamma-Chlordane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	15	mg/kg		0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U
Methoxychlor	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 5. Summary of Pesticides and Herbicides in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	Sample Designation:	SB-67B	SB-68A	SB-68B	SB-69A	SB-69B	SB-70A	SB-70B	SB-71A	SB-71B	SB-72A	SB-72B	SB-72C	SB-73A	SB-73B	SB-73C	SB-74A	SB-74B
			Sample Date:	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/14/2018	11/14/2018	11/14/2018	11/14/2018	11/14/2018	11/14/2018	11/14/2018	11/14/2018	11/14/2018	11/14/2018	11/15/2018	11/15/2018
			Sample Depth (ft bls):	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4,4'-DDD	92	mg/kg		0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U
4,4'-DDE	62	mg/kg		0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U
4,4'-DDT	47	mg/kg		0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.026 D	0.0369 D	0.00165 U	0.0354 D	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00245 DP	0.00164 U	0.00165 U	0.00165 U	0.00164 U
Aldrin	0.68	mg/kg		0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U
alpha-BHC	3.4	mg/kg		0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U
alpha-Chlordane	24	mg/kg		0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U
beta-BHC	3	mg/kg		0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U
Chlordane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC	500	mg/kg		0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U
Dieldrin	1.4	mg/kg		0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U
Endosulfan I	200	mg/kg		0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U
Endosulfan II	200	mg/kg		0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U
Endosulfan sulfate	200	mg/kg		0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U
Endosulfan	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin	89	mg/kg		0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U
gamma-BHC (Lindane)	9.2	mg/kg		0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U
gamma-Chlordane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	15	mg/kg		0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00164 U	0.00165 U	0.00165 U	0.00164 U
Methoxychlor	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 5. Summary of Pesticides and Herbicides in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	**Sample Designation:**	SB-75A	SB-75B	SB-76A	SB-76B	SB-77A	SB-77B	SB-77C
			Sample Date:	11/15/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018
			Sample Depth (ft bls):	-	-	-	-	-	-	-
4,4'-DDD	92	mg/kg		0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00164 U
4,4'-DDE	62	mg/kg		0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00164 U
4,4'-DDT	47	mg/kg		0.00785 D	0.00165 U	0.00165 U	0.00165 U	0.0121 D	0.00164 U	0.00164 U
Aldrin	0.68	mg/kg		0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00164 U
alpha-BHC	3.4	mg/kg		0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00164 U
alpha-Chlordane	24	mg/kg		0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00164 U
beta-BHC	3	mg/kg		0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00164 U
Chlordane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA
delta-BHC	500	mg/kg		0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00164 U
Dieldrin	1.4	mg/kg		0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00164 U
Endosulfan I	200	mg/kg		0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00164 U
Endosulfan II	200	mg/kg		0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00164 U
Endosulfan sulfate	200	mg/kg		0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00164 U
Endosulfan	--	mg/kg		NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde	--	mg/kg		NA	NA	NA	NA	NA	NA	NA
Endrin ketone	--	mg/kg		NA	NA	NA	NA	NA	NA	NA
Endrin	89	mg/kg		0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00164 U
gamma-BHC (Lindane)	9.2	mg/kg		0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00164 U
gamma-Chlordane	--	mg/kg		NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	--	mg/kg		NA	NA	NA	NA	NA	NA	NA
Heptachlor	15	mg/kg		0.00164 U	0.00165 U	0.00165 U	0.00165 U	0.00165 U	0.00164 U	0.00164 U
Methoxychlor	--	mg/kg		NA	NA	NA	NA	NA	NA	NA
Toxaphene	--	mg/kg		NA	NA	NA	NA	NA	NA	NA

Table 6. Summary of Petroleum Hydrocarbons in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC Part 375 Commercial SCO	Units	**Sample Designation:**	COMPOSITE	SB-62	SB-63
			Sample Date:	12/20/2017	11/13/2018	11/13/2018
			Sample Depth (ft bls):	-	-	-
C28-C40	--	mg/kg		155	NA	NA
C9-C28	--	mg/kg		140	NA	NA
C9-C40 Total	--	mg/kg		295	NA	NA
Petroleum Hydrocarbons	--	Unknown		NA	ND	ND

Table 7. Summary of TCLP Metals in Soil, 27-10 49th Avenue, Hunters Point, New York

Parameter (Concentrations in mg/L)	USEPA Regulatory Levels (mg/L)	**Sample Designation:** COMPOSITE **Sample Date:** 12/20/2017
Arsenic	5	0.1 U
Barium	100	0.309
Cadmium	1	0.1 U
Chromium	5	0.1 U
Lead	5	0.325
Mercury	0.2	0.025 U
Selenium	1	0.4 U
Silver	5	0.1 U

Table 8. Summary of Volatile Organic Compounds in Groundwater, 27-10 49th Avenue, Hunters Point, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	Sample Designation:	MW-1	MW-1	MW-2	MW-2	MW-3	MW-3	MW-4	MW-4 DUP	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	SB-15-AQ PHASE	SB-2
		Sample Date:	11/29/2017	11/28/2018	11/29/2017	11/28/2018	11/29/2017	11/28/2018	11/27/2018	11/27/2018	11/28/2018	11/27/2018	11/27/2018	11/27/2018	11/27/2018	11/27/2018	10/24/2017	10/23/2017
1,1,1,2-Tetrachloroethane	5		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	5		0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	2.5 U	0.5 U
1,1,2,2-Tetrachloroethane	5		0.5 U	NA	0.5 U	NA	0.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.5 U	0.5 U
1,1,2-Trichloroethane	1		0.5 U	NA	0.5 U	NA	0.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	5 U	1 U
1,1-Dichloroethane	5		0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	2.5 U	0.5 U
1,1-Dichloroethene	5		0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	2.5 U	0.5 U
1,2,3-Trichlorobenzene	5		1 U	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.5 U	1 U
1,2,3-Trichloropropane	0.04		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	5		1 U	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.5 U	1 U
1,2,4-Trimethylbenzene	5		NA	0.2 U	NA	0.2 U	NA	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA
1,2-Dibromoethane	0.0006		0.015 U	NA	0.015 U	NA	0.015 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.015 U	0.5 U
1,2-Dichlorobenzene	3		0.608	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	2.5 U	0.5 U
1,2-Dichloroethane	0.6		0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	2.5 U	0.5 U
1,2-Dichloropropane	1		0.5 U	NA	0.5 U	NA	0.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.5 U	0.5 U
1,3,5-Trimethylbenzene	5		NA	0.2 U	NA	0.2 U	NA	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA
1,3-Dichlorobenzene	3		0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	2.5 U	0.5 U
1,3-Dichloropropene	0.4		0.5 U	NA	0.5 U	NA	0.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.5 U	0.5 U
1,4-Dichlorobenzene	3		0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	2.5 U	0.5 U
1,4-Dioxane	--		100 U	40 U	100 U	40 U	100 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	500 U	100 U
2-Butanone (MEK)	50		2 U	0.2 U	2 U	0.2 U	2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	10 U	2 U
2-Hexanone	50		1 U	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	5 U	2 U
4-Methyl-2-pentanone (MIBK)	--		1 U	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	5 U	2 U
Acetone	50		2 U	1 U	2 U	1 U	2 U	1 U	1 U	1 U	5.9	11	11	1 U	1 U	1 U	10 U	2 U
Acrolein	5		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acrylonitrile	5		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	1		0.708	0.2 U	0.5 U	0.2 U	0.689	0.2 U	0.2 U	0.2 U	0.37 J	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	2.5 U	0.5 U
Bromochloromethane	5		1 U	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	5 U	1 U
Bromodichloromethane	50		0.5 U	NA	0.5 U	NA	0.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.5 U	0.5 U
Bromoform	50		0.5 U	NA	0.5 U	NA	0.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.5 U	0.5 U
Bromomethane	5		1 U	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	5 U	1 U
Carbon disulfide	60		1 U	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.5 U	0.5 U
Carbon tetrachloride	5		0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	2.5 U	0.5 U
Chlorobenzene	5		0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	2.5 U	0.5 U
Chloroethane	5		0.5 U	NA	0.5 U	NA	0.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.5 U	0.5 U
Chloroform	7		0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U	0.2 U	0.2 U	0.2 U	0.42 J	0.43 J	0.2 U	0.2 U	0.2 U	2.5 U	0.5 U
Chloromethane	5		0.5 U	NA	0.5 U	NA	0.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.5 U	0.5 U
cis-1,2-Dichloroethene	5		0.5 U	0.2 U	0.768	0.57	0.49 J	0.44 J	0.22 J	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.44 J	2.5 U	0.5 U
cis-1,3-Dichloropropene	--		0.5 U	NA	0.5 U	NA	0.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.5 U	0.5 U
Cyclohexane	--		1.44	NA	0.5 U	NA	0.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	13.4 D	1 U
Dibromochloromethane	50		0.5 U	NA	0.5 U	NA	0.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	5 U	1 U
Dibromochloropropane	0.04		0.015 U	NA	0.015 U	NA	0.015 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.015 U	1 U
Dibromomethane	5		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	5		1 U	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	5 U	1 U
Ethylbenzene	5		0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	2.5 U	0.5 U
Freon 113	5		1 U	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	5 U	1 U
Hexachlorobutadiene	0.5		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	5		2.5	NA	0.5 U	NA	0.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	**26.1 D**	0.5 U
m+p-Xylene	5		NA	0.5 U	NA	0.5 U	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA	NA
Methyl acetate	--		0.5 U	NA	0.5 U	NA	0.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.5 U	0.5 U
Methylcyclohexane	--		1.15	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	14.9 D	1 U
Methylene chloride	5		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U
MTBE	10		0.5 U	0.2 U	0.5 U	0.2 U	1.55	0.9	2.8	2.6	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	2.5 U	0.5 U
Naphthalene	10		NA	1 U	NA	1 U	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	NA

Table 8. Summary of Volatile Organic Compounds in Groundwater, 27-10 49th Avenue, Hunters Point, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** / **Sample Date:**	MW-1 11/29/2017	MW-1 11/28/2018	MW-2 11/29/2017	MW-2 11/28/2018	MW-3 11/29/2017	MW-3 11/28/2018	MW-4 11/27/2018	MW-4 DUP 11/27/2018	MW-5 11/28/2018	MW-6 11/27/2018	MW-7 11/27/2018	MW-8 11/27/2018	MW-9 11/27/2018	MW-10 11/27/2018	SB-15-AQ PHASE 10/24/2017	SB-2 10/23/2017
n-Butylbenzene	5		NA	0.2 U	NA	0.2 U	NA	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA
n-Propylbenzene	5		NA	0.55	NA	0.2 U	NA	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA
o-Xylene	5		NA	0.2 U	NA	0.2 U	NA	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA
P-CYMENE (P-ISOPROPYLTOLUENE)	--		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	5		NA	0.2 U	NA	0.2 U	NA	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA
Styrene	5		0.5 U	NA	0.5 U	NA	0.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.5 U	0.5 U
t-Butyl Alcohol	--		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	5		NA	0.2 U	NA	0.2 U	NA	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA
Tetrachloroethene	5		0.679	0.2 U	0.484 J	2	0.5 U	0.62	0.68	0.64	3.3	0.53	0.71	1.2	0.2 U	0.26 J	2.5 U	2.48
Toluene	5		0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U	0.2 U	0.2 U	0.21 J	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	2.5 U	0.5 U
trans-1,2-Dichloroethene	5		0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.43 J	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	2.5 U	0.5 U
trans-1,3-Dichloropropene	--		0.5 U	NA	0.5 U	NA	0.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.5 U	0.5 U
trans-1,4-Dichloro-2-butene	5		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	5		0.5 U	0.2 U	0.5 U	0.36 J	0.5 U	1.1	0.2 U	0.2 U	0.2 U	0.2 U	0.21 J	0.2 U	0.2 U	0.26 J	2.5 U	0.5 U
Trichlorofluoromethane	5		1 U	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.5 U	0.5 U
Vinyl chloride	2		1 U	0.2 U	1.62	0.85	1 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	5 U	1 U
Xylenes (total)	5		1 U	0.6 U	1 U	0.6 U	1 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	5 U	1 U

Table 8. Summary of Volatile Organic Compounds in Groundwater, 27-10 49th Avenue, Hunters Point, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** **Sample Date:**	SB-38 12/20/2017	SB-39 12/20/2017	TW-4 5/15/2018
1,1,1,2-Tetrachloroethane	5		NA	NA	0.2 U
1,1,1-Trichloroethane	5		0.5 U	0.5 U	0.2 U
1,1,2,2-Tetrachloroethane	5		0.5 U	0.5 U	0.2 U
1,1,2-Trichloroethane	1		0.5 U	0.5 U	0.2 U
1,1-Dichloroethane	5		0.5 U	0.5 U	0.2 U
1,1-Dichloroethene	5		0.5 U	0.5 U	0.2 U
1,2,3-Trichlorobenzene	5		1 U	1 U	0.2 U
1,2,3-Trichloropropane	0.04		NA	NA	0.2 U
1,2,4-Trichlorobenzene	5		1 U	1 U	0.2 U
1,2,4-Trimethylbenzene	5		NA	NA	0.2 U
1,2-Dibromoethane	0.0006		0.5 U	0.5 U	0.2 U
1,2-Dichlorobenzene	3		0.5 U	0.5 U	0.2 U
1,2-Dichloroethane	0.6		0.5 U	0.5 U	0.2 U
1,2-Dichloropropane	1		0.5 U	0.5 U	0.2 U
1,3,5-Trimethylbenzene	5		NA	NA	0.2 U
1,3-Dichlorobenzene	3		0.5 U	0.5 U	0.2 U
1,3-Dichloropropene	0.4		0.5 U	0.5 U	NA
1,4-Dichlorobenzene	3		0.5 U	0.5 U	0.2 U
1,4-Dioxane	--		100 U	100 U	40 U
2-Butanone (MEK)	50		2 U	2 U	0.2 U
2-Hexanone	50		1 U	1 U	0.2 U
4-Methyl-2-pentanone (MIBK)	--		1 U	1 U	0.2 U
Acetone	50		2 U	2 U	2.3
Acrolein	5		NA	NA	0.2 U
Acrylonitrile	5		NA	NA	0.2 U
Benzene	1		0.5 U	0.5 U	0.2 U
Bromochloromethane	5		1 U	1 U	0.2 U
Bromodichloromethane	50		0.5 U	0.5 U	0.2 U
Bromoform	50		0.5 U	0.5 U	0.2 U
Bromomethane	5		1 U	1 U	0.2 U
Carbon disulfide	60		1 U	1 U	0.2 U
Carbon tetrachloride	5		0.5 U	0.5 U	0.2 U
Chlorobenzene	5		0.5 U	0.5 U	0.2 U
Chloroethane	5		0.5 U	0.5 U	0.2 U
Chloroform	7		0.5 U	0.5 U	0.2 U
Chloromethane	5		1.32	1.2	0.2 U
cis-1,2-Dichloroethene	5		0.5 U	0.5 U	0.2 U
cis-1,3-Dichloropropene	--		0.5 U	0.5 U	0.2 U
Cyclohexane	--		2.91	0.5 U	0.2 U
Dibromochloromethane	50		0.5 U	0.5 U	0.2 U
Dibromochloropropane	0.04		1 U	1 U	0.2 U
Dibromomethane	5		NA	NA	0.2 U
Dichlorodifluoromethane	5		1 U	1 U	0.2 U
Ethylbenzene	5		0.5 U	0.5 U	0.2 U
Freon 113	5		1 U	1 U	0.2 U
Hexachlorobutadiene	0.5		NA	NA	0.2 U
Isopropylbenzene	5		0.5 U	0.5 U	0.2 U
m+p-Xylene	5		NA	NA	0.5 U
Methyl acetate	--		0.5 U	0.5 U	0.2 U
Methylcyclohexane	--		2.89	1 U	0.2 U
Methylene chloride	5		1 U	1 U	1 U
MTBE	10		0.874	8.77	0.2 U
Naphthalene	10		NA	NA	NA

Table 8. Summary of Volatile Organic Compounds in Groundwater, 27-10 49th Avenue, Hunters Point, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** / **Sample Date:**	SB-38 12/20/2017	SB-39 12/20/2017	TW-4 5/15/2018
n-Butylbenzene	5		NA	NA	0.2 U
n-Propylbenzene	5		NA	NA	0.2 U
o-Xylene	5		NA	NA	0.2 U
P-CYMENE (P-ISOPROPYLTOLUENE)	--		NA	NA	0.2 U
sec-Butylbenzene	5		NA	NA	0.2 U
Styrene	5		0.5 U	0.5 U	0.2 U
t-Butyl Alcohol	--		NA	NA	0.5 U
tert-Butylbenzene	5		NA	NA	0.2 U
Tetrachloroethene	5		3.88	1.56	**7.4**
Toluene	5		0.5 U	0.5 U	0.2 U
trans-1,2-Dichloroethene	5		0.5 U	0.5 U	0.2 U
trans-1,3-Dichloropropene	--		0.5 U	0.5 U	0.2 U
trans-1,4-Dichloro-2-butene	5		NA	NA	0.2 U
Trichloroethene	5		0.5 U	0.944	1.1
Trichlorofluoromethane	5		0.5 U	0.5 U	0.2 U
Vinyl chloride	2		1 U	1 U	0.2 U
Xylenes (total)	5		1 U	1 U	0.6 U

Table 9. Summary of Semivolatile Organic Compounds in Groundwater, 27-10 49th Avenue, Hunters Point, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	Sample Designation:	MW-1	MW-1	MW-2	MW-2	MW-3	MW-3	MW-4	MW-4 DUP	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	SB-15-AQ PHASE	SB-2	TW-4
		Sample Date:	11/29/2017	11/28/2018	11/29/2017	11/28/2018	11/29/2017	11/28/2018	11/27/2018	11/27/2018	11/28/2018	11/27/2018	11/27/2018	11/27/2018	11/27/2018	11/27/2018	10/24/2017	10/23/2017	5/15/2018
1,1'-Biphenyl	5		0.161 J	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	2.94 U
1,2,4,5-Tetrachlorobenzene	5		1 U	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	2.94 U
1,2,4-Trichlorobenzene	5		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.94 U
1,2-Dichlorobenzene	3		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.94 U
1,2-Diphenylhydrazine	--		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.94 U
1,3-Dichlorobenzene	3		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.94 U
1,4-Dichlorobenzene	3		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.94 U
2,3,4,6-Tetrachlorophenol	--		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.94 U
2,4,5-Trichlorophenol	--		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.94 U
2,4,6-Trichlorophenol	--		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.94 U
2,4-Dichlorophenol	5		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.94 U
2,4-Dimethylphenol	50		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.94 U
2,4-Dinitrophenol	10		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.94 U
2,4-Dinitrotoluene	5		1 U	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	2.94 U
2,6-Dinitrotoluene	5		1 U	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	2.94 U
2-Chloronaphthalene	10		1 U	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	2.94 U
2-Chlorophenol	--		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.94 U
2-Methylnaphthalene	--		2.2	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	345 D	1 U	2.94 U
2-Methylphenol	--		NA	2.56 U	NA	2.56 U	NA	2.56 U	2.56 U	2.56 U	2.56 U	2.56 U	2.56 U	2.56 U	2.56 U	2.56 U	NA	NA	2.94 U
2-Nitroaniline	5		1 U	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	2.94 U
2-Nitrophenol	--		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.94 U
3&4-Methylphenol	--		NA	2.56 U	NA	2.56 U	NA	2.56 U	2.56 U	2.56 U	2.56 U	2.56 U	2.56 U	2.56 U	2.56 U	2.56 U	NA	NA	2.94 U
3,3'-Dichlorobenzidine	5		1 U	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	2.94 U
3-Nitroaniline	5		1 U	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	2.94 U
4,6-Dinitro-2-methylphenol	--		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.94 U
4-Bromophenyl phenyl ether	--		1 U	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	2.94 U
4-Chloro-3-methylphenol	--		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.94 U
4-Chloroaniline	5		1 U	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	2.94 U
4-Chlorophenyl phenyl ether	--		1 U	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	2.94 U
4-Nitroaniline	5		1 U	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	2.94 U
4-Nitrophenol	--		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.94 U
Acenaphthene	20		4.71	4.66	1 U	0.0513 U	1 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0615	**334 D**	0.967 J	0.0588 U
Acenaphthylene	20		1 U	0.0718	1 U	0.0513 U	1 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.113	0.0513 U	0.0513 U	1 U	0.602 J	0.259
Acetophenone	--		1 U	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	2.94 U
Aniline	5		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.94 U
Anthracene	50		0.724 J	0.964	1 U	0.0615	1 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.164	0.0513 U	0.0615	**305 D**	1.28	0.306
Atrazine	7.5		1 U	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	0.588 U
Benzaldehyde	--		1 U	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	2.94 U
Benzidine	5		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11.8 U
Benzo[a]anthracene	0.002		0.1 U	**0.144**	0.1 U	0.0513 U	0.1 U	0.0513 U	0.0513 U	0.0513 U	**0.0615**	0.0513 U	0.0513 U	**0.338**	0.0513 U	0.0513 U	**218 D**	**2.98**	**0.706**
Benzo[a]pyrene	0		0.1 U	**0.0923**	0.1 U	0.0513 U	0.1 U	0.0513 U	0.0513 U	0.0513 U	**0.0615**	0.0513 U	0.0513 U	**0.421**	**0.0513**	0.0513 U	**68.1**	**1.97**	**1.29**
Benzo[b]fluoranthene	0.002		0.1 U	**0.0615**	0.1 U	0.0513 U	0.1 U	0.0513 U	0.0513 U	0.0513 U	**0.0615**	0.0513 U	0.0513 U	**0.503**	0.0513 U	0.0513 U	**40.7**	**2.54**	**1.62**
Benzo[g,h,i]perylene	--		1 U	0.0513	1 U	0.0513 U	1 U	0.0513 U	0.0513 U	0.0513 U	0.0513	0.0513 U	0.0513 U	0.328	0.0513 U	0.0513 U	29.7	3.89	0.8
Benzo[k]fluoranthene	0.002		0.1 U	**0.0718**	0.1 U	0.0513 U	0.1 U	0.0513 U	0.0513 U	0.0513 U	**0.0615**	0.0513 U	0.0513 U	**0.4**	0.0513 U	0.0513 U	**48.1**	**1.13**	**1.28**
Benzoic Acid	--		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	29.4 U
Benzyl Alcohol	--		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.94 U
Bis(2-chloro-1-methylethyl)ether	5		1 U	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	2.94 U
Bis(2-chloroethoxy)methane	5		1 U	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	2.94 U
Bis(2-chloroethyl) ether	--		1 U	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	2.94 U
Bis(2-ethylhexyl) phthalate	5		1 U	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	**11.4**	1 U	0.588 U
Butylbenzyl phthalate	50		1 U	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	2.94 U
Caprolactam	--		1 U	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	2.94 U
Carbazole	--		1.34	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.77	0.713 J	2.94 U

Table 9. Summary of Semivolatile Organic Compounds in Groundwater, 27-10 49th Avenue, Hunters Point, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	Sample Designation:	MW-1	MW-1	MW-2	MW-2	MW-3	MW-3	MW-4	MW-4 DUP	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	SB-15-AQ PHASE	SB-2	TW-4
		Sample Date:	11/29/2017	11/28/2018	11/29/2017	11/28/2018	11/29/2017	11/28/2018	11/27/2018	11/27/2018	11/28/2018	11/27/2018	11/27/2018	11/27/2018	11/27/2018	11/27/2018	10/24/2017	10/23/2017	5/15/2018
Chrysene	0.002		1 U	**0.144**	1 U	0.0513 U	1 U	0.0513 U	0.0513 U	0.0513 U	**0.0821**	0.0513 U	0.0513 U	**0.451**	**0.0513**	0.0513 U	**123**	**9.28**	**0.882**
Dibenzo[a,h]anthracene	--		0.1 U	0.0513 U	0.1 U	0.0513 U	0.1 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0923	0.0513 U	0.0513 U	12	1.45	0.318
Dibenzofuran	--		0.792 J	2.56 U	1 U	2.56 U	1 U	2.56 U	2.56 U	2.56 U	2.56 U	2.56 U	2.56 U	2.56 U	2.56 U	2.56 U	99.9	1 U	2.94 U
Diethyl phthalate	50		1 U	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	6.18	2.94 U
Dimethyl phthalate	50		1 U	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	2.94 U
Di-n-butyl phthalate	50		1 U	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	2.94 U
Di-n-octyl phthalate	--		1 U	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	2.94 U
Fluoranthene	50		0.526 J	0.872	1 U	0.0615	1 U	0.0513 U	0.0513 U	0.0513 U	0.164	0.0718	0.0718	0.636	0.0923	0.0821	**652 D**	9.3	0.765
Fluorene	50		2.31	2.49	1 U	0.0513 U	1 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	**272 D**	0.506 J	0.0588 U
Hexachlorobenzene	0.04		0.02 U	0.0205 U	0.02 U	0.0205 U	0.02 U	0.0205 U	0.0205 U	0.0205 U	0.0205 U	0.0205 U	0.0205 U	0.0205 U	0.0205 U	0.0205 U	1 U	0.02 U	0.0235 U
Hexachlorobutadiene	0.5		1 U	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	0.588 U
Hexachlorocyclopentadiene	5		1 U	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	2.94 U
Hexachloroethane	5		1 U	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	0.588 U
Indeno[1,2,3-cd]pyrene	0.002		0.1 U	0.0513 U	0.1 U	0.0513 U	0.1 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	**0.308**	0.0513 U	0.0513 U	**24.4**	**1.77**	**0.824**
Isophorone	50		1 U	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	2.94 U
Naphthalene	10		1.2	0.256	1 U	0.0513 U	1 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513	0.0513 U	0.0513 U	1 U	1 U	0.0588 U
Nitrobenzene	0.4		1 U	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	0.294 U
n-Nitrosodimethylamine	--		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.588 U
n-Nitrosodi-n-propylamine	--		1 U	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	2.94 U
n-Nitrosodiphenylamine	50		1 U	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	2.94 U
Pentachlorophenol	1		NA	0.256 U	NA	0.256 U	NA	0.256 U	0.256 U	0.256 U	0.256 U	0.256 U	0.256 U	0.256 U	0.256 U	0.256 U	NA	NA	0.294 U
Phenanthrene	50		3.63	4.53	1 U	0.0513 U	1 U	0.0513 U	0.0513 U	0.0513 U	0.123	0.0513	0.0513 U	0.226	0.0821	0.164	**1010 D**	4.88	0.153
Phenols (Total)	1		NA	2.56 U	NA	2.56 U	NA	2.56 U	2.56 U	2.56 U	2.56 U	2.56 U	2.56 U	2.56 U	2.56 U	2.56 U	NA	NA	2.94 U
Pyrene	50		0.483 J	0.944	1 U	0.133	1 U	0.0513 U	0.0513	0.0615	0.154	0.0615	0.0718	0.667	0.185	0.0923	**721 D**	10.7	0.659

Notes Utilized Throughout Tables	
Groundwater Tables	
J -	Estimated Value
U -	The analyte was analyzed for, but was not detected above the level of the method detection limit
FD -	Duplicate
µg/L -	Micrograms per liter
NYSDEC -	New York State Department of Environmental Conservation
AWQSGVs -	Ambient Water-Quality Standards and Guidance Values
--	No NYSDEC AWQSGV available
Bold data indicates that parameter was detected above the NYSDEC AWQSGVs	

Table 9B. Summary of Polycyclic Aromatic Hydrocarbons in Groundwater, 27-10 49th Avenue, Long Island City, New York

Sample Designation:			MW-1	MW-2	MW-4	MW-4	MW-8	MW-9
Sample Date:			05/29/2024	05/29/2024	05/29/2024	05/29/2024	05/29/2024	05/29/2024
Normal Sample or Field Duplicate:			N	N	N	FD	N	N
Parameter	NYSDEC Ambient Water Quality Standards and Guidance	Units						
2-Chloronaphthalene	10	UG/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
2-Methylnaphthalene	--	UG/L	0.86	0.06 J	0.03 U	0.03 U	0.03 U	0.03 U
Acenaphthene	20	UG/L	3.8	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Acenaphthylene	20	UG/L	0.03 J	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Anthracene	50	UG/L	0.56	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Benzo(A)Anthracene	0.002	UG/L	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Benzo(A)Pyrene	0	UG/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Benzo(B)Fluoranthene	0.002	UG/L	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Benzo(G,H,I)Perylene	--	UG/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Benzo(K)Fluoranthene	0.002	UG/L	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Chrysene	0.002	UG/L	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Dibenz(A,H)Anthracene	--	UG/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Fluoranthene	50	UG/L	0.39	0.03 U	0.03 U	0.03 U	0.04 J	0.03 U
Fluorene	50	UG/L	1.8	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Indeno(1,2,3-C,D)Pyrene	0.002	UG/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Naphthalene	10	UG/L	0.08 J	0.34	0.03 J	0.02 U	0.11	0.02 U
Phenanthrene	50	UG/L	1.2	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Pyrene	50	UG/L	0.34	0.04 U	0.04 U	0.04 U	0.04 U	0.17

Table 10. Summary of Metals in Groundwater, 27-10 49th Avenue, Hunters Point, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** **Sample Date:**	MW-1 11/28/2018 Total	MW-1 11/28/2018 Dissolved	MW-2 11/28/2018 Total	MW-2 11/28/2018 Dissolved	MW-3 11/28/2018 Total	MW-3 11/28/2018 Dissolved	MW-4 11/27/2018 Total	MW-4 11/27/2018 Dissolved	MW-4 DUP 11/27/2018 Total	MW-4 DUP 11/27/2018 Dissolved	MW-5 11/28/2018 Total	MW-5 11/28/2018 Dissolved	MW-6 11/27/2018 Total	MW-6 11/27/2018 Dissolved	MW-7 11/27/2018 Total	MW-7 11/27/2018 Dissolved	MW-8 11/27/2018 Total	MW-8 11/27/2018 Dissolved
Aluminum	--		483	55.6 U	105	94	86.3	118	2290	103	993	59.4	1190	55.6 U	55.6 U	55.6 U	55.6 U	55.6 U	55.6 U	55.6 U
Antimony	3		1.11 U	1.11 U	1.11 U	1.11 U	1.81	1.34	1.11 U	1.11 U	1.11 U	1.11 U	1.11 U	1.11 U	1.11 U	1.11 U	1.11 U	1.11 U	**4.58**	**4.25**
Arsenic	25		3.61	2.67	1.12	1.11 U	4.55	2.83	1.12	1.11 U	1.11 U	1.26	1.8	1.74	1.92	1.95	2.05	1.55	5.09	2.09
Barium	1000		317	895	27.8 U	323	27.8 U	112	208	506	299	505	483	305	27.8 U	27.8 U	58.8	27.8 U	78.6	216
Beryllium	3		0.333 U	0.333 U	0.333 U	0.333 U	0.333 U	0.333 U	0.333 U	0.333 U	0.333 U	0.333 U	0.333 U	0.333 U	0.333 U	0.333 U	0.333 U	0.333 U	0.333 U	0.333 U
Cadmium	5		0.556 U	0.556 U	0.556 U	0.556 U	1.46	0.556 U	0.556 U	0.556 U	0.556 U	0.556 U	0.556 U	0.556 U	0.556 U	0.556 U	0.556 U	0.556 U	1.87	0.556 U
Calcium	--		238000	376000	108000	665000	115000	702000	257000	474000	490000	472000	591000	235000	55.6 U	107000	104000	117000	86700	253000
Chromium, Hexavalent	50		10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
Chromium, Trivalent	--		0.01 U	NA	0.01 U	NA	0.01 U	NA	0.0204	NA	0.01 U	NA	0.01 U	NA	0.01 U	NA	0.01 U	NA	0.01 U	NA
Chromium	50		6.53	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	20.4	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	10
Cobalt	--		4.44 U	4.44 U	4.44 U	4.44 U	4.44 U	4.44 U	4.44 U	4.44 U	4.44 U	4.44 U	4.44 U	4.44 U	4.44 U	4.44 U	4.44 U	4.44 U	4.44 U	4.44 U
Copper	200		22.2 U	22.2 U	22.2 U	22.2 U	22.2 U	22.2 U	143	22.2 U	22.2 U	22.2 U	22.2 U	22.2 U	22.2 U	22.2 U	22.2 U	22.2 U	22.2 U	22.2 U
Cyanide	200		0.0261	NA	0.01 U	NA	0.01 U	NA	0.01 U	NA	0.01 U	NA	0.01 U	NA	0.01 U	NA	0.01 U	NA	0.01 U	NA
Iron	300		**12900**	**75700**	278 U	**3280**	278 U	**2290**	**4920**	**15200**	**2560**	**15500**	**3920**	**12900**	278 U	278 U	**360**	278 U	**907**	**455**
Lead	25		19.4	5.56 U	5.56 U	5.62	11.1	5.56 U	**728**	5.56 U	14	5.56 U	12.7	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U
Magnesium	35000		**161000**	**115000**	**272000**	**157000**	**278000**	**251000**	**404000**	**108000**	**44200**	**107000**	**159000**	**173000**	55.6 U	**275000**	18000	**287000**	15800	**404000**
Manganese	300		**2840**	**1290**	16.8	**2030**	24.7	**929**	**1300**	**779**	**963**	**797**	**1730**	**2770**	5.56 U	13.7	173	23	**511**	**1160**
Mercury	0.7		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	100		11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U
Potassium	--		73500	79000	101000	52700	104000	155000	151000	50800	39500	50200	69400	80400	712	105000	10500	108000	9400	154000
Selenium	10		**20.6**	**32.1**	**37.1**	**43.1**	**50.3**	**77.7**	**28.8**	**37.6**	**29**	**26**	**55.5**	**41.1**	**60.5**	**80.5**	**73.8**	**83.6**	**103**	**115**
Silver	50		5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U
Sodium	20000		**1260000 D**	**931000**	**1140000 D**	**835000**	**3890000 D**	**5230000 D**	**1380000 D**	**929000**	**1210000 D**	**930000**	**2340000 D**	**2870000 D**	2180	**4570000 D**	**94700**	**4800000 D**	**86400**	**5960000 D**
Thallium	0.5		1.11 U	1.11 U	1.11 U	1.11 U	1.11 U	1.11 U	1.11 U	1.11 U	1.11 U	1.11 U	1.11 U	1.11 U	1.11 U	1.11 U	1.11 U	1.11 U	1.11 U	1.11 U
Vanadium	--		11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	14.6	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U
Zinc	2000		27.8 U	27.8 U	50	49.2	48.7	27.8 U	244	27.8 U	30	27.8 U	27.8 U	27.8 U	27.8 U	44.2	89.1	40	27.8 U	33.6

Table 10. Summary of Metals in Groundwater, 27-10 49th Avenue, Hunters Point, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** / **Sample Date:**	MW-9 11/27/2018 Total	MW-9 11/27/2018 Dissolved	MW-10 11/27/2018 Total	MW-10 11/27/2018 Dissolved	TW-4 5/15/2018 Total
Aluminum	--		354	220	55.6 U	114	16400
Antimony	3		1.11 U	1.11 U	1.11 U	1.11 U	**12**
Arsenic	25		1.28	1.2	4.06	4.35	6
Barium	1000		50.2	297	27.8 U	477	226
Beryllium	3		0.333 U	0.333 U	0.333 U	0.333 U	3
Cadmium	5		0.556 U	0.556 U	0.556 U	0.556 U	3 U
Calcium	--		34600	481000	7710	577000	47300
Chromium, Hexavalent	50		10 U	NA	10 U	NA	NA
Chromium, Trivalent	--		0.01 U	NA	0.01 U	NA	NA
Chromium	50		8.35	5.56 U	5.56 U	5.56 U	**232**
Cobalt	--		4.44 U	4.44 U	4.44 U	4.44 U	73
Copper	200		22.2 U	22.2 U	22.2 U	22.2 U	98
Cyanide	200		0.0207	NA	0.01 U	NA	NA
Iron	300		**1450**	**1250**	278 U	**1960**	**26500**
Lead	25		6.29	5.56 U	5.56 U	5.56 U	**72**
Magnesium	35000		2770	**42400**	1860	**156000**	6410
Manganese	300		168	**914**	5.56 U	**1690**	**2580**
Mercury	0.7		0.2 U	0.2 U	0.2 U	0.2 U	0.26
Nickel	100		11.1 U	11.1 U	11.1 U	11.1 U	45
Potassium	--		4190	42300	2050	69800	6220
Selenium	10		**44.4**	**54.5**	**40.8**	**63.6**	11 U
Silver	50		5.56 U	5.56 U	5.56 U	5.56 U	6 U
Sodium	20000		**26500**	**2850000 D**	**20200**	**1170000**	**99200**
Thallium	0.5		1.11 U	1.11 U	1.11 U	1.11 U	6 U
Vanadium	--		11.1 U	11.1 U	11.1 U	11.1 U	18
Zinc	2000		48.7	27.8 U	27.8 U	27.8 U	37

Table 11. Summary of Polychlorinated Biphenyls in Groundwater, 27-10 49th Avenue, Hunters Point, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** MW-1 **Sample Date:** 11/29/2017	MW-1 11/28/2018	MW-2 11/29/2017	MW-2 11/28/2018	MW-3 11/29/2017	MW-3 11/28/2018	MW-4 11/27/2018	MW-4 DUP 11/27/2018	MW-5 11/28/2018	MW-6 11/27/2018	MW-7 11/27/2018	MW-8 11/27/2018	MW-9 11/27/2018	MW-10 11/27/2018	TW-4 5/15/2018
Aroclor-1016	--	0.05 U	0.0513 U	0.05 U	0.0513 U	0.05 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0606 U
Aroclor-1221	--	0.05 U	0.0513 U	0.05 U	0.0513 U	0.05 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0606 U
Aroclor-1232	--	0.05 U	0.0513 U	0.05 U	0.0513 U	0.05 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0606 U
Aroclor-1242	--	0.05 U	0.0513 U	0.05 U	0.0513 U	0.05 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0606 U
Aroclor-1248	--	0.05 U	0.0513 U	0.05 U	0.0513 U	0.05 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0606 U
Aroclor-1254	--	0.05 U	0.0513 U	0.05 U	0.0513 U	0.05 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.528
Aroclor-1260	--	0.05 U	0.0513 U	0.05 U	0.0513 U	0.05 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.445
Aroclor-1262	--	0.05 U	NA	0.05 U	NA	0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1268	--	0.05 U	NA	0.05 U	NA	0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor (Total)	0.09	0.05 U	0.0513 U	0.05 U	0.0513 U	0.05 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	0.0513 U	**0.972**

Table 12. Summary of Pesticides and Herbicides in Groundwater, 27-10 49th Avenue, Hunters Point, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** MW-1	MW-2	MW-3	MW-4	MW-4 DUP	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	TW-4
		Sample Date: 11/28/2018	11/28/2018	11/28/2018	11/27/2018	11/27/2018	11/28/2018	11/27/2018	11/27/2018	11/27/2018	11/27/2018	11/27/2018	5/15/2018
2,4,5-T	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA
2,4,5-TP	0.26	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA
2,4-D	50	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA
4,4'-DDD	0.3	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.00485 U
4,4'-DDE	0.2	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.00485 U
4,4'-DDT	0.2	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.00485 U
Aldrin	0	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.00485 U
alpha-BHC	0.01	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.00485 U
alpha-Chlordane	--	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.00485 U
beta-BHC	0.04	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.00485 U
Chlordane	0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0242 U
delta-BHC	0.04	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.00485 U
Dieldrin	0.004	0.00205 U	0.00205 U	0.00205 U	0.00205 U	0.00205 U	0.00205 U	0.00205 U	0.00205 U	0.00205 U	0.00205 U	0.00205 U	0.00242 U
Endosulfan I	--	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.00485 U
Endosulfan II	--	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.00485 U
Endosulfan sulfate	--	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.00485 U
Endrin aldehyde	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0121 U
Endrin ketone	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0121 U
Endrin	0	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.00485 U
gamma-BHC (Lindane)	0.05	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.00485 U
gamma-Chlordane	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0121 U
Heptachlor epoxide	0.03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00485 U
Heptachlor	0.04	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.0041 U	0.00485 U
Methoxychlor	35	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00485 U
Toxaphene	0.06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.121 U

Table 13. Summary of Emerging Contaminants (Per- and Polyfluoroalkyl Substances and 1,4-Dioxane) in Groundwater
27-10 49th Avenue, Hunters Point, New York

Parameter	NYSDEC AWQSGVs	Units	**Sample Designation:** / **Sample Date:**	MW-1 11/28/2018	MW-2 11/28/2018	MW-3 11/28/2018	MW-4 DUP 11/27/2018	MW-4 11/27/2018	MW-5 11/28/2018	MW-6 11/27/2018	MW-7 11/27/2018	MW-8 11/27/2018	MW-9 11/27/2018	MW-10 11/27/2018
1,4-Dioxane	0.35	µg/L		**1.1**	**1.2**	0.21 U	**0.97**	**1**	0.2 U	0.2 U	0.2 U	0.2 U	**0.88**	0.21
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NETFOSAA)	--	ng/L		2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMEFOSAA)	--	ng/L		2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Perfluorobutanesulfonic Acid (PFBS)	--	ng/L		3.3	3.5	4.3	5.3	10	2 U	2.5	3.8	2.5	7.5	24
Perfluorobutanoic Acid (PFBA)	--	ng/L		4.4	18	5.7	3.4	4.1	7.7	2 U	2 U	4.9	15	6.2
Perfluorodecanesulfonic Acid (PFDS)	--	ng/L		2.7	2 U	4.5	2 U	2 U	2 U	16	17	2 U	2 U	2 U
Perfluorodecanoic Acid (PFDA)	--	ng/L		2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Perfluorododecanoic Acid (PFDOA)	--	ng/L		2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Perfluoroheptanesulfonic Acid (PFHPS)	--	ng/L		2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Perfluoroheptanoic Acid (PFHPA)	--	ng/L		89	31	10	26	24	5.6	3.5	3.5	6.6	200	22
Perfluorohexanesulfonic Acid (PFHXS)	--	ng/L		2.9	2 U	4.2	3.5	2.1	3	2 U	2 U	2 U	3.4	6.3
Perfluorohexanoic Acid (PFHxA)	--	ng/L		41	60	26	23	22	9.2	5.3	6.3	8.7	86	15
Perfluorononanoic Acid (PFNA)	--	ng/L		10	2 U	2.8	2 U	2 U	2 U	3	2.1	2.3	12	2 U
Perfluorooctanesulfonamide (FOSA)	--	ng/L		2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Perfluorooctanesulfonic Acid (PFOS)	2.7	ng/L		**9.5**	**4**	**15**	**8.3**	**9.6**	**12**	**8.2**	**6.3**	**7.9**	**12**	2 U
Perfluorooctanoic Acid (PFOA)	6.7	ng/L		**48**	**21**	**26**	**25**	**24**	**18**	**11**	**10**	**20**	**110**	**14**
Perfluoropentanoic Acid (PFPEA)	--	ng/L		34	120	27	37	43	16	7.6	8.5	13	62	12
Perfluorotetradecanoic Acid (PFTA)	--	ng/L		2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Perfluorotridecanoic Acid (PFTRDA)	--	ng/L		2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Perfluoroundecanoic Acid (PFUNA)	--	ng/L		2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Sodium 1H,1H,2H,2H-Perfluoro-1-[1,2-13C2]-Decane Sulfonate (8:2)	--	ng/L		2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Sodium 1H,1H,2H,2H-Perfluoro-1-[1,2-13C2]-Octane Sulfonate (6:2)	--	ng/L		8.3	8.4	2 U	2	2.6	2 U	2 U	2 U	2 U	2 U	2 U

Table 14. Summary of Volatile Organic Compounds in Soil Vapor (ppbv), 27-10 49th Avenue, Hunters Point, New York

Parameter	Units	Sample Designation: / Sample Date:	SV1-a 5/15/2018	SV2-a 5/15/2018	SV3-a 5/15/2018	SV-4 5/15/2018	SV-5 5/15/2018
1,1,1,2-Tetrachloroethane	ppbv		1.6 U	1.5 U	1.6 U	1.7 U	1.6 U
1,1,1-Trichloroethane	ppbv		1.6 U	1.5 U	1.6 U	1.7 U	1.6 U
1,1,2,2-Tetrachloroethane	ppbv		1.6 U	1.5 U	1.6 U	1.7 U	1.6 U
1,1,2-Trichloroethane	ppbv		1.6 U	1.5 U	1.6 U	1.7 U	1.6 U
1,1-Dichloroethane	ppbv		1.6 U	1.5 U	1.6 U	1.7 U	1.6 U
1,1-Dichloroethene	ppbv		0.41 U	0.38 U	0.4 U	0.43 U	0.41 U
1,2,4-Trichlorobenzene	ppbv		1.6 U	1.5 U	1.6 U	1.7 U	1.6 U
1,2,4-Trimethylbenzene	ppbv		**14 D**	**10 D**	**13 D**	**32 D**	**27 D**
1,2-Dibromoethane	ppbv		1.6 U	1.5 U	1.6 U	1.7 U	1.6 U
1,2-Dichlorobenzene	ppbv		1.6 U	1.5 U	1.6 U	1.7 U	1.6 U
1,2-Dichloroethane	ppbv		**4.1 D**	**3.0 D**	**4.0 D**	**7.7 D**	**7.5 D**
1,2-Dichloropropane	ppbv		1.6 U	1.5 U	1.6 U	1.7 U	1.6 U
1,3,5-Trimethylbenzene	ppbv		**4.8 D**	**3.0 D**	**4.0 D**	**9.4 D**	**7.9 D**
1,3-Butadiene	ppbv		4.9 U	4.5 U	4.8 U	5.1 U	4.9 U
1,3-Dichlorobenzene	ppbv		1.6 U	1.5 U	1.6 U	1.7 U	1.6 U
1,3-Dichloropropane	ppbv		1.6 U	1.5 U	1.6 U	1.7 U	1.6 U
1,4-Dichlorobenzene	ppbv		1.6 U	1.5 U	1.6 U	1.7 U	1.6 U
1,4-Dioxane	ppbv		3.3 U	3 U	3.2 U	3.4 U	3.3 U
2-Butanone (MEK)	ppbv		**40 D**	**31 D**	**32 D**	**630 D**	**210 D**
2-Hexanone	ppbv		**18 D**	**7.8 D**	**6.3 D**	**110 D**	**44 D**
3-Chloropropene	ppbv		8.2 U	7.5 U	8.1 U	8.5 U	8.2 U
4-Ethyltoluene	ppbv		**16 D**	**11 D**	**14 D**	**34 D**	**29 D**
4-Methyl-2-pentanone (MIBK)	ppbv		**3.9 D**	1.5 U	**3.2 D**	1.7 U	**5.4 D**
Acetone	ppbv		**140 D**	**69 D**	**82 D**	**150 D**	**89 D**
Acrylonitrile	ppbv		1.6 U	1.5 U	1.6 U	1.7 U	1.6 U
Benzene	ppbv		**3.0 D**	**11 D**	**170 D**	**8.9 D**	**6.9 D**
Benzyl chloride	ppbv		1.6 U	1.5 U	1.6 U	1.7 U	1.6 U
Bromodichloromethane	ppbv		1.6 U	1.5 U	1.6 U	1.7 U	1.6 U
Bromoethene	ppbv		1.6 U	1.5 U	1.6 U	1.7 U	1.6 U
Bromoform	ppbv		1.6 U	1.5 U	1.6 U	1.7 U	1.6 U
Bromomethane	ppbv		1.6 U	1.5 U	1.6 U	1.7 U	1.6 U
Carbon disulfide	ppbv		**8.2 D**	**29 D**	**6.1 D**	**5.8 D**	**20 D**
Carbon tetrachloride	ppbv		0.41 U	0.38 U	0.4 U	0.43 U	0.41 U
Chlorobenzene	ppbv		1.6 U	1.5 U	1.6 U	1.7 U	1.6 U
Chloroethane	ppbv		1.6 U	1.5 U	1.6 U	1.7 U	1.6 U
Chloroform	ppbv		1.6 U	**2.4 D**	**2.3 D**	**11 D**	**11 D**
Chloromethane	ppbv		1.6 U	**1.6 D**	1.6 U	1.7 U	**7.9 D**

Table 14. Summary of Volatile Organic Compounds in Soil Vapor (ppbv), 27-10 49th Avenue, Hunters Point, New York

Parameter	Units	Sample Designation: / Sample Date:	SV1-a 5/15/2018	SV2-a 5/15/2018	SV3-a 5/15/2018	SV-4 5/15/2018	SV-5 5/15/2018
cis-1,2-Dichloroethene	ppbv		0.41 U	0.38 U	0.4 U	**770 D**	**130 D**
cis-1,3-Dichloropropene	ppbv		1.6 U	1.5 U	1.6 U	1.7 U	1.6 U
Cyclohexane	ppbv		**2.0 D**	**19 D**	**1.6 D**	1.7 U	**5.4 D**
Dibromochloromethane	ppbv		1.6 U	1.5 U	1.6 U	1.7 U	1.6 U
Dichlorodifluoromethane	ppbv		1.6 U	1.5 U	1.6 U	1.7 U	1.6 U
Ethyl Acetate	ppbv		3.3 U	3 U	3.2 U	3.4 U	3.3 U
Ethylbenzene	ppbv		**44 D**	**23 D**	**37 D**	**66 D**	**58 D**
Freon 113	ppbv		1.6 U	1.5 U	1.6 U	1.7 U	1.6 U
Freon 114	ppbv		1.6 U	1.5 U	1.6 U	1.7 U	1.6 U
Hexachlorobutadiene	ppbv		1.6 U	1.5 U	1.6 U	1.7 U	1.6 U
ISOPROPANOL	ppbv		**20 D**	**3.3 D**	**6.8 D**	3.4 U	3.3 U
m+p-Xylene	ppbv		**130 D**	**69 D**	**100 D**	**190 D**	**170 D**
Methyl Methacrylate	ppbv		1.6 U	1.5 U	1.6 U	1.7 U	1.6 U
Methylene chloride	ppbv		3.3 U	3 U	3.2 U	3.4 U	3.3 U
MTBE	ppbv		1.6 U	1.5 U	1.6 U	1.7 U	1.6 U
N-HEPTANE	ppbv		**4.4 D**	**4.6 D**	**2.7 D**	**8.2 D**	**10 D**
n-Hexane	ppbv		**3.4 D**	**7.4 D**	**1.6 D**	**6.0 D**	**13 D**
o-Xylene	ppbv		**44 D**	**24 D**	**36 D**	**69 D**	**59 D**
Propene	ppbv		**8.0 D**	**26 D**	**58 D**	**61 D**	**85 D**
Styrene	ppbv		**250 D**	**160 D**	**220 D**	**410 D**	**390 D**
Tetrachloroethene	ppbv		**310 D**	**400 D**	**190 D**	**6200 D**	**3100 D**
Tetrahydrofuran	ppbv		3.3 U	3 U	3.2 U	3.4 U	3.3 U
Toluene	ppbv		**61 D**	**18 D**	**200 D**	**160 D**	**41 D**
trans-1,2-Dichloroethene	ppbv		1.6 U	1.5 U	1.6 U	**34 D**	**6.9 D**
trans-1,3-Dichloropropene	ppbv		1.6 U	1.5 U	1.6 U	1.7 U	1.6 U
Trichloroethene	ppbv		**16 D**	**63 D**	**4.8 D**	**790 D**	**300 D**
Trichlorofluoromethane	ppbv		1.6 U	1.5 U	1.6 U	1.7 U	1.6 U
Vinyl acetate	ppbv		1.6 U	1.5 U	1.6 U	1.7 U	1.6 U
Vinyl chloride	ppbv		0.41 U	0.38 U	0.4 U	0.43 U	0.41 U

Table 15. Summary of Volatile Organic Compounds in Soil Vapor (µg/m^3), 27-10 49th Avenue, Hunters Point, New York

Parameter	Units	Sample Designation:	11-6-DUP	A1	A1	A2	A2	A3	A3	A4	A4	A10	AA	AA	B12	B14	B-2	B-4	B6	C11	C3
		Sample Date:	11/6/2018	1/10/2018	6/23/2021	1/10/2018	6/23/2021	1/10/2018	6/23/2021	1/10/2018	6/23/2021	11/7/2018	11/6/2018	6/23/2021	11/7/2018	11/7/2018	11/6/2018	11/6/2018	11/7/2018	11/7/2018	11/7/2018
1,1,1,2-Tetrachloroethane	ug/m3		0.57 U	NA	0.66 U	NA	0.62 U	NA	0.65 U	NA	0.51 U	1.1 U	0.53 U	0.59 U	1.1 U	0.94 U	0.53 U	0.68 U	1.2 U	1.2 U	1.1 U
1,1,1-Trichloroethane	ug/m3		0.45 U	1.1 U	0.53 U	1.1 U	0.49 U	1.1 U	0.51 U	1.1 U	0.4 U	**1.5 D**	0.42 U	0.47 U	**1.8 D**	**1.7 D**	0.42 U	**6.6 D**	**12 D**	0.93 U	**1.7 D**
1,1,2,2-Tetrachloroethane	ug/m3		0.57 U	1.4 U	0.66 U	1.4 U	0.62 U	1.4 U	0.65 U	1.4 U	0.51 U	1.1 U	0.53 U	0.59 U	1.1 U	0.94 U	0.53 U	0.68 U	1.2 U	1.2 U	1.1 U
1,1,2-Trichloroethane	ug/m3		0.45 U	1.1 U	0.53 U	1.1 U	0.49 U	1.1 U	0.51 U	1.1 U	0.4 U	0.9 U	0.42 U	0.47 U	0.88 U	0.74 U	0.42 U	0.54 U	0.95 U	0.93 U	0.86 U
1,1-Dichloroethane	ug/m3		0.34 U	0.81 U	0.39 U	0.81 U	0.37 U	0.81 U	0.38 U	0.81 U	0.3 U	0.67 U	0.31 U	0.35 U	0.65 U	0.55 U	0.31 U	**4.4 D**	0.71 U	0.69 U	0.64 U
1,1-Dichloroethene	ug/m3		0.082 U	0.79 U	0.095 U	0.79 U	0.089 U	0.79 U	0.093 U	0.79 U	0.073 U	**0.52 D**	0.077 U	0.085 U	0.16 U	0.14 U	0.077 U	**0.43 D**	0.17 U	0.17 U	0.16 U
1,2,4-Trichlorobenzene	ug/m3		0.62 U	1.5 U	0.71 U	1.5 U	0.67 U	1.5 U	0.7 U	1.5 U	0.55 U	1.2 U	0.58 U	0.63 U	1.2 U	1 U	0.58 U	0.74 U	1.3 U	1.3 U	1.2 U
1,2,4-Trimethylbenzene	ug/m3		**0.98 D**	**2.3**	**3.6 D**	0.98 U	**1.1 D**	**2.5**	**1.2 D**	0.98 U	**0.98 D**	**6.4 D**	**0.65 D**	0.42 U	**6.0 D**	**5.6 D**	**0.88 D**	**1.3 D**	**4.7 D**	0.83 U	**9.0 D**
1,2-Dibromoethane	ug/m3		0.64 U	1.5 U	0.74 U	1.5 U	0.69 U	1.5 U	0.72 U	1.5 U	0.57 U	1.3 U	0.6 U	0.66 U	1.2 U	1 U	0.6 U	0.76 U	1.3 U	1.3 U	1.2 U
1,2-Dichlorobenzene	ug/m3		0.5 U	1.2 U	0.58 U	1.2 U	0.54 U	1.2 U	0.57 U	1.2 U	0.44 U	0.99 U	0.47 U	0.51 U	0.97 U	0.82 U	0.47 U	0.6 U	1.1 U	1 U	0.95 U
1,2-Dichloroethane	ug/m3		0.34 U	0.81 U	0.39 U	0.81 U	0.37 U	0.81 U	0.38 U	0.81 U	0.3 U	0.67 U	0.31 U	0.35 U	0.65 U	0.55 U	0.31 U	0.4 U	0.71 U	0.69 U	0.64 U
1,2-Dichloropropane	ug/m3		0.38 U	0.92 U	0.44 U	0.92 U	0.42 U	0.92 U	0.43 U	0.92 U	0.34 U	0.76 U	0.36 U	0.39 U	0.74 U	0.63 U	0.36 U	0.46 U	0.81 U	0.78 U	0.73 U
1,3,5-Trimethylbenzene	ug/m3		0.41 U	0.98 U	**1.9 D**	0.98 U	0.44 U	0.98 U	0.46 U	0.98 U	0.36 U	**6.4 D**	0.38 U	0.42 U	**1.6 D**	**1.4 D**	0.38 U	0.49 U	**1.2 D**	0.83 U	**3.0 D**
1,3-Butadiene	ug/m3		0.55 U	0.44 U	0.64 U	0.44 U	0.6 U	0.44 U	0.62 U	0.44 U	0.49 U	1.1 U	0.52 U	0.57 U	1.1 U	0.9 U	0.52 U	0.66 U	1.2 U	1.1 U	1 U
1,3-Dichlorobenzene	ug/m3		0.5 U	1.2 U	0.58 U	1.2 U	0.54 U	1.2 U	0.57 U	1.2 U	0.44 U	0.99 U	0.47 U	0.51 U	0.97 U	0.82 U	0.47 U	0.6 U	1.1 U	1 U	0.95 U
1,3-Dichloropropane	ug/m3		0.38 U	NA	0.45 U	NA	0.42 U	NA	0.43 U	NA	0.34 U	0.76 U	0.36 U	0.39 U	0.74 U	0.63 U	0.36 U	0.46 U	0.81 U	0.78 U	0.73 U
1,3-Hexachlorobutadiene	ug/m3		NA	2.1 U	NA	2.1 U	NA	2.1 U	NA	2.1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	ug/m3		0.5 U	1.2 U	0.58 U	1.2 U	0.54 U	1.2 U	0.57 U	1.2 U	0.44 U	0.99 U	0.47 U	0.51 U	0.97 U	0.82 U	0.47 U	0.6 U	1.1 U	1 U	0.95 U
1,4-Dioxane	ug/m3		0.6 U	0.72 U	0.69 U	0.72 U	0.65 U	0.72 U	0.68 U	0.72 U	0.53 U	1.2 U	0.56 U	0.62 U	1.2 U	0.98 U	0.56 U	0.72 U	1.3 U	1.2 U	1.1 U
2,2,4-Trimethylpentane	ug/m3		NA	**2.5**	NA	**1.4**	NA	**2.5**	NA	**0.93**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone (MEK)	ug/m3		**1.1 D**	**1**	**1.4 D**	**1.1**	**1.3 D**	**1**	**1.2 D**	**1.2**	**0.78 D**	**1.7 D**	**0.94 D**	**0.93 D**	**1.6 D**	**1.3 D**	**1.1 D**	**1.4 D**	**1.4 D**	**1.5 D**	**5.3 D**
2-Hexanone	ug/m3		0.68 U	NA	0.79 U	NA	0.74 U	NA	0.77 U	NA	0.61 U	1.4 U	**1.3 D**	0.7 U	1.3 U	1.1 U	0.64 U	0.81 U	1.4 U	1.4 U	**4.1 D**
3-Chloropropene	ug/m3		1.3 U	NA	1.5 U	NA	1.4 U	NA	1.5 U	NA	1.2 U	2.6 U	1.2 U	1.3 U	2.5 U	2.1 U	1.2 U	1.6 U	2.7 U	2.7 U	2.5 U
4-Ethyltoluene	ug/m3		**0.90 D**	NA	**4.8 D**	NA	**0.89 D**	NA	**0.93 D**	NA	**0.73 D**	**5.3 D**	0.38 U	0.42 U	**4.5 D**	**4.2 D**	**0.80 D**	**1.2 D**	**3.6 D**	0.83 U	**6.6 D**
4-Methyl-2-pentanone (MIBK)	ug/m3		0.34 U	0.82 U	0.39 U	0.82 U	**0.63 D**	0.82 U	**0.62 D**	**2**	**0.42 D**	0.68 U	0.32 U	**0.35 D**	0.66 U	0.56 U	0.32 U	**0.41 D**	0.72 U	0.69 U	**1.3 D**
Acetone	ug/m3		**8.0 D**	**10**	**73 D**	**13**	**100 D**	**13**	**92 D**	**7.6**	**44 D**	**7.6 D**	**6.5 D**	**7.7 D**	**7.6 D**	**4.8 D**	**7.2 D**	**8.3 D**	**3.5 D**	**11 D**	**37 D**
Acrylonitrile	ug/m3		0.18 U	NA	0.21 U	NA	0.2 U	NA	0.2 U	NA	0.16 U	0.36 U	0.17 U	0.19 U	0.35 U	0.3 U	0.17 U	0.22 U	0.38 U	0.37 U	0.34 U
Benzene	ug/m3		**0.82 D**	**0.96**	**1.4 D**	**0.96**	**0.46 D**	**0.86**	**0.42 D**	**1.4**	**0.33 D**	**7.8 D**	**0.82 D**	**0.35 D**	**4.6 D**	**1.1 D**	**0.77 D**	**0.95 D**	**0.84 D**	**0.65 D**	**0.86 D**
Benzyl chloride	ug/m3		0.43 U	NA	0.5 U	NA	0.47 U	NA	0.49 U	NA	0.38 U	0.86 U	0.4 U	0.44 U	0.83 U	0.71 U	0.4 U	0.51 U	0.9 U	0.88 U	0.82 U
Bromodichloromethane	ug/m3		0.56 U	1.3 U	0.65 U	1.3 U	0.6 U	1.3 U	0.63 U	1.3 U	0.5 U	1.1 U	0.52 U	0.57 U	1.1 U	0.91 U	0.52 U	0.67 U	1.2 U	1.1 U	1.1 U
Bromoethene	ug/m3		0.36 U	NA	0.42 U	NA	0.39 U	NA	0.41 U	NA	0.32 U	0.72 U	0.34 U	0.37 U	0.7 U	0.6 U	0.34 U	0.43 U	0.76 U	0.74 U	0.69 U
Bromoform	ug/m3		0.86 U	2.1 U	1 U	2.1 U	0.93 U	2.1 U	0.97 U	2.1 U	0.76 U	1.7 U	0.8 U	0.88 U	1.7 U	1.4 U	0.8 U	1 U	1.8 U	1.8 U	1.6 U
Bromomethane	ug/m3		0.32 U	0.78 U	0.37 U	0.78 U	0.35 U	0.78 U	0.37 U	0.78 U	0.29 U	0.64 U	0.3 U	0.33 U	0.62 U	0.53 U	0.3 U	0.39 U	0.68 U	0.66 U	0.61 U
Carbon disulfide	ug/m3		0.26 U	0.62 U	0.3 U	0.62 U	0.28 U	0.62 U	0.29 U	0.62 U	0.23 U	**7.0 D**	0.24 U	0.27 U	**9.1 D**	**6.5 D**	0.24 U	0.31 U	**18 D**	**2.5 D**	**79 D**
Carbon tetrachloride	ug/m3		**0.31 D**	**0.38**	**0.42 D**	**0.38**	**0.34 D**	**0.38**	**0.41 D**	**0.38**	**0.37 D**	0.26 U	**0.34 D**	**0.32 D**	0.25 U	0.21 U	**0.34 D**	**0.44 D**	0.27 U	0.27 U	0.25 U
Chlorobenzene	ug/m3		0.38 U	0.92 U	0.44 U	0.92 U	0.42 U	0.92 U	0.43 U	0.92 U	0.34 U	0.76 U	0.36 U	0.39 U	**0.81 D**	0.63 U	0.36 U	0.46 U	0.8 U	0.78 U	0.73 U
Chloroethane	ug/m3		0.22 U	0.53 U	0.25 U	0.53 U	0.24 U	0.53 U	0.25 U	0.53 U	0.19 U	0.44 U	0.21 U	0.23 U	0.42 U	0.36 U	0.21 U	0.26 U	0.46 U	0.45 U	0.42 U
Chloroform	ug/m3		0.41 U	0.98 U	0.47 U	0.98 U	0.44 U	0.98 U	0.46 U	0.98 U	0.36 U	**21 D**	0.38 U	0.42 U	**11 D**	**9.0 D**	0.38 U	0.48 U	**43 D**	0.83 U	**15 D**
Chloromethane	ug/m3		0.17 U	0.41 U	**0.86 D**	0.41 U	**0.88 D**	0.41 U	**0.78 D**	0.41 U	**1.0 D**	0.34 U	**0.87 D**	**0.97 D**	0.33 U	0.28 U	**1.7 D**	0.21 U	0.36 U	0.35 U	0.33 U
cis-1,2-Dichloroethene	ug/m3		0.082 U	0.79 U	0.095 U	0.79 U	0.089 U	0.79 U	0.093 U	0.79 U	0.073 U	**940 D**	**0.12 D**	0.085 U	**810 D**	**240 D**	0.077 U	0.098 U	0.17 U	**0.67 D**	0.16 U
cis-1,3-Dichloropropene	ug/m3		0.38 U	0.91 U	0.44 U	0.91 U	0.41 U	0.91 U	0.43 U	0.91 U	0.34 U	0.75 U	0.35 U	0.39 U	0.73 U	0.62 U	0.35 U	0.45 U	0.79 U	0.77 U	0.72 U
Cyclohexane	ug/m3		**0.40 D**	0.69 U	**19 D**	**0.69**	0.31 U	0.69 U	0.32 U	0.69 U	0.25 U	**1.1 D**	**0.37 D**	**0.35 D**	**0.72 D**	**0.66 D**	**0.35 D**	**0.48 D**	**0.96 D**	0.58 U	**0.60 D**
Dibromochloromethane	ug/m3		0.71 U	1.7 U	0.82 U	1.7 U	0.77 U	1.7 U	0.8 U	1.7 U	0.63 U	1.4 U	0.66 U	0.73 U	1.4 U	1.2 U	0.66 U	0.85 U	1.5 U	1.4 U	1.3 U
Dichlorodifluoromethane	ug/m3		**1.6 D**	0.99 U	**2.1 D**	**2.4**	**2.3 D**	**2.5**	**2.1 D**	**2.4**	**2.2 D**	**1.9 D**	**1.7 D**	**2.1 D**	**2.0 D**	**1.8 D**	**1.3 D**	**1.6 D**	**1.8 D**	**1.8 D**	**2.0 D**
Ethyl Acetate	ug/m3		**0.81 D**	NA	**4.2 D**	NA	**0.78 D**	NA	**0.78 D**	NA	**0.53 D**	1.2 U	**0.59 D**	**0.71 D**	1.2 U	0.98 U	**0.62 D**	**0.82 D**	1.3 U	1.2 U	1.1 U
Ethylbenzene	ug/m3		**0.72 D**	**1.5**	**2.2 D**	0.87 U	**0.43 D**	**1.7**	**0.41 D**	0.87 U	0.32 U	**2.9 D**	**0.64 D**	0.37 U	**1.2 D**	**1.0 D**	**0.71 D**	**0.91 D**	**1.2 D**	0.74 U	**2.7 D**
Freon 113	ug/m3		0.64 U	1.5 U	0.74 U	1.5 U	0.69 U	1.5 U	0.72 U	1.5 U	0.57 U	1.3 U	0.6 U	0.65 U	1.2 U	1 U	0.6 U	0.76 U	1.3 U	1.3 U	1.2 U
Freon 114	ug/m3		0.58 U	1.4 U	0.67 U	1.4 U	0.63 U	1.4 U	0.66 U	1.4 U	0.52 U	1.2 U	**2.9 D**	0.6 U	1.1 U	0.95 U	0.54 U	0.69 U	1.2 U	1.2 U	1.1 U
Hexachlorobutadiene	ug/m3		0.89 U	NA	1 U	NA	0.96 U	NA	1 U	NA	0.79 U	1.8 U	0.83 U	0.91 U	1.7 U	1.5 U	0.83 U	1.1 U	1.9 U	1.8 U	1.7 U
Isopropanol	ug/m3		**4.0 D**	NA	**6.6 D**	NA	**5.8 D**	NA	**6.6 D**	NA	**2.4 D**	0.81 U	**2.2 D**	**3.4 D**	0.79 U	0.67 U	**2.7 D**	**3.4 D**	0.86 U	0.83 U	**3.2 D**
m+p-Xylene	ug/m3		**2.4 D**	**5.4**	**24 D**	0.87 U	**1.4 D**	**6.2**	**1.3 D**	**1.8**	**0.77 D**	**4.9 D**	**2.0 D**	**1.1 D**	**4.3 D**	**3.4 D**	**2.3 D**	**3.0 D**	**4.0 D**	**1.8 D**	**12 D**
Methyl Methacrylate	ug/m3		**0.37 D**	NA	0.39 U	NA	0.37 U	NA	0.39 U	NA	0.3 U	0.68 U	**0.64 D**	0.35 U	0.66 U	0.56 U	**1.2 D**	0.41 U	0.72 U	0.69 U	0.65 U
Methylene chloride	ug/m3		**4.3 D**	**3.2**	**21 D**	**3.1**	**6.2 D**	**4.2**	**3.4 D**	**4.2**	**1.4 D**	1.1 U	**5.0 D**	**1.2 D**	1.1 U	0.95 U	**12 D**	**2.3 D**	1.2 U	1.2 U	1.1 U

Table 15. Summary of Volatile Organic Compounds in Soil Vapor (µg/m^3), 27-10 49th Avenue, Hunters Point, New York

Parameter	Units	Sample Designation:	11-6-DUP	A1	A1	A2	A2	A3	A3	A4	A4	A10	AA	AA	B12	B14	B-2	B-4	B6	C11	C3
		Sample Date:	11/6/2018	1/10/2018	6/23/2021	1/10/2018	6/23/2021	1/10/2018	6/23/2021	1/10/2018	6/23/2021	11/7/2018	11/6/2018	6/23/2021	11/7/2018	11/7/2018	11/6/2018	11/6/2018	11/7/2018	11/7/2018	11/7/2018
MTBE	ug/m3		0.3 U	0.72 U	0.35 U	0.72 U	0.33 U	0.72 U	0.34 U	0.72 U	0.27 U	0.6 U	0.28 U	0.31 U	0.58 U	0.49 U	0.28 U	0.36 U	0.63 U	0.61 U	0.57 U
N-Heptane	ug/m3		**0.58 D**	0.82 U	**24 D**	0.82 U	**0.74 D**	0.82 U	**0.66 D**	0.82 U	**0.39 D**	0.68 U	**0.67 D**	**0.56 D**	0.66 U	0.56 U	**0.48 D**	**0.69 D**	0.72 U	0.7 U	**2.5 D**
n-Hexane	ug/m3		**1.0 D**	**0.95**	**52 D**	**1.1**	**0.89 D**	**0.88**	**0.63 D**	**1.2**	**0.42 D**	0.58 U	**0.93 D**	**0.84 D**	0.57 U	0.48 U	**0.82 D**	**1.1 D**	**2.8 D**	**0.66 D**	**11 D**
o-Xylene	ug/m3		**0.76 D**	**2.3**	**8.7 D**	0.87 U	**0.47 D**	**2.6**	**0.49 D**	0.87 U	0.32 U	**4.6 D**	**0.64 D**	**0.37 D**	**1.7 D**	**1.4 D**	**0.78 D**	**0.99 D**	**1.6 D**	0.74 U	**6.2 D**
Propene	ug/m3		**1.9 D**	NA	0.17 U	NA	0.16 U	NA	0.16 U	NA	0.13 U	**2.0 D**	**1.7 D**	0.15 U	**2.5 D**	**1.3 D**	**1.6 D**	**1.9 D**	0.3 U	**1.5 D**	**1.6 D**
Styrene	ug/m3		0.35 U	0.85 U	0.41 U	0.85 U	0.38 U	0.85 U	0.4 U	0.85 U	0.31 U	**1.2 D**	0.33 U	0.36 U	**1.4 D**	**1.3 D**	0.33 U	**0.42 D**	**0.74 D**	0.72 U	**1.8 D**
Tert-butyl alcohol	ug/m3		NA	0.61 U	NA	0.61 U	NA	0.61 U	NA	0.61 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/m3		**10 D**	**12**	**0.78 D**	**8.3**	0.61 U	**16**	0.64 U	1.4 U	0.5 U	**22000 D**	**1.1 D**	0.58 U	**8900 D**	**6200 D**	**10 D**	**96 D**	**7400 D**	**15 D**	**2800 D**
Tetrahydrofuran	ug/m3		0.49 U	NA	0.57 U	NA	0.53 U	NA	0.56 U	NA	0.44 U	0.98 U	0.46 U	0.5 U	0.95 U	0.8 U	0.46 U	0.59 U	1 U	1 U	**1.8 D**
Toluene	ug/m3		**4.5 D**	**5**	**27 D**	**2.6**	**2.5 D**	**5.5**	**2.4 D**	**4.2**	**2.1 D**	**3.4 D**	**3.7 D**	**2.0 D**	**2.3 D**	**1.6 D**	**4.5 D**	**5.3 D**	**2.0 D**	**2.8 D**	**4.8 D**
trans-1,2-Dichloroethene	ug/m3		0.33 U	0.79 U	0.38 U	0.79 U	0.36 U	0.79 U	0.37 U	0.79 U	0.29 U	**27 D**	0.31 U	0.34 U	**17 D**	**17 D**	0.31 U	0.39 U	0.69 U	0.67 U	0.62 U
trans-1,3-Dichloropropene	ug/m3		0.38 U	0.91 U	0.44 U	0.91 U	0.41 U	0.91 U	0.43 U	0.91 U	0.34 U	0.75 U	0.35 U	0.39 U	0.73 U	0.62 U	0.35 U	0.45 U	0.79 U	0.77 U	0.72 U
Trichloroethene	ug/m3		**0.27 D**	**0.38**	0.13 U	**0.38**	0.12 U	**0.48**	0.13 U	0.25 U	0.099 U	**860 D**	0.1 U	0.11 U	**490 D**	**280 D**	**0.63 D**	**11 D**	**1100 D**	**0.55 D**	**29 D**
Trichlorofluoromethane	ug/m3		**1.2 D**	**1.5**	**1.1 D**	**1.4**	**1.1 D**	**1.2**	**1.2 D**	**1.4**	**1.0 D**	**1.4 D**	**1.2 D**	**0.96 D**	**1.2 D**	**1.1 D**	**1.1 D**	**1.8 D**	**4.0 D**	0.95 U	0.89 U
Vinyl acetate	ug/m3		0.29 U	0.87 U	0.34 U	0.87 U	0.32 U	0.87 U	0.33 U	0.87 U	0.26 U	0.58 U	0.27 U	0.3 U	0.57 U	0.48 U	0.27 U	0.35 U	0.62 U	0.6 U	0.55 U
Vinyl chloride	ug/m3		0.053 U	0.51 U	0.12 U	0.51 U	0.12 U	0.51 U	0.12 U	0.51 U	0.094 U	0.11 U	0.05 U	0.11 U	**40 D**	0.087 U	0.05 U	0.063 U	0.11 U	0.11 U	0.1 U

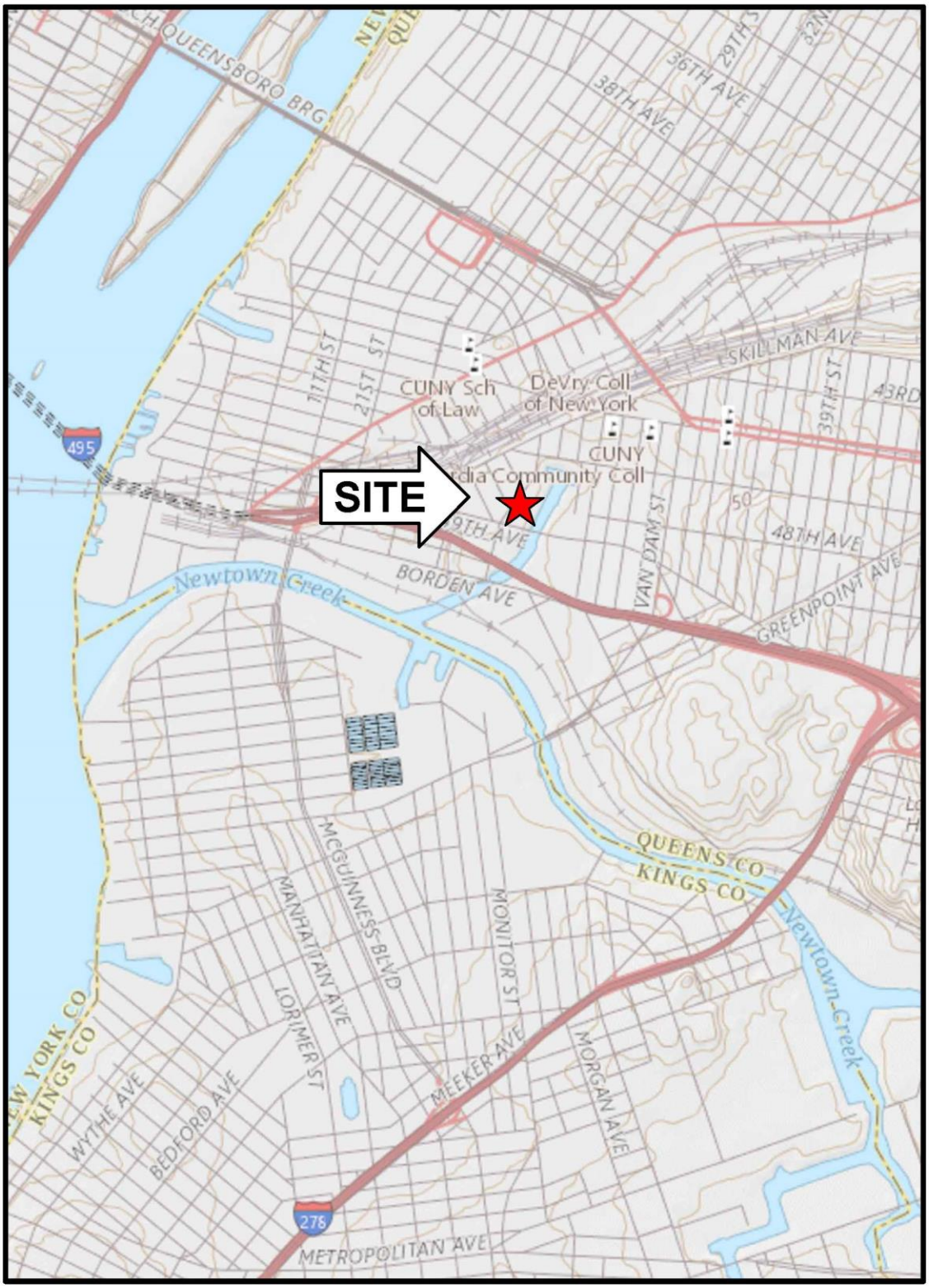
Table 15. Summary of Volatile Organic Compounds in Soil Vapor (µg/m^3), 27-10 49th Avenue, Hunters Point, New York

Parameter	Units	Sample Designation: / Sample Date:	C5 11/7/2018	C-7 11/6/2018	D1 11/7/2018	DUP 11/7/2018	SV-1 12/20/2017	SV-2 12/20/2017	SV-3 12/20/2017
1,1,1,2-Tetrachloroethane	ug/m3		1.2 U	0.65 U	1 U	1.1 U	NA	NA	NA
1,1,1-Trichloroethane	ug/m3		**2.7 D**	0.51 U	0.81 U	**3.2 D**	11 U	11 U	**33 D**
1,1,2,2-Tetrachloroethane	ug/m3		1.2 U	0.65 U	1 U	1.1 U	14 U	14 U	14 U
1,1,2-Trichloroethane	ug/m3		0.92 U	0.51 U	0.81 U	0.88 U	11 U	11 U	11 U
1,1-Dichloroethane	ug/m3		0.68 U	0.38 U	0.6 U	0.65 U	8.1 U	8.1 U	8.1 U
1,1-Dichloroethene	ug/m3		0.17 U	0.093 U	0.15 U	0.16 U	7.9 U	7.9 U	7.9 U
1,2,4-Trichlorobenzene	ug/m3		1.3 U	0.7 U	1.1 U	1.2 U	15 U	15 U	15 U
1,2,4-Trimethylbenzene	ug/m3		**4.9 D**	**0.74 D**	**5.7 D**	**4.8 D**	9.8 U	9.8 U	9.8 U
1,2-Dibromoethane	ug/m3		1.3 U	0.72 U	1.1 U	1.2 U	15 U	15 U	15 U
1,2-Dichlorobenzene	ug/m3		1 U	0.57 U	0.9 U	0.97 U	12 U	12 U	12 U
1,2-Dichloroethane	ug/m3		0.68 U	0.38 U	0.6 U	0.65 U	8.1 U	8.1 U	8.1 U
1,2-Dichloropropane	ug/m3		0.78 U	0.43 U	0.69 U	0.74 U	9.2 U	9.2 U	9.2 U
1,3,5-Trimethylbenzene	ug/m3		**1.1 D**	0.46 U	**1.8 D**	**1.2 D**	9.8 U	9.8 U	9.8 U
1,3-Butadiene	ug/m3		1.1 U	0.62 U	0.99 U	1.1 U	4.4 U	4.4 U	4.4 U
1,3-Dichlorobenzene	ug/m3		1 U	0.57 U	0.9 U	0.97 U	12 U	12 U	12 U
1,3-Dichloropropane	ug/m3		0.78 U	0.43 U	0.69 U	0.74 U	NA	NA	NA
1,3-Hexachlorobutadiene	ug/m3		NA	NA	NA	NA	21 U	21 U	21 U
1,4-Dichlorobenzene	ug/m3		**1.7 D**	0.57 U	0.9 U	**1.2 D**	12 U	12 U	12 U
1,4-Dioxane	ug/m3		1.2 U	0.68 U	1.1 U	1.2 U	7.2 U	7.2 U	7.2 U
2,2,4-Trimethylpentane	ug/m3		NA	NA	NA	NA	9.3 U	9.3 U	9.3 U
2-Butanone (MEK)	ug/m3		**2.6 D**	**1.2 D**	**12 D**	**2.2 D**	**59 D**	**76 D**	**110 D**
2-Hexanone	ug/m3		1.4 U	0.77 U	**2.8 D**	1.3 U	NA	NA	NA
3-Chloropropene	ug/m3		2.6 U	1.5 U	2.3 U	2.5 U	NA	NA	NA
4-Ethyltoluene	ug/m3		**3.7 D**	**0.74 D**	**4.6 D**	**3.2 D**	NA	NA	NA
4-Methyl-2-pentanone (MIBK)	ug/m3		0.69 U	0.39 U	**3.0 D**	0.66 U	8.2 U	8.2 U	8.2 U
Acetone	ug/m3		**6.3 D**	**8.0 D**	**59 D**	**3.9 D**	**33 D**	**110 D**	**530 D**
Acrylonitrile	ug/m3		0.37 U	0.2 U	0.32 U	0.35 U	NA	NA	NA
Benzene	ug/m3		**3.2 D**	**0.81 D**	**0.86 D**	**3.4 D**	6.4 U	**35 D**	**160 D**
Benzyl chloride	ug/m3		0.87 U	0.49 U	0.77 U	0.83 U	NA	NA	NA
Bromodichloromethane	ug/m3		1.1 U	0.63 U	1 U	1.1 U	13 U	13 U	13 U
Bromoethene	ug/m3		0.74 U	0.41 U	0.65 U	0.7 U	NA	NA	NA
Bromoform	ug/m3		1.7 U	0.97 U	1.5 U	1.7 U	21 U	21 U	21 U
Bromomethane	ug/m3		0.66 U	0.37 U	0.58 U	0.62 U	7.8 U	7.8 U	7.8 U
Carbon disulfide	ug/m3		**13 D**	0.29 U	**230 D**	**15 D**	**24 D**	**40 D**	**110 D**
Carbon tetrachloride	ug/m3		0.27 U	**0.30 D**	0.23 U	0.25 U	2.5 U	2.5 U	2.5 U
Chlorobenzene	ug/m3		0.78 U	0.43 U	0.69 U	0.74 U	9.2 U	9.2 U	9.2 U
Chloroethane	ug/m3		0.45 U	0.25 U	0.39 U	0.42 U	5.3 U	5.3 U	5.3 U
Chloroform	ug/m3		**9.6 D**	0.46 U	**5.4 D**	**12 D**	9.8 U	**13 D**	**19 D**
Chloromethane	ug/m3		0.35 U	0.19 U	0.31 U	0.33 U	4.1 U	4.1 U	4.1 U
cis-1,2-Dichloroethene	ug/m3		0.17 U	0.093 U	0.15 U	0.16 U	7.9 U	7.9 U	7.9 U
cis-1,3-Dichloropropene	ug/m3		0.77 U	0.43 U	0.68 U	0.73 U	9.1 U	9.1 U	9.1 U
Cyclohexane	ug/m3		**2.6 D**	**0.39 D**	**0.62 D**	**2.3 D**	**13 D**	**120 D**	**160 D**
Dibromochloromethane	ug/m3		1.4 U	0.8 U	1.3 U	1.4 U	17 U	17 U	17 U
Dichlorodifluoromethane	ug/m3		**1.8 D**	**1.6 D**	**2.0 D**	**1.7 D**	9.9 U	9.9 U	9.9 U
Ethyl Acetate	ug/m3		1.2 U	**0.75 D**	1.1 U	1.2 U	NA	NA	NA
Ethylbenzene	ug/m3		**1.4 D**	**0.69 D**	**1.8 D**	**0.91 D**	8.7 U	8.7 U	8.7 U
Freon 113	ug/m3		1.3 U	0.72 U	1.1 U	1.2 U	15 U	15 U	15 U
Freon 114	ug/m3		1.2 U	0.66 U	1 U	1.1 U	14 U	14 U	14 U
Hexachlorobutadiene	ug/m3		1.8 U	1 U	1.6 U	1.7 U	NA	NA	NA
Isopropanol	ug/m3		**0.83 D**	**2.9 D**	**3.8 D**	0.79 U	NA	NA	NA
m+p-Xylene	ug/m3		**5.1 D**	**2.1 D**	**7.0 D**	**3.5 D**	8.7 U	8.7 U	8.7 U
Methyl Methacrylate	ug/m3		0.69 U	**0.77 D**	0.61 U	0.66 U	NA	NA	NA
Methylene chloride	ug/m3		**4.7 D**	**8.3 D**	**1.8 D**	**2.3 D**	**19 D**	6.9 U	6.9 U

Table 15. Summary of Volatile Organic Compounds in Soil Vapor (µg/m^3), 27-10 49th Avenue, Hunters Point, New York

Parameter	Units	Sample Designation: / Sample Date:	C5 11/7/2018	C-7 11/6/2018	D1 11/7/2018	DUP 11/7/2018	SV-1 12/20/2017	SV-2 12/20/2017	SV-3 12/20/2017
MTBE	ug/m3		0.61 U	0.34 U	0.54 U	0.58 U	7.2 U	7.2 U	7.2 U
N-Heptane	ug/m3		0.69 U	**0.54 D**	**7.6 D**	0.66 U	8.2 U	**9.8 D**	**35 D**
n-Hexane	ug/m3		**2.3 D**	**0.96 D**	**38 D**	**2.8 D**	**9.9 D**	**20 D**	**42 D**
o-Xylene	ug/m3		**2.3 D**	**0.69 D**	**2.7 D**	**1.7 D**	8.7 U	8.7 U	8.7 U
Propene	ug/m3		**0.70 D**	**1.8 D**	**1.2 D**	**0.50 D**	NA	NA	NA
Styrene	ug/m3		0.72 U	0.4 U	**1.3 D**	0.68 U	8.5 U	8.5 U	8.5 U
Tert-butyl alcohol	ug/m3		NA	NA	NA	NA	6.1 U	**35 D**	**58 D**
Tetrachloroethene	ug/m3		**11000 D**	**10 D**	**740 D**	**11000 D**	**660 D**	**480 D**	**1100 D**
Tetrahydrofuran	ug/m3		1 U	0.55 U	0.88 U	0.95 U	NA	NA	NA
Toluene	ug/m3		**5.1 D**	**4.4 D**	**6.7 D**	**3.4 D**	**24 D**	**26 D**	**31 D**
trans-1,2-Dichloroethene	ug/m3		0.67 U	0.37 U	0.59 U	0.64 U	7.9 U	7.9 U	7.9 U
trans-1,3-Dichloropropene	ug/m3		0.77 U	0.43 U	0.68 U	0.73 U	9.1 U	9.1 U	9.1 U
Trichloroethene	ug/m3		**1100 D**	0.13 U	**5.9 D**	**1400 D**	**49 D**	**120 D**	**39 D**
Trichlorofluoromethane	ug/m3		**1.2 D**	**1.2 D**	**1.3 D**	**1.4 D**	11 U	11 U	11 U
Vinyl acetate	ug/m3		0.59 U	0.33 U	0.52 U	0.57 U	8.7 U	8.7 U	8.7 U
Vinyl chloride	ug/m3		0.11 U	0.06 U	0.095 U	0.1 U	5.1 U	5.1 U	5.1 U

FIGURES



Title:

SITE LOCATION MAP

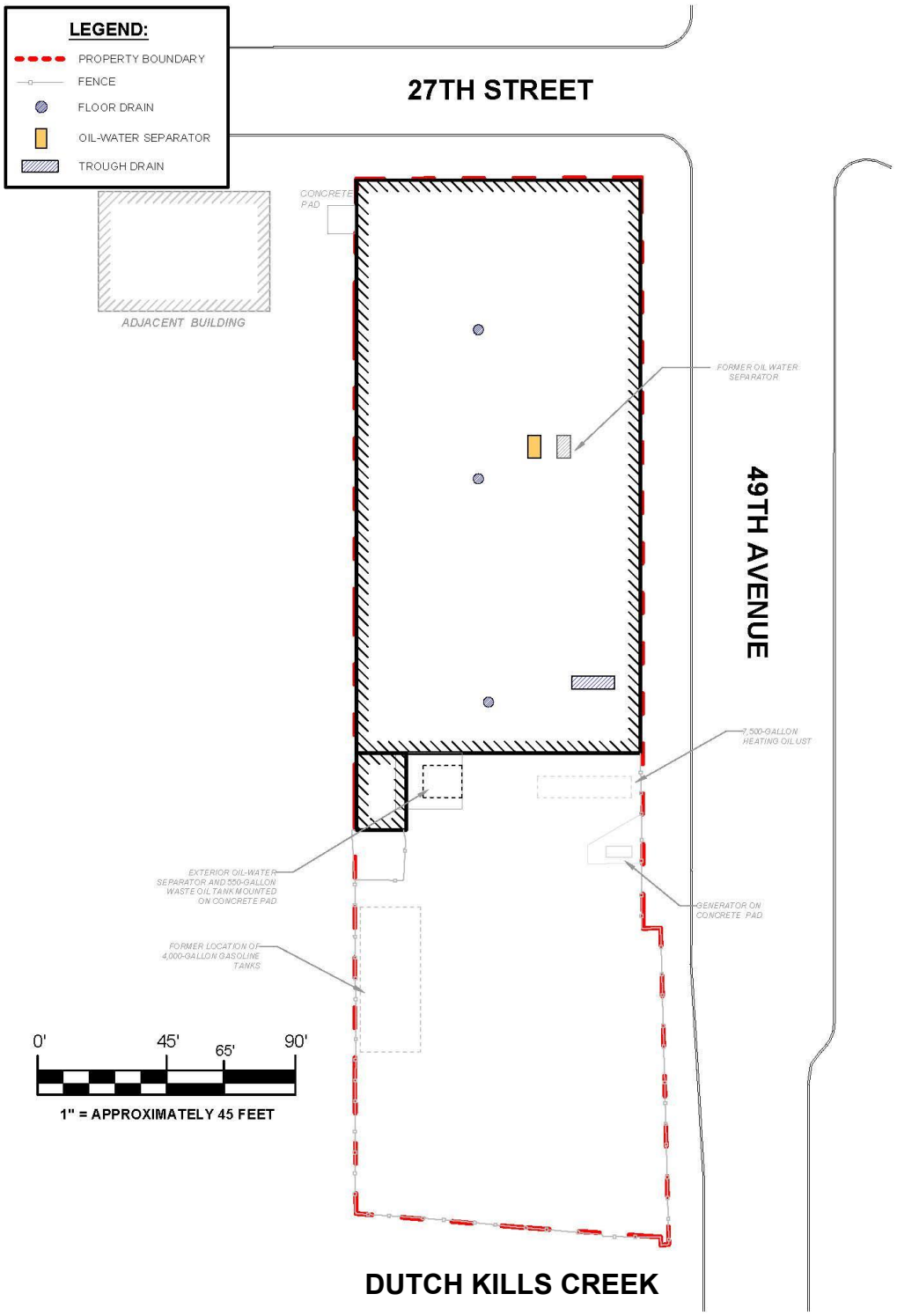
27-10 49TH AVENUE
LONG ISLAND CITY, NY

Prepared for:

HUNTERS POINT SG, LLC

ROUX	Compiled by: R.M.	Date: 11/23/2021	FIGURE 1
	Prepared by: M.S.R.	Scale: AS SHOWN	
	Project Mgr: R.L.	Project: 3446.0008Y000	
	File: 3446.0008Y101.ppt		

**FIGURE ADAPTED FROM DRAWINGS BY ATLANTIC ENVIRONMENTAL SOLUTIONS INC.*



Title:

SITE PLAN

27-10 49TH AVENUE
LONG ISLAND CITY, NY

Prepared for:

HUNTERS POINT SG, LLC

ROUX	Compiled by: R.M.	Date: 11/23/2021	FIGURE 2
	Prepared by: M.S.R.	Scale: AS SHOWN	
	Project Mgr: R.L.	Project: 3446.0008Y000	
	File: 3446.0008Y101.ppt		

**FIGURE ADAPTED FROM DRAWINGS BY ATLANTIC ENVIRONMENTAL SOLUTIONS INC.*

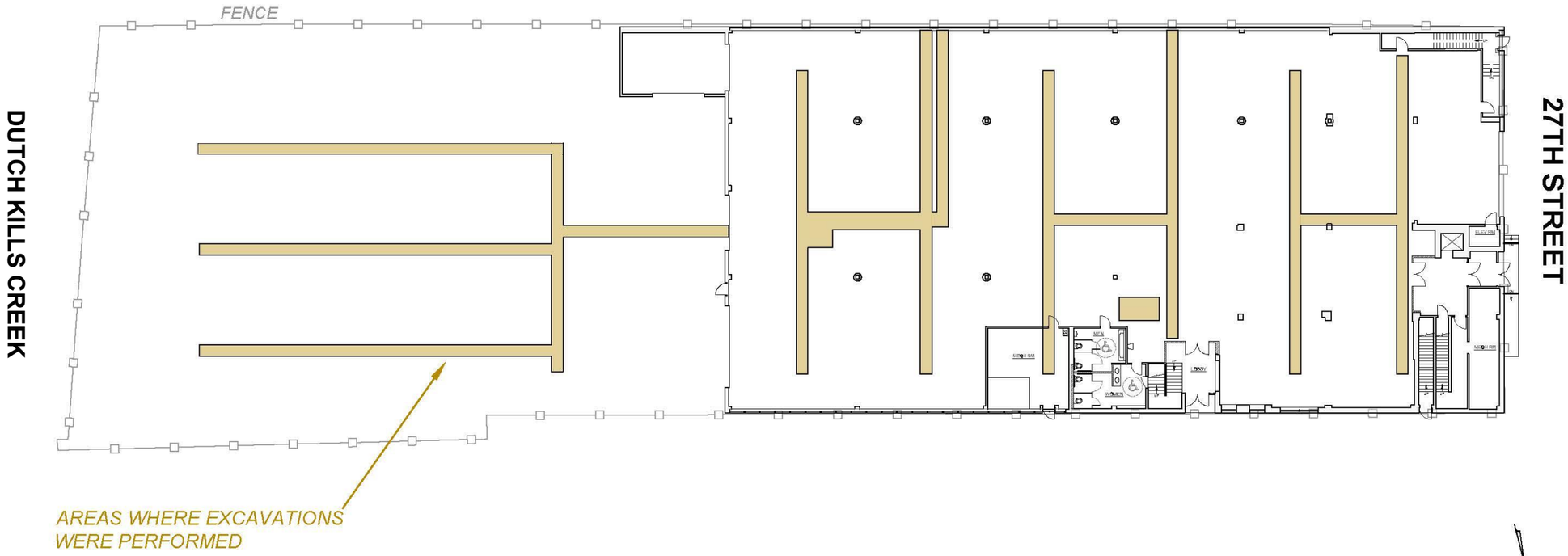


*FIGURE ADAPTED FROM DRAWINGS BY ATLANTIC ENVIRONMENTAL SOLUTIONS INC.

Title:

EXCAVATION AREAS

27-10 49TH AVENUE
LONG ISLAND CITY, NY

Prepared for:

HUNTERS POINT SG, LLC

ROUX

Compiled by: R.M.	Date: 11/23/2021	FIGURE
Prepared by: M.S.R.	Scale: AS SHOWN	
Project Mgr: R.L.	Project: 3446.0008Y000	3
File: 3446.0008Y101.ppt		

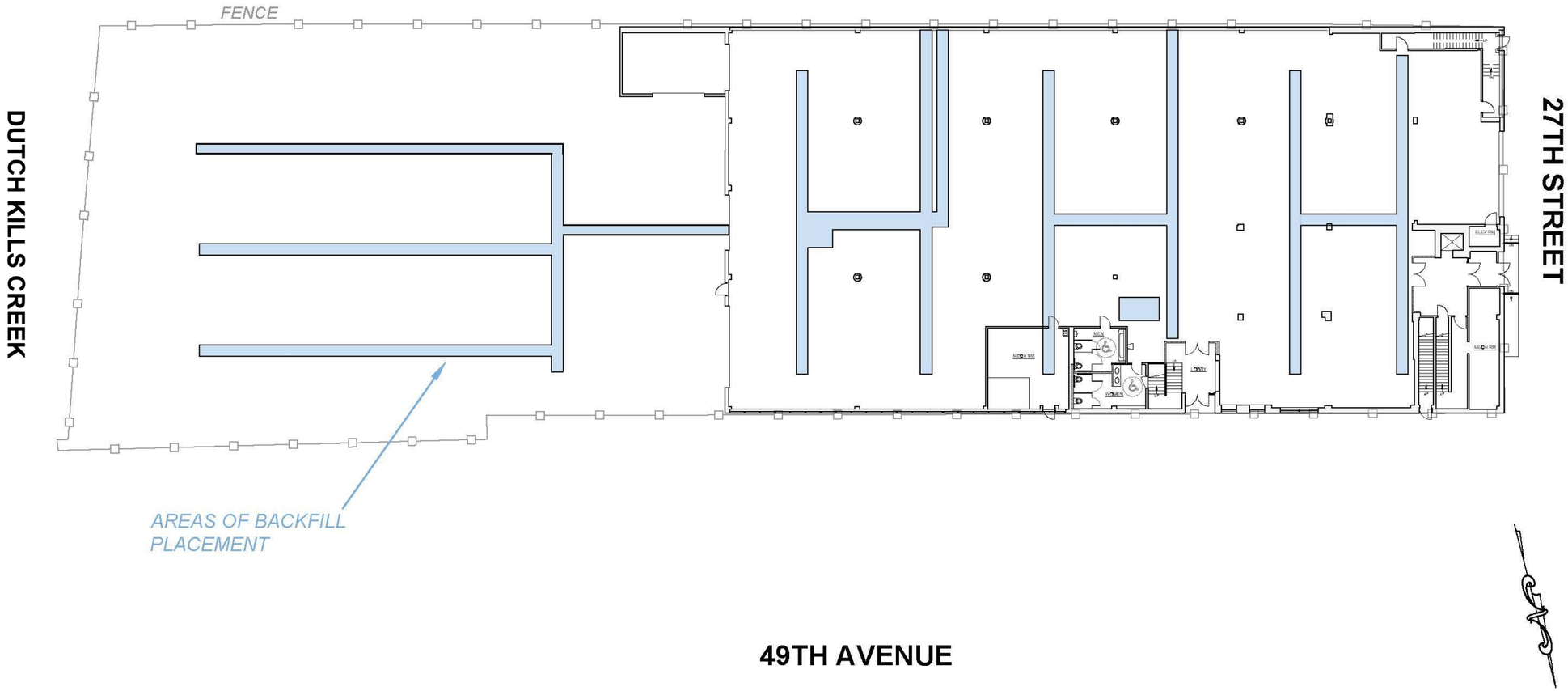


*FIGURE ADAPTED FROM DRAWINGS BY ATLANTIC ENVIRONMENTAL SOLUTIONS INC.

Title:

BACKFILL AREAS

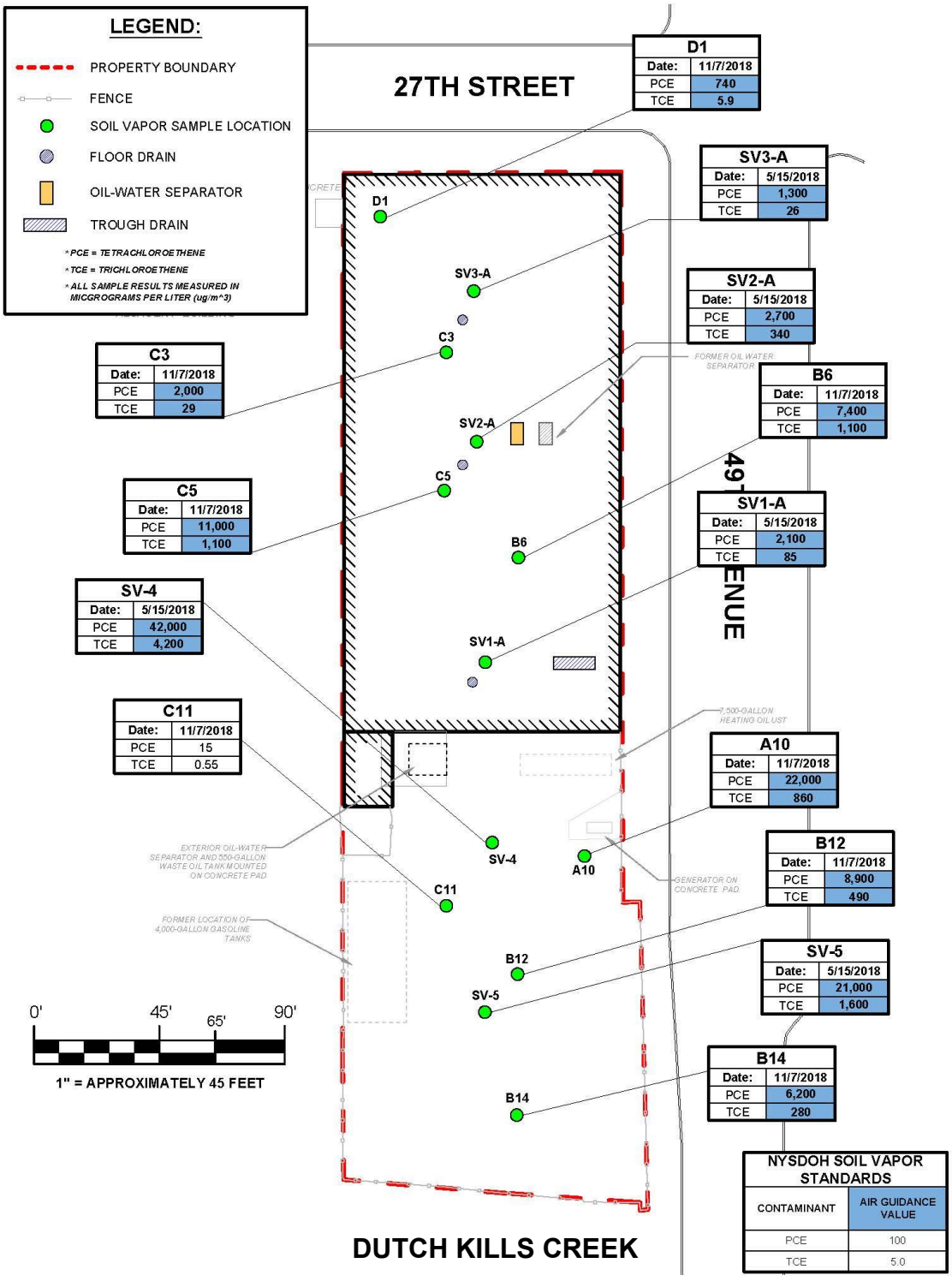
27-10 49TH AVENUE
LONG ISLAND CITY, NY

Prepared for:

HUNTERS POINT SG, LLC

ROUX

Compiled by: R.M.	Date: 11/23/2021	FIGURE
Prepared by: M.S.R.	Scale: AS SHOWN	
Project Mgr: R.L.	Project: 3446.0008Y000	4
File: 3446.0008Y101.ppt		



Title:

PRE-IRM SOIL VAPOR CONCENTRATIONS

27-10 49TH AVENUE
LONG ISLAND CITY, NY

Prepared for:

HUNTERS POINT SG, LLC

ROUX	Compiled by: R.M.	Date: 11/23/2021	FIGURE 5A
	Prepared by: M.S.R.	Scale: AS SHOWN	
	Project Mgr: R.L.	Project: 3446.0008Y000	
	File: 3446.0008Y101.ppt		

FIGURE ADAPTED FROM DRAWINGS BY ATLANTIC ENVIRONMENTAL SOLUTIONS INC.

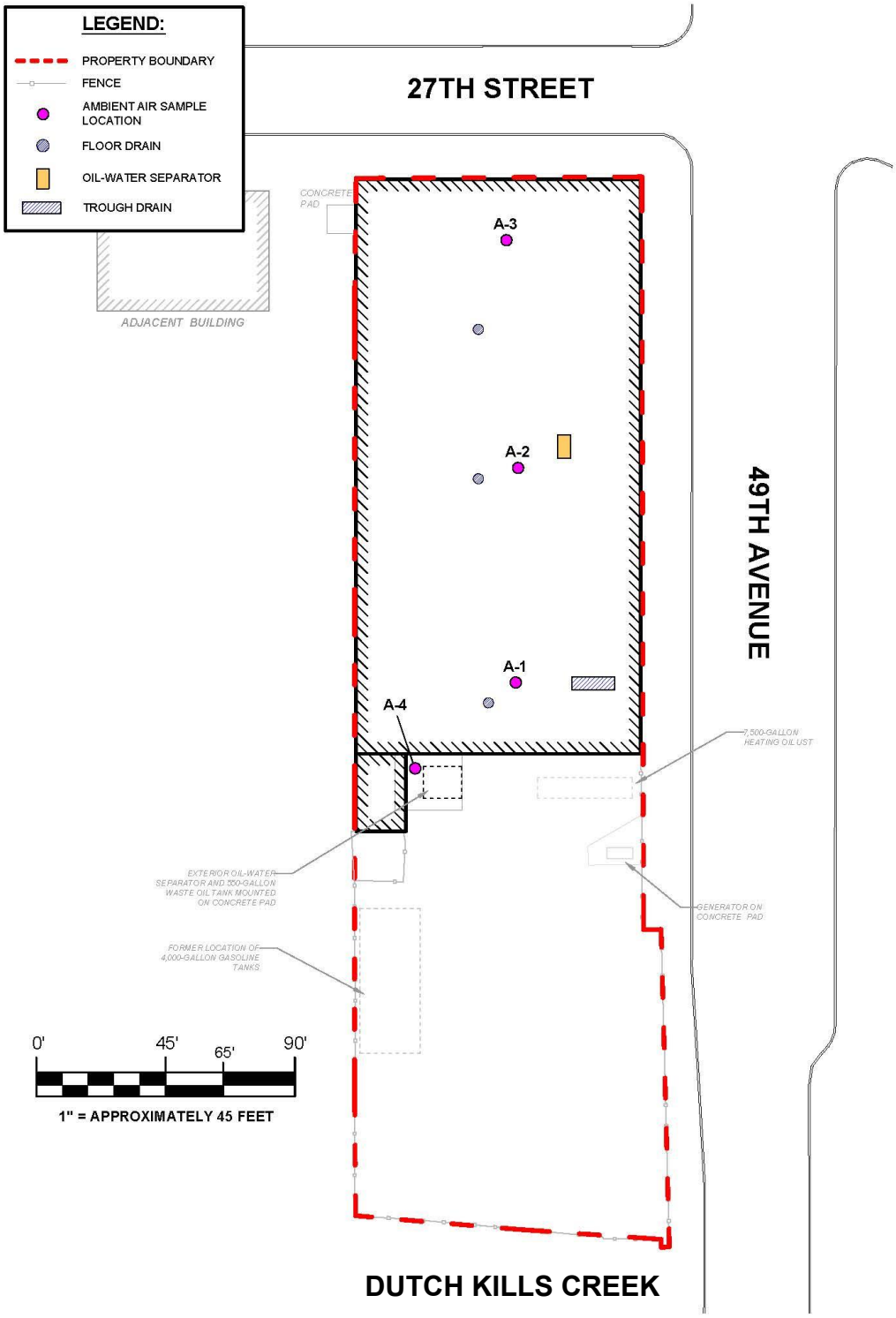


FIGURE ADAPTED FROM DRAWINGS BY ATLANTIC ENVIRONMENTAL SOLUTIONS INC.

Title:

INDOOR AND AMBIENT AIR SAMPLE LOCATIONS

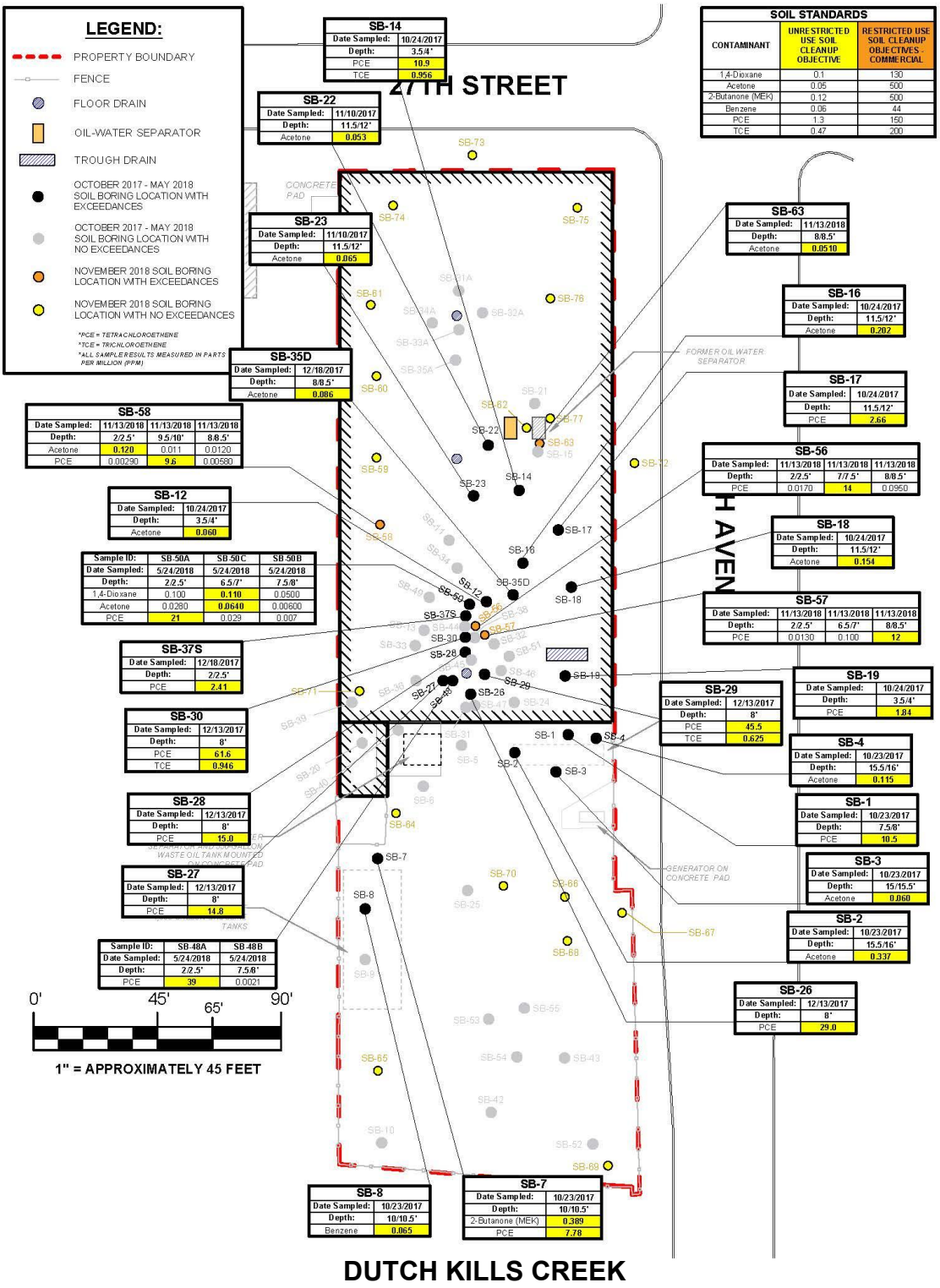
27-10 49TH AVENUE
LONG ISLAND CITY, NY

Prepared for:

HUNTERS POINT SG, LLC

ROUX

Compiled by: R.M.	Date: 11/23/2021	FIGURE
Prepared by: M.S.R.	Scale: AS SHOWN	
Project Mgr: R.L.	Project: 3446.0008Y000	5B
File: 3446.0008Y101.ppt		



Title:

REMAINING SOIL CONTAMINATION - VOCS

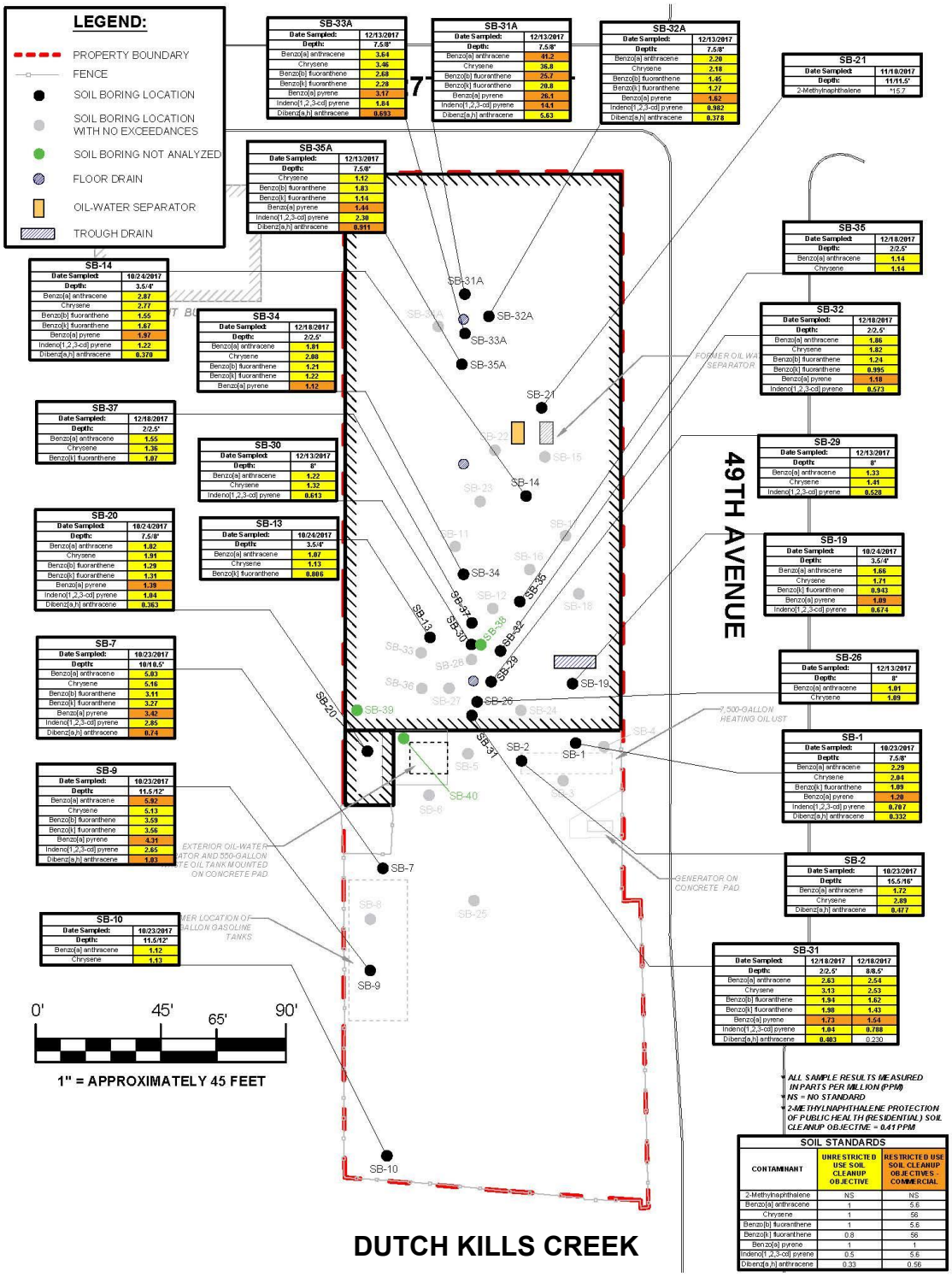
27-10 49TH AVENUE
LONG ISLAND CITY, NY

Prepared for:

HUNTERS POINT SG, LLC

Compiled by: R.M.	Date: 11/23/2021	FIGURE
Prepared by: M.S.R.	Scale: AS SHOWN	6A
Project Mgr: R.L.	Project: 3446.0008Y000	
File: 3446.0008Y101.ppt		

FIGURE ADAPTED FROM DRAWINGS BY ATLANTIC ENVIRONMENTAL SOLUTIONS INC.



Title:

REMAINING SOIL CONTAMINATION – SVOCS (2017)

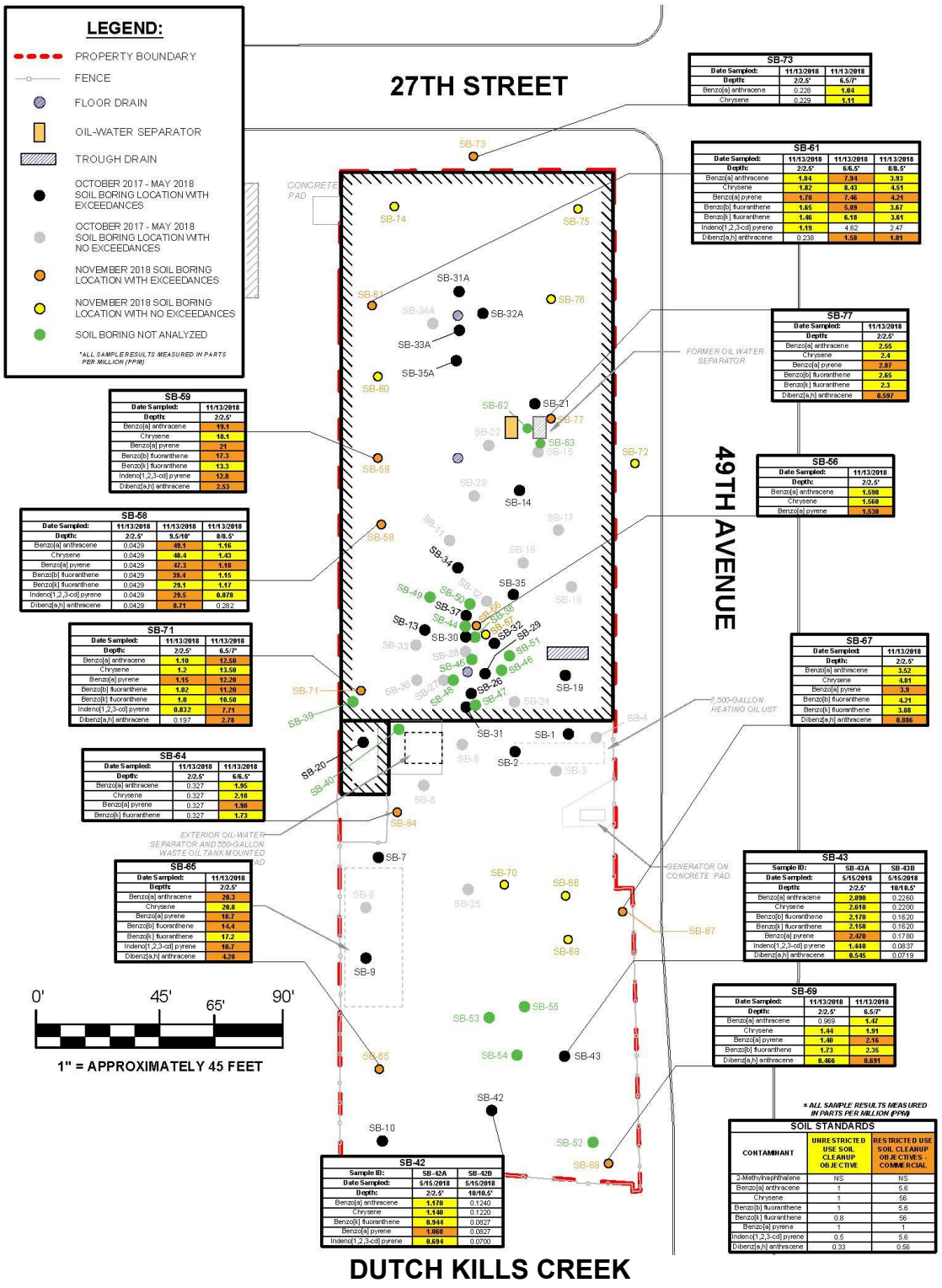
27-10 49TH AVENUE
LONG ISLAND CITY, NY

Prepared for:

HUNTERS POINT SG, LLC

ROUX	Compiled by: R.M.	Date: 11/23/2021	FIGURE
	Prepared by: M.S.R.	Scale: AS SHOWN	6B
	Project Mgr: R.L.	Project: 3446.0008Y000	
	File: 3446.0008Y101.ppt		

**FIGURE ADAPTED FROM DRAWINGS BY ATLANTIC ENVIRONMENTAL SOLUTIONS INC.*



Title:

REMAINING SOIL CONTAMINATION – SVOCS (2018)

27-10 49TH AVENUE
LONG ISLAND CITY, NY

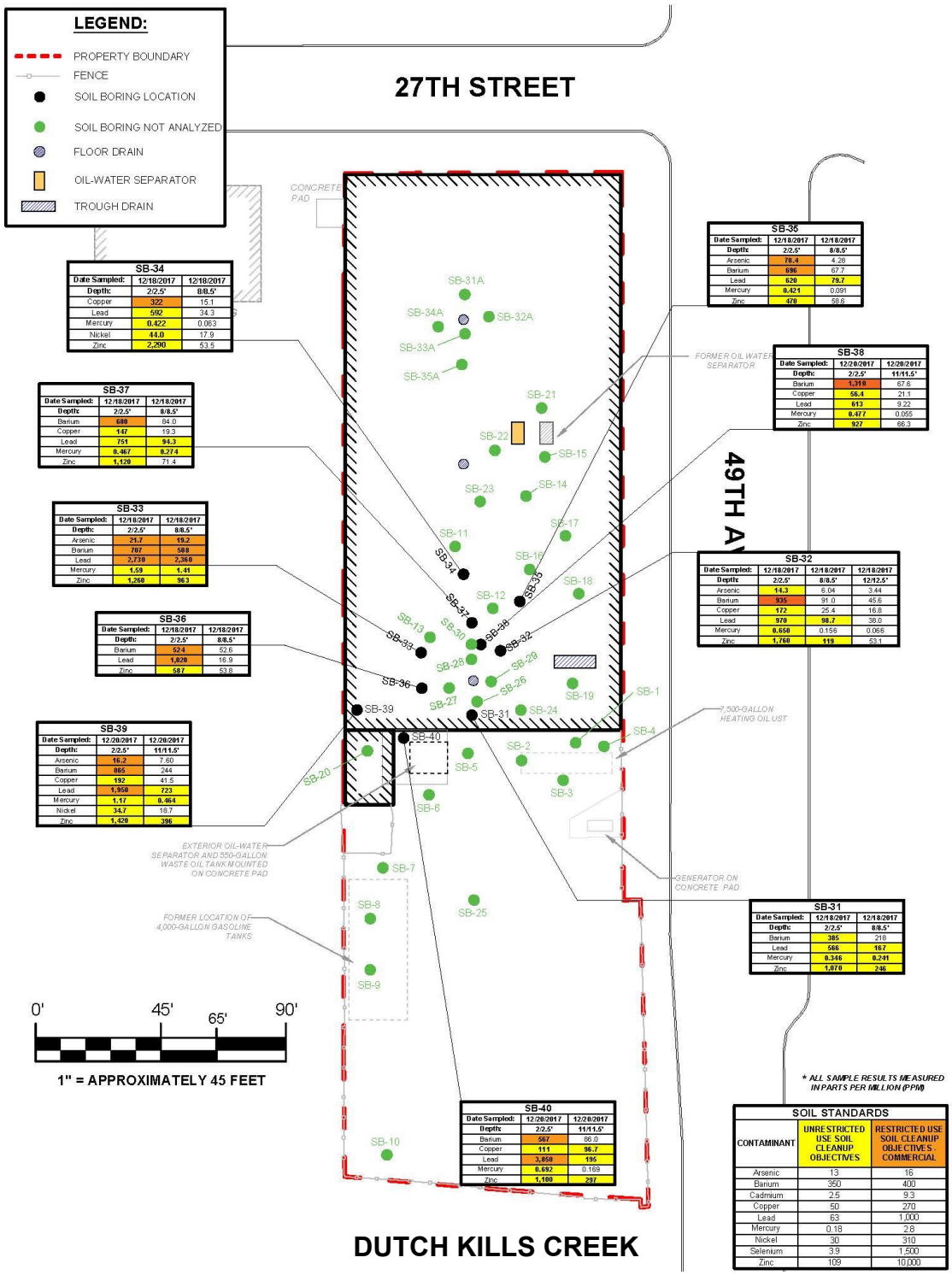
Prepared for:

HUNTERS POINT SG, LLC

Compiled by: R.M.	Date: 11/23/2021	FIGURE
Prepared by: M.S.R.	Scale: AS SHOWN	6C
Project Mgr: R.L.	Project: 3446.0008Y000	
File: 3446.0008Y101.ppt		

ROUX

FIGURE ADAPTED FROM DRAWINGS BY ATLANTIC ENVIRONMENTAL SOLUTIONS INC.



SB-34		
Date Sampled:	12/18/2017	12/18/2017
Depth:	2/2.5'	8/8.5'
Copper	322	15.1
Lead	592	34.3
Mercury	0.422	0.063
Nickel	44.0	17.9
Zinc	2,290	53.5

SB-35		
Date Sampled:	12/18/2017	12/18/2017
Depth:	2/2.5'	8/8.5'
Arsenic	76.4	4.28
Barium	696	67.7
Lead	620	79.7
Mercury	0.421	0.091
Zinc	470	58.6

SB-37		
Date Sampled:	12/18/2017	12/18/2017
Depth:	2/2.5'	8/8.5'
Barium	680	84.0
Copper	147	19.3
Lead	751	94.3
Mercury	0.467	0.274
Zinc	1,120	71.4

SB-38		
Date Sampled:	12/20/2017	12/20/2017
Depth:	2/2.5'	11/11.5'
Barium	1,310	67.6
Copper	56.4	21.1
Lead	613	9.22
Mercury	0.477	0.055
Zinc	927	66.3

SB-33		
Date Sampled:	12/18/2017	12/18/2017
Depth:	2/2.5'	8/8.5'
Arsenic	21.7	19.2
Barium	707	508
Lead	2,730	2,360
Mercury	1.59	1.41
Zinc	1,260	963

SB-32			
Date Sampled:	12/18/2017	12/18/2017	12/18/2017
Depth:	2/2.5'	8/8.5'	12/12.5'
Arsenic	14.3	6.04	3.44
Barium	935	91.0	45.6
Copper	172	25.4	16.8
Lead	970	98.7	38.0
Mercury	0.650	0.156	0.066
Zinc	1,760	119	53.1

SB-36		
Date Sampled:	12/18/2017	12/18/2017
Depth:	2/2.5'	8/8.5'
Barium	524	52.6
Lead	1,020	16.9
Zinc	587	53.8

SB-39		
Date Sampled:	12/20/2017	12/20/2017
Depth:	2/2.5'	11/11.5'
Arsenic	16.2	7.60
Barium	865	244
Copper	192	41.5
Lead	1,950	723
Mercury	1.17	0.464
Nickel	34.7	18.7
Zinc	1,420	396

SB-31		
Date Sampled:	12/18/2017	12/18/2017
Depth:	2/2.5'	8/8.5'
Barium	385	218
Lead	566	167
Mercury	0.346	0.241
Zinc	1,070	246

SB-40		
Date Sampled:	12/20/2017	12/20/2017
Depth:	2/2.5'	11/11.5'
Barium	567	86.0
Copper	111	96.7
Lead	3,850	195
Mercury	0.652	0.169
Zinc	1,100	297

* ALL SAMPLE RESULTS MEASURED IN PARTS PER MILLION (PPM)

SOIL STANDARDS		
CONTAMINANT	UNRESTRICTED USE SOIL CLEANUP OBJECTIVES	RESTRICTED USE SOIL CLEANUP OBJECTIVES - COMMERCIAL
Arsenic	13	16
Barium	350	400
Cadmium	2.5	9.3
Copper	50	270
Lead	63	1,000
Mercury	0.18	2.8
Nickel	30	310
Selenium	3.9	1,500
Zinc	109	10,000

FIGURE ADAPTED FROM DRAWINGS BY ATLANTIC ENVIRONMENTAL SOLUTIONS INC.

Title:

REMAINING SOIL CONTAMINATION – METALS (2017)

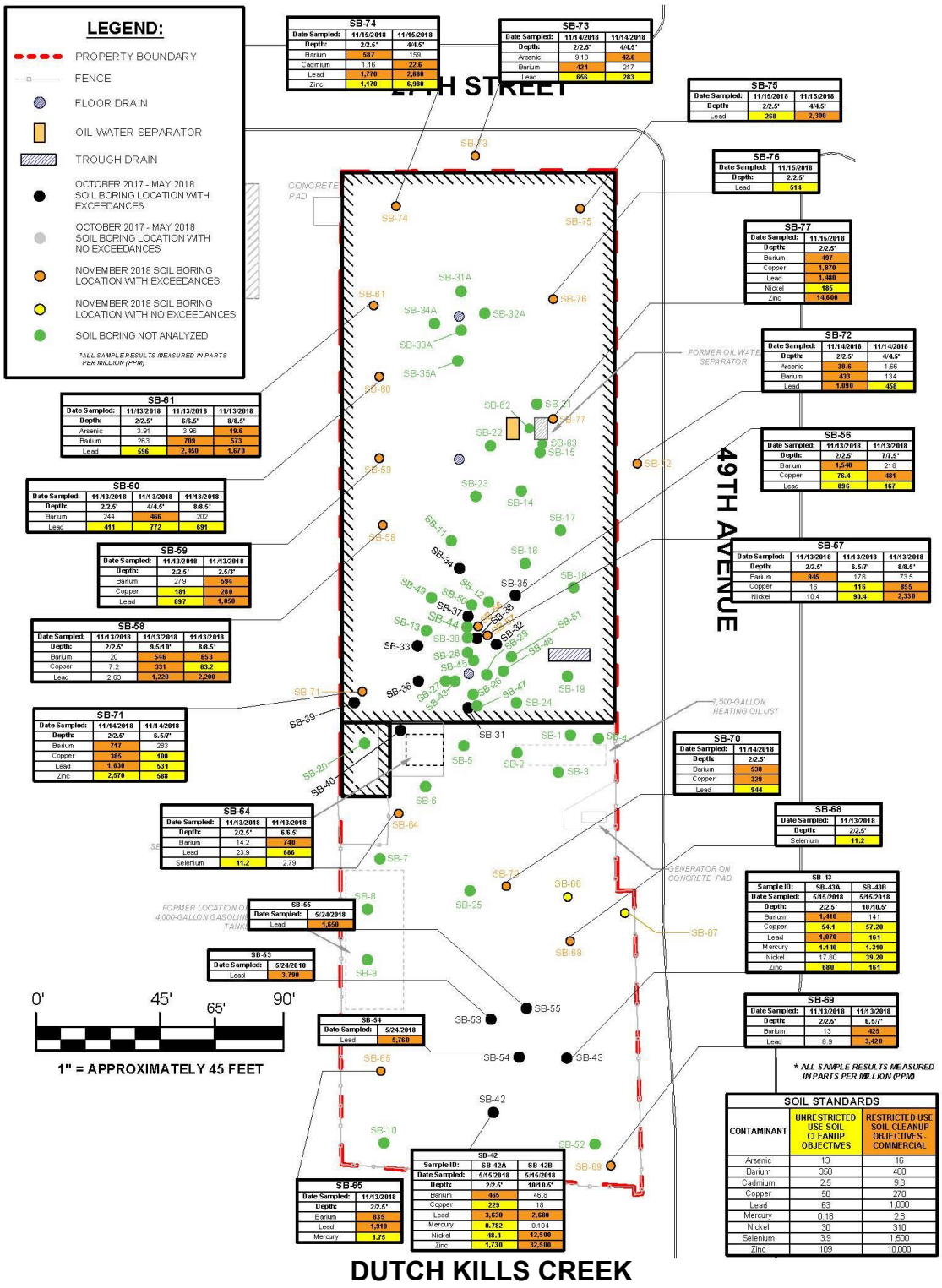
27-10 49TH AVENUE
LONG ISLAND CITY, NY

Prepared for:

HUNTERS POINT SG, LLC

ROUX

Compiled by: R.M.	Date: 11/23/2021	FIGURE
Prepared by: M.S.R.	Scale: AS SHOWN	6D
Project Mgr: R.L.	Project: 3446.0008Y000	
File: 3446.0008Y101.ppt		



Title:

REMAINING SOIL CONTAMINATION – METALS (2018)

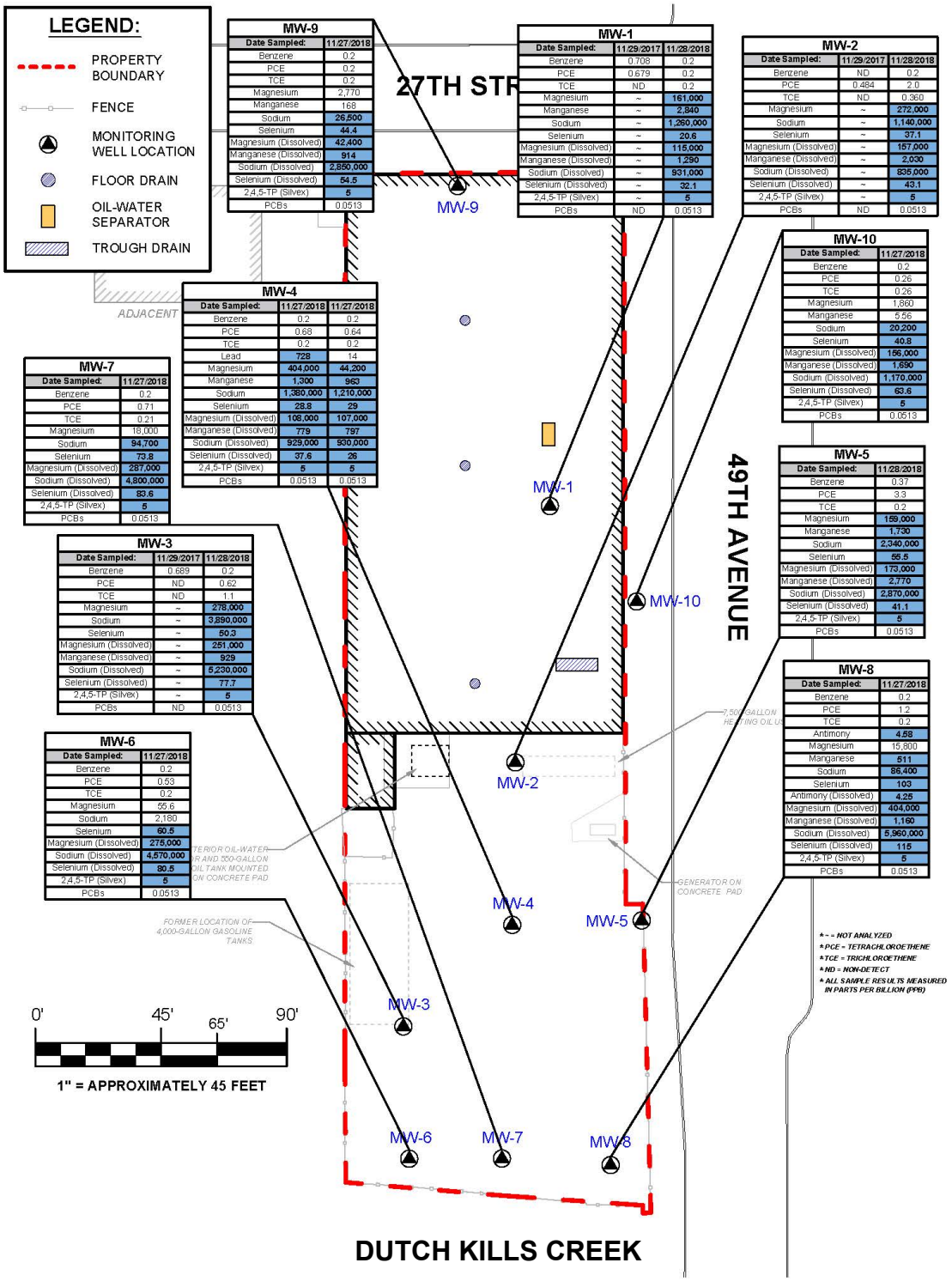
27-10 49TH AVENUE
LONG ISLAND CITY, NY

Prepared for:

HUNTERS POINT SG, LLC

ROUX	Compiled by: R.M.	Date: 11/23/2021	FIGURE 6E
	Prepared by: M.S.R.	Scale: AS SHOWN	
	Project Mgr: R.L.	Project: 3446.0008Y000	
	File: 3446.0008Y101.ppt		

FIGURE ADAPTED FROM DRAWINGS BY ATLANTIC ENVIRONMENTAL SOLUTIONS INC.



Title:

GROUNDWATER RESULTS MAP

27-10 49TH AVENUE
LONG ISLAND CITY, NY

Prepared for:

HUNTERS POINT SG, LLC

ROUX	Compiled by: R.M.	Date: 11/23/2021
	Prepared by: M.S.R.	Scale: AS SHOWN
	Project Mgr: R.L.	Project: 3446.0008Y000
	File: 3446.0008Y101.ppt	

FIGURE **7A**

**FIGURE ADAPTED FROM DRAWINGS BY ATLANTIC ENVIRONMENTAL SOLUTIONS INC.*

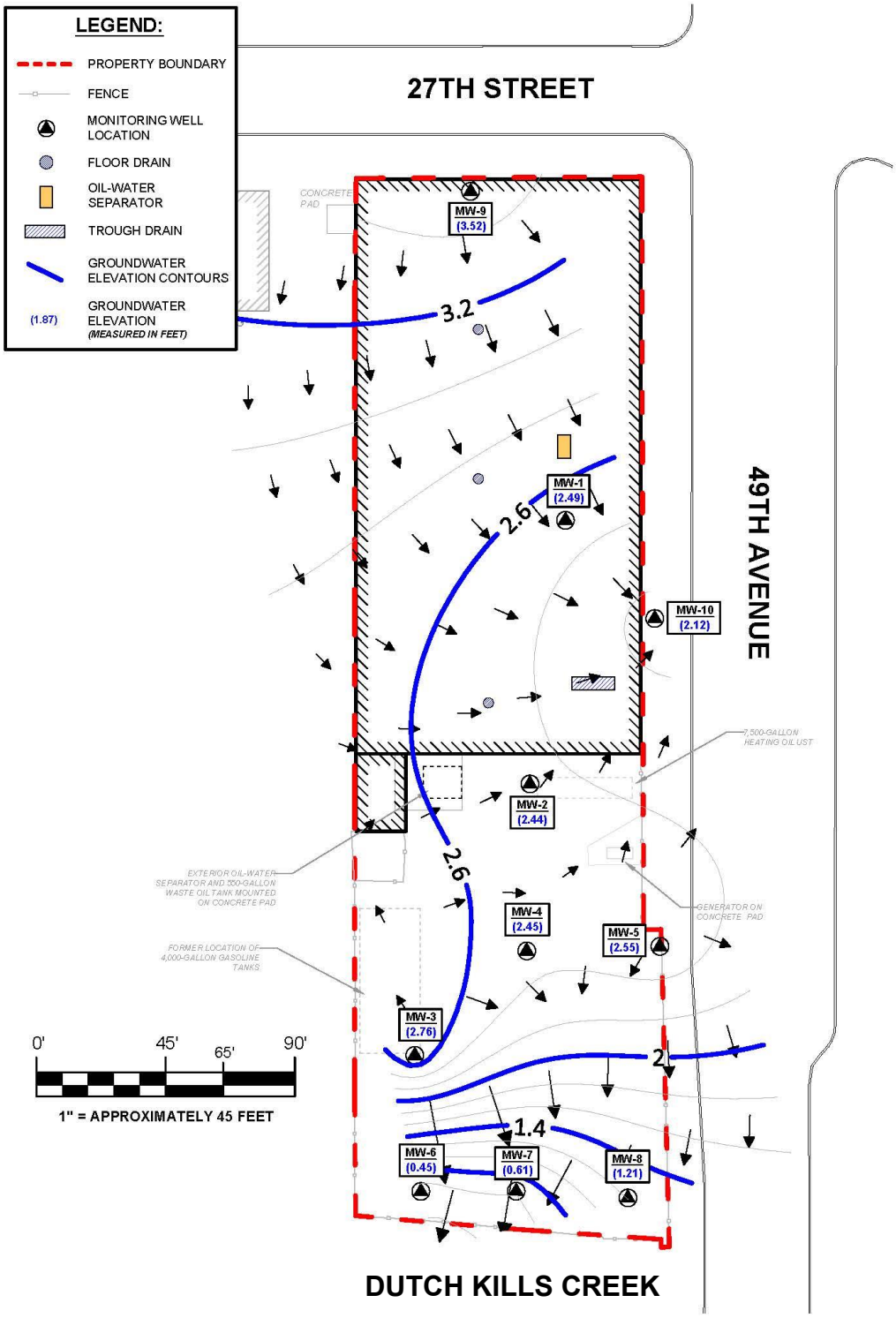


FIGURE ADAPTED FROM DRAWINGS BY ATLANTIC ENVIRONMENTAL SOLUTIONS INC.

Title:

GROUNDWATER FLOW DIRECTION MAP

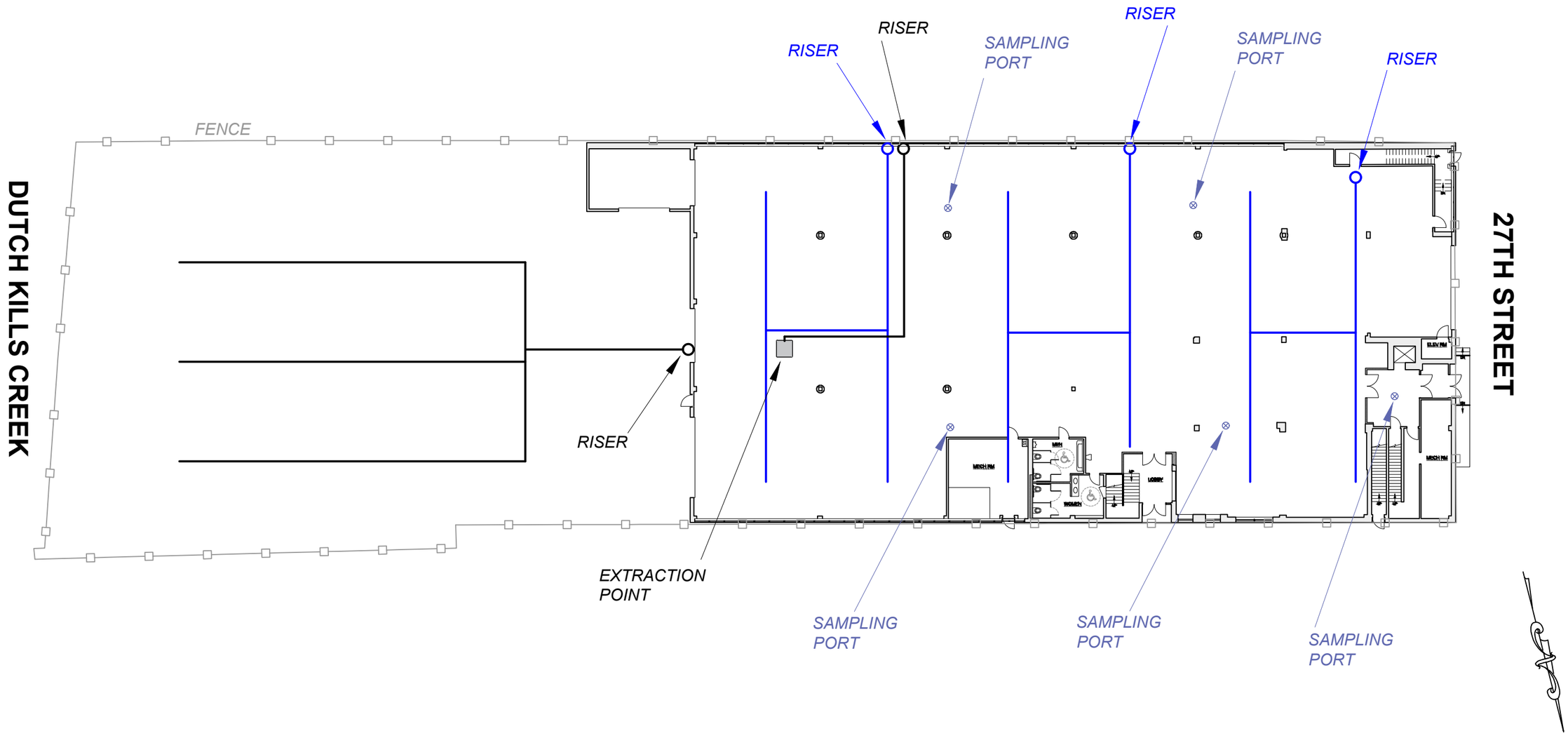
27-10 49TH AVENUE
LONG ISLAND CITY, NY

Prepared for:

HUNTERS POINT SG, LLC

ROUX

Compiled by: R.M.	Date: 11/23/2021	FIGURE
Prepared by: M.S.R.	Scale: AS SHOWN	7B
Project Mgr: R.L.	Project: 3446.0008Y000	
File: 3446.0008Y101.ppt		



49TH AVENUE

* SSDS = SUB-SLAB DEPRESSURIZATION SYSTEM
* SVES = SOIL-VAPOR EXTRACTION SYSTEM

ROUX NOTES
1. FIGURE ADAPTED FROM DRAWINGS BY ATLANTIC ENVIRONMENTAL SOLUTIONS INC.
2. ROUX FIELD VERIFIED THE SYSTEM TO THE EXTENT POSSIBLE, HOWEVER, THE CONFIGURATION OF SUBGRADE COMPONENTS COULD NOT BE VERIFIED.

0' 40' 80'
SCALE: 1" = 40'

Title:

SITE SSDS AND SVES PLAN

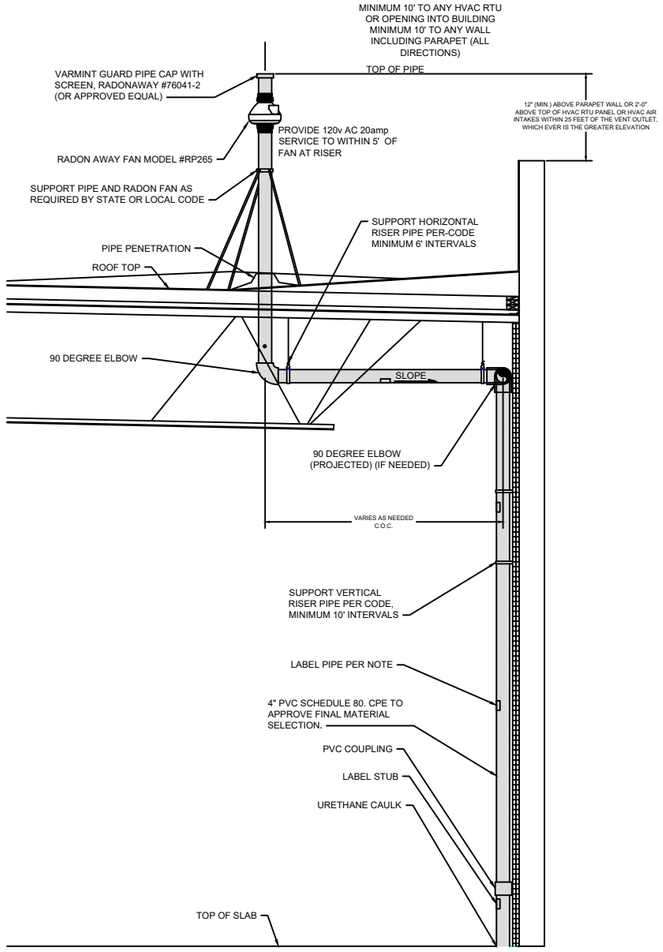
27-10 49TH AVENUE
LONG ISLAND CITY, NY

Prepared for:
HUNTERS POINT SG, LLC

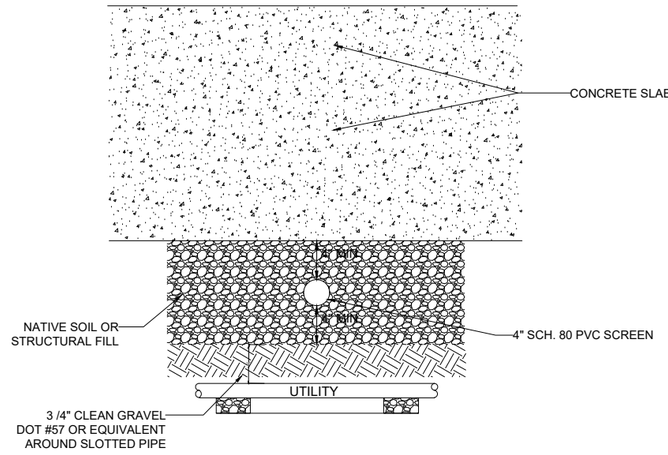
ROUX

Compiled by: DEK	Date: 1/21/2022	FIGURE
Prepared by: DEK	Scale: AS SHOWN	8
Project Mgr: CP	Project: 3446.0008Y000	
File: 3446.0008Y101.DWG		

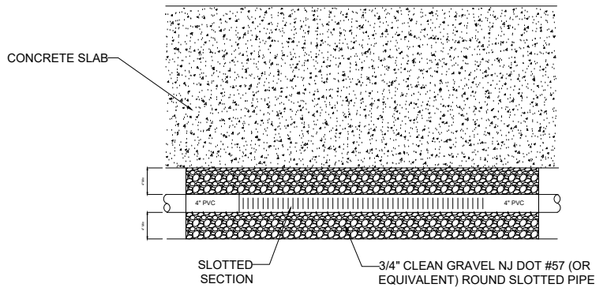
V:\CAD\PROJECTS\3446Y\0008Y\101\3446.0008Y101.DWG



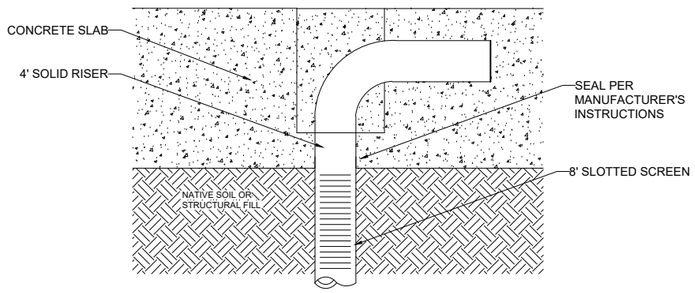
CONSTRUCTION AND INSTALLATION OF SSDS PIPING



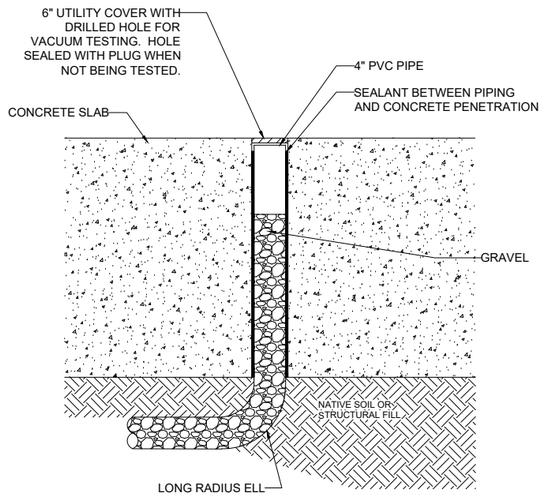
TYP. SSDS INSTALLATION



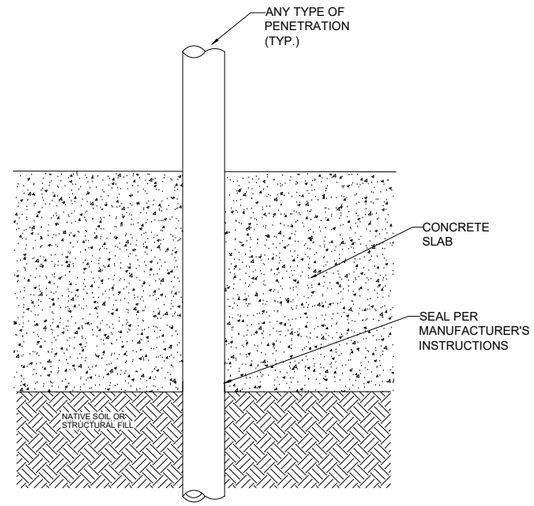
SOIL VAPOR EXTRACTION POINT



SAMPLING PORT



SLAB PENETRATION DETAIL



ROUX NOTES
1. FIGURE ADAPTED FROM DRAWINGS BY ATLANTIC ENVIRONMENTAL SOLUTIONS INC.
2. ROUX FIELD VERIFIED THE SYSTEM TO THE EXTENT POSSIBLE, HOWEVER, THE CONFIGURATION OF SUBGRADE COMPONENTS COULD NOT BE VERIFIED.

Title:

SITE SSDS AND SVES DETAILS

27-10 49TH AVENUE
LONG ISLAND CITY, NY

Prepared for:

HUNTERS POINT SG, LLC

ROUX	Compiled by: DEK	Date: 1/21/2022	FIGURE
	Prepared by: DEK	Scale: AS SHOWN	9
	Project Mgr: CP	Project: 3446.0008Y000	
	File: 3446.0008Y101.DWG		

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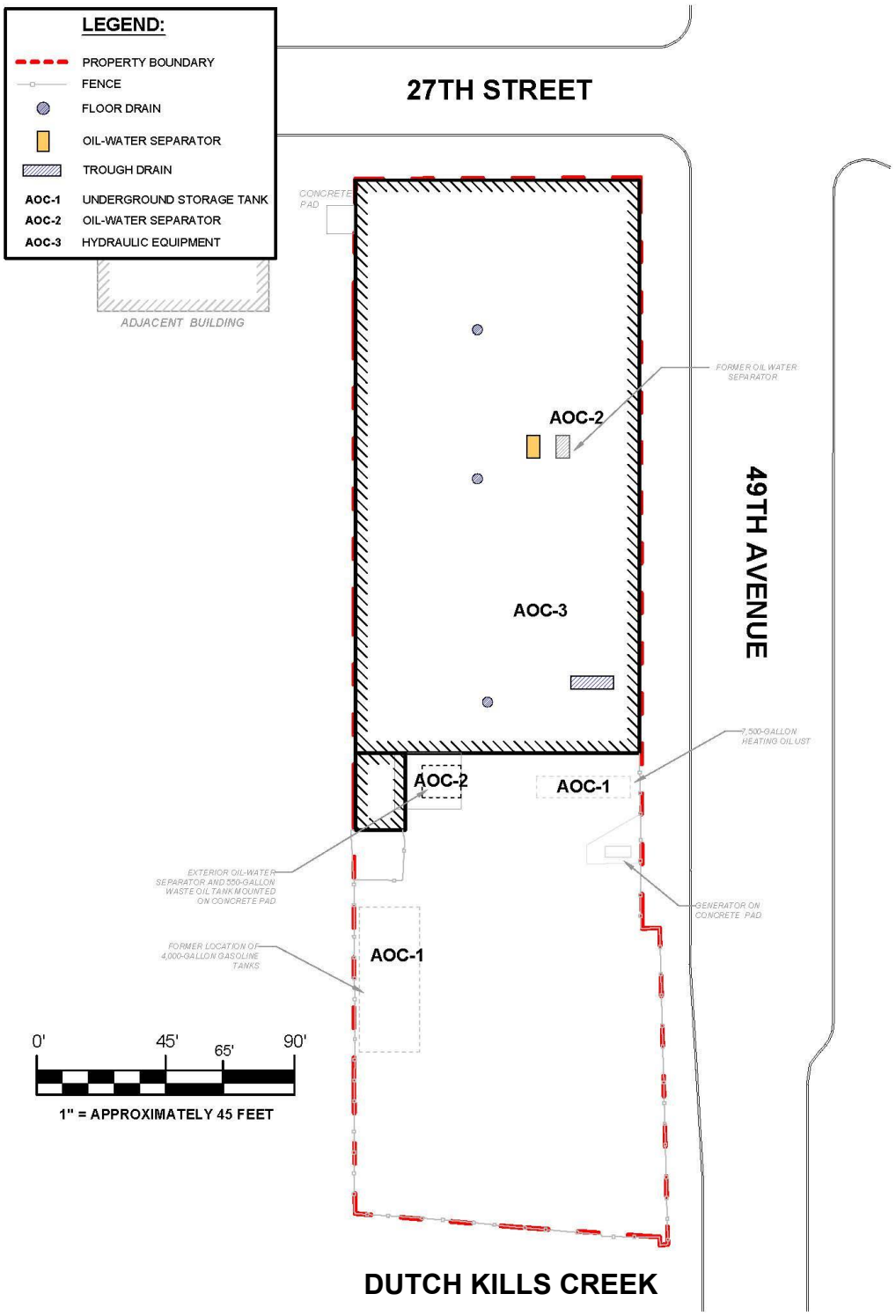


Title:

AREA OF CONCERN MAP

27-10 49TH AVENUE
LONG ISLAND CITY, NY

Prepared for:

HUNTERS POINT SG, LLC

ROUX	Compiled by: R.M.	Date: 11/23/2021	FIGURE
	Prepared by: M.S.R.	Scale: AS SHOWN	10
	Project Mgr: R.L.	Project: 3446.0008Y000	
	File: 3446.0008Y101.ppt		

**FIGURE ADAPTED FROM DRAWINGS BY ATLANTIC ENVIRONMENTAL SOLUTIONS INC.*

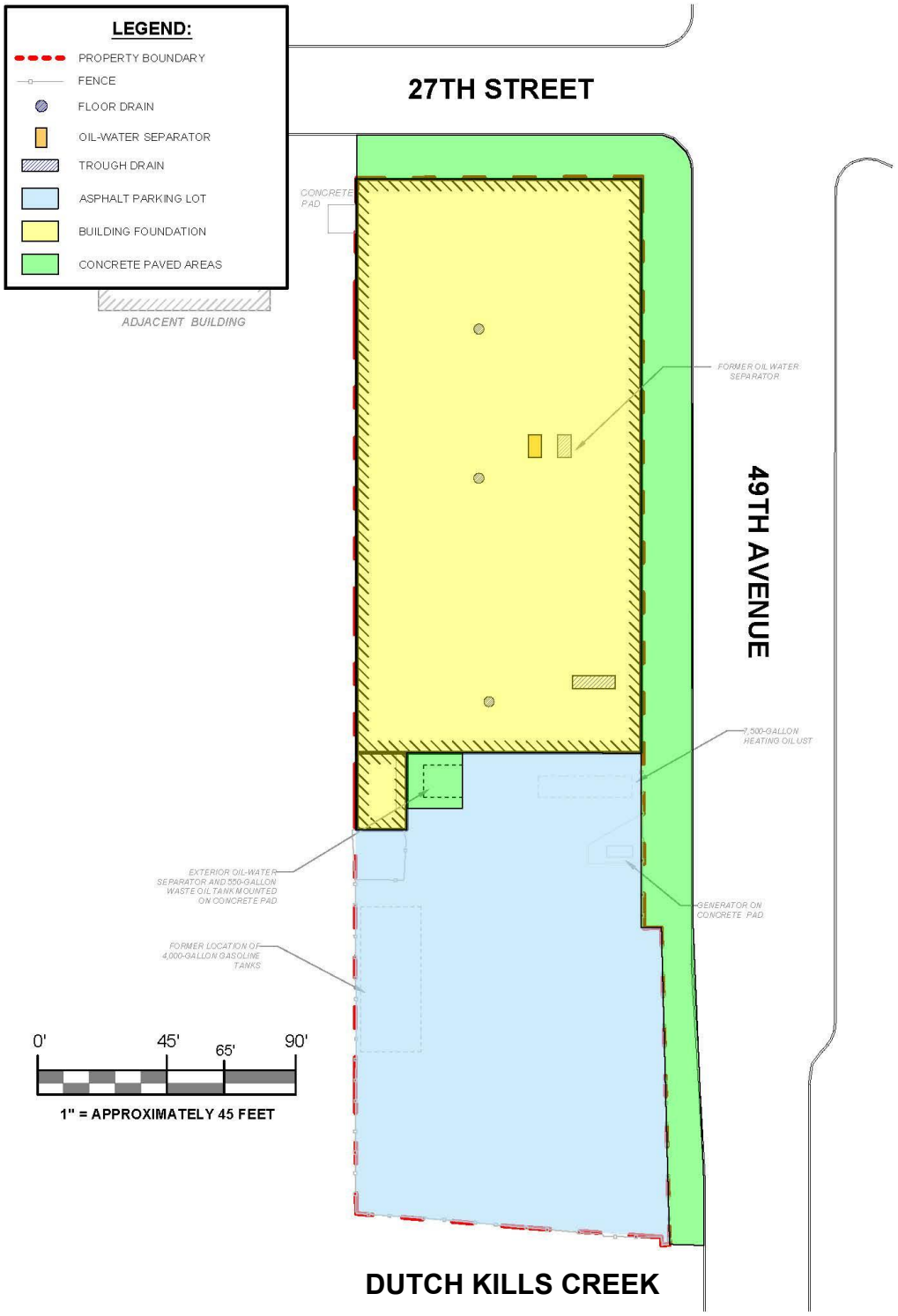


FIGURE ADAPTED FROM DRAWINGS BY ATLANTIC ENVIRONMENTAL SOLUTIONS INC.

Title:

SITE COVER SYSTEM PLAN

27-10 49TH AVENUE
LONG ISLAND CITY, NY

Prepared for:

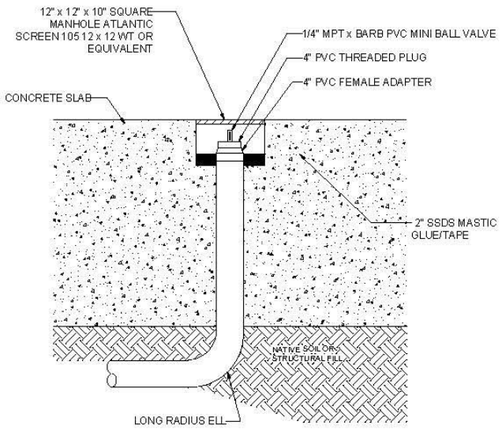
HUNTERS POINT SG, LLC

ROUX

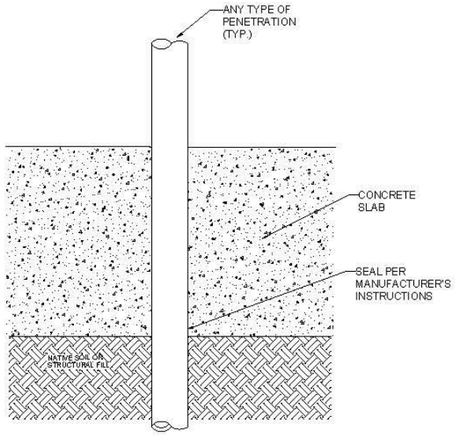
Compiled by: R.M.	Date: 11/23/2021	FIGURE
Prepared by: M.S.R.	Scale: AS SHOWN	
Project Mgr: R.L.	Project: 3446.0008Y000	11
File: 3446.0008Y101.ppt		

BUILDING FOUNDATION DETAIL

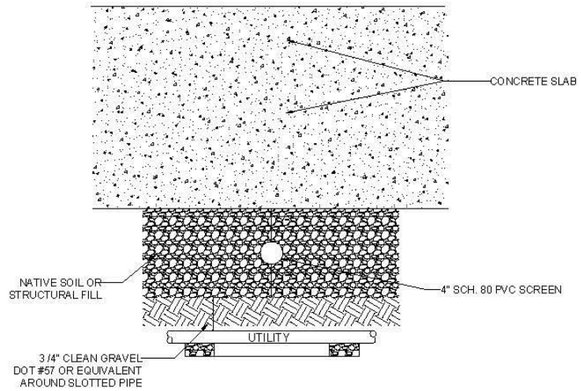
SAMPLING PORT



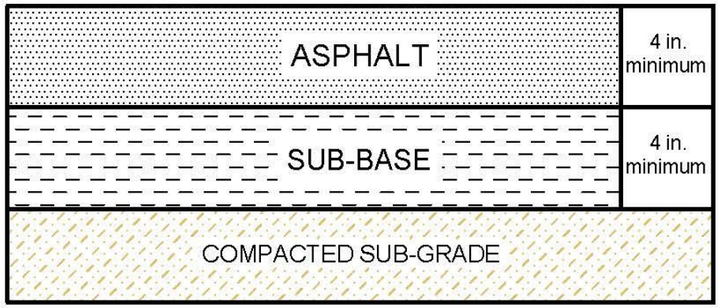
SLAB PENETRATION DETAIL



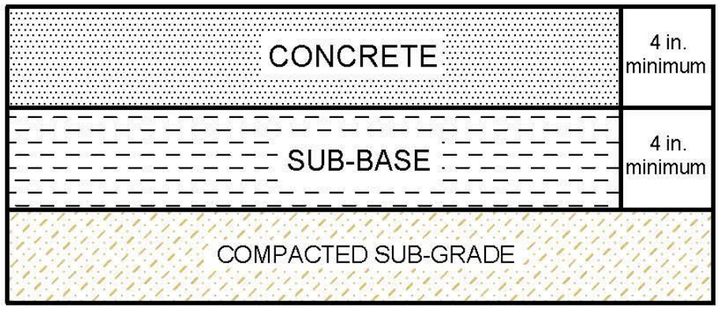
CONSTRUCTION AND INSTALLATION OF SSDS PIPING



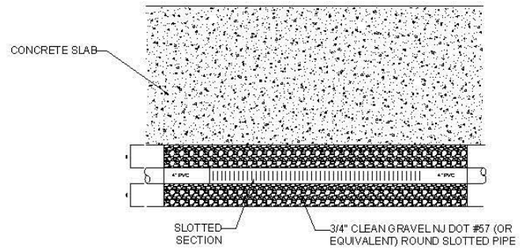
ASPHALT PARKING LOT DETAIL



CONCRETE PAVED SURFACES DETAIL



TYP. SSDS INSTALLATION



SOIL VAPOR EXTRACTION POINT

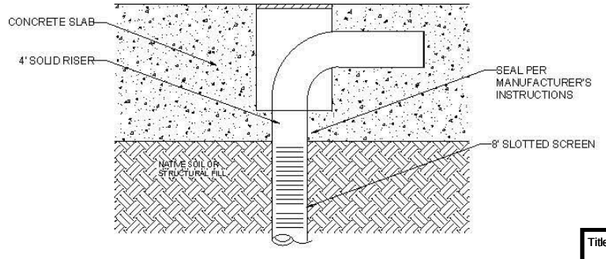


**FIGURE ADAPTED FROM DRAWINGS BY ATLANTIC ENVIRONMENTAL SOLUTIONS INC.*

Title:

SITE COVER SYSTEM DETAILS

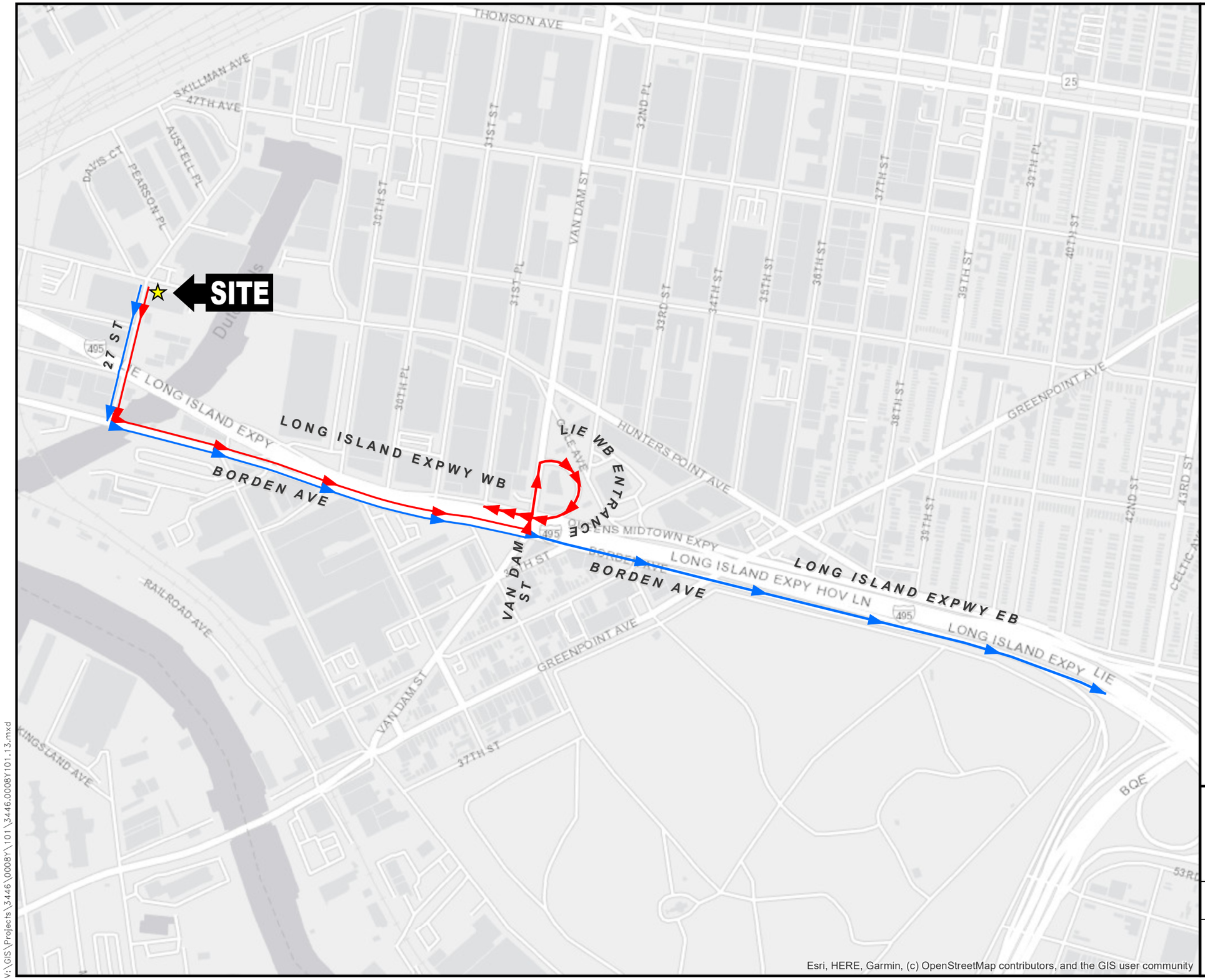
27-10 49TH AVENUE
LONG ISLAND CITY, NY

Prepared for:

HUNTERS POINT SG, LLC

ROUX

Compiled by: R.M.	Date: 11/23/2021	FIGURE
Prepared by: M.S.R.	Scale: AS SHOWN	12
Project Mgr: R.L.	Project: 3446.0008Y000	
File: 3446.0008Y101.ppt		



Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

N

DIRECTIONS TO WESTBOUND I-495

1. HEAD SOUTH ON 27TH ST TOWARD 51ST AVE
2. TURN LEFT ONTO BORDEN AVE
3. TURN LEFT ONTO VAN DAM ST
4. TURN RIGHT TO MERGE ONTO I-495 W TOWARD MIDTOWN TUNNEL/MANHATTAN

DIRECTIONS TO EASTBOUND I-495

1. HEAD SOUTH ON 27TH ST TOWARD 51ST AVE
2. TURN LEFT ONTO BORDEN AVE
3. USE ANY LANE TO TAKE THE RAMP TO I-495 E
4. KEEP LEFT AT THE FORK
5. FOLLOW SIGNS FOR I-495/ EASTERN LONG ISLAND/RIVERHEAD
6. MERGE LEFT ONTO I-495 E

500 0 500
Feet

Title:

TRUCK ROUTE MAP

27-10 49TH AVENUE, LONG ISLAND CITY, NY

Prepared for:

HUNTERS POINT SG, LLC

ROUX

Compiled by: D.E.K.	Date: 10/12/23	FIGURE
Prepared by: M.S.R.	Scale: AS SHOWN	13
Project Mgr: D.E.K.	Project: 3446.0008Y000	
File: 3446.0008Y101.13.mxd		

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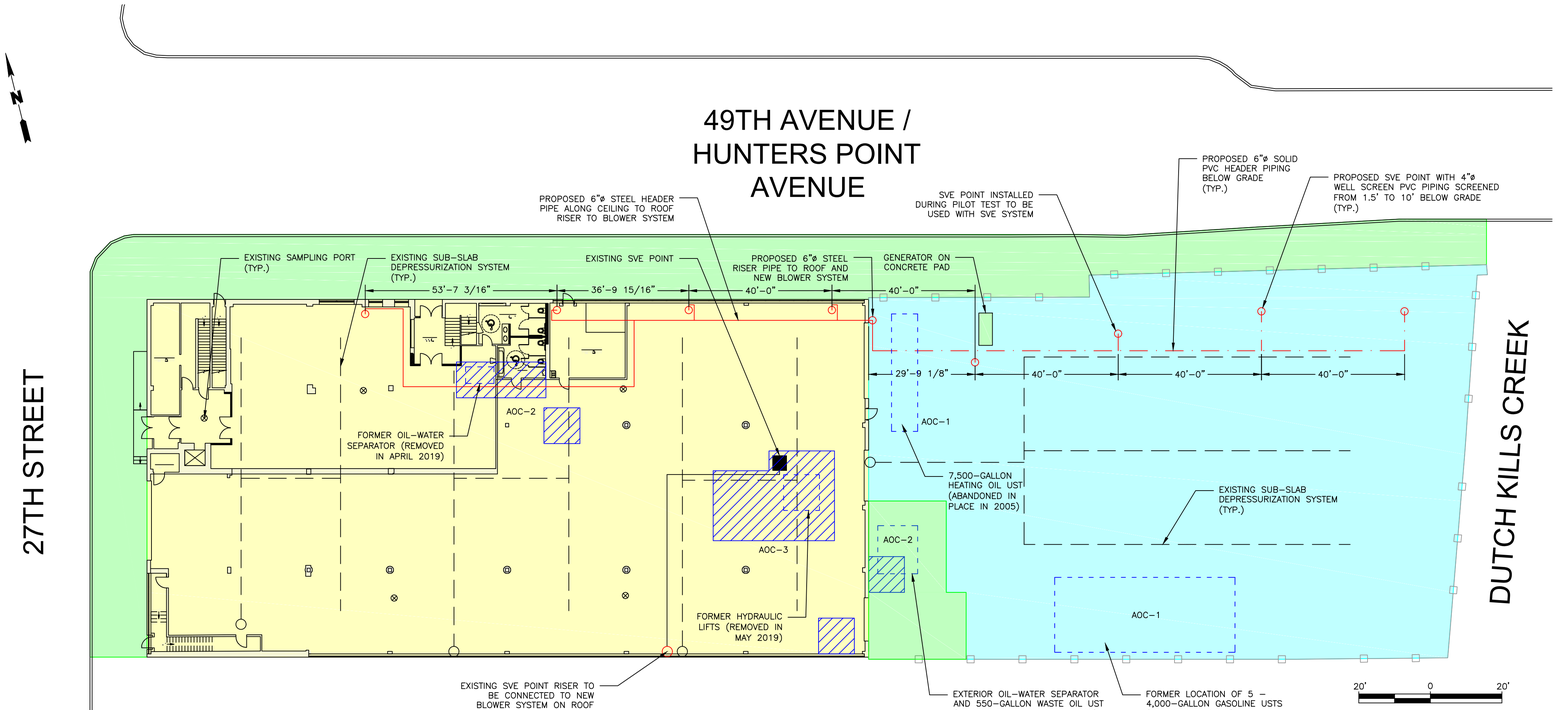
DRAWINGS

1. Soil Vapor Extraction System Expansion Plan and Details



SITE PLAN

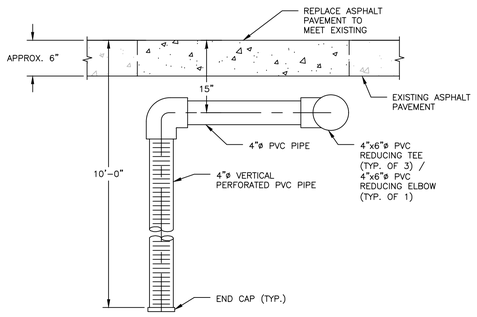
SCALE: 1" = 20'

LEGEND

- BUILDING FOUNDATION
- ASPHALT PARKING LOT
- CONCRETE PAVED AREA
- FENCE
- APPROXIMATE EXCAVATION AREAS (AS PER ATLANTIC ENVIRONMENTAL SOLUTIONS, INC.)
- APPROXIMATE TANK AREAS (AS PER ATLANTIC ENVIRONMENTAL SOLUTIONS, INC.)
- EXISTING SAMPLING PORT
- BUILDING COLUMN

SUB-SLAB DEPRESSURIZATION SYSTEM NOTES

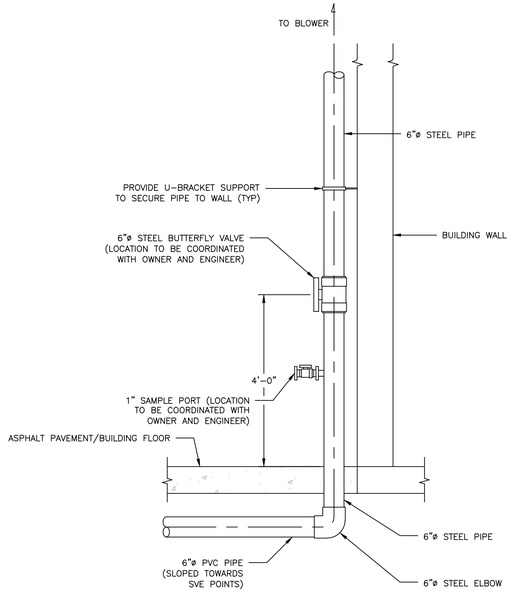
1. CONTRACTOR SHALL COORDINATE WITH PLUMBING, MECHANICAL, CIVIL AND ELECTRICAL CONTRACTORS FOR ALL UTILITY CROSSINGS.
2. THIS SOIL VAPOR EXTRACTION SYSTEM WAS DESIGNED TO MINIMIZE CROSSINGS OF ONSITE FEATURES AND STRUCTURAL FEATURES. FIELD VERIFICATION OF LOCATIONS SHOULD BE MADE TO ENSURE CROSSINGS ARE MINIMIZED.



PROFILE VIEW

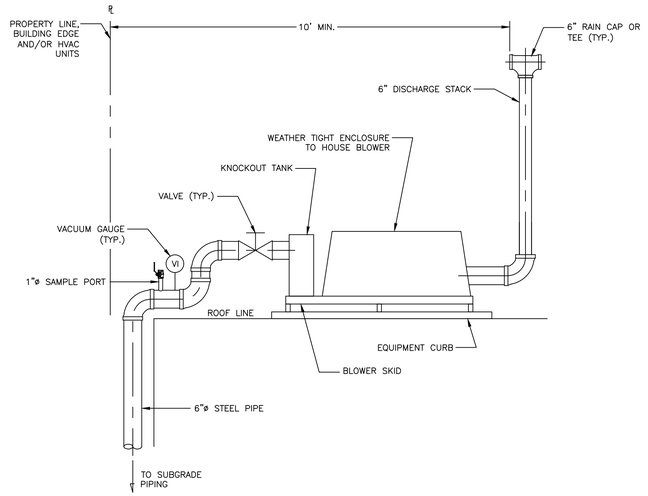
1 SOIL VAPOR EXTRACTION POINT DETAIL

SCALE: NOT TO SCALE



2 RISER DETAIL

SCALE: NOT TO SCALE



BLOWER NOTES

1. PROVIDE ELECTRICAL/CONTROL CONDUIT TO BLOWERS. COORDINATE WITH ELECTRICAL CONTRACTOR.
2. ELECTRICAL CONDUIT SHALL BE SIZED FOR 230/460 VOLT, THREE PHASE, 60 HZ, FOR THE BLOWER MOTOR.
3. SVES VENT EXHAUST SHALL BE OFFSET A MINIMUM OF 10 FEET FROM PROPERTY LINES, BUILDING EDGES, HVAC/AIR INTAKES, OPERABLE OPENINGS AND ANY OUTDOOR RECREATIONAL SPACES IN ACCORDANCE WITH NYC PLUMBING CODE CHAPTER 9 VENTS.
4. THE BLOWER SHALL BE A 10.0 HP, ATLANTIC BLOWERS AB-850 OR APPROVED EQUAL.
5. THE BLOWER SHALL BE PROVIDED WITH A WEATHER TIGHT ALUMINUM CUSTOM ENCLOSURE OR APPROVED EQUAL.
6. THE BLOWER SKID SHALL INCLUDE A WEATHER TIGHT ENCLOSURE, KNOCKOUT TANK (WITH HIGH LEVEL ALARM), VACUUM RELIEF VALVE, LOW VACUUM SWITCH, GAUGES, AND INTERCONNECTING PIPING/FITTINGS.
7. A CONTROL PANEL SHALL BE PROVIDED WITH THE BLOWER SKID. THE CONTROL PANEL SHALL HAVE GREEN OPERATING LIGHTS AND RED ALARM LIGHTS. THE CONTROL PANEL SHALL HAVE AN ALARM FOR WATER LEVEL IN KNOCKOUT TANK, LOW VACUUM AND NO POWER. THE ALARM SIGNAL SHALL BE SENT TO AN APPROPRIATE LOCATION IN THE PROPOSED BUILDING (I.E., SUPERINTENDENT'S OFFICE) AND SHALL ALSO BE AUDIBLE. THE ALARM SHALL BE A MCMASTER-CARR SIGNAL LIGHT WITH AUDIBLE ALARM (PART NO. 5753T71) OR APPROVED EQUAL.
8. PROVIDE ALL NECESSARY PIPE SUPPORTS FOR RISERS FROM THE ASPHALT PAVEMENT AND INSIDE THE BUILDING TO THE BLOWER ON THE ROOF.

3 TYPICAL BLOWER DETAIL

SCALE: NOT TO SCALE

NO.	DATE	REVISION DESCRIPTION	INT.
2	8/21/24	ADD SVE POINTS IN BUILDING	D.E.K.
1	7/29/24	ADD EXCAVATION AREAS, AOCS, LOCATIONS OF TANKS	D.E.K.

PROJ. ENGINEER: D.E.K.		DRAWN BY: D.E.K.	
DESIGNED BY: D.E.K.		CHECKED BY: N.C.	
DRAWING SCALE: AS SHOWN		PLOT SCALE: 1:1	
DRAWING DATE: 8/21/24		PRINT TYPE: COLOR	
OFFICE: NY		PAPER SIZE: ARCH D	
PROJECT NO.: 3446.0008Y000			
DRAWING FILE: 3446.0008Y106.05-REV2.DWG			

ROUX
Roux Environmental Engineering and Geology, D.P.C.
209 SHAFTER STREET ISLANDIA NEW YORK 11749
(631) 232-2600

PROJECT NAME:
27-10 49TH AVENUE, QUEENS, NY
NYSDEC BCP SITE NO. C241219

PROJECT FOR:
HUNTERS POINT SG, LLC
10 W FOREST AVENUE, ENGLEWOOD, NJ

TITLE:
SOIL VAPOR EXTRACTION SYSTEM EXPANSION PLAN AND DETAILS

DRAWING NO.
1
DRAWING 1 OF 1

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APPENDICES

A. NYSDOH Generic CAMP
B. Citizen Participation Plan
C. Health and Safety Plan
D. SVES Blower System Submittal Package
E. NYSDEC Fact Sheet – February 2024

APPENDIX A

NYSDOH Generic CAMP

Appendix 1A
New York State Department of Health
Generic Community Air Monitoring Plan

Overview

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

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

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

Community Air Monitoring Plan

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

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

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. “Periodic” monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

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 work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

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 shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC 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/m^3) 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/m^3 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/m^3 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/m^3 of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

APPENDIX B

Citizen Participation Plan

NEW YORK STATE OF OPPORTUNITY. Department of Environmental Conservation

Brownfield Cleanup Program

Citizen Participation Plan
for
27-10 49th Avenue, Long Island City, New York
March 2019

27-10
49th Avenue
Long Island City
Queens, New York

Contents

* * * * *

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: **Hunters Point SG LLC**
Site Name: **27-10 49th Avenue, Long Island City, New York ("Site")**
Site Address: **27-10 49th Avenue, Long Island City, New York**
Site County: **Queens**
Site Number: **C241219**

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, it has been determined that the site does not pose a significant threat.

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:	
• Prepare site contact list • Establish document repository(ies)	At time of preparation of application to participate in the BCP.
• 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):	
• 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:	
• 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:	
• Distribute fact sheet to site contact list that describes RI results	Before NYSDEC approves RI Report
Before NYSDEC Approves Remedial Work Plan (RWP):	
• 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:	
• Distribute fact sheet to site contact list that describes upcoming cleanup action	Before the start of cleanup action.
After Applicant Completes Cleanup Action:	
• 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.

The subject property in a commercial/industrial neighborhood, adjacent to the Dutch Kills Creek. Sampling conducted on Site confirms that contamination is not migrating off-site into Dutch Kills.

4. Site Information

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

Site Description

- **location -** 27-10 49th Avenue, Long Island City, Queens County, New setting - urban, suburban or rural
- **setting - urban**
- **site size -**38,300 square feet
- **adjacent properties –** The site is located in an industrial business zone (M3-2), the surrounding parcels are currently utilized for commercial, industrial and manufacturing purposes. The site is bound to the north by 49th Avenue followed by a commercial warehouse operated by Mana Products, a cosmetics manufacturer. It is bound to the west by 27th Street followed by a warehouse space operated by UPS. It is bound to the south by a warehouse building operated by Leadstone, USA, a quartz manufacturing company and a commercial building of unknown use. It is bound to the east by Dutch Kills Creek.

History of Site Use, Investigation, and Cleanup

The site was most recently operated by Black Bear Lubricants as a warehouse for mixing, repackaging and distribution of petroleum products. Carey Limousine utilized the second floor of the building as office space, with a small reception area on the first floor. Carey Limousine also utilized the parking lot for vehicle parking. Prior to these operations the property was used by courier companies for distribution.

Potential sources of contamination on the site are petroleum spills associated with the operations of Black Bear Lubricants, historic fill and repair operations associated with the former courier companies.

Seven (7) underground storage tanks (USTs) have been identified in relation to the subject property: Five (5) 4,000-gallon gasoline USTs, one (1) 7,500-gallon heating oil

UST, and one (1) 550-gallon waste oil UST. The gasoline USTs were removed in 1990, the heating oil UST was abandoned in place in 2005, and the waste oil UST was abandoned in place in 2009.

In October 2017 Hunters Point SG, LLC entered into a contract to purchase the property from Kinloch Company Inc. Hunters Point SG, LLC performed due diligence investigation activities between October 2017 and March 2018. Contamination in excess of the most stringent standards was identified during due diligence and Hunters Point SG, LLC contacted the New York City Mayor's Office of Environmental Remediation (OER) to explore entering into the Voluntary Cleanup Program (VCP) as a Volunteer. A Pre-application meeting was held with OER in February 2018 and the VCP application was submitted in March 2018, prior to Hunters Point SG LLC closing on the property. A Remedial Investigation Report was submitted to OER and approved on March 19, 2018. A Remedial Action Workplan was submitted to OER and approved on April 10, 2018. Following approval of the workplan, AESI conducted additional delineation testing requested by OER including soil, groundwater and soil vapor sampling. Results of the investigation activities conducted have been submitted to both OER and NYSDEC for review.

On May 25, 2018 Hunters Point SG, LLC met with OER and NYSDEC to discuss moving forward with remediation of the site. At that meeting it was determined that NYSDEC would take primary oversight of the remediation going forward.

Hunters Point SG, LLC submitted a BCP application to the NYSDEC in July 2018 and a Remedial Investigation Workplan in August 2018. The Site was accepted into the program in October 2018 and the RIWP was implemented in October and November 2018. A Remedial Investigation Report was submitted in January 2019 documenting that delineation had been completed on site. A Remedial Action Report was submitted in January 2019 outlining the proposed scope of work for remediation at the site.

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

purposes.

To achieve this goal, the Applicant will conduct 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.

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):

Charles Post
Project Manager, Division of
Environmental Remediation
NYSDEC
625 Broadway, Albany, NY 12233-1706
518-402-9768

New York State Department of Health (NYSDOH):

Arunesh Ghosh
Project Manager
NYSDOH
Empire State Plaza
Corning Tower
Albany, NY 12237
518-486-1443

Locations of Reports and Information

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

Long Island City Branch of the Queens Public Library
37-44 21st St
Long Island City, NY 11101
Monday: 9 am-8 pm
Tuesday: 1 pm-6pm
Wednesday: 10 am-6 pm
Thursday: 12 pm- 8 pm
Friday: 10 am- 6 pm
Saturday: 10 am- 5 pm

NYSDEC
Division of Environmental Remediation
625 Broadway, Albany, NY 12233-1706
Attn: Charles Post
Project Manager
518-402-9768
Hours: Monday-Friday 9am-5pm

Queens Community Board 2
Denise Keehan-Smith
43-22 50th Street,
Woodside, NY 11377
(718)-533-8773

Appendix B - Site Contact List

Property Owner
Hunters Point SG, LLC
10 West Forest Avenue
Englewood, New Jersey 07631

Environmental Consultant
Atlantic Environmental Solutions, Inc
5 Marine View Plaza, Suite 401
Hoboken, New Jersey 07030

Residents, owners, and occupants of the site and properties adjacent to the site:

Adjacent Properties

Block: 111 Lot: 11
49-10 27th Street, Queens, New York
Adjacent to the East

United Parcel Service-Owner
643 West 43rd Street
New York, New York 10036

Block: 115 Lot: 1
27-11 49th Avenue, Queens, New York
Adjacent to the North

27-11 49th Avenue Realty LLC -Owner
27-11 49th Avenue
Queens, New York

Block: 113 Lot: 1
50-09 27th Street, Queens, New York
Adjacent to the South

34-06 73RD LLC, as tenants in common
84-11 Elmhurst Avenue Apt 1F
Elmhurst, NY 11373

There are no schools or day care facilities located on the site. The following are schools or day care facilities located within ½ mile of the site:

Lagcc Early Childhood Learning

Gail O. Mellow, President
31-10 Thomson Avenue
Long Island City, NY 11101
(718) 482-5295

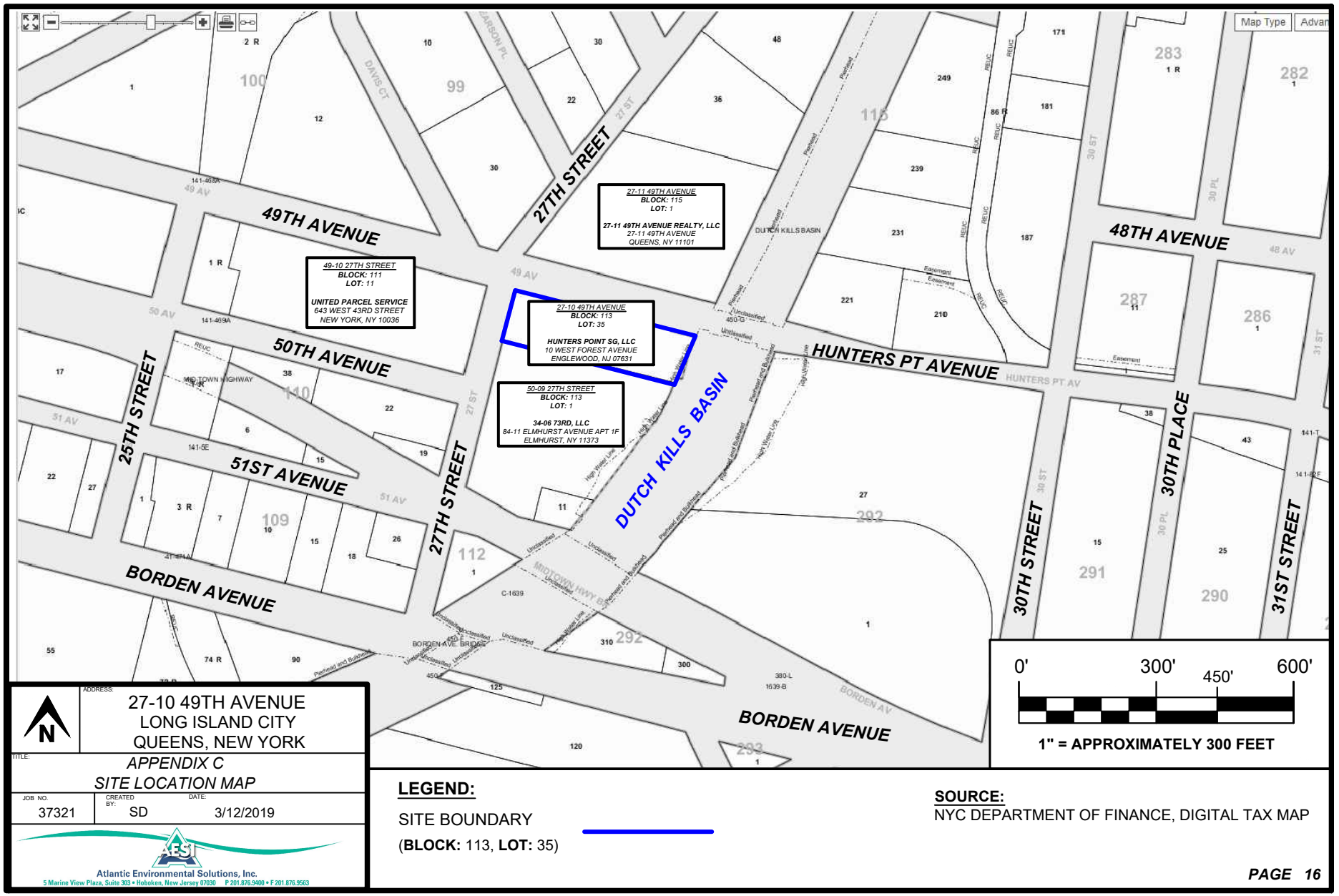
The Learning Experience
Richard Weissman
Day Care Center
27-28 Thomson Avenue
Long Island City, NY 11101
(718) 433-4007

High School of Applied Communication
Connor Kelly-Principal
30-20 Thomson Avenue
Long Island City, NY 11101
(718) 389-3163

PS 078
Mr. Pavone-Principal
4809 Center Boulevard
Long Island City, NY 11109
(718) 392-5402

LaGuardia Community College
Dr. Gail O. Mellow-President
31-10 Thomson Avenue
Long Island City, NY 11101
(718) 482-5242

LaGuardia International High School
Jaclyn Valane-Principal
45-35 Van Dam Street
Long Island City, NY 11101
(718) 392-3433



ADDRESS:
27-10 49TH AVENUE
LONG ISLAND CITY
QUEENS, NEW YORK

TITLE:
APPENDIX C
SITE LOCATION MAP

JOB NO.	CREATED BY:	DATE:
37321	SD	3/12/2019

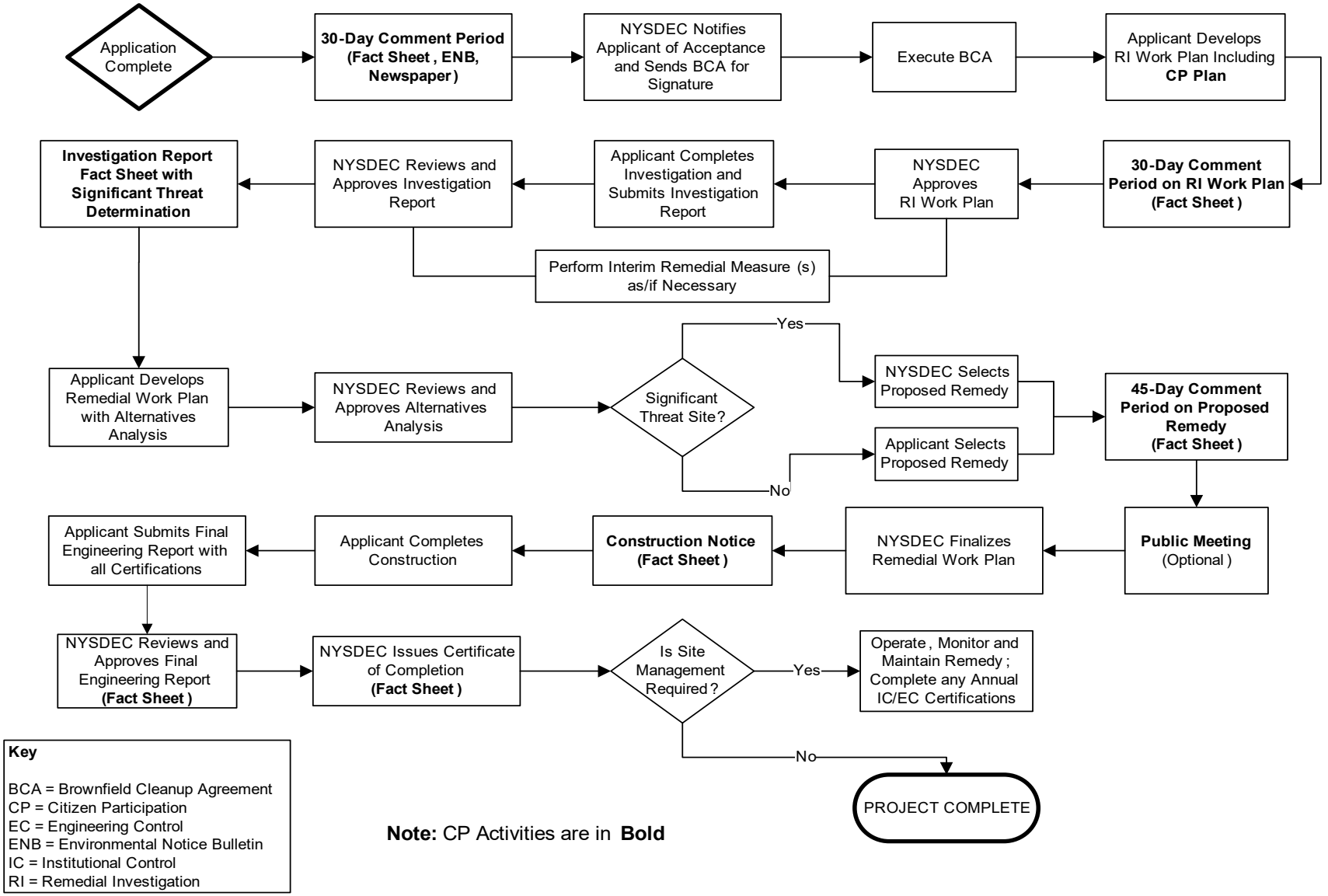
Atlantic Environmental Solutions, Inc.
5 Marine View Plaza, Suite 303 • Hoboken, New Jersey 07030 P 201.876.9400 • F 201.876.9563

LEGEND:

SITE BOUNDARY
(**BLOCK:** 113, **LOT:** 35)

SOURCE:
NYC DEPARTMENT OF FINANCE, DIGITAL TAX MAP

Appendix D– Brownfield Cleanup Program Process



Key

BCA = Brownfield Cleanup Agreement
CP = Citizen Participation
EC = Engineering Control
ENB = Environmental Notice Bulletin
IC = Institutional Control
RI = Remedial Investigation

Note: CP Activities are in **Bold**

APPENDIX C

Health and Safety Plan

Site-Specific Health and Safety Plan

27-10 49th Avenue
Long Island City, New York

June 19, 2023

Prepared for:

Hunters Point SG, LLC
10 W. Forest Avenue
Englewood, New Jersey 07631

Prepared by:

Roux Environmental Engineering and Geology, D.P.C.
209 Shafter Street
Islandia, New York 11749

3446.0008Y112/CV

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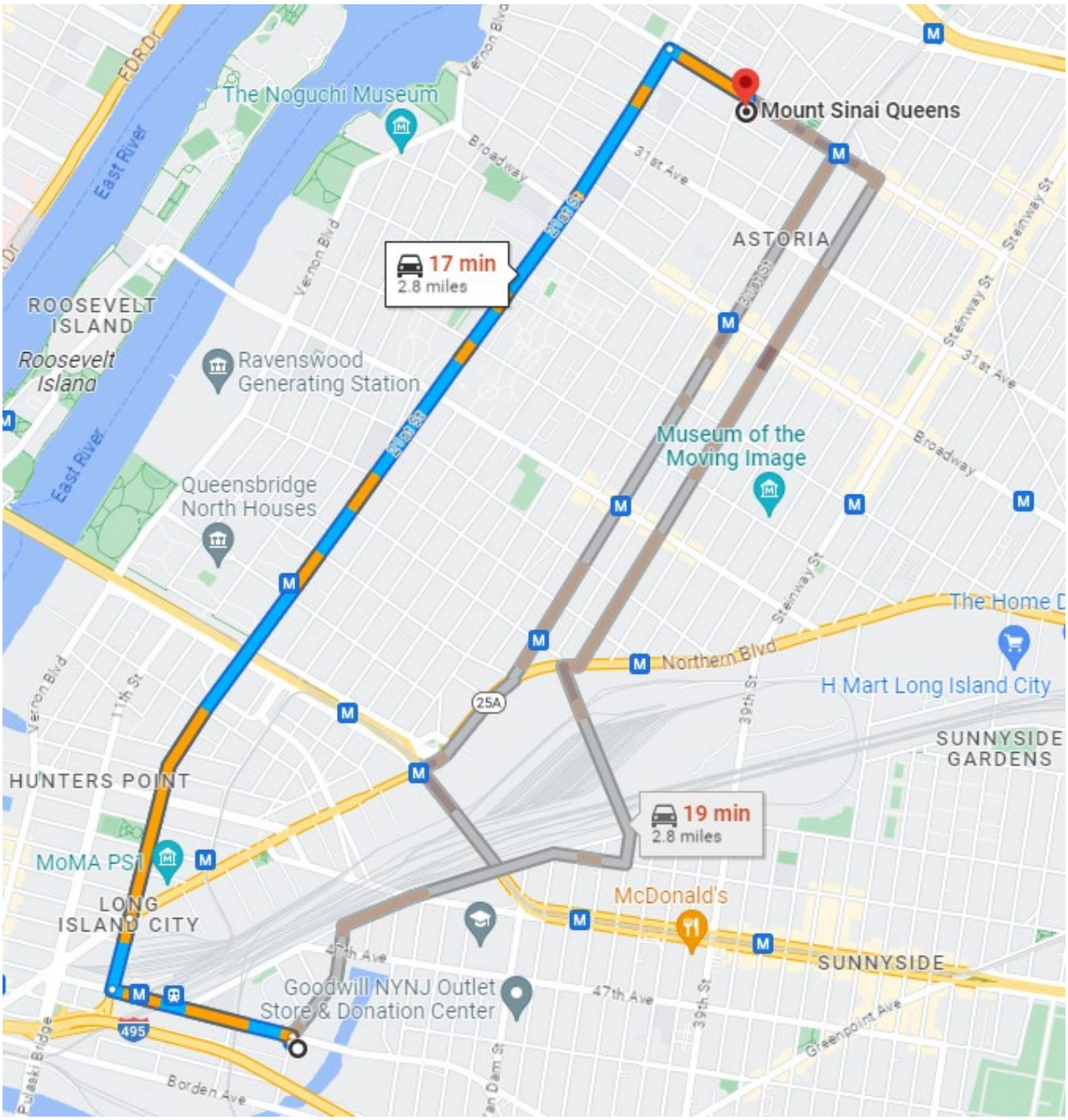
I. Fatigue Management Program
J. Silica Exposure Control Program
K. Ergonomics Management Program

Site-Specific Emergency Information

Emergency Phone Numbers

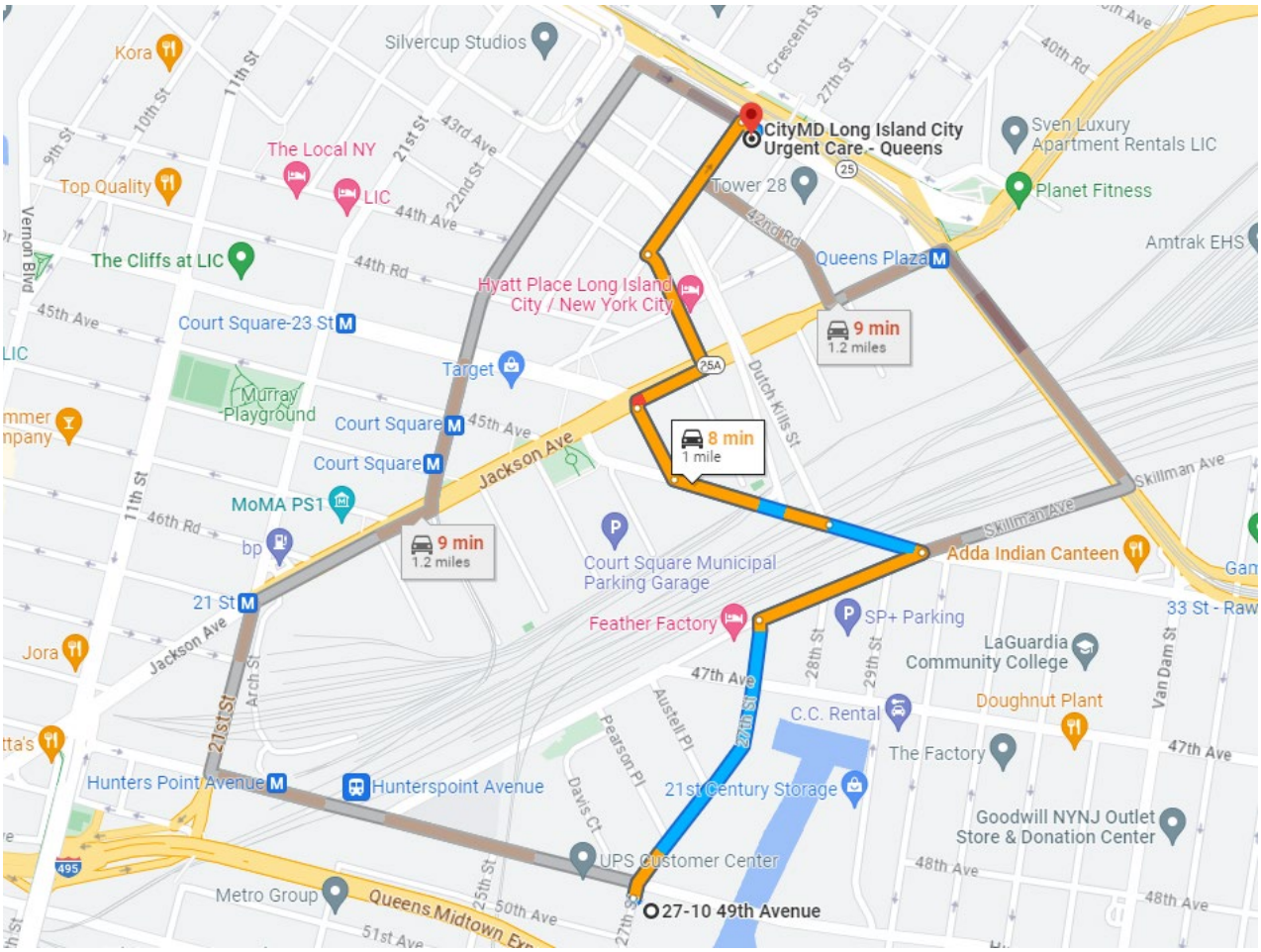
Most emergency services can be obtained by calling **911**. Where 911 service is not available, use the telephone numbers provided in the below table. The following is a master emergency phone list for use by the project management personnel. A more condensed version of the emergency numbers listed below will be posted throughout project work areas. Emergencies encountered on the site will be responded to by a combination of off-site emergency services and on-site personnel.

Emergency Contact Information			
Site Personnel			
Title	**Contact**		**Telephone**
Operations Manager (OM)	Jeff Wills		516-637-0213
Project Principal (PP)	Chris Proce		516-250-0356
Project Manager (PM)	David Kaiser		516-849-0562
Site Supervisor (SS)	TBD		
Site Health and Site Safety Officer (SHSO)	TBD		
Office Health and Safety Manager (OHSM)	Nevin Pahlad, CSP, CHMM		347-885-6930
Corporate Health and Safety Director (CHSD)	Brian Hobbs, CIH, CSP		631-807-0193
WorkCare, Inc. (Formally AllOne Health)	Occupational Health Care Management Provider		800-350-4511
Client Emergency Contact	Zach McHugh		561-302-7937
Outside Assistance			
Agency	**Contact**	**Telephone**	**Address/Location**
Ambulance/emergency medical services (EMS)	Mount Sinai Queens	(718) 932-1000	25-10 30th Ave Queens, NY 11102
Police	New York City Police Department	(718) 361-1021	4707 Pearson Place Queens, NY 11101
Fire	FDNY Engine 258/Ladder 115	(718) 999-2000	10-40 47th Ave Queens, NY 11101
Site Address	27-10 49th Avenue, Long Island City, New York 11101		



Route to Hospital: Mount Sinai Queens Hospital, 25-10 30th Ave, Queens, NY 11102:

- Head west on 49th Ave
- Turn right onto 21st St
- Continue straight to stay on 21st St
- Turn right onto 30th Ave
- Hospital will be on the right



Route to Urgent Care: CityMD Long Island City Urgent Care - Queens, 25-18 Queens Plaza S, Queens, NY 11101:

- Head west on 49th Ave
- Turn right onto 27th St
- Turn right onto Skillman Ave
- Turn left onto Thomson Ave
- Turn right onto 44th Dr
- Turn right onto Jackson Ave
- Turn left onto 43rd Ave
- Turn right at the 2nd cross street onto Crescent St
- Turn right onto Queens Plaza S
- Urgent Care will be on the right

1. Introduction

This Site-specific Health and Safety Plan (HASP) has been prepared by Roux Environmental Engineering and Geology, D.P.C. (Roux) for use during the pilot test and installation of a soil vapor extraction system (SVES), which will include drilling, limited soil excavation and disposal, asphalt and concrete demolition, piping installation, and blower installation to a portion of the Hunters Point SG (HP) building located at 27-10 49th Avenue, Long Island City, New York (Site; **Figure 1**). These activities fall within the scope of operations covered by the Occupational Safety and Health Administration (OSHA) standards promulgated at 29 CFR 1910.120 and 29 CFR 1926.65, both commonly referred to as the Hazardous Waste Operations and Emergency Response (HAZWOPER) Standard. In accordance with the HAZWOPER Standard, this Site-specific HASP was prepared to address the safety and health hazards associated with the installation of a SVES, soil sampling, vapor sampling, asphalt/concrete demolition, soil excavation and disposal activities being performed at the Site by Roux and to provide requirements and procedures for the protection of Roux employees, subcontractor personnel, government oversight personnel, Site personnel, and the general public. It also addresses client- and Site-specific requirements for health and safety. Additionally, subcontractors may be required to submit their own HASP as it relates to their specific work activities and will be kept onsite during such work.

Implementation of this HASP is the joint responsibility of the Project Manager (PM), the Site Health and Safety Officer (SHSO), and all field staff, with assistance from the Project Principal (PP), Office Health and Safety Manager (OHSM), and Corporate Health and Safety Director (CHSD). The PM for this project is David Kaiser. The Site Supervisor (SS) is TBD and Site Health and Safety Officer (SHSO) is TBD.

This HASP will be introduced to, reviewed, and signed off on by all Roux personnel through a formal training session prior to commencing work. A copy of the HASP will be kept at the Site at all times. The Roux SHSO or PM will be responsible for posting any changes, amendments, memos, etc. to the HASP. Any revisions to this HASP will be signed by appropriate personnel, which can include Roux's PP, CHSD, and SS. Any changes will be announced to all workers at the next safety meeting.

1.1 Roles and Responsibilities

Overall Roles and Responsibilities (R&Rs) of Roux personnel are provided in Roux's Policies and Procedures Manual. Only those R&Rs specific to HASP requirements are listed below.

Project Manager (PM)

The PM has responsibility and authority to direct all work operations. The PM coordinates safety and health functions with the Site Health and Safety Officer (SHSO), has the authority to oversee and monitor the performance of the SHSO, and bears ultimate responsibility for the proper implementation of this HASP. The specific duties of the PM are:

- Preparing and coordinating the Site work plan;
- Providing Site supervisor(s) with work assignments and overseeing their performance; Coordinating safety and health efforts with the SSHO;
- Ensuring effective emergency response through coordination with the Emergency Response Coordinator (ERC); and
- Serving as primary Site liaison with public agencies and officials and Site contractors.

Site Health and Safety Officer (SHSO)

The SHSO has the full responsibility and authority to develop and implement this HASP and to verify compliance. The SHSO reports to the Project Manager. The SHSO is on Site or readily accessible to the Site during all work operations and has the authority to halt Site work if unsafe conditions are detected. The specific responsibilities of the SHSO include:

- Managing the safety and health functions on this Site;
- Serving as the Site's point of contact for safety and health matters;
- Ensuring Site monitoring, worker training, and effective selection and use of PPE;
- Assessing Site conditions for unsafe acts and conditions and providing corrective action;
- Assisting the preparation and review of this HASP;
- Maintaining effective safety and health records as described in this HASP; and
- Coordinating with the SS and others as necessary for safety and health efforts.

Site Supervisor (SS)

The Site Supervisor (SS) is responsible for field operations and reports to the Project Manager (PM). The SS ensures the implementation of the HASP requirements and procedures in the field. The specific responsibilities of the Site Supervisor include:

- Executing the work plan and schedule as detailed by the PM;
- Coordination with the SHSO on safety and health; and
- Ensuring Site work compliance with the requirements of this HASP.

Employees

All Roux employees are responsible for reading and following all provisions of the Corporate Health and Safety Manual, including this HASP. Employees report to the SS at the project Site. Each employee is also responsible for the following:

- Wearing all appropriate PPE as outlined within this HASP;
- Attending all safety meetings;
- Inspecting tools and equipment prior to use, and taking any defective tools or equipment out of service;
- Appropriately documenting field events as they occur within a logbook or equivalent;
- Properly operating machinery and/or equipment only if trained to do so;
- Stopping work operations if unsafe conditions exist;
- Identifying and mitigating hazards when observed;
- Reporting all incidents and near misses to the Roux SHSO and SS immediately; and
- Knowing where emergency equipment is located (e.g., first aid kit, fire extinguisher).

Subcontractors and Visitors

Subcontractors and visitors are responsible for complying with the same health and safety requirements. It is the responsibility of all to make sure subcontractors and visitors comply and uphold the HASP. Subcontractors and visitors have the following additional responsibilities:

- Designating a qualified safety representative for the project that can make the necessary changes in work practices, as necessary;
- Attending all safety meetings while participating in Roux Site work activities;
- Reporting all incidents and near misses to Roux SHSO and SS immediately;
- Conducting initial and periodic equipment inspections in accordance with manufacturer and regulatory guidelines; and
- Providing copies of all Safety Data Sheets (SDS) to Roux SHSO for materials brought to the Site.

2. Background

Relevant background information is provided below, including a general description of the Site; a brief review of the Site's history with respect to hazardous material use, handling, and/or storage; and a review of known and potential releases of hazardous substances at the Site.

2.1 Site Description

The Site address is 27-10 49th Avenue in the Borough of Queens, City and State of New York. Additional information regarding the Site is provided in the tables below:

Property Location	
Property Name:	27-10 49th Avenue
Property Address:	27-10 49th Avenue
Property Town, County, State:	Long Island City, Queens County, New York
Property Tax Identification:	Tax Block 113, Lot 35
Nearest Intersections:	(Northwest) 27th Street and 49th Avenue (Southwest) 27th Street and 50th Avenue (Southeast) Dutch Kills (Northeast) Dutch Kills
Area Description:	The Site is located in an urban and developed area. The surrounding properties are currently used for a combination of commercial/industrial uses. The nearest residential properties are located 0.4 miles to the north.
Property Information	
Acreage:	0.87 acres
Shape:	Rectangular
Number of Buildings:	One
Number of Stories:	Two
Cellar/Slab-on-Grade:	Slab-on-Grade
Property Use:	The Site is developed with an industrial building with a parking lot located on the eastern side of the site. The first floor has historically been used as a warehouse for mixing, repackaging and distribution of petroleum products. The second floor was used for offices. The building is currently occupied by a ride share company, Lyft, and is used as an office space and as storage.

2.2 Site History

The Site was most recently used as a warehouse for mixing, repackaging and distribution of petroleum products. A limousine company utilized the second floor of the building as office space, with a small reception area on the first floor. Prior to these operations, the Site was used by courier companies for distribution.

2.3 Known and Potential Releases of Hazardous Substances at the Site

In November 2017, AESI conducted a Phase I Environmental Site Assessment (ESA) for the Site. AESI identified multiple recognized environmental conditions (RECs) based on the operations of the Site at the time and recommended additional investigation.

In October 2017, AESI conducted a Preliminary Remedial Investigation (PRI) at the Site. The PRI was conducted to evaluate potential impacts and to provide general characterization of the Site. A total of 56 soil samples, along with three (3) soil vapor samples, and four (4) ambient air samples were collected for chemical analysis. In addition, three (3) permanent monitoring wells were installed and a geophysical survey was completed as part of the PRI. Analytical results of the PRI identified the presence of elevated concentrations of tetrachloroethene (PCE) in soil gas and the presence of elevated concentrations of other VOCs in soil in the vicinity of the eastern floor drain. Based on the results of the investigation, AESI recommended that additional investigation activities be performed at the Site.

In order to confirm that PCE contamination identified during previous investigation activities was not migrating off-Site towards the Dutch Kills, AESI conducted a Supplemental Remedial Investigation (SRI). The SRI activities were conducted to delineate soil, groundwater, and soil vapor conditions at the Site. Based on the results of the SRI, Hunters Point SG, LLC applied to enter into the BCP as a volunteer in September 2018.

Due to the proximity of the Site to Dutch Kills and Newton Creek, the NYSDEC requested additional investigation activities to supplement existing data to define the nature and extent of contamination more fully in soil, groundwater, and soil vapor identified at the Site. As required by the NYSDEC, a Remedial Investigation Work Plan (RIWP) was prepared by AESI in July 2018 and was approved by the NYSDEC in August 2018. Subsequent to the RIWP approval, the Site was accepted into the BCP in September 2018 (as Site number C241219).

Upon being accepted as a Volunteer into the BCP, remedial investigation activities (outlined in the approved RIWP) were implemented to investigate and characterize the extent of environmental impacts on the Site, as well as to define chemical constituent migration pathways and evaluate the potential feasibility of planned remedial actions for the Site.

Remedial investigation activities included the installation of 23 soil borings, seven (7) permanent monitoring wells, 60 sub-slab soil gas screening points and eight (8) confirmation soil gas sample points. Based on the remedial investigation data, it was concluded that the nature of contamination present in groundwater was consistent with the historic fill materials used during development of the Site. It was also concluded that PCE contamination, previously identified in soil at the Site above Track 4 commercial soil cleanup objectives (SCOs), was fully delineated. In addition to the elevated PCE contamination, there was also petroleum-related contamination identified primarily in the vicinity of the oil/water separator within the Site building. Soil gas results identified high levels of PCE along the northern property boundary, with concentrations decreasing across the property towards the south and east.

In January 2019 AESI submitted an IRM Work Plan to NYSDEC, which was approved in March 2019.

3. Scope of Work

The current scope of work for the Site is oversight of the following tasks: pilot test and installation of a SVES, which will include drilling, limited soil excavation and disposal, asphalt and concrete demolition, piping installation, and blower installation to a portion of the building.

Non-routine activities will not be performed by Roux personnel.

If there are any changes with the scope, a revision of the HASP will be required to address any new hazards.

4. Site Control

This Site control program is designed to reduce the spread of hazardous substances from contaminated areas to clean areas, to identify and isolate contaminated areas of the Site, to facilitate emergency evacuation and medical care, to prevent unauthorized entry to the Site, and to deter vandalism and theft.

4.1 Site Map

A map of this Site, showing Site boundaries, designated work zones, and points of entry and exit is provided in **Figure 2**.

4.2 Site Access

Access to the work areas at the Site is restricted to reduce the potential for exposure to its safety and health hazards. During hours of Site operation, Site entry and exit is authorized only at the points identified in **Figure 2**. Entry and exit at these points is controlled by a fenced parking lot with an electric gate at the north side of the Site on 49th Avenue. When the Site is not operating, access to the Site will be coordinated with the Site contact, as needed.

4.3 Buddy System

This section is not applicable for all components of the SOW described in Section 3. Some Site inspections, SVES installation oversight and sampling are completed by a single Roux employee. However, when completing these tasks, the single Roux employee is accompanied either by Roux subcontractors or the Site caretaker/other representatives from HP. Any time Roux is on-site, HP is made aware and communications with HP and the Roux PM is maintained via cellular phone.

While working in the Exclusion Zone, Site workers use the buddy system. The buddy system means that personnel work in pairs and stay in close visual contact to be able to observe one another and summon rapid assistance in case of an emergency. The responsibilities of workers using the buddy system include:

- Remaining in close visual contact with partner;
- Providing partner with assistance as needed or requested;
- Observing partner for signs of heat stress, chemical overexposure or other difficulties;
- Periodically checking the integrity of partner's PPE; and
- Notifying the SS or other Site personnel if emergency assistance is needed.

4.4 Site Communications

The following communication equipment is used to support on-site communication: cell phone and visual hand signals.

As applicable, hand signals will be used according to the following:

Hand Signals

SIGNAL	MEANING
Hand gripping throat	Out of air, can't breathe
Grip partner's wrist	Leave area immediately
Hands on top of head	Need assistance
Thumbs up	I'm all right, okay
Thumbs down	No, negative

A current list of emergency contact numbers is included in the Site-Specific Emergency Information at the beginning of this HASP.

4.5 Site Work Zones

This Site is divided into three (3) major zones, described below. These zones are characterized by the likely presence or absence of biological, chemical, or physical hazards and the activities performed within them. Zone boundaries are clearly marked at all times and the flow of personnel among the zones is controlled. The Site is monitored for changing conditions that may warrant adjustment of zone boundaries. Zone boundaries are adjusted as necessary to protect personnel and clean areas. Whenever boundaries are adjusted, zone markings are also changed and workers are immediately notified of the change.

Exclusion Zone

The area where contamination exists is the Exclusion Zone (EZ). All areas where excavation and handling of contaminated materials take place are considered part of the EZ. This zone will be clearly delineated by chain link fencing, caution tape, cones or other effective barriers, as necessary. Safety tape may be used as a secondary delineation within the EZ. The zone delineation markings may be opened in areas for varying lengths of time to accommodate equipment operation or specific construction activities. The SHSO may establish more than one EZ where different levels of protection may be employed or where different hazards exist. Personnel are not allowed in the EZ without:

- A buddy (co-worker);
- Required minimum level PPE;
- Medical authorization;
- Training certification; and
- Requirement to be in the zone.

Contamination Reduction Zone

A Contamination Reduction Zone (CRZ) is established between the exclusion zone and the support zone. The CRZ contains the Contamination Reduction Corridor (CRC) and provides an area for decontamination

of personnel and equipment. The CRZ will be used for general Site entry and egress in addition to access for heavy equipment and emergency support services. Personnel are not allowed in the CRZ without:

- A buddy (co-worker);
- Appropriate PPE;
- Medical authorization;
- Training certification; and
- Requirement to be in the zone.

Support Zone

The Support Zone (SZ) is an uncontaminated area that will be the field support area for the Site operations. If required, the SZ will be determined before the start of work. Appropriate sanitary facilities and safety equipment will be located in this zone. Potentially contaminated personnel or materials are not allowed in this zone. The only exception will be appropriately packaged/decontaminated and labeled samples.

5. Job Hazard Evaluation

Roux's work at the Site is expected to entail a variety of physical, chemical, and biological hazards, all of which must be sufficiently managed to allow the work to be performed safely. Some of the hazards are Site-specific (i.e., they are associated with the nature, physical characteristics, and/or routine operation of the Site itself), while others are activity-specific (i.e., they are associated with [or arise from] the particular activity being performed). The various hazards can be grouped into the following categories:

- **Caught/Crushed** – the potential to become caught in, under, between, or by an object or parts of an object, such as equipment with parts that open and close or move up and down ("pinch points") or equipment that rotates, and the accompanying potential to have body parts cut, mangled, or crushed thereby.
- **Contact** – the potential to be struck by or against moving or stationary objects that can cause physical injury, such as heavy machinery, overhead piping, moving vehicles, falling objects, and equipment (including tools and hand-held equipment) or infrastructure with the ability to cut or impale.
- **Energy Sources** – the potential for bodily harm associated with energy sources, most notably electricity, but also including latent energy sources such as compressed air and equipment under tension (which when released could cause injurious contact or a fall).
- **Ergonomics** – the potential for musculoskeletal injury associated with lifting/carrying, pushing/pulling, bending, reaching, and other physical activity attributable to poor body position/mechanics, repetitive motion, and/or vibration.
- **Exposure** – the potential for injury/illness due to physical, chemical, or biological exposures in the work environment, including, but not limited to, temperature extremes, solar radiation, and noise (physical), chemical splashes and hazardous atmospheres (chemical), and animal/insect bites and poisonous plants (biological).
- **Falls** – the potential to slip or trip and thus fall or drop a load, resulting in bodily injury to oneself or others.

The foregoing is intended to provide Roux employees with a general awareness of the hazards involved with Site work. A more detailed review of the potential hazards associated with each specific activity planned for the Site (or on-going activity, as the case may be) is provided in the activity-specific Job Safety Analysis (JSA) forms in **Appendix A**. As can be seen in the JSA forms, the hazards are identified by category per the above, and specific measures designed to mitigate/manage those hazards are also identified. In preparing the JSA forms, all categories of hazards were considered, and all anticipated potential hazards were identified to the extent possible based on the experience of the personnel preparing and reviewing the JSA forms. However, there is always the possibility for an unanticipated hazard to arise, potentially as condition change over the course of the workday. Roux personnel must maintain a continual awareness of potential hazards in the work zone, regardless of whether the hazard is identified in the JSA form. Particular attention should be paid to hazards associated with exposure to hazardous substances (see **Table 1** for a listing of the hazardous substances most likely to be encountered in environmental media at the Site) and to Site personnel being located "in the line of fire" with respect to moving equipment, pinch points, and latent energy (e.g., being located or having body parts located within the swing radius of an excavator, between two sections of pipe being connected, below a piece of suspended equipment, or adjacent to a compressed air line).

5.1 Hazard Communication and Overall Site Information Program

The information in the JSAs and SDSs is made available to all employees and subcontractors who could be affected by it prior to the time they begin their work activities.

Modifications to JSAs are communicated during routine pre-work briefings, and periodically updated as needed in the HASP. SDSs will be maintained by the SHSO/SS for new chemicals brought on-site as needed. Copies of SDSs can be found in **Appendix B**.

5.2 Noise

Noise is associated with the operation of heavy equipment, power tools, pumps, and generators. Noise is also a potential hazard when working near operating equipment such as excavators, drill rigs or pole drivers. High noise (i.e., < 85 dBA) operations may be evaluated by the SHSO utilizing a type 2 handheld sound level meter (SLM) operating on the "A"-weighted scale with slow response because this scale most closely resembles human response to noise and complies with OSHA 29 CFR 1910.95. Hearing protection is required in areas with noise exposure greater than 85 dBA. Double hearing protection (ear plugs and earmuffs) should be donned in areas where the noise exposure is more than 95 dBA. Noise exposure will be controlled by hearing protection as described above or by maintaining set-backs from high-noise equipment, as warranted. Personnel handling heavy equipment and using power tools that produce noise levels exceeding those described levels above are required by OSHA 29 CFR 1910.95 to wear the appropriate Noise Reduction Rating (NRR) level of hearing protection. Appropriate hearing protection will be evaluated by the SHSO as necessary in consultation with the OHSM and CHSD.

5.3 Slip, Trip, and Fall Hazards

Slip, trip, and fall hazards may include, but are not limited to, general slip and trip hazards associated with uneven ground, possible debris, wet grass, and equipment. Prior to work, walking paths will be assessed for solid footings, any ground penetrations that may cause a tripping hazard will be appropriately marked, and other areas will be noted and discussed with the field team.

Personnel shall be aware of their surroundings and footings at all time, and all accommodations should be made for proper housekeeping and organized equipment placement at the Site, where possible, to help prevent any slip, trip, and fall-related incidents. All tools and materials should be appropriately stored when not in use and placed in appropriate storage containers.

5.4 Biological Hazards

Biological hazards that may potentially be present at a Site, include poisonous plants, insects (ticks, spiders, bees), animals (snakes, dogs), etc. Information on biological hazards can be found within Roux's Biological Hazard Awareness Management Program located within Roux's Corporate Health and Safety Manual. There is also potential for transmission and/or exposure to SARS-CoV-2, the virus that causes COVID-19. Prior to beginning work, on-Site protocols shall be established by the project team, including subcontractors, in accordance with federal, state, county, city, and/or other guidance, as applicable and consistent with Roux's COVID-19 Interim Health and Safety Guidance which can be found in **Appendix C**.

6. Emergency Response Plan

This emergency response plan details actions to be taken in the event of Site emergencies. The PM and SHSO is responsible for the implementation of emergency response procedures onsite. The SHSO/PM provides specific direction for emergency action based upon information available regarding the incident and response capabilities and initiates emergency procedures and notification of appropriate authorities. In the event of an emergency, Site personnel are evacuated and do not participate in emergency response activities, response is facilitated through external emergency services.

6.1 Emergency Response

The SHSO, after investigating the incident and relevant information, shall determine the level of response required for containment, rescue and medical care. Limited on-site emergency response activities could occur therefore the SHSO is responsible for notifying external emergency response agencies. The SHSO provides relevant information to the responding organizations, including, but not limited to, the hazards associated with the emergency incident, potential containment problems, and missing Site personnel.

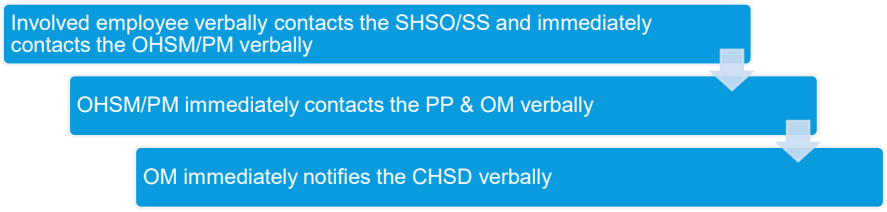
6.2 Emergency Alerting and Evacuation

If evacuation notice is given, Site workers leave the worksite, if possible, by way of the nearest exit. Appropriate primary and alternate evacuation routes and assembly areas have been identified and are shown on the Site Plan with Emergency Muster Area (**Figure 2**). The routes and assembly area will be determined by conditions at the time of the evacuation based on wind direction, the location of the hazard source, and other factors as determined by SHSO/PM.

Personnel exiting the Site gather at a designated assembly point. To determine that everyone has successfully exited the Site, personnel will be accounted for at the assembly point. If any worker cannot be accounted for, notification is given to the SHSO, PM, and any arriving response authorities so that appropriate action can be initiated. Subcontractors on this Site have coordinated their emergency response plans to ensure that these plans are compatible and potential emergencies are recognized, alarm systems are clearly understood, and evacuation routes are accessible to all personnel relying upon them.

6.3 Emergency Medical Treatment and First Aid

In the event of a work-related injury or illness, employees are required to follow the procedures outlined below. All work-place injury and illness situations require Roux's Project and Corporate Management Team to be notified when an injury/illness incident occurs, and communication with the contracted Occupational Health Care Management Provider, WorkCare, Inc. (Formally AllOne Health), is initiated, as necessary. The Injury/Illness Notification Flowchart is provided below and within Roux's Incident Investigation and Reporting program included within Roux's Corporate Health and Safety Manual.



If on-Site personnel require any medical treatment, the following steps will be taken:

a. Notify Roux's Project and Corporate Management Team for any work-related injury and/or illness occurrence, and communicate with the contracted Occupational Health Care Management Provider, WorkCare, immediately following the notifications provided above.

b. Based on discussions with the Project Team, Corporate Management and the WorkCare evaluation, if medical attention beyond onsite first aid is warranted, transport the injured / ill person (IP) to the Urgent Care Center, or notify the Fire Department or Ambulance Emergency service and request an ambulance or transport the victim to the hospital, and continue communications with Corporate Management Team. An Urgent Care/Hospital Route map with location to CityMD Long Island City Urgent Care/ Mount Sinai Queens Hospital is included as **Figure 3**.

c. Decontaminate to the extent possible prior to administration of first aid or movement to medical or emergency facilities.

d. First aid medical support will be provided by onsite personnel trained and certified in First Aid, Cardio Pulmonary Resuscitation (CPR), Automatic External Defibrillation (AED), and Blood-Borne Pathogens (BBP) Awareness, until relieved by emergency medical services (EMS).

e. The SHSO and PM will perform a Loss Investigation (LI) and the Project Team will complete the final Loss Report. If a Roux employee is involved in a vehicular incident, the employee must also complete the Acord Automobile Loss Notice.

7. Environmental Conditions and Response

7.1 Adverse Weather Conditions

In the event of adverse weather conditions, the SHSO or project principal will determine if work can continue without jeopardizing the health and safety of field workers. Some of the items related to adverse weather conditions to be considered prior to determining if work should continue include:

- Potential for heat stress and heat-related injuries;
- Potential for cold stress and cold-related injuries;
- Treacherous weather-related conditions. If wind speed is greater than 15 mph averaged over a 15-minute period or wind gusts over 25 mph, earthmoving operations will be ceased
- Limited visibility; and
- Electrical storm potential.

Site activities will be limited to daylight hours and acceptable weather conditions. Inclement working conditions may include heavy rain, fog, high winds, and lightning. The SHSO and/or PM shall observe daily weather reports and evacuate, if necessary, in case of inclement weather conditions.

7.2 Electrical Storm Guidelines

In the event that lightning and/or thunder are observed while working onsite, all onsite activities shall stop and personnel shall seek proper shelter (e.g., substantial building, enclosed vehicle, etc.). Work shall not resume until the threat of lighting has subsided and no lightning or thunder has been observed for 30 minutes. If the possibility of lightning is forecast for the day, advise the onsite personnel on the risks and proper procedure at the pre-work safety briefing. Continuously monitor for changing weather conditions and allow enough time to properly stop work if lightning is forecast.

7.3 Environmental Stressors, Heat Stress, Heat Exhaustion, and Heat Stroke

It is the employer's responsibility to monitor weather forecasts and ambient air temperatures, both prior to the work shift and during the shift. The National Oceanic and Atmospheric Administration records average minimum/maximum temperatures of 31-84 degrees Fahrenheit during the year in Queens, New York.

To prevent potential heat illness, the following strategies will be implemented:

- Adjusting personnel work/rest intervals;
- Monitoring for symptoms of heat illness;
- Providing shaded rest areas;
- Providing cool potable water so that each employee has access to at least one quart per hour for the entire shift, free of charge;
- Allowing for employees to acclimatize to the weather conditions and work demands;
- Observe workers during a heat wave (i.e., when the temperature is at least 80°F, and 10 degrees hotter than the average temperature of the five preceding days); and

- Implementing high heat procedures when the temperature reaches 95°F.

Roux's Heat Illness Prevention Plan is implemented when the ambient temperatures exceed 80°F. Roux's Heat Illness Prevention Program can be found within **Appendix D**. Additional information regarding heat illnesses is provided below. This can include, but is not limited to, access to shade that is sufficient in size to fit all workers who are on break; a car with air conditioning is acceptable, too. Preventative cool-down breaks shall be allowed at any time, and anyone taking such a break will be monitored for heat illness symptoms and not required to return to work until all symptoms (if present) of heat illness have disappeared. If necessary, first aid will be offered, but if symptoms are severe, emergency response procedures will be implemented per Section 6.3. Anyone who has shown symptoms of severe heat illness will not be sent home without being offered first aid or medical treatment.

High heat procedures must be implemented when temperatures reach 95°F. These procedures include:

- Ensuring that effective communication by voice, observation, or electronic means is maintained so that employees at the work site can contact a supervisor when necessary. An electronic device, such as a cell phone or text messaging device, may be used for this purpose only if the reception in the area is reliable.
- Observing employees for alertness and signs or symptoms of heat illness. The employer shall ensure effective employee observation/monitoring by implementing one or more of the following:
    - Supervisor or designee observation of 20 or fewer employees;
    - Mandatory buddy system; and
    - Regular communication with sole employee such as by radio or cellular phone, or other effective means of observation.
- Designating one or more employees on each worksite as authorized to call for emergency medical services and allowing other employees to call for emergency services when no designated employee is available.
- Encouraging employees throughout the work shift to drink plenty of water.
- A review of the high heat procedures during the daily tailgate meeting and remind employees of their right to take a cool-down rest when necessary.

7.3.1 Heat Stress

Heat stress is the body's response to excessive heat and can be a significant potential hazard. The risk of heat stress can be increased with heavy physical activity and/or the use of personal protective equipment in hot, humid weather environments. There are also personal risk factors that can contribute to the risk of suffering from heat stress, such as obesity, water intake, alcohol and caffeine consumption, pregnancy, age, medication, etc. Heat illness includes heat cramps, heat exhaustion, heat syncope, and heat stroke.

7.3.2 Heat Cramps

Heat cramps may be brought on by prolonged exposure to heat. As an individual sweats, water and salts are lost by the body resulting in painful muscle cramps, typically in the legs.

First aid treatment includes, but is not limited to, shade, rest, and fluid replacement. Typically, the individual should recover within one-half hour while being monitored constantly. If the individual has not improved substantially within 30 minutes and the body temperature has not decreased, the individual should be transported to a hospital for medical attention.

Per Roux's Heat Illness Prevention Plan, employees shall have access to potable drinking water that is fresh, pure, suitably cool, free of charge and in sufficient quantities. Access to shade shall be present when temperatures exceed 80 degrees Fahrenheit and shall be available when temperatures do not exceed 80 degrees Fahrenheit.

7.3.3 Heat Exhaustion

Heat exhaustion may occur in an individual who has been exposed to excessive heat while working or exercising. The circulatory system of the individual fails as blood collects near the skin to rid the body of excess heat through transference. The signs and symptoms of heat exhaustion are as follows:

- Rapid and shallow breathing;
- Weak pulse;
- Cold and clammy skin with heavy perspiration;
- Skin appears pale;
- Fatigue and weakness;
- Dizziness; and
- Elevated body temperature.

First aid treatment includes, but is not limited to, cooling the victim, elevating the feet, and replacing fluids.

If the individual is not substantially improved within 30 minutes and the body temperature has not decreased, the individual should be transported to the hospital for medical attention.

7.3.4 Heat Stroke

Heat stroke occurs when an individual is exposed to excessive heat and stops sweating. This condition is classified as a MEDICAL EMERGENCY requiring immediate cooling of the victim and transport to a medical facility. The signs and symptoms of heat stroke are as follows:

- Dry, hot, red skin;
- Body temperature approaching or above 105^{o}F;
- Confusion, altered mental state, slurred speech;
- Seizures;
- Large (dilated) pupils; and
- Loss of consciousness – the individual may go into a coma.

First aid treatment requires immediate cooling and transportation to a medical facility. Heat stress is a significant hazard if any type of protective equipment (semi-permeable or impermeable) that prevents evaporative cooling when worn in hot weather environments.

7.4 Cold Stress

Cold stress is a danger at low temperatures and when the wind-chill factor is low. Prevention of cold-related illnesses is a function of whole-body protection. Adequate insulating clothing must be used when the air temperature is below 60°F. A work/rest regimen will be initiated when ambient temperatures and protective

clothing cause a stressful situation. In addition, reduced work periods followed by rest in a warm area may be necessary in extreme conditions. The signs and symptoms of cold stress include the following:

- Severe shivering;
- Abnormal behavior;
- Slowing;
- Weakness;
- Stumbling or repeated falling;
- Inability to walk;
- Collapse; and/or
- Unconsciousness.

First aid requires removing the victim from the cold environment and seeking medical attention immediately. Also, prevent further body heat loss by covering the victim lightly with blankets. Do not cover the victim's face. If the victim is still conscious, administer hot drinks and encourage activity such as walking, wrapped in a blanket.

8. Safety Procedures

This section of the HASP presents the specific safety procedures to be implemented during Roux's activities at the Site in order to protect the health and safety of various on-site personnel. Minimum OSHA-mandated procedures are presented first, followed by client- and Site-specific procedures. Lastly, activity-specific procedures are discussed. These Site and activity-specific procedures supplement the general safety procedures included in Roux's Corporate Health and Safety Manual, which also must be followed in their entirely.

8.1 Training

At a minimum, Site personnel who will perform work in areas where there exists the potential for toxic exposure will be health and safety-trained prior to performing work onsite per OSHA 29 CFR 1910.120(e) and 29 CFR 1926.65(e). More specifically, all Roux, subcontractor, and other personnel engaged in sampling and remedial activities at the Site and who are exposed or potentially exposed to hazardous substances, health hazards, or safety hazards must have received at a minimum the 40 hour initial HAZWOPER training consistent with the requirements of 29CFR 1910.120(e)(3)(i) training and a minimum of 3 days' actual field experience under the direct supervision of a trained experienced supervisor, plus 8 hours of refresher training on an annual basis. Depending on tasks performed, less training may be permitted. Evidence of such training must be maintained at the Site at all times. Furthermore, all on-Site management and supervisory personnel directly responsible for or who supervise the employees engaged in Site remedial operations, must have received an additional 8 hours of specialized training at the time of job assignment on topics including, but not limited to, the employer's safety and health program and the associated employee training program, personal protective equipment program, spill containment program, and health hazard monitoring procedure and techniques, plus 8 hours of refresher training on an annual basis. Additionally, all workers who will be required to don a respirator will be properly trained on their employer's Respiratory Protection Program, which also includes being medically cleared to wear a respirator and passed a fit test, at least initially prior to use, and then annually thereafter in accordance with 29 CFR 1910.134, Respiratory Protection.

Roux personnel training records are maintained in a corporate database with records available upon request from either the OHSM/SHSO/CHSD or Human Resources Department.

8.2 Site-Specific Safety Briefings for Visitors

A site-specific briefing is provided to all site visitors who enter this site beyond the site entry point. For visitors, the site-specific briefing provides information about site hazards, the site lay-out including work zones and places of refuge, the emergency alarm system and emergency evacuation procedures, and other pertinent safety and health requirements as appropriate.

8.3 HASP Information and Site-Specific Briefings for Workers

Site personnel review this HASP and are provided a Site-specific tailgate briefing prior to the commencement of work to ensure employees are familiar with this HASP and the information and requirements it contains, as well as the relevant JSAs included in **Appendix A**. Additional briefings are provided as necessary to notify employees of any changes to this HASP as a result of information gathered during on-going Site characterization and analysis of changing conditions. Conditions for which we schedule additional briefings

include, but are not limited to: changes in site conditions, changes in the work schedule/plan, newly discovered hazards, and incidents occurring during Site work.

8.4 Medical Surveillance

The medical surveillance section of the Health and Safety Plan describes how worker health status is monitored at this site. Medical surveillance is used when there is the potential for worker exposure to hazardous substance at levels above OSHA Permissible Exposure Limits (PEL) or other published limits. The purpose of a medical surveillance program is to medically monitor worker health to ensure that personnel are not adversely affected by site hazards. The provisions for medical surveillance at this site are based on the site characterization and job hazard analysis found in Section 4 of this HASP and are consistent with OSHA requirements in 29 CFR 1910.120(f) as applicable.

8.4.1 Site Medical Surveillance Program

Medical surveillance requirements are based on a worker's potential for exposure as determined by the site characterization and job hazard analysis documented in Section 4 and JSAs within **Appendix A** of this HASP and in compliance with the requirements of 29 CFR 1910.120(f)(2). Based on site information and use of direct reading instruments, limited use of respirators (less than 30 days per year), and the absence of an employee-staffed HAZMAT team, a limited medical surveillance program is required and implemented at this site. The medical surveillance program provides that:

1. Workers assigned to tasks requiring the use of respirators receive medical examinations in accordance with 29 CFR 1910.134(e) to ensure they are physically capable to perform the work and use the equipment, and
2. If a worker is injured, becomes ill, or develops signs or symptoms of possible over-exposure to hazardous substance or health hazards, medical examinations are provided to that worker as soon as possible after the occurrence and as required by the attending physician.
3. These medical examinations and procedures are performed by or under the supervision of a licensed physician and are provided to workers free of cost, without loss of pay, and at a reasonable time and place. In addition, the need to implement a more comprehensive medical surveillance program will be re-evaluated after any apparent over-exposure.

8.4.2 Medical Recordkeeping Procedures

Medical recordkeeping procedures are consistent with the requirements of 29 CFR 1910.1020 and are described in the company's overall safety and health program. A copy of that program is available at our Islandia, New York office.

The following items are maintained in worker medical records:

- Respirator fit test and selection;
- Physician's medical opinion of fitness for duty (pre-placement, periodic, termination);
- Physician's medical opinion of fitness for respirator protection (pre-placement, periodic); and
- Exposure monitoring results.

8.4.3 Program Review

The medical program is reviewed to ensure its effectiveness. The Corporate Health and Safety Manager in coordination with the Human Resources Director is responsible for this review. At minimum, this review consists of:

- Review of accident and injury records and medical records to determine whether the causes of accidents and illness were promptly investigated and whether corrective measures were taken wherever possible;
- Evaluation of the appropriateness of required medical tests based on site exposures; and
- Review of emergency treatment procedures and emergency contacts list to ensure they were site-specific, effective, and current.

8.5 Personnel Protection

Site safety and health hazards are eliminated or reduced to the greatest extent possible through engineering controls and work practices. Where hazards are still present, a combination of engineering controls, work practices and PPE are used to protect employees. Appropriate personal protective equipment (PPE) shall be worn by Site personnel when there is a potential exposure to chemical, biological or physical hazards (e.g., falling objects, flying particles, sharp edges, electricity, and noise), as determined by the SHSO. The level of personal protection, type and kind of equipment selected will depend on the hazardous conditions and in some cases cost, availability, compatibility with other equipment, and performance. An accurate assessment of all these factors will be made before work can be safely executed.

Roux maintains a comprehensive written PPE program that addresses proper PPE selection, use, maintenance, storage, fit and inspection. Roux's PPE program can be found within **Appendix E**. PPE to be used at the Site will meet the appropriate American National Standards Institute (ANSI) standards and the following OSHA (General/Construction Industry) standards for minimum PPE requirements.

The minimum level of PPE for entry onto the Site is Level D. The following equipment shall be worn:

- Work uniform (long pants, sleeved shirt);
- Hard hat;
- Steel or composite toe work boots (must comply with American Society for Testing and Materials [ASTM]) F 2412-05, Standard Test Methods for Foot Protection and ASTM F 2413-05, Standard Specification for Performance Requirements for Foot Protection);
- Safety Glasses (must comply with one of the following ANSI/ISEA Z87.1-2010, ANSI Z87.1-2003, ANSI Z87.1-2003);
- Boot Covers (as needed);
- Hearing protection (as needed);
- High visibility clothing (shirt/vest); and
- Hand protection (e.g., minimum cut resistance meeting ANSI 105-2000 Level 2).

Note that jewelry shall be removed or appropriately secured to prevent it from becoming caught in rotating equipment or unexpectedly snagged on a fixed object (e.g., wrist watches, bracelets, rings, chains and necklaces, open earrings). Do not wear loose clothing and all shoulder-length hair should be tied back.

Site specific PPE ensembles and materials are identified within task specific JSAs located within **Appendix A**, and any upgrades or downgrades of the level of protection (i.e., not specified in the JSA) must be approved by the PP and immediately communicated to all Roux personnel and subcontractors as applicable. PPE is used in accordance with manufacturer's recommendations.

8.5.1 Hearing Conservation

Hearing protection is made available when noise exposures equal or exceed an 8-hour time-weighted average sound level of 85 dBA. Hearing protection is required when the 8-hour time weighted average sound level $\geq$ 85 dBA, or when noise levels exceed 140 dBA at any point or exceeds 115 dBA for at least 15 minutes. Where noise exposure meets or exceeds this level, noise is listed as a physical hazard in the JSA for the tasks/operation, and hearing protection is included as one of the control measures (PPE).

8.6 Monitoring

An air monitoring program is important to the safety of on- and off-Site personnel, and the surrounding area. A preliminary survey, to establish background conditions in the immediate sampling area, may be made prior to the initiation of Site work including, but not limited to, monitoring wind direction (e.g., wind socks) and approximate temperature during all invasive Site activities. This survey will be conducted with the appropriate pre-calibrated air monitoring instrument(s), as warranted by the field activity. Once this survey has been complete, any changes in the type of PPE will be determined and relayed to those working on-Site.

Work zone air monitoring will be performed to verify that the proper level of PPE is used, and to determine if increased protection or work stoppage is required. The following equipment shall be used to monitor conditions:

- A Photoionization Detector (PID) with a lamp energy of 10.6 eV will be used to provide direct readings of organic vapor concentrations during intrusive activities to determine that personnel protection is adequate. Concentrations shall be recorded during intrusive activities with the potential to encounter contaminant vapors.
- A pre-calibrated multi-gas meter with combustible Lower Explosive Limit (LEL), oxygen (O2), carbon monoxide (CO), and hydrogen sulfide (H2S) sensors shall be used to monitor the potential for oxygen-deficient atmospheres, explosive concentrations of organic vapors, and toxic gases during intrusive operations. The calibration for this device will be performed using a known gas composition calibration mixture.

Personal exposure monitoring utilizing activated charcoal tubes may be considered based on whether or not the area sample results are at or above half of the PEL. The decision to perform the monitoring will be made by, and under the control of, the CHSD.

Below are monitoring action levels for Site-specific chemicals of concern. In the event PID readings above the thresholds identified below are sustained for 5 minutes in the breathing zone, worker protection will require upgrading following notification to the OHSM and applicable parties.

8.6.1 Action Levels for Air Monitoring

PPE can remain at Level D if breathing zone VOC concentrations are less than 5 ppm and benzene is non-detect. Personnel are required to evacuate the Site when breathing zone VOC readings exceed 25 ppm.

The following tables include summaries of the air monitoring, work practices, and action levels for the expected contaminants. The action levels to initiate testing with colorimetric tubes for airborne volatiles is 1 ppm (PID reading) and is based on the Permissible Exposure Limit (PEL) for benzene (1 ppm). The colorimetric tubes are used to confirm the presence or absence of specific constituents, and they do not provide a measured concentration.

PPE can remain at Level D if breathing zone VOC concentrations are less than 5 ppm. Personnel are required to evacuate the Site when breathing zone VOC readings exceed 25 ppm.

The following tables include summaries of the air monitoring, work practices, and action levels for the expected contaminants.

Air Monitoring Summary and Action Levels Organic Vapors	
PID Reading in Breathing Zone (ppm)	**Action**
0-1 ppm above background	Continue monitoring
>1-5 ppm sustained 60 seconds	Continue monitoring, if applicable initiate additional collection of benzene/vinyl chloride/formaldehyde using colorimetric tubes.
<5 ppm and no presence of benzene/vinyl chloride/formaldehyde	Continue Monitoring, ventilate space
≥ 5 ppm - ≤ 25 ppm and no presence of benzene/vinyl chloride/formaldehyde	Ventilate space until PID reads < 5 ppm. If < 5 ppm cannot be achieved, upgrade to Level C[1].
≥ 25 ppm	Ventilate space and evacuate area. Consult with CHSD.

Background concentrations should be established at the beginning of each work day. It may be necessary to re-establish background concentrations and ambient conditions vary through the day.

1 Measured air concentrations of known organic vapors will be reduced by the respirator to one half of the PEL or lower, and the individual and combined compound concentrations shall be within the service limit of the respirator cartridge.

Air Monitoring Summary and Action Levels Oxygen	
O_2 Reading in Breathing Zone (%)[1]	**Action**
20.9% O_2	Oxygen level normal
< 19.5% O_2	Oxygen deficient Interrupt task/Evacuate area
>23.5% O_2	Oxygen enriched Interrupt task/Evacuate area

1. Action levels based on USEPA Standard Operating Safety Guides; Table 5-1

Air Monitoring Summary and Action Levels Carbon Monoxide	
CO Reading in Breathing Zone (ppm)[1]	**Action**
<12.5 ppm	Inspect exhaust system for leaks or other sources of CO. Monitor initially and every 15 minutes during use of CO-generating equipment.
12.5-25 ppm	Ventilate area. Monitor continuously and record measurements. Contact PM.
>25 ppm	Cease Field Operations. Ventilate area.

1. Based upon the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV) of 25 ppm as an 8-hour time weighted average (TWA) and OSHA's Permissible Exposure Limit (PEL) of 50 ppm as an 8-hour TWA concentration.

Air Monitoring Summary and Action Levels Combustible Gases	
Lower Explosive Limit (LEL) Reading	**Action**
< 4% LEL	Site activities will continue with normal monitoring
4% – 20% LEL	Stop work until levels dissipate to <4% LEL
> 20% LEL	Potential explosion hazard. Halt all site activities, research source of release, aerate work area, suppress source.
Air Monitoring Summary and Action Levels Hydrogen Sulfide	
Hydrogen Sulfide (H_2S) Reading	**Action**
<10 ppm	Site activities will continue with normal monitoring
≥10 ppm	Stop work until levels dissipate to <10 ppm; use mechanical ventilation if possible. Consult with CHSD if unable to reduce concentrations below 10 ppm.

8.6.2 Air Monitoring Equipment and Calibration

A PID calibrated to an appropriate calibration mixture will be used to detect organic vapors in and around the work areas. Monitoring will be conducted in and around all work areas and at the workers breathing zone before activities commence to establish a background level, then at 15-minute intervals throughout the day. All equipment will be calibrated according to the manufacturer's recommendation. A calibration log will be maintained and will include the name of the person who performed the calibration, the date and time calibrated, and the instrument reading at the time of calibration. A manual bellows pump or equivalent with colorimetric tubes for specific compounds will be utilized to determine the course of action related to upgrading or downgrading the level of respiratory protection, as applicable.

If air monitoring data indicate safe levels of potentially harmful constituents at consistent intervals (5-minute intervals), then monitoring can be conducted less frequently (every 30 minutes). This determination will be made by the onsite SHSO. Monitoring data, including background readings and calibration records, will be documented. Work to be performed on-Site will conform to Roux's Standard Operating Procedures (SOPs). Conformance with these guidelines as well as the guidelines described in this HASP will aid in mitigating the physical and chemical hazards mentioned throughout this HASP.

8.7 Tailgate Safety Meetings

A designated Site worker will provide daily safety briefings (e.g., tailgate meetings) including, but not limited to, the following scenarios:

- When new operations are to be conducted;
- Whenever changes in work practices must be implemented; and
- When new conditions are identified and/or information becomes available.

Daily safety briefings shall be recorded on the Roux Daily Tailgate Health and Safety Meeting Log/Daily Site Safety Checklist, and all completed forms will become a part of the project file.

8.8 Spill Containment

Spill containment equipment and procedures should, at a minimum, meet the requirements of the facility's Spill Prevention, Control and Countermeasure Plan, if applicable. Otherwise, spill containment equipment and procedures must be considered depending on the task, including, but not limited to, chemical/product transfer points and handling.

8.8.1 Initial Spill Notification and Response

Any worker who discovers a hazardous substance spill will immediately notify the SHSO. The worker will, to his/her best ability, report the hazardous substance involved, the location of the spill, the estimated quantity of material spilled, the direction/flow of the spill material, related fire/explosion incidents, and any associated injuries without compromising their own safety.

8.8.2 Spill Evaluation and Response

The SHSO is responsible for evaluating spills and determining the appropriate response. When this evaluation is being made, the spill area will be isolated and demarcated to the extent possible. If necessary to protect nearby community members, notification of the appropriate authorities is made by the PM as appropriate. On-Site response is limited to small spills (e.g., <10 gallons); large spills require external emergency responders who will be contacted by the SHSO.

8.9 Decontamination

The decontamination section of the HASP describes how personnel and equipment are decontaminated when they leave the Exclusion Zone. This section also describes how residual waste from decontamination processes is disposed. The site decontamination procedures are designed to achieve an orderly, controlled removal or neutralization of contaminants that may accumulate on personnel or equipment. These procedures minimize worker contact with contaminants and protect against the transfer of contaminants to clean areas of the site and off-site. They also extend the useful life of PPE by reducing the amount of time

that contaminants contact and can permeate PPE surfaces. Decontamination is facilitated within the CRZ at this site, if applicable.

8.9.1 Decontamination Procedures for Personnel and PPE

The following are general decontamination procedures established and implemented at this site.

1. Decontamination is required for all workers exiting a contaminated area. Personnel may re-enter the SZ only after undergoing the decontamination procedures described below in the next section.
2. Protective clothing is decontaminated, cleaned, laundered, maintained and/or replaced as needed to ensure its effectiveness.
3. PPE used at this site that requires maintenance or parts replacement is decontaminated prior to repairs, or
4. PPE used at this site is decontaminated or prepared for disposal on the premises. Personnel who handle contaminated equipment have been trained in the proper means to do so to avoid hazardous exposure.
5. This site uses an off-site laundry for decontamination of PPE. The site has informed that facility of the hazards associated with contaminated PPE from this site.
6. The site requires and trains workers that if their permeable clothing is splashed or becomes wetted with a hazardous substance, they will immediately exit the work zone, perform applicable decontamination procedures, shower, and change into uncontaminated clothing.
7. Procedures for disposal of decontamination waste meet applicable local, State, and Federal regulations.

8.9.2 Decontamination Procedures for Equipment

All tools, equipment, and machinery from the EZ or CRZ are decontaminated in the CRZ prior to removal to the SZ. Equipment decontamination procedures are designed to minimize the potential for hazardous skin or inhalation exposure and to avoid cross-contamination and chemical incompatibilities.

General Equipment Decontamination Procedures:

1. Decontamination is required for all equipment exiting a contaminated area. Equipment may re-enter the SZ only after undergoing the equipment decontamination procedures.
2. Vehicles that travel regularly between the contaminated and clean areas of the site are carefully decontaminated each time they exit the EZ and the effectiveness of that decontamination is monitored to reduce the likelihood that contamination will be spread to other parts of the site.
3. Particular attention is given to decontaminating tires, scoops, and other parts of heavy equipment that are directly exposed to contaminants and contaminated soil.
4. Procedures for disposal of decontamination waste shall meet applicable local, State, and Federal regulations.

The following items may be used to decontaminate equipment:

- Fresh water rinse;
- Non-phosphorus detergent wash;
- Acetone rinse;
- Distilled water rinse; and

- A steam cleaner or pressure washer (heavy equipment only).

8.9.3 Monitoring the Effectiveness of Decontamination Procedures

Visual examination and sampling are used to evaluate the effectiveness of decontamination procedures. Visual examination is used to ensure that procedures are implemented as described and that they appear to control the spread of contaminants under changing site conditions. Visual examination is also used to inspect for signs of residual contamination or for contaminant permeation of PPE.

Personnel who work in contaminated areas of the site, either the Contamination Reduction Zone (CRZ) or the Exclusion Zone, are trained in the principles and practices of decontamination described in this section of the HASP and in related SOPs. If site procedures are changed as a result of inspection and monitoring, all affected employees are notified of these changes.

8.10 Confined Space Entry

Confined Space Entry is not anticipated to be performed at the Site.

If required, the following is a list of the safety requirements for confined space entry at the Site:

- **ROUX PERSONNEL ARE NOT AUTHORIZED TO ENTER AN OSHA PERMIT REQUIRED CONFINED SPACE;**
- Currently the scope of work **DOES NOT** require personnel to enter permitted confined space for this project; and
- Any changes to the field activities that may necessitate confined space entry will be reported to the Project Principal and OHSM.

Confined space is defined as any space, depression, or enclosure that:

- Has limited opening for entry and egress;
- Is large enough for and employee to enter and perform assigned work; and
- Is not intended for continuous occupancy.

A permit required confined space is one that meets the definition of a confined space and has one or more of the following characteristics:

- May contain or produce life-threatening atmospheres due to oxygen deficiency the presence of toxic, flammable, or corrosive contaminants;
- Contains a material that has the potential for engulfment;
- Has an internal configuration that may cause an entrant to be trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to a smaller cross-section; and
- Contains any other serious safety or health hazards.

Although Roux personnel will not perform confined space entry, it is expected that subcontractors performing cleaning and mitigation and/or remedial measures activities may be required to enter structures that are considered to be a permit required confined space. Permitting of the confined space as well as hazard mitigation for entry will be completed by the subcontractor in accordance with 29 CFR 1910.146 or 1926.1201-1213 and/or applicable local/client requirements.

8.11 Client and Site-Specific

In addition to the OSHA-specific procedures discussed above, there may be client and site-specific safety procedures that must be adhered to during the performance of remedial activities at the Site.

8.12 Unusual or Significant Risks

Field activities that appear to have unusual or significant risks that cannot be adequately managed with existing risk tools such as LPS, HASPs, traffic safety plans, work permits, design and O&M practices, equipment HAZOPS or other safety tools must be referred to the CHSD to help with the assessment and management of the associated potential safety risks. Examples include the use of explosives for demolition, use of firearms to control wildlife, rappelling, demolition over water, diving, etc.

8.13 Activity-Specific Hazards

In addition to the general hazards discussed above, there are activity-specific hazards associated with each work activity planned for the Site. An activity-specific JSA has been completed for each of the activities planned for the Site. JSAs are provided in **Appendix A**. In the event that new work activities or tasks are planned, JSAs will be developed and implemented prior to performing the new activities. In the absence of a JSA, the personnel performing work must prepare a field JSA and receive clearance from a designated competent safety official prior to performing any task with significant risk. In emergency situations where time is critical SPSAs will be utilized to identify the task, associated hazards and mitigative actions to take. For lower risk activities (as deemed by the discretion of a Competent Person) where a JSA is determined to not be needed, the individual(s) conducting the activities must perform SPSAs prior to and during the work.

8.13.1 Electrical and Other Utility Assessment and Accommodations

Roux shall perform a site walk to identify any potential overhead electrical or utility lines. All applicable guidelines will be followed in the vicinity of overhead power and utility lines (see Section 8.13.3 below).

A One-Call notification will be made prior to any subsurface work to identify any buried utility lines to identify potential hazards. A Ground Penetrating Radar survey to determine underground utility location(s) is not necessary to be performed.

Roux has also reviewed all available Site maps showing buried utility lines to identify potential hazards, which revealed that no underground hazards are known to exist in the vicinity of the areas of the Site pertinent to this HASP.

8.13.2 Subsurface Work

Subsurface work activities will require adherence to Roux's Corporate Subsurface Utility Clearance Management program found within **Appendix F**.

8.13.2.1 Excavations and Trenching

Trenching and excavation work activities carried out by Roux and their subcontractors shall comply with applicable OSHA standards (i.e., 29 CFR 1926.650-652). Regional Notification Centers (i.e., Underground Services Alert) shall be notified at least two working days prior to the start of any digging or excavation work per state requirements (i.e., 811-One Call). Personnel responsible for excavation activities will be trained in

their job responsibilities. Additionally, for trenches 4 feet or deeper, where employees will enter, the trench needs to have a stairway, ladder or other safe means of egress, and located so that employees don't have to travel farther than 25 feet horizontally. Where employees will enter trenches greater than 5 feet deep, the trench must have some type of protective system or sloped sidewalls appropriately to prevent cave-ins.

The SHSO or other responsible Roux personnel will be present on-Site during all Roux contracted excavation and backfill operations and will supplement health and safety monitoring conducted by Subcontractor air quality screening to ensure that appropriate levels of protection and safety procedures are utilized. The proximity of chemical, water, sewer, and electrical lines will be identified by Roux and/or their subcontractor before any subsurface activity or sampling is attempted. Prior to any excavation activities, trees, shrubbery, and other objects that can potentially pose as a hazard during excavation should be supported or removed from the excavation area. The following safe work practices will be implemented during this task.

- The proximity of chemical, water, sewer, and electrical lines will be identified by a facility representative prior to beginning any subsurface activity;
- At the start of every day, a competent person will inspect excavations to evaluate if the area is stable and safe to enter. Inspections will be conducted as needed throughout the excavation operations. If deemed necessary, a competent person may also conduct inspections after rainfall or any other event that can potentially affect the integrity of the excavation. Employees will not enter excavations where water has accumulated until protective measures have been implemented.
- Prior to entering excavations greater than 4 feet in depth, air monitoring for oxygen and hazardous atmospheres must be conducted to assure atmospheric conditions are within normal levels described in Section 8.6. Continuous air monitoring with a standard multi-gas detector (O^2, LEL%, CO, H^2S) shall be used during the course of work within an excavation; if action limits are reached workers shall safely exit the excavation. Upgrades to worker protection should be evaluated with the SHSO and PP in consultation with the CHSD. Emergency rescue equipment, such as breathing apparatuses and safety harnesses connected to an extraction device, will be readily available in the event of hazardous atmospheric conditions;
- While earthmoving, stay out of the excavator's delineated heavy equipment exclusion zone and away from the excavation sides where there is potential for cave in (within excavations that are 6 feet or more in depth, a delineated perimeter 6 feet away from the excavated edge is required);
- During loading and unloading operations, stand away from haul trucks and other vehicles to avoid contact with any falling loads; and
- Traffic cones, caution tape, or other barriers will be set up around the perimeter of the excavation when employees are working along the excavation edge and for any excavation that will be left open overnight or unattended for more than two days.

Maximum Allowable Slopes

Soil or Rock Type	Maximum Allowable Slopes (H:V)[1] for Excavations Less Than 20 Feet Deep[3]
Stable Rock	Vertical (90°)
Type A[2]	3/4 : 1 (53°)
Type B	1 : 1 (45°)
Type C	1 1/2 : 1 (34°)

29 CFR 1926 Subpart P Appendix B Sloping and Benching Table B-1

Notes:

[1] Numbers shown in parentheses next to maximum allowable slopes are angles expressed in degrees from the horizontal. Angles have been rounded off.

[2] A short-term maximum allowable slope of 1/2H : 1V (63°) is allowed in excavations in Type A soil that are 12 feet (3.67 meters) or less in depth. Short-term maximum allowable slopes for excavations greater than 12 feet (3.67 meters) in depth shall be 3/4H : 1V (53°).

[3] Sloping or benching for excavations greater than 20 feet deep shall be designed and stamped by a registered professional engineer.

Proper stockpiling (i.e., 2 feet minimum distance from the excavation edge), containment, transport, storage, and disposal practices will be utilized and is dependent upon the potential type and amount of waste generated during operations. The location of safety equipment and evacuation procedures will be established prior to initiation of operations according to this HASP.

8.13.3 Heavy Equipment

Use of heavy equipment at the Site will require adherence to Roux's Corporate Heavy Equipment Exclusion Zone Management Program found within **Appendix G**. Additionally, operation of the drill rig/other heavy equipment will maintain clearances from overhead power lines in accordance with 29 CFR 1926.1408 Table A Minimum Clearance Distances provided below.

Minimum Required Clearances for Energized Overhead Power Lines

Nominal System Voltage of Power Line (K V)	Minimum Required Clearance (feet)
0-50	10
51-100	12
101-200	15
201-300	20
301-500	25
501-750	35
751-1000	45

1 kilovolt (KV) = 1,000 volts

8.14 Traffic Control

If Site operations encroach upon public streets or highways and a hazard exists to Site personnel because of traffic conditions, a traffic control plan will be implemented in accordance with the United States Department of Transportation's (DOT's) "Manual on Uniform Traffic Control Devices."

8.15 Sanitation

Sanitation facilities will be provided in accordance with the sanitation standards (29 CFR 1910.141, 29 CFR 1926.51 and 29 CFR 1928.110). Sanitation facilities will be maintained and kept in good conditions at all times.

9. Field Team Review

Each person performing work at or visiting this site shall sign this section after site-specific training is completed and before being permitted to access the CRZ or Exclusion Zone.

I have read and understand this Site-Specific Health and Safety Plan. I will comply with the provision contained therein.

Site/Project: HP – 27-10 49th Avenue, Long Island City, NY

Name & Company	Signature	Date

10. Approvals

By their signature, the undersigned certify that this HASP is approved and will be utilized at the 47-25 34th Street Site.

TBD – Site Health and Safety Officer	Date
Nevin Pahlad, CSP, CHMM – Office Health and Safety Manager	Date
David Kaiser – Project Manager	Date
Chris Proce – Project Principal	Date

TABLE

Toxicological Properties of Hazardous Substances Present at the Site

Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at the Site.

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
ORGANOCHLORINE PESTICIDES (OCP)									
DDT	50-29-3	TWA 1 mg/m3	TWA 0.5 mg/m3	TWA 1 mg/m3	500 mg/m3	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin; paresthesia tongue, lips, face; tremor; anxiety, dizziness, confusion, malaise (vague feeling of discomfort), headache, lassitude (weakness, exhaustion); convulsions; paresis hands; vomiting; [potential occupational carcinogen]	Eyes, skin, central nervous system, kidneys, liver, peripheral nervous system	White, odorless and tasteless, very stable, water-insoluble, synthetic BP: 260°F Fl.Pt. = 162-171°F LEL: NA UEL: NA
Aldrin	309-00-2	TWA 0.1 mg/m3	TWA 0.25 mg/m3	TWA 0.25 mg/m3	25 mg/m3	Inhalation, ingestion, skin and/or eye contact	headache, dizziness; nausea, vomiting, malaise (vague feeling of discomfort); myoclonic jerks of limbs; clonic, tonic convulsions; coma; hematuria (blood in the urine), azotemia; [potential occupational carcinogen]	Developmemntal, Endocrine, Liver, Immune System, Nervous System,	Colorless to dark-brown crystalline solid with a mild chemical odor. BP: 293°F Fl.Pt. = 150°F LEL: NA UEL: NA
Lindane (gamma-BHC)	58-89-9	TWA 0.5 mg/m3	TWA 0.5 mg/m3	TWA 0.5 mg/m3	50 mg/m3	Inhalation, ingestion, skin and/or eye contact	irritation eyes, skin, nose, throat; headache; nausea; clonic convulsions; resp difficulty; cyanosis; aplastic anemia; muscle spasm; In Animals: liver, kidney damage	Eyes, skin, respiratory system, central nervous system, blood, liver, kidneys	White to yellow, crystalline powder with a slight, musty odor. BP: 614°F Fl.Pt. = 150°F LEL: NA UEL: NA
Dieldrin	860-57-1□	TWA 0.1 mg/m3	TWA 0.25 mg/m3	TWA 0.25 mg/m3	25 mg/m3	Inhalation, ingestion, skin and/or eye contact	headache, dizziness; nausea, vomiting, malaise (vague feeling of discomfort), sweating; myoclonic limb jerks; clonic, tonic convulsions; coma; ; In Animals: liver, kidney damage [potential occupational carcinogen]	Developmemntal, Endocrine, Liver, Immune System, Nervous System,	Colorless to light-tan crystals with a mild, chemical odor. BP: NA (Decomposes) Fl.Pt. = NA LEL: NA UEL: NA
VOLATILE ORGANIC COMPOUNDS (VOCs)									
1,1,1-Trichloroethane	71-55-6	TWA 350 ppm STEL 450 ppm	C 350 ppm (1900 mg/m^3) [15-minute]	TWA 350 ppm (1900 mg/m^3)	700 ppm	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin; headache, lassitude (weakness, exhaustion), central nervous system depression, poor equilibrium; dermatitis; cardiac arrhythmias; liver damage	Eyes, skin, central nervous system, cardiovascular system, liver	Colorless liquid with a mild, chloroform-like odor. BP: 165°F Fl.Pt. = NA LEL: 7.5% UEL: 12.5% Combustible Liquid, but burns with difficulty
1,1,2,2-Tetrachloroethane	79-34-5	TWA 1 ppm [skin]	Ca TWA 1 ppm (7 mg/m^3) [skin]	TWA 5 ppm (35 mg/m^3) [skin]	Ca [100 ppm]	Inhalation, skin absorption, ingestion, skin and/or eye contact	Nausea, vomiting, abdominal pain; tremor fingers; jaundice, hepatitis, liver tenderness; dermatitis; leukocytosis (increased blood leukocytes); kidney damage; [potential occupational carcinogen]	Skin, liver, kidneys, central nervous system, gastrointestinal tract	Colorless to pale-yellow liquid with a pungent, chloroform-like odor BP: 296°F Fl.Pt. = NA LEL: NA UEL: NA Noncombustible Liquid
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	TWA 1000 ppm STEL 1250 ppm	TWA 1000 ppm (7600 mg/m3) ST 1250 ppm (9500 mg/m3)	TWA 1000 ppm (7600 mg/m3)	2000 ppm	Inhalation, ingestion, skin and/or eye contact	Irritation skin, throat, drowsiness, dermatitis; central nervous system depression; In Animals: cardiac arrhythmias, narcosis	Skin, heart, central nervous system, cardiovascular system	Colorless to water-white liquid with an odor like carbon tetrachloride at high concentrations. [Note: A gas above 118°F.] BP: 118°F Fl.Pt. = NA LEL: NA UEL: NA
1,1,2-Trichloroethane	79-00-5	TWA 10 ppm [skin]	Ca TWA 10 ppm (45 mg/m3) [skin]	TWA 10 ppm (45 mg/m3) [skin]	Ca [100 ppm]	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, nose; central nervous system depression; liver, kidney damage; dermatitis; [potential occupational carcinogen]	Eyes, respiratory system, central nervous system, liver, kidneys	Colorless liquid with a sweet, chloroform-like odor BP: 237°F Fl.Pt. = NA LEL: 6% UEL: 15.5% Combustible Liquid, forms dense soot
1,1-Dichloroethane	75-34-3	TWA 100 ppm	TWA 100 ppm (400 mg/m^3)	TWA 100 ppm (400 mg/m^3)	3,000 ppm	Inhalation, ingestion, skin and/or eye contact	Irritation skin; central nervous system depression; liver, kidney, lung damage	Skin, liver, kidneys, lungs, central nervous system	Colorless, oily liquid with a chloroform-like odor. BP: 135°F Fl.Pt. = 2°F LEL: 5.4% UEL: 11.4% Class IB Flammable Liquid Fl.P. below 73°F and BP at or above 100°F.

Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at the Site.

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
1,1-Dichloroethene	75-35-4	TWA 5 ppm	Ca	None	Ca	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, throat; dizziness, headache, nausea, dyspnea (breathing difficulty); liver, kidney disturbance; pneumonitis; [potential occupational carcinogen]	Eyes, skin, respiratory system, central nervous system, liver, kidneys	Colorless liquid or gas (above 89°F) with a mild, sweet, chloroform-like odor BP: 89°F Fl.Pt. = -2°F LEL: 6.5% UEL: 15.5% Class IA Flammable Liquid: Fl.P. below 73°F and BP below 100°F
1,2,3-Trichlorobenzene	87-61-6	Cameo Chemicals Source https://cameochemicals.noaa.gov/chemical/10051	NA	NA	NA	Inhalation, skin absorption, ingestion, skin and/or eye contact	Inhalation may cause irritation of respiratory tract. Irritating to the eyes. May redden skin on contact. Ingestion may cause liver damage.	Skin, eyes, respiratory tract, liver	A white solid with a sharp chlorobenzene odor. Insoluble in water and denser than water. Hence sinks in water Fl.Pt. = 234.9°F
1,2,4-Trichlorobenzene	120-82-1	C 5 ppm	C 5 ppm (40 mg/m3)	None	N.D.	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation eyes, skin, mucous membrane; In Animals: liver, kidney damage; possible teratogenic effects	Eyes, skin, respiratory system, liver, reproductive system	Colorless liquid or crystalline solid (below 63°F) with an aromatic odor BP: 416°F Fl.Pt. = 222°F LEL (302°F): 2.5% UEL (302°F): 6.6% Class IIIB Combustible Liquid: Fl.P. at or above 200°F. Combustible Solid
1,2-Dibromo-3-chloropropane	96-12-8	NA	Ca	TWA 0.001 ppm	Ca	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat; drowsiness; nausea, vomiting; pulmonary edema; liver, kidney injury; sterility; [potential occupational carcinogen]	Eyes, skin, respiratory system, central nervous system, liver, kidneys, spleen, reproductive system, digestive system	Dense yellow or amber liquid with a pungent odor at high concentrations. [pesticide] [Note: A solid below 43°F.] BP: 384°F Fl.Pt. = (oc) 170°F LEL: NA UEL: NA Class IIIA Combustible Liquid: Fl.P. at or above 140°F and below 200°F.
1,2-Dibromoethane	106-93-4	None listed Skin	Ca TWA 0.045 ppm C 0.13 ppm [15-minute]	TWA 20 ppm C 30 ppm 50 ppm [5-minute maximum peak]	Ca [100 ppm]	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, respiratory system; dermatitis with vesiculation; liver, heart, spleen, kidney damage; reproductive effects; [potential occupational carcinogen]	Eyes, skin, respiratory system, liver, kidneys, reproductive system	Colorless liquid or solid (below 50°F) with a sweet odor. [fumigant] BP: 268°F Fl.Pt. = 50°F LEL: NA UEL: NA Noncombustible Liquid
1,2-Dichlorobenzene	95-50-1	TWA 25 ppm STEL 50 ppm	C 50 ppm (300 mg/m3)	C 50 ppm (300 mg/m3)	200 ppm	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, nose; liver, kidney damage; skin blisters	Eyes, skin, respiratory system, liver, kidneys	Colorless to pale-yellow liquid with a pleasant, aromatic odor. [herbicide] BP: 357°F Fl.Pt. = 1°F LEL: 2.2% UEL: 9.2% Class IIIA Combustible Liquid: Fl.P. at or above 140°F and below 200°F.
1,2-Dichloroethane	107-06-2	TWA 10 ppm	Ca TWA 1 ppm (4 mg/m3) ST 2 ppm (8 mg/m3)	TWA 50 ppm C 100 ppm 200 ppm [5-minute maximum peak in any 3 hours]	Ca [50 ppm]	Inhalation, ingestion, skin absorption, skin and/or eye contact	Irritation eyes, corneal opacity; central nervous system depression; nausea, vomiting; dermatitis; liver, kidney, cardiovascular system damage; [potential occupational carcinogen]	Eyes, skin, kidneys, liver, central nervous system, cardiovascular system	Colorless liquid with a pleasant, chloroform-like odor. [Note: Decomposes slowly, becomes acidic & darkens in color.] BP: 182°F Fl.Pt. = 56°F LEL: 6.2% UEL: 16% Class IB Flammable Liquid Fl.P. below 73°F and BP at or above 100°F.
1,2-Dichloropropane	78-87-5	TWA 10 ppm Dermal Sensitizer (DSEN)	Ca	TWA 75 ppm (350 mg/m3)	Ca [400 ppm]	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, respiratory system; drowsiness, dizziness; liver, kidney damage; In Animals: central nervous system depression; [potential occupational carcinogen]	Eyes, skin, respiratory system, liver, kidneys, central nervous system	Colorless liquid with a chloroform-like odor. [pesticide] BP: 206°F Fl.Pt. = 60°F LEL: 3.4% UEL: 14.5% Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.
1,3-Dichlorobenzene	541-73-1	https://cameochemicals.noaa.gov/chemical/8514				Inhalation, skin absorption, ingestion, skin and/or eye contact	INHALATION: Causes headache, drousiness, unsteadiness. Irritating to mucous membranes. EYES: Severe irritation. SKIN: Severe irritation. INGESTION: Irritation of gastric mucosa, nausea, vomiting, diarrhea, abdominal cramps and cyanosis.		Colorless liquid. Sinks in water. BP: 343°F Fl.Pt. = 146°F LEL: 2.02% UEL: 9.2%
1,4-Dichlorobenzene	106-46-7	TWA 10 ppm	Ca	TWA 75 ppm (450 mg/m3)	Ca [150 ppm]	Inhalation, skin absorption, ingestion, skin and/or eye contact	Eye irritation, swelling periorbital (situated around the eye); profuse rhinitis; headache, anorexia, nausea, vomiting; weight loss, jaundice, cirrhosis; In Animals: liver, kidney injury; [potential occupational carcinogen]	Liver, respiratory system, eyes, kidneys, skin	Colorless or white crystalline solid with a mothball-like odor. [insecticide] BP: 345°F Fl.Pt. = 150°F LEL: 2.5% UEL: NA Combustible Solid, but may take some effort to ignite.

Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at the Site.

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
1,4-Dioxane	123-91-1	TWA 20 ppm [skin]	Ca C 1 ppm (3.6 mg/m3) [30-minute]	TWA 100 ppm (360 mg/m3) [skin]	Ca [500 ppm]	Inhalation, skin absorption, ingestion, skin and/or eye contact	irritation eyes, skin, nose, throat; drowsiness, headache; nausea, vomiting; liver damage; kidney failure; [potential occupational carcinogen]	Eyes, skin, respiratory system, liver, kidneys	Colorless liquid or solid (below 53°F) with a mild, ether-like odor. BP: 214°F Fl.Pt. = 55°F LEL: 2.0% UEL: 22% Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F
2-Butanone	78-93-3	TWA 200 ppm STEL 300 ppm	TWA 200 ppm (590 mg/m3) ST 300 ppm (885 mg/m3)	TWA 200 ppm (590 mg/m3)	3000 ppm	inhalation, ingestion, skin and/or eye contact	irritation eyes, skin, nose; headache; dizziness; vomiting; dermatitis	Eyes, skin, respiratory system, central nervous system	Colorless liquid with a moderately sharp, fragrant, mint- or acetone-like odor BP: 175°F Fl.Pt. = 16°F LEL (200°F): 1.4% UEL (200°F): 11.4% Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F
2-Hexanone	591-78-6	TWA 5 ppm STEL 10 ppm [skin]	TWA 1 ppm (4 mg/m3)	TWA 100 ppm (410 mg/m3)	1600 ppm	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, nose; peripheral neuropathy: lassitude (weakness, exhaustion), paresthesia; dermatitis; headache, drowsiness	Eyes, skin, respiratory system, central nervous system, peripheral nervous system	Colorless liquid with an acetone-like odor BP: 262°F Fl.Pt. = 77°F LEL: NA UEL: 8.0% Class IC Flammable Liquid: Fl.P. at or above 73°F and below 100°F
4-Methyl-2-pentanone	108-10-1	TWA 20 ppm STEL 75 ppm	TWA 50 ppm (205 mg/m3) ST 75 ppm (300 mg/m3)	TWA 100 ppm (410 mg/m3)	500 ppm	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, mucous membrane; headache, narcosis, coma; dermatitis; In Animals: liver, kidney damage	Eyes, skin, respiratory system, central nervous system, liver, kidneys	Colorless liquid with a pleasant odor BP: 242°F Fl.Pt. = 64°F LEL (200°F): 1.2% UEL (200°F): 8.0% Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F
Acetone	67-64-1	TWA 250 ppm STEL 500 ppm	TWA 250 ppm (590 mg/m^3)	TWA 1000 ppm (2400 mg/m^3)	2500 ppm [10% LEL]	Inhalation, ingestion, skin and/or eye contact	irritation eyes, nose, throat; headache, dizziness, central nervous system depression; dermatitis	Eyes, skin, respiratory system, central nervous system	Colorless liquid with a fragrant, mint-like odor BP: 133°F Fl.Pt. = 0°F LEL: 12.8% UEL: 2.5% Class IB Flammable liquid: Fl.P. below 73°F and BP at or above 100°F.
Benzene	71-43-2	TWA 0.5 ppm STEL 2.5 ppm	Ca TWA 0.1 ppm ST 1 ppm	TWA 1 ppm ST 5 ppm	Ca [500 ppm]	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, respiratory system; dizziness; headache, nausea, staggered gait; anorexia, lassitude (weakness, exhaustion); dermatitis; bone marrow depression; [potential occupational carcinogen]	Eyes, skin, respiratory system, blood, central nervous system, bone marrow	Colorless to light yellow liquid with an aromatic odor [Note: Solid below 42 °F] BP: 176°F Fl.Pt. = 12°F LEL: 1.2% UEL: 7.8% Class IB Flammable liquid. Fl.P. below 73°F and BP at or above 100°F.
Bromochloromethane	74-97-5	TWA 200 ppm	TWA 200 ppm (1050 mg/m3)	TWA 200 ppm (1050 mg/m3)	2000 ppm	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, throat; confusion, dizziness, central nervous system depression; pulmonary edema	Eyes, skin, respiratory system, liver, kidneys, central nervous system	Colorless to pale-yellow liquid with a chloroform-like odor. [Note: May be used as a fire extinguishing agent.] BP: 155°F Fl.Pt. = NA LEL: NA UEL: NA Noncombustible Liquid
Bromodichloromethane	75-27-4	https://cameochemicals.noaa.gov/chemical/16064				Inhalation, ingestion, skin and/or eye contact	Symptoms of exposure to this compound may include irritation of the skin, eyes, mucous membranes and respiratory tract. It may also cause narcosis. Other symptoms may include nausea, dizziness and headache.	Liver and kidney damage. Central nervous system effects may also occur.	Clear colorless liquid BP: 189°F Fl.Pt. = NA LEL: NA UEL: NA
Bromoform	75-25-2	TWA 0.5 ppm	TWA 0.5 ppm (5 mg/m3) [skin]	TWA 0.5 ppm (5 mg/m3) [skin]	850 ppm	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, respiratory system; central nervous system depression; liver, kidney damage	Eyes, skin, respiratory system, central nervous system, liver, kidneys	Colorless to yellow liquid with a chloroform-like odor. [Note: A solid below 47°F.] BP: 301°F Fl.Pt. = NA LEL: NA UEL: NA Noncombustible Liquid
Bromomethane	74-83-9	TWA 1 ppm [skin]	Ca	C 20 ppm (80 mg/m3) [skin]	Ca [250 ppm]	Inhalation, skin absorption (liquid), skin and/or eye contact (liquid)	Irritation eyes, skin, respiratory system; muscle weak, incoordination, visual disturbance, dizziness; nausea, vomiting, headache; malaise (vague feeling of discomfort); hand tremor; convulsions; dyspnea (breathing difficulty); skin vesiculation; liquid: frostbite; [potential occupational carcinogen]	Eyes, skin, respiratory system, central nervous system	Colorless gas with a chloroform-like odor at high concentrations. [Note: A liquid below 38°F. Shipped as a liquefied compressed gas.] BP: 38°F Fl.Pt. = NA (Gas) LEL: 10% UEL: 16.0% Flammable Gas, but only in presence of a high energy ignition source.

Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at the Site.

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Carbon disulfide	75-15-0	TWA 1 ppm [skin]	TWA 1 ppm (3 mg/m3) ST 10 ppm (30 mg/m3) [skin]	TWA 20 ppm C 30 ppm 100 ppm (30-minute maximum peak)	500 ppm	Inhalation, skin absorption, ingestion, skin and/or eye contact	Dizziness, headache, poor sleep, lassitude (weakness, exhaustion), anxiety, anorexia, weight loss; psychosis; polyneuropathy; Parkinson-like syndrome; ocular changes; coronary heart disease; gastritis; kidney, liver injury; eye, skin burns; dermatitis; reproductive effects	Central nervous system, peripheral nervous system, cardiovascular system, eyes, kidneys, liver, skin, reproductive system	Colorless to faint-yellow liquid with a sweet ether-like odor. [Note: Reagent grades are foul smelling.] BP: 116°F Fl.Pt. = -22°F LEL: 1.3% UEL: 50.0% Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.
Carbon tetrachloride	56-23-5	TWA 5 ppm STEL 10 ppm [skin]	Ca ST 2 ppm (12.6 mg/m3) [60-minute]	TWA 10 ppm C 25 ppm 200 ppm (5-minute maximum peak in any 4 hours)	Ca [200 ppm]	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; central nervous system depression; nausea, vomiting; liver, kidney injury; drowsiness, dizziness, incoordination; [potential occupational carcinogen]	Central nervous system, eyes, lungs, liver, kidneys, skin	Colorless liquid with a characteristic ether-like odor BP: 170°F Fl.Pt. = NA LEL: NA UEL: NA Noncombustible Liquid
Chlorobenzene	108-90-7	TWA 10 ppm	NA	TWA 75 ppm (350 mg/m3)	1000 ppm	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose; drowsiness, incoordination; central nervous system depression; In Animals: liver, lung, kidney injury	Eyes, skin, respiratory system, central nervous system, liver	Colorless liquid with an almond-like odor BP: 270°F Fl.Pt. = 82°F LEL: 1.3% UEL: 9.6% Class IC Flammable Liquid: Fl.P. at or above 73°F and below 100°F.
Chloroethane	75-00-3	TWA 100 ppm [skin]	Handle with caution in the workplace	TWA 1000 ppm (2600 mg/m3)	3800 ppm [10%LEL]	Inhalation, skin absorption (liquid), ingestion (liquid), skin and/or eye contact	Incoordination, inebriation; abdominal cramps; cardiac arrhythmias, cardiac arrest; liver, kidney damage	Liver, kidneys, respiratory system, cardiovascular system, central nervous system	Colorless gas or liquid (below 54°F) with a pungent, ether-like odor. [Note: Shipped as a liquefied compressed gas.] BP: 54°F Fl.Pt. = NA (gas), -58°F (liquid) LEL: 3.8% UEL: 15.4% Flammable Gas
Chloroform	67-66-3	TWA 10 ppm	Ca ST 2 ppm (9.78 mg/m3) [60-minute]	C 50 ppm (240 mg/m3)	Ca [500 ppm]	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; dizziness, mental dullness, nausea, confusion; headache, lassitude (weakness, exhaustion); anesthesia; enlarged liver; [potential occupational carcinogen]	Liver, kidneys, heart, eyes, skin, central nervous system	Colorless liquid with a pleasant odor BP: 143°F Fl.Pt. = -82°F LEL: NA UEL: NA Noncombustible Liquid
Chloromethane	74-87-3	TWA 50 ppm STEL 100 ppm	Ca	TWA 100 ppm C 200 ppm 300 ppm (5-minute maximum peak in any 3 hours)	Ca [2000 ppm]	Inhalation, skin and/or eye contact (liquid)	Dizziness, nausea, vomiting; visual disturbance, stagger, slurred speech, convulsions, coma; liver, kidney damage; liquid: frostbite; reproductive, teratogenic effects; [potential occupational carcinogen]	Central nervous system, liver, kidneys, reproductive system	Colorless gas with a faint, sweet odor which is not noticeable at dangerous concentrations. [Note: Shipped as a liquefied compressed gas.] BP: -12°F Fl.Pt. = NA (Gas) LEL: 8.1% UEL: 17.4% Flammable Gas
cis-1,2-Dichloroethene	156-59-2	TWA 200 ppm (All isomers)	TWA 200 ppm (790 mg/m3)	TWA 200 ppm (790 mg/m3)	1000 ppm	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, respiratory system; central nervous system depression	Eyes, respiratory system, central nervous system	Colorless liquid (usually a mixture of the cis & trans isomers) with a slightly acrid, chloroform-like odor. BP: 118-140°F Fl.Pt. = 36-39°F LEL: 5.6% UEL: 12.8% Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F
cis-1,3-Dichloropropene	10061-01-5	https://cameochemicals.noaa.gov/chemical/20168				Inhalation, ingestion, skin and/or eye contact	Symptoms of exposure to this compound may include local irritation of the eyes skin and respiratory tract; dermatitis, gasping, coughing, substernal pain, extreme respiratory distress, lacrimation, central nervous system depression, skin irritation, acute gastrointestinal distress with pulmonary congestion and edema. It also may cause injury to the liver, kidneys and heart.	Skin, eyes, mucous membranes, liver, kidney, heart	Colorless to amber liquid with a sweetish odor. BP: 219.7°F Fl.Pt. = NA LEL: NA UEL: NA
Cyclohexane	110-82-7	TWA 100 ppm	TWA 300 ppm (1050 mg/m3)	TWA 300 ppm (1050 mg/m3)	1300 ppm [10%LEL]	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, respiratory system; drowsiness; dermatitis; narcosis, coma	Eyes, skin, respiratory system, central nervous system	Colorless liquid with a sweet, chloroform-like odor. [Note: A solid below 44°F.] BP: 177°F Fl.Pt. = 0°F LEL: 1.3% UEL: 8.0% Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.
Dibromochloromethane	124-48-1	https://cameochemicals.noaa.gov/chemical/16183				Inhalation, ingestion, skin and/or eye contact	Symptoms of exposure to this compound may include irritation of the skin, eyes, mucous membranes and upper respiratory tract. It may also cause fatigue. Other symptoms may include central nervous system effects, lung and cornea irritation and liver and kidney damage. Prolonged exposure can cause nausea, dizziness, headache and narcosis.	Skin, eyes, mucous membranes, upper respiratory tract	Clear colorless to yellow-orange liquid BP: 246-248°F Fl.Pt. = Greater than 200°F LEL: NA UEL: NA

Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at the Site.

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Dichlorodifluoromethane	75-71-8	TWA 1000 ppm	TWA 1000 ppm (4950 mg/m3)	TWA 1000 ppm (4950 mg/m3)	15,000 ppm	Inhalation, skin and/or eye contact (liquid)	Dizziness, tremor, asphyxia, unconsciousness, cardiac arrhythmias, cardiac arrest; liquid: frostbite	Cardiovascular system, peripheral nervous system	Colorless gas with an ether-like odor at extremely high concentrations. [Note: Shipped as a liquefied compressed gas.] BP: -22°F Fl.Pt. = NA LEL: NA UEL: NA Nonflammable Gas
Ethyl benzene	100-41-4	TWA 20 ppm	TWA 100 ppm (435 mg/m^3) ST 125 ppm (545 mg/m^3)	TWA 100 ppm (435 mg/m^3)	800 ppm [10%LEL]	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, mucous membrane; headache; dermatitis; narcosis, coma	Eyes, skin, respiratory system, central nervous system	Colorless liquid with an aromatic odor. BP: 277°F Fl.Pt. = 55°F LEL: 0.8% UEL: 6.7% Class IB Flammable Liquid below 73°F and BP at or above 100°F
Isopropyl benzene	98-82-8	TWA 5 ppm	TWA 50 ppm (245 mg/m3) [skin]	TWA 50 ppm (245 mg/m3) [skin]	900 ppm [10%LEL]	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, mucous membrane; dermatitis; headache, narcosis, coma	Eyes, skin, respiratory system, central nervous system	Colorless liquid with a sharp, penetrating, aromatic odor BP: 306°F Fl.Pt. = 96°F LEL: 0.9% UEL: 6.5% Class IC Flammable Liquid: Fl.P. at or above 73°F and below 100°F
Methyl Acetate	79-20-9	TWA 200 ppm STEL 250 ppm	TWA 200 ppm (610 mg/m3) ST 250 ppm (760 mg/m3)	TWA 200 ppm (610 mg/m3)	3100 ppm [10%LEL]	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat; headache, drowsiness; optic nerve atrophy; chest tightness; In Animals: narcosis	Eyes, skin, respiratory system, central nervous system	Colorless liquid with a fragrant, fruity odor BP: 135°F Fl.Pt. = 14°F LEL: 3.1% UEL: 16% Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.
Methylcyclohexane	108-87-2	TWA 400 ppm	TWA 400 ppm (1600 mg/m3)	TWA 500 ppm (2000 mg/m3)	1200 ppm [LEL]	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat; dizziness, drowsiness; In Animals: narcosis	Eyes, skin, respiratory system, central nervous system	Colorless liquid with a faint, benzene-like odor BP: 214°F Fl.Pt. = 25°F LEL: 1.2% UEL: 6.7% Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.
Methylene chloride	75-09-2	TWA 50 ppm [skin] STEL 100 ppm	Ca	[1910.1052] TWA 25 ppm ST 125 ppm	Ca [2300 ppm]	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; lassitude (weakness, exhaustion), drowsiness, dizziness; numb, tingle limbs; nausea; [potential occupational carcinogen]	Eyes, skin, cardiovascular system, central nervous system	Colorless liquid with a chloroform-like odor. [Note: A gas above 104°F.] BP: 104°F Fl.Pt. = NA LEL: 13% UEL: 23% Combustible Liquid
Methyl-t-butyl ether	1634-04-4	TWA 50 ppm	NA	NA	NA	Inhalation, skin absorption, ingestion, skin and/or eye contact	May cause dizziness or suffocation. Contact may irritate or burn eyes or skin. May be harmful if swallowed.	Eyes, skin	A colorless liquid with a distinctive anesthetic-like odor. BP: 131°F Fl.Pt. = -14°F LEL: NA UEL: NA
o-Xylene	95-47-6	TWA 20 ppm (All isomers)	TWA 100 ppm (435 mg/m3) ST 150 ppm (655 mg/m3)	TWA 100 ppm (435 mg/m3)	900 ppm	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait; corneal vacuolization; anorexia, nausea, vomiting, abdominal pain; dermatitis	Eyes, skin, respiratory system, central nervous system, gastrointestinal tract, blood, liver, kidneys	Colorless liquid with an aromatic odor BP: 292°F Fl.Pt. = 90°F LEL: 0.9% UEL: 6.7% Class IC Flammable Liquid: Fl.P. at or above 73°F and below 100°F
Styrene	100-42-5	TWA 10 ppm STEL 20 ppm OTO (ototoxicant)	TWA 50 ppm (215 mg/m3) ST 100 ppm (425 mg/m3)	TWA 100 ppm C 200 ppm 600 ppm (5-minute maximum peak in any 3 hours)	700 ppm	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, nose, respiratory system; headache, lassitude (weakness, exhaustion), dizziness, confusion, malaise (vague feeling of discomfort), drowsiness, unsteady gait; narcosis; defatting dermatitis; possible liver injury; reproductive effects	Eyes, skin, respiratory system, central nervous system, liver, reproductive system	Colorless to yellow, oily liquid with a sweet, floral odor BP: 293°F Fl.Pt. = 88°F LEL: 0.9% UEL: 6.8% Class IC Flammable Liquid: Fl.P. at or above 73°F and below 100°F
Tetrachloroethene	127-18-4	TWA 25 ppm STEL 100 ppm	Ca Minimize workplace exposure concentrations	TWA 100 ppm C 200 ppm (for 5 minutes in any 3-hour period), with a maximum peak of 300 ppm	Ca [150 ppm]	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat, respiratory system; nausea; flush face, neck; dizziness, incoordination; headache, drowsiness; skin erythema (skin redness); liver damage; [potential occupational carcinogen]	Eyes, skin, respiratory system, liver, kidneys, central nervous system	Colorless liquid with a mild, chloroform-like odor BP: 250°F Fl.Pt. = NA LEL: NA UEL: NA Noncombustible Liquid, but decomposes in a fire to hydrogen chloride and phosgene

Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at the Site.

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Sodium Hydroxide	1310-73-2	Ceiling 2 mg/m^3	C 2 mg/m^3	TWA 2 mg/m^3	10 mg/m^3	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, mucous membrane; pneumonitis; eye, skin burns; temporary loss of hair	Eyes, skin, respiratory system	Colorless to white, odorless solid (flakes, beads, granular form). BP: 2534°F Fl.Pt. = NA LEL: NA UEL: NA Noncombustible Solid, but when in contact with water may generate sufficient heat to ignite combustible materials.
Sulfuric Acid	7664-93-9	TWA 0.2 mg/m^3 (as thoracic particulate mass)	TWA 1 mg/m^3	TWA 1 mg/m^3	15 mg/m^3	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat; pulmonary edema, bronchitis; emphysema; conjunctivitis; stomatis; dental erosion; eye, skin burns; dermatitis	Eyes, skin, respiratory system, teeth	Colorless to dark-brown, oily, odorless liquid.[Note: Pure compound is a solid below 51°F. Often used in an aqueous solution.] BP = 554°F Fl.Pt. = NA LEL = NA UEL = NA Noncombustible Liquid, but capable of igniting finely divided combustible materials.
trans-1,2-Dichloroethene	156-60-5	200 ppm (All isomers)	TWA 200 ppm (790 mg/m3)	TWA 200 ppm (790 mg/m3)	1000 ppm	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, respiratory system; central nervous system depression	Eyes, respiratory system, central nervous system	Colorless liquid (usually a mixture of the cis & trans isomers) with a slightly acrid, chloroform-like odor. BP: 118-140°F Fl.P: 36-39°F LEL: 5.6% UEL: 12.8% Class IB Flammable Liquid Fl.P. below 73°F and BP at or above 100°F.
trans-1,3-Dichloropropene	10061-02-6	https://cameochemicals.noaa.gov/chemical/18110				Inhalation, ingestion, skin and/or eye contact	Symptoms of exposure to this compound may include local irritation of the eyes skin and respiratory tract, dermatitis, gasping, coughing, substernal pain, extreme respiratory distress, lacrimation, central nervous system depression, acute gastrointestinal distress with pulmonary congestion and edema. It may also cause injury to the liver, kidneys and heart	Skin, eyes, mucous membranes, liver, kidney, heart	A clear colorless liquid with chloroform odor BP: 234°F Fl.P: NA LEL: NA UEL: NA
Toluene	108-88-3	TWA 20 ppm (ototoxicant)	TWA 100 ppm (375 mg/m^3) ST 150 ppm (560 mg/m^3)	TWA 200 ppm C 300 ppm 500 ppm (10-minute maximum peak)	500 ppm	Inhalation, skin absorption, ingestion, skin and/or eye contact	irritation eyes, nose; lassitude (weakness, exhaustion), confusion, euphoria, dizziness, headache; dilated pupils, lacrimation (discharge of tears); anxiety, muscle fatigue, insomnia; paresthesia; dermatitis; liver, kidney damage	Eyes, skin, respiratory system, central nervous system, liver, kidneys	Colorless liquid with a sweet, pungent, benzene-like odor. BP: 232°F Fl.P: 40°F LEL: 1.1% UEL: 7.1% Class IB Flammable Liquid Fl.P. below 73°F and BP at or above 100°F.
Trichloroethene (TCE)	79-01-6	TWA 10 ppm STEL 25 ppm	Ca	TWA 100 ppm C 200 ppm 300 ppm (5-minute maximum peak in any 2 hours)	Ca [1000 ppm]	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; headache, visual disturbance, lassitude (weakness, exhaustion), dizziness, tremor, drowsiness, nausea, vomiting; dermatitis; cardiac arrhythmias, paresthesia; liver injury; [potential occupational carcinogen]	Eyes, skin, respiratory system, heart, liver, kidneys, central nervous system	Colorless liquid (unless dyed blue) with a chloroform-like odor. BP: 189°F Fl.Pt. = NA LEL(77°F): 8.0% UEL(77°F): 10.5% Combustible Liquid, but burns with difficulty.
Trichlorofluoromethane	75-69-4	STEL C 1000 ppm	C 1000 ppm (5600 mg/m3)	TWA 1000 ppm (5600 mg/m3)	2000 ppm	Inhalation, ingestion, skin and/or eye contact	Incoordination, tremor; dermatitis; cardiac arrhythmias, cardiac arrest; asphyxia; liquid: frostbite	Skin, respiratory system, cardiovascular system	Colorless to water-white, nearly odorless liquid or gas (above 75°F) BP: 75°F Fl.P: NA LEL: NA UEL: NA Noncombustible Liquid Nonflammable Gas
Vinyl Chloride (chloroethylene)	75-01-4	TWA 1 ppm	Ca	TWA 1 ppm C 5 ppm [15-minute]	Ca (ND)	Inhalation, skin and/or eye contact (liquid)	Lassitude (weakness, exhaustion); abdominal pain, gastrointestinal bleeding; enlarged liver; pallor or cyanosis of extremities; liquid: frostbite; [potential occupational carcinogen]	Liver, central nervous system, blood, respiratory system, lymphatic system	Colorless gas or liquid (below 7°F) with a pleasant odor at high concentrations.[Note: Shipped as a liquefied compressed gas.] BP: 7°F Fl.Pt. = NA (Gas) LEL: 3.6% UEL: 33.0% Flammable Gas
Xylene (m, o & p isomers)	108-38-3, 95-47-6, 106-42-3	TWA 20 ppm	NA	NA	NA	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait; corneal vacuolization; anorexia, nausea, vomiting, abdominal pain; dermatitis	Eyes, skin, respiratory system, central nervous system, gastrointestinal tract, blood, liver, kidneys	Colorless liquid with an aromatic odor BP: 282°F, 292°F, 281°F Fl. Pt. 82°F, 90°F, 81°F LEL: 1.1%, 0.9%, 1.1% UEL: 7.0%, 6.7%, 7.0% Class IC Flammable Liquid at or above 73°F and below 100°F.
Zinc Oxide (dust)	7440-66-6	TWA 2 mg/m3 (repsirable) STEL 10 mg/m^3 (respirable)	TWA 5 mg/m^3 C 15 mg/m^3	TWA 15 mg/m^3 (total dust) TWA 5 mg/m^3 (resp dust) TWA 5 mg/m^3 (fume)	500 mg/m^3	Inhalation	Metal fume fever: chills, muscle ache, nausea, fever, dry throat, cough; lassitude (weakness, exhaustion); metallic taste; headache; blurred vision; low back pain; vomiting; malaise (vague feeling of discomfort); chest tightness; dyspnea (breathing difficulty), rales, decreased pulmonary function	Respiratory system	White, odorless solid. BP: NA Fl.Pt. = NA LEL: NA UEL: NA Noncombustible Solid

Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at the Site.

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)									
2-Chloronaphthalene	91-58-7	https://cameochemicals.noaa.gov/chemical/16185				Inhalation, ingestion, skin and/or eye contact	Chloracne, cysts, headache, fatigue, vertigo, anorexia and jaundice		Monoclinic plates or off-white crystalline powder BP: NA Fl.Pt. = NA LEL: NA UEL: NA
2-Methylnaphthalene	91-57-6	TWA 0.5 ppm TLV-SL 3 mg/100 cm2 [skin]	https://cameochemicals.noaa.gov/chemical/20668			Inhalation, ingestion, skin and/or eye contact	Headaches, nausea, vomiting, diarrhea, anemia, jaundice, euphoria, dermatitis, visual disturbances, convulsions and comatose	Skin, eyes, mucous membranes and upper respiratory tract	White crystalline solid Combustible solid BP: 466-468 ° F Fl.Pt. = 208 ° F LEL: NA UEL: NA
Acenaphthene	83-32-9	https://cameochemicals.noaa.gov/chemical/10358				Inhalation, ingestion, skin and/or eye contact	Irritation of the skin, eyes, mucous membranes and upper respiratory tract, vomiting	Skin, eyes, mucous membranes and upper respiratory tract	White needles BP: 534 ° F Fl.Pt. = NA LEL: 0.6% UEL: NA
Acenaphthylene	208-96-8	https://cameochemicals.noaa.gov/chemical/16157				Inhalation, ingestion, skin and/or eye contact			Colorless crystalline solid BP: 509 to 527 ° F at 760 mm Hg Fl.Pt. = NA LEL: NA UEL: NA
Anthracene (as coal tar pitch volatiles)	120-12-7	TWA 0.2 mg/m3 (as Benzene solubles)	Ca TWA 0.1 mg/m3 (cyclohexane-extractable fraction)	TWA 0.2 mg/m3 (benzene-soluble fraction) [1910.1002]	Ca [80 mg/m3]	Inhalation, skin and/or eye contact	Dermatitis, bronchitis, [potential occupational carcinogen]	Respiratory system, skin, bladder, kidneys	Black or dark-brown amorphous residue BP: NA Fl.Pt. = NA LEL: NA UEL: NA Combustible Solids
Benzo[a]anthracene	56-55-3	https://cameochemicals.noaa.gov/chemical/16171				Inhalation, injestion, skin and/or eye contact			Colorless leaflets or plates or coarse gold powder with a greenish-yellow fluorescence. May reasonably be expected to be a carcinogen. BP: 815° F at 760 mm Hg Fl.Pt. = NA LEL: NA UEL: NA
Benzo[a]pyrene (as coal tar pitch volatiles)	50-32-8	TWA 0.2 mg/m3 (as Benzene solubles)	Ca TWA 0.1 mg/m3 (cyclohexane-extractable fraction)	TWA 0.2 mg/m3 (benzene-soluble fraction) [1910.1002]	Ca [80 mg/m3]	Inhalation, skin and/or eye contact	Dermatitis, bronchitis, [potential occupational carcinogen]	Respiratory system, skin, bladder, kidneys	Black or dark-brown amorphous residue BP: NA Fl.Pt. = NA LEL: NA UEL: NA Combustible Solids
Benzo[b]fluoranthene	205-99-2	None listed	https://cameochemicals.noaa.gov/chemical/16172			Inhalation, injestion, skin and/or eye contact			Needles or yellow fluffy powder BP: NA Fl.Pt. = NA LEL: NA UEL: NA
Benzo[g,h,i]perylene	191-24-2	https://cameochemicals.noaa.gov/chemical/16174				Inhalation, injestion, skin and/or eye contact	Inhalation of material may be harmful. Contact may cause burns to skin and eyes. Inhalation of Asbestos dust may have a damaging effect on the lungs. Fire may produce irritating, corrosive and/or toxic gases. Some liquids produce vapors that may cause dizziness or suffocation. Runoff from fire control may cause pollution.	Lungs, skin, eyes	Colorless to white crystalline solid. Water insoluble. BP: NA Fl.Pt. = NA LEL: NA UEL: NA
Benzo[k]fluoranthene	207-08-9	https://cameochemicals.noaa.gov/chemical/16173				Inhalation, injestion, skin and/or eye contact	When heated to decomposition this compound emits acrid smoke and irritating fumes.		Pale yellow needles or yellow crystalline solid BP: 896° F Fl.Pt. = NA LEL: NA UEL: NA
Chrysene (as coal tar pitch volatiles	218-01-9	TWA 0.2 mg/m3 (as Benzene solubles)	Ca TWA 0.1 mg/m3 (cyclohexane-extractable fraction)	TWA 0.2 mg/m3 (benzene-soluble fraction) [1910.1002]	Ca [80 mg/m3]	Inhalation, skin and/or eye contact	Dermatitis, bronchitis, [potential occupational carcinogen]	Respiratory system, skin, bladder, kidneys	Black or dark-brown amorphous residue BP: NA Fl.Pt. = NA LEL: NA UEL: NA Combustible Solids
Dibenzo(a,h)anthracene	53-70-3	https://cameochemicals.noaa.gov/chemical/16192				Inhalation, injestion, skin and/or eye contact	Symptoms of exposure to this compound may include irritation. This compound is harmful if swallowed or inhaled. It may cause irritation. When heated to decomposition it emits acrid smoke, irritating fumes and toxic fumes of carbon monoxide and carbon dioxide.	Lungs	White crystals or pale yellow solid. Sublimes BP: 975° F Fl.Pt. = NA LEL: NA UEL: NA

Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at the Site.

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Fluoranthene	206-44-0	https://cameochemicals.noaa.gov/chemical/16213				Inhalation, injestion, skin and/or eye contact	When heated to decomposition this compound emits acrid smoke and fumes.		Light yellow fine crystals BP: 482° F Fl.Pt. = NA LEL: NA UEL: NA
Fluorene	86-73-7	https://cameochemicals.noaa.gov/chemical/16214				Inhalation, injestion, skin and/or eye contact			White leaflets. Sublimes easily under a vacuum. Fluorescent when impure. BP: 563° F Fl.Pt. = NA LEL: NA UEL: NA
Indeno[1,2,3-cd]pyrene	193-39-5	https://cameochemicals.noaa.gov/chemical/16218				Inhalation, injestion, skin and/or eye contact			Yellow crystals BP: 997° F Fl.Pt. = NA LEL: NA UEL: NA
Naphthalene	91-20-3	TWA 10 ppm [skin]	TWA 10 ppm (50 mg/m3) ST 15 ppm (75 mg/m3)	TWA 10 ppm (50 mg/m3)	250 ppm	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes; headache, confusion, excitement, malaise (vague feeling of discomfort); nausea, vomiting, abdominal pain; irritation bladder; profuse sweating; jaundice; hematuria (blood in the urine), renal shutdown; dermatitis, optical neuritis, corneal damage	Eyes, skin, blood, liver, kidneys, central nervous system	Colorless to brown solid with an odor of mothballs. [Note: Shipped as a molten solid.] BP: 424°F Fl.P: 174°F LEL: 0.9% UEL: 5.9% Combustible Solid, but will take some effort to ignite
Phenanthrene	85-01-8	https://cameochemicals.noaa.gov/chemical/16236				Inhalation, injestion, skin and/or eye contact	Symptoms following exposure to this compound may include skin sensitization, dermatitis, bronchitis, cough, dyspnea, respiratory neoplasm, kidney neoplasm, skin irritation, and respiratory irritation.	Skin, respiratory tract	Colorless monoclinic crystals with a faint aromatic odor. Solutions exhibit a blue fluorescence. BP: 642° F Fl.Pt. = 340° F LEL: NA UEL: NA
Pyrene (see coal tar pitch volatiles)	129-00-0	TWA 0.2 mg/m3 (as Benzene solubles)	Ca TWA 0.1 mg/m3 (cyclohexane-extractable fraction)	TWA 0.2 mg/m3 (benzene-soluble fraction) [1910.1002]	Ca [80 mg/m3]	Inhalation, skin and/or eye contact	Dermatitis, bronchitis, [potential occupational carcinogen]	Respiratory system, skin, bladder, kidneys	Black or dark-brown amorphous residue BP: NA Fl.Pt. = NA LEL: NA UEL: NA Combustible Solids
METALS									
Aluminum	7429-90-5	TWA 1 mg/m3	TWA 10 mg/m^3 (total) TWA 5 mg/m^3 (resp)	TWA 15 mg/m^3 (total) TWA 5 mg/m^3 (resp)	N.D.	Inhalation, skin and/or eye contact	Irritation eyes, skin, respiratory system	Eyes, skin, respiratory system	Silvery-white, malleable, ductile, odorless metal BP: 4221°F Fl.Pt. = NA LEL: NA UEL: NA Combustible Solid, finely divided dust is easily ignited; may cause explosions.
Antimony	7440-36-0	TWA 0.5 mg/m3 (as Sb)	TWA 0.5 mg/m3 [*Note: The REL also applies to other antimony compounds (as Sb).]	TWA 0.5 mg/m3 [*Note: The PEL also applies to other antimony compounds (as Sb).]	50 mg/m3 (as Sb)	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat, mouth; cough; dizziness; headache; nausea, vomiting, diarrhea; stomach cramps; insomnia; anorexia; unable to smell properly	Eyes, skin, respiratory system, cardiovascular system	Silver-white, lustrous, hard, brittle solid; scale-like crystals; or a dark-gray, lustrous powder BP: 2975°F Fl.Pt. = NA LEL: NA UEL: NA Noncombustible Solid in bulk form, but a moderate explosion hazard in the form of dust when exposed to flame.
Arsenic	7440-38-2	TWA 0.01 mg/m3	Ca C 0.002 mg/m3 [15-minute]	[1910.1018] TWA 0.010 mg/m3	Ca [5 mg/m3 (as As)]	Inhalation, skin absorption, skin and/or eye contact, ingestion	Ulceration of nasal septum, dermatitis, gastrointestinal disturbances, peripheral neuropathy, resp irritation, hyperpigmentation of skin, [potential occupational carcinogen]	Liver, kidneys, skin, lungs, lymphatic system	Metal: Silver-gray or tin-white, brittle, odorless solid BP: Sublimes Fl.Pt. = NA LEL: NA UEL: NA Metal: Noncombustible Solid in bulk form, but a slight explosion hazard in the form of dust when exposed to flame
Barium	7440-39-3	TWA 0.5 mg/m3	0.5 mg Ba/m3 TWA	0.5 mg Ba/m3 TWA	50 mg Ba/m3	Inhalation, ingestion, skin and/or eye contact	Inhalation or contact with vapors, substance or decomposition products may cause severe injury or death. Contact may cause burns to skin, eyes, and mucous membranes. May be toxic by ingestion, inhalation and skin absorption. Used to make other chemicals.	Lungs, skin, eyes, and mucous membrane	A silver to white metallic solid BP: 1337°F Fl.Pt. = NA LEL: NA UEL: NA
Beryllium	7440-41-7	TWA 0.00005 mg/m^3	Ca C 0.0005 mg/m^3	TWA 0.002 mg/m^3 C 0.005 mg/m^3 0.025 mg/m3 [30-minute maximum peak]	Ca [4 mg/m^3 (as Be)]	Inhalation, skin and/or eye contact	Berylliosis (chronic exposure): anorexia, weight loss, lassitude (weakness, exhaustion), chest pain, cough, clubbing of fingers, cyanosis, pulmonary insufficiency; irritation eyes; dermatitis; [potential occupational carcinogen]	Eyes, skin, respiratory system	Hard, brittle, gray-white solid BP: 4532°F Fl.Pt. = NA LEL: NA UEL: NA Noncombustible Solid in bulk form, but a slight explosion hazard in the form of a powder or dust.

Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at the Site.

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Cadmium	7440-43-9	TWA 0.01 mg/m^3 total dust TWA 0.002 mg/m^3 (as Cd) respirable fraction	Ca	TWA 0.005 mg/m^3	Ca [9 mg/m3 (as Cd)]	Inhalation, ingestion	Pulmonary edema, dyspnea (breathing difficulty), cough, chest tightness, substernal (occurring beneath the sternum) pain; headache; chills, muscle aches; nausea, vomiting, diarrhea; anosmia (loss of the sense of smell), emphysema, proteinuria, mild anemia; [potential occupational carcinogen]	Respiratory system, kidneys, prostate, blood	Silver-white/blue tinged lustrous, odorless solid. BP: 1409°F Fl.Pt. = NA LEL: NA UEL: NA Noncombustible - will burn in powder form
Calcium	7440-70-2	https://cameochemicals.noaa.gov/chemical/309				Inhalation, ingestion, skin and/or eye contact	Contact with eyes or skin produces caustic burns.	Eyes, skin	A silvery, soft metal that turns grayish white on exposure to air. BP: 2714°F Fl.Pt. = NA LEL: NA UEL: NA
Chromium	7440-47-3	TWA 0.5 mg/m^3 (metal) TWA 0.003 mg/m^3 (water-soluble Cr III compounds) TWA 0.0002 mg/m^3 (water-soluble Cr VI compounds) STEL 0.0005 mg/m3 (water-soluble Cr VI compounds)	TWA 0.5 mg/m^3	TWA 1 mg/m^3	250 mg/m^3 (as Cr)	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin; lung fibrosis (histologic)	Eyes, skin, respiratory system	Blue-white to steel-gray, lustrous, brittle, hard, odorless solid. BP: 4788°F Fl.Pt. = NA LEL: NA UEL: NA Noncombustible - will burn in dust form if heated in a flame
Cobalt	7440-48-4	TWA 0.02 mg/m3 [DSEN] [RSEN]	TWA 0.05 mg/m3	TWA 0.1 mg/m3	20 mg/m3 (as Co)	Inhalation, ingestion, skin and/or eye contact	Cough, dyspnea (breathing difficulty), wheezing, decreased pulmonary function; weight loss; dermatitis; diffuse nodular fibrosis; resp hypersensitivity, asthma	Skin, respiratory system	Odorless, silver-gray to black solid BP: 5612°F Fl.Pt. = NA LEL: NA UEL: NA Noncombustible Solid in bulk form, but finely divided dust will burn at high temperatures.
Copper	7440-50-8	TWA 0.2 mg/m^3 (fume) TWA 1 mg/m3 (dusts and mists)	TWA 1 mg/m^3	TWA 1 mg/m^3	100 mg/m^3 (as Cu)	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, nose, pharynx; nasal septum perforation; metallic taste; dermatitis; In Animals: lung, liver, kidney damage; anemia	Eyes, skin, respiratory system, liver, kidneys (increased risk with Wilson's disease)	Reddish, lustrous, malleable, odorless solid. BP: 4703°F Fl.Pt. = NA LEL: NA UEL: NA Noncombustible - powdered form may ignite
Iron (as iron oxide)	7439-89-6	TWA 5 mg/m3 (respirable particulate mass)	TWA 1 mg/m^3	NA	NA	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, mucous membrane; abdominal pain, diarrhea, vomiting; possible liver damage	Eyes, skin, respiratory system, liver, gastrointestinal tract	Appearance and odor vary depending upon the specific soluble iron salt. BP: NA Fl.Pt. = NA LEL: NA UEL: NA Noncombustible Solids
Lead	7439-92-1	TWA 0.05 mg/m3	TWA (8-hour) 0.050 mg/m3	[1910.1025] TWA 0.050 mg/m3	100 mg/m3 (as Pb)	Inhalation, ingestion, skin and/or eye contact	Lassitude (weakness, exhaustion), insomnia; facial pallor; anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; paralysis wrist, ankles; encephalopathy; kidney disease; irritation eyes; hypertension	Eyes, gastrointestinal tract, central nervous system, kidneys, blood, gingival tissue	A heavy, ductile, soft, gray solid BP: 3164°F Fl.Pt. = NA LEL: NA UEL: NA Noncombustible Solid in bulk form
Magnesium	7439-95-4	https://cameochemicals.noaa.gov/chemical/6949				Eye and/or skin contact	Dust irritates eyes in same way as any foreign material. Penetration of skin by fragments of metal is likely to produce local irritation, blisters, and ulcers which may become infected.	Eyes	A light silvery metal BP: 1202°F Fl.Pt. = NA LEL: NA UEL: NA
Manganese	7439-96-5	TWA 0.02 mg/m3 [R] TWA 0.1 mg/m3 [I]	TWA 1 mg/m3 ST 3 mg/m3	C 5 mg/m3	500 mg/m3 (as Mn)	inhalation, ingestion	Manganism; asthenia, insomnia, mental confusion; metal fume fever: dry throat, cough, chest tightness, dyspnea (breathing difficulty), rales, flu-like fever; low-back pain; vomiting; malaise (vague feeling of discomfort); lassitude (weakness, exhaustion); kidney damage	respiratory system, central nervous system, blood, kidneys	A lustrous, brittle, silvery solid BP: 3564°F Fl.Pt. = NA LEL: NA UEL: NA Metal: Combustible Solid
Mercury	7439-97-6	TWA 0.1 mg/m3, as Hg Aryl compounds TWA 0.025 mg/m3 as Hg, inorganic forms including metallic mercury	Hg Vapor: TWA 0.05 mg/m3 [skin] Other: C 0.1 mg/m3 [skin]	TWA 0.1 mg/m3	10 mg/m3 (as Hg)	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; cough, chest pain, dyspnea (breathing difficulty), bronchitis, pneumonitis; tremor, insomnia, irritability, indecision, headache, lassitude (weakness, exhaustion); stomatitis, salivation; gastrointestinal disturbance, anorexia, weight loss; proteinuria	Eyes, skin, respiratory system, central nervous system, kidneys	Metal: Silver-white, heavy, odorless liquid. [Note: "Other" Hg compounds include all inorganic & aryl Hg compounds except (organo) alkyls.] BP: 674°F Fl.Pt. = NA LEL: NA UEL: NA Metal: Noncombustible Liquid

Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at the Site.

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Nickel	7440-02-0	TWA 1.5 mg/m^3 [elemental] TWA 0.1 mg/m^3 [soluble inorganic compound] TWA 0.2 mg/m^3 [insoluble inorganic compound] TWA 0.1 mg/m^3 [Nickel subsulfide]	Ca TWA 0.015 mg/m^3	TWA 1 mg/m^3	Ca [10 mg/m3 (as Ni)]	Inhalation, ingestion, skin and/or eye contact	Sensitization dermatitis, allergic asthma, pneumonitis; [potential occupational carcinogen]	Nasal cavities, lungs, skin	Lustrous, silvery, odorless solid. BP: 5139°F Fl.Pt. = NA LEL: NA UEL: NA Combustible Solid; nickel sponge catalyst may ignite spontaneously in air.
Potassium	9/7/7440	https://cameochemicals.noaa.gov/chemical/4289				Eye and/or skin contact	Will burn skin and eyes	Skin, eyes	Potassium is a soft silvery metal though normally grayish white due to oxidation BP: 1425°F Fl.Pt. = NA LEL: NA UEL: NA
Selenium	7782-49-2	TWA 0.2 mg/m3	TWA 0.2 mg/m3	TWA 0.2 mg/m3	1 mg/m3 (as Se)	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat; visual disturbance; headache; chills, fever; dyspnea (breathing difficulty), bronchitis; metallic taste, garlic breath, gastrointestinal disturbance; dermatitis; eye, skin burns; In Animals: anemia; liver necrosis, cirrhosis; kidney, spleen damage	Eyes, skin, respiratory system, liver, kidneys, blood, spleen	Amorphous or crystalline, red to gray solid. [Note: Occurs as an impurity in most sulfide ores.] BP: 1265°F Fl.Pt. = NA LEL: NA UEL: NA Combustible Solid
Silver	7440-22-4	TWA 0.1 mg/m3 [Metal, dust, and fume] TWA 0.01 mg/m3 [Soluble compounds, as Ag]	TWA 0.01 mg/m3	TWA 0.01 mg/m3	10 mg/m3 (as Ag)	Inhalation, ingestion, skin and/or eye contact	Blue-gray eyes, nasal septum, throat, skin; irritation, ulceration skin; gastrointestinal disturbance	Nasal septum, skin, eyes	Metal: White, lustrous solid BP: 3632°F Fl.Pt. = NA LEL: NA UEL: NA Metal: Noncombustible Solid, but flammable in form of dust or powder
Sodium	7440-23-5	https://cameochemicals.noaa.gov/chemical/7794				Skin contact	Severe burns caused by burning metal or by caustic soda formed by reaction with moisture on skin	Skin	A silvery soft metal that becomes grayish white upon exposure to air BP: 1621°F Fl.Pt. = NA LEL: NA UEL: NA
Thallium	7440-28-0	0.02 mg/m3 inhallable particulate matter	TWA 0.1 mg/m3 [skin]	TWA 0.1 mg/m3 [skin]	15 mg/m3 (as Tl)	Inhalation, skin absorption, ingestion, skin and/or eye contact	Nausea, diarrhea, abdominal pain, vomiting; ptosis, strabismus; peri neuritis, tremor; retrosternal (occurring behind the sternum) tightness, chest pain, pulmonary edema; convulsions, chorea, psychosis; liver, kidney damage; alopecia; paresthesia legs	Eyes, respiratory system, central nervous system, liver, kidneys, gastrointestinal tract, body hair	Appearance and odor vary depending upon the specific soluble thallium compound BP: NA Fl.Pt. = NA LEL: NA UEL: NA
Vanadium	7440-62-2	https://cameochemicals.noaa.gov/chemical/16147				Inhalation, skin absorption, ingestion, skin and/or eye contact	Highly toxic, may be fatal if inhaled, swallowed or absorbed through skin. Avoid any skin contact. Effects of contact or inhalation may be delayed. Fire may produce irritating, corrosive and/or toxic gases. Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution	Skin	Silvery-whitish powder BP: NA Fl.Pt. = NA LEL: NA UEL: NA
Zinc	7440-66-6	https://cameochemicals.noaa.gov/chemical/4814				Inhalation, skin absorption, ingestion, skin and/or eye contact	Inhalation or contact with vapors, substance or decomposition products may cause severe injury or death. May produce corrosive solutions on contact with water. Fire will produce irritating, corrosive and/or toxic gases. Runoff from fire control may cause pollution	Lungs	A grayish powder BP: NA Fl.Pt. = NA LEL: NA UEL: NA
PCBs									
PCBs (total)	11097-69-1, 53469-21-9	TWA 0.5 mg/m3 [skin] TWA 1 mg/m3 [skin]	Ca TWA 0.001 mg/m3 Ca TWA 0.001 mg/m3	TWA 0.5 mg/m3 [skin] TWA 1 mg/m3 [skin]	Ca [5 mg/m3] Ca [5 mg/m3]	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, chloracne; liver damage; reproductive effects; [potential occupational carcinogen]	Skin, eyes, liver, reproductive system	Colorless to pale-yellow, viscous liquid or solid (below 50°F) with a mild, hydrocarbon odor BP: 689-734°F, 617-691°F Fl.Pt. = NA, NA LEL: NA UEL: NA Nonflammable Liquid, but exposure in a fire results in the formation of a black soot containing PCBs, polychlorinated dibenzofurans, and chlorinated dibenzo-p-dioxins.

Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at the Site.

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Petroleum Hydrocarbons									
Gasoline	86290-81-5	TWA 300 ppm STEL 500 ppm	Ca	None	Ca [N.D.]	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, mucous membrane; dermatitis; headache, lassitude (weakness, exhaustion), blurred vision, dizziness, slurred speech, confusion, convulsions; chemical pneumonitis (aspiration liquid); possible liver, kidney damage; [potential occupational carcinogen]	Eyes, skin, respiratory system, central nervous system, liver, kidneys	Clear liquid with a characteristic odor BP: 102°F Fl.Pt. = -45°F LEL: 1.4% UEL: 7.6%

References

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Abbreviations:

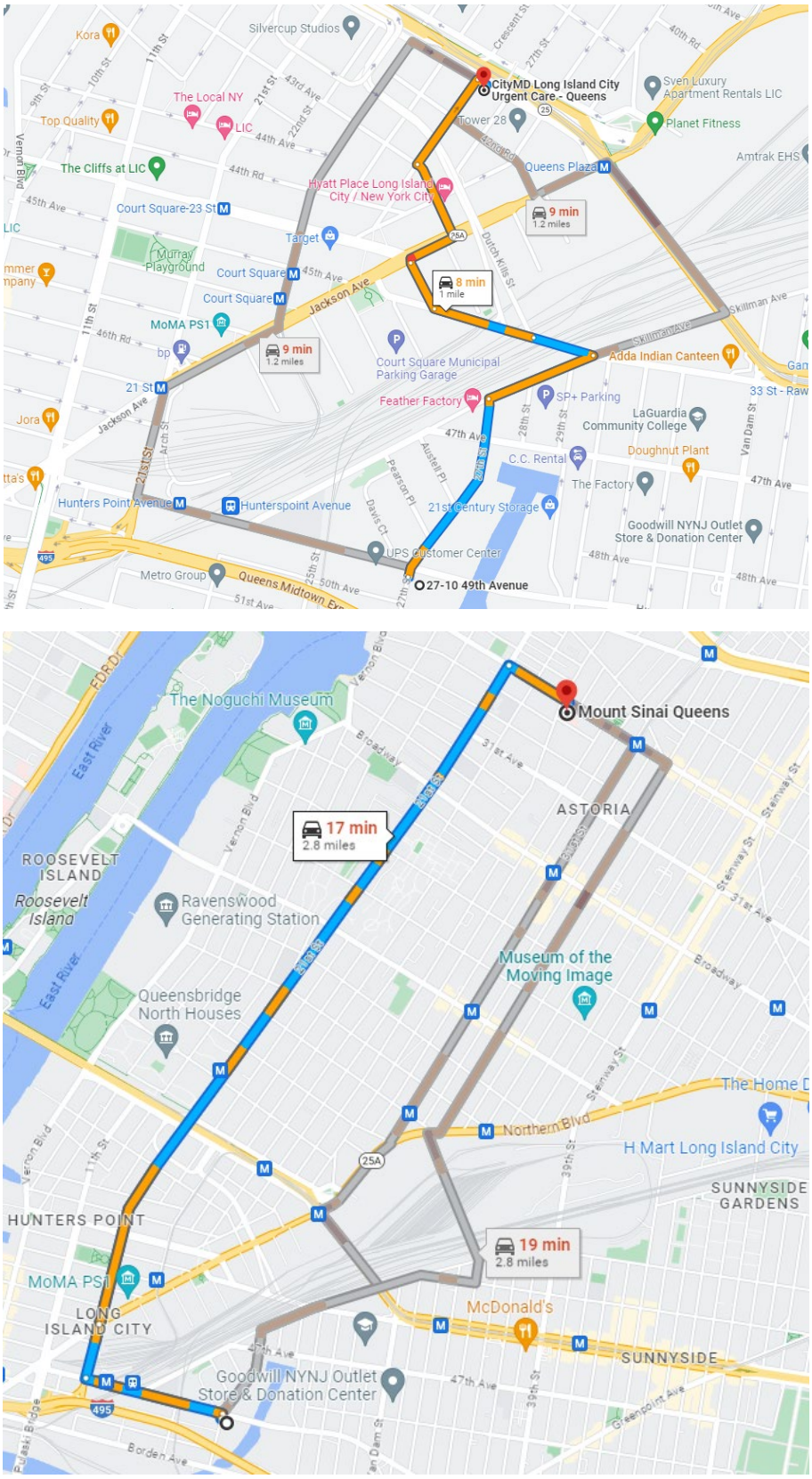
ACGIH – American Conference of Governmental Industrial Hygienists.
BP – boiling point at 1 atmosphere, °F
C – Ceiling, is a concentration that should not be exceeded during and part of the working exposure.
Ca – Carcinogenic.
CAS# - Chemical Abstracts Service registry number which is unique for each chemical.
DSEN - Dermal Sensitization
Ft Pt. – Flash point
IDLH - Immediately Dangerous to Life and Health concentrations represent the maximum concentration from which, in the event of respirator failure, one could escape within 30 minutes without a respirator and without experiencing any escape-impairing or irreversible health effects.
LEL – Lower explosive (flammable) limit in air, % by volume (at room temperature)
mg/m^3 – Milligrams of substance per cubic meter of air
NIOSH - National Institute for Occupational Safety and Health.
OSHA – Occupational Safety and Health Administration
OTO - Ototoxicant
PEL - OSHA Permissible Exposure Limit (usually) a time weighted average concentration that must not be exceeded during any 8 hour work shift of a 40 hr work week.
ppm – parts per million
REL – NIOSH Recommended Limit indicated a time weighted average concentration that must not be exceeded during any 10 hour work shift of a 40 hr work week
RSEN - Respiratory Sensitization
SG - Specific Gravity
STEL – ACGIH Short-term exposure limit (ST)
TLV - ACGIH Threshold Limit Values (usually 8 hour time weighted average concentrations).
TWA – 8-hour, time-weighted average
UEL – Upper explosive (flammable) limit in air, % by volume (at room temperature)
VP - Vapor Pressure

FIGURES

1. Site Location Map
2. Site Plan with Emergency Muster Area
3. Routes to Urgent Care and Hospital

Figure 1: **Site Location Map**

Figure 2: **Site Plan with Emergency Muster Area**



<u>Figure 3</u>: Routes to Urgent Care and Hospital

APPENDICES

A. Job Safety Analysis (JSA) Forms
B. Safety Data Sheets (SDSs) for Chemicals Used
C. COVID-19 Interim Health and Safety Guidance
D. Heat Illness Prevention Program
E. Personal Protective Equipment (PPE) Management Program
F. Subsurface Utility Clearance Management Program
G. Heavy Equipment Exclusion Zone Policy
H. Incident Investigation and Reporting Management Program
I. Fatigue Management Program
J. Silica Exposure Control Program
K. Ergonomics Management Program

APPENDIX A

Job Safety Analysis (JSA) Forms

JOB SAFETY ANALYSIS	Ctrl. No. GEN-003	DATE 4/10/2023	☐ NEW ☒ REVISED	PAGE 1 of 2

JSA TYPE CATEGORY	WORK TYPE	WORK ACTIVITY (Description)
GENERIC	**Construction - Excavation**	**Backfilling Excavation & Compaction**

DEVELOPMENT TEAM	POSITION / TITLE	REVIEWED BY:	POSITION / TITLE
David Kaiser	Project Engineer	Brian Hobbs	CHSD
Edward Lacina	Senior Construction Manager		

REQUIRED AND / OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT

☐ LIFE VEST	☐ GOGGLES	☐ AIR PURIFYING RESPIRATOR	☒ GLOVES: Leather/ cut-resistant level 2
☒ HARD HAT	☐ FACE SHIELD	☐ SUPPLIED RESPIRATOR	☐ OTHER _____
☐ LIFELINE / BODY HARNESS	☒ HEARING PROTECTION	☒ PPE CLOTHING: reflective DOT approved safety	
☒ SAFETY GLASSES	☒ SAFETY TOE BOOTS		

REQUIRED AND / OR RECOMMENDED EQUIPMENT

Payloader, Backhoe, Dump Trucks, Mechanical gas powered tampers, Excavator with hydraulic tamper. APR when tamping if dust present. Two-way radios.

COMMITMENT TO SAFETY- All personnel onsite will actively participate in hazard recognition and mitigation throughout the day by verbalizing SPSAs.

EXCLUSION ZONE (EZ): Maintain Minimum Heavy Equipment Exclusion Zone (HEEZ) around equipment and loads while it is in motion. The HEEZ must be greater than the swing zone of any moving part of the equipment, tip zone of the equipment, fall zone of the equipment and contents, distance that debris may travel during demolition activities and/or foot print of a structure to be demolished.

Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
1. Pre-construction meeting: Review proposed excavation locations	**1a. CONTACT:** Potential for contact with subsurface utilities and above ground utilities	1a. Call state 811 for mark out service and one call ticket. 1a. Obtain private utility mark out service as necessary. 1a. Review and mark proposed excavations w/white paint. 1a. Identify all "Critical" zones. A Critical zone is any area within 10 feet of any operating utility. 1a. Complete subsurface clearance checklist. 1a. Soft dig must be conducted within 2 lateral feet of any suspected underground utility. 1a. Protection of aboveground utilities identified as being located within the work zone must be coordinated w/ client and utility owner.
2. Secure Work Area	**2a. CONTACT:** Potential for personnel to enter the work area. Potential for equipment to contact, or crush personnel. **2b. EXERTION:** Potential for muscle strain or tear while installing traffic cones and barrel	2a. Ensure work area is secure and inform others of work activity. Establish a HEEZ using 42" traffic cones, barrels & snow fencing or telescoping poles. Use of flag persons to maintain clear traffic and to minimize motorist confusion during set-up of new traffic pattern. HEEZ to include tip/swing radius of equipment. 2a. Dump Truck/Excavator/Payloader/Backhoe equipment to be set-up by personnel who are familiar with machinery. Spotters shall be in place for all equipment. and to control access to the HEEZ 2a. Truck wheels are chocked when driver is not in truck and engine shut off. 2a. Personnel shall stay out of the exclusion zone (10' minimum or greater than the equipment boom) while equipment is maneuvering. 2b. Keep back straight, keep load close to the body and bend knees while lifting and working. If over 50 lbs., use 2 or more laborers for lifting or use of equipment.

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3. Backfilling excavation, and compaction	**3a. CONTACT:** Traffic and live equipment. . **3b. EXPOSURE:** Fumes from gas powered tamper **3c. FALL:** Slips, trips, fall hazards. **3d. OVEREXERTION:** Muscle strain, or tear. **3e. EXPOSURE:** Noise from tamper. Dust inhalation.	3a. Equipment and trucks shall be isolated from other workers, subcontractors and third party traffic with 42" traffic cones, barricades, snow fencing or telescoping poles, and/or Jersey barriers. Spotters shall direct dump truck for placement of fill near excavation. Pay loader/ Excavator, as directed by spotter, shall move fill into trench where it shall be placed in layers and compacted by mechanical means. 3a. Spotters will wear florescent vests at all times. 3a. Spotters will remain out of the exclusion zone, line-of-fire from equipment and third-party vehicles. 3a. Spotters and operators will have radios for communication, when other visual and/or hand signals are insufficient. 3a. Locate all overhead utilities. All personnel and machinery should maintain a minimum 10' distance from overhead electric lines. Refer to OSHA chart for distances and voltage. 3a. For excavations engineered (shored, sloped, benched} all personnel, equipment, and materials must remain a minimum of 2 feet from edge of excavation. 3b. Fueling of all equipment will be done outside of work area in a well-ventilated area. Refueling will be done only after a 2-5-minute cool down. 3c. Work area will be clean and free of any debris to remove slip, trip and fall hazards. All tools will be kept in designated areas. Insure work area is well illuminated. 3c. Workers should only be working in areas that have been leveled with a machine. 3c. All persons working at elevations over 6' shall use a guardrail system or personal fall arrest system while around excavation. 3d. Keep knees bent and back straight while transferring/ lifting/lowering tamper from elevated areas. Utilize a co-worker to avoid staining muscles. 3d. Keep knees bent and back straight while maneuvering tamper. Utilize a co-worker to avoid staining muscles. 3e. Workers will wear hearing protection during compaction tamper activities. 3e. Wear NIOSH approved dust mask for personal comfort. If dust is visible for extended time, limit by wetting down area. 3e. If dust continues stop work and evaluate if increase in APR is needed with approval and clearance.
4. Secure/leave site.	**4a. FALL:** Slip, trip, fall	4a. Clear work area of all debris and store all equipment in designated areas/containers before opening to traffic. 4a. Replace fencing and barricades as needed to secure path before opening roadway or area up to traffic(vehicle, pedestrian and/or bicycle).

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JOB SAFETY ANALYSIS	Ctrl. No. GEN-004	DATE 4/10/2023	☐ NEW ☒ REVISED	PAGE 1 of 2

JSA TYPE CATEGORY	WORK TYPE	WORK ACTIVITY (Description)
GENERIC	**Construction - Concrete and Asphalt**	**Concrete Form Assembly and Concrete Pouring**

DEVELOPMENT TEAM	POSITION / TITLE	REVIEWED BY:	POSITION / TITLE
David Kaiser	Senior Engineer	Brian Hobbs	CHSD

REQUIRED AND / OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT

☐ LIFE VEST ☒ HARD HAT ☐ LIFELINE / BODY HARNESS ☒ SAFETY GLASSES	☐ GOGGLES ☒ FACE SHIELD ☒ HEARING PROTECTION ☒ SAFETY TOE BOOTS: Steel /composite toe boots	☒ AIR PURIFYING RESPIRATOR ☐ SUPPLIED RESPIRATOR ☒ PPE CLOTHING: reflective DOT approved safety	☒ GLOVES: Cut resistant and Nitrile/Latex ☒ OTHER: Chaps, dust mask

REQUIRED AND / OR RECOMMENDED EQUIPMENT

Wheel Barrow, Trowels, Concrete Floats and Hand Tools (Extension Poles), Waterproof Boot Covers, Traffic Cones, Caution Tape, Portable Eye Wash Station

COMMITMENT TO SAFETY- All personnel onsite will actively participate in hazard recognition and mitigation throughout the day by verbalizing SPSAs.

EXCLUSION ZONE (EZ): Maintain Minimum Heavy Equipment Exclusion Zone around equipment and loads while it is in motion. The HEEZ must be greater than the swing zone of any moving part of the equipment, tip zone of the equipment, fall zone of the equipment and contents, distance that debris may travel during demolition activities and/or foot print of a structure to be demolished.

Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
1. Set-up work zone	**1a. CONTACT:** Moving equipment, third party traffic.	1a. Secure work area using barricades/barrels/cones and caution tape/safety fence. Use flagmen to control third party traffic. **Maintain minimum heavy equipment exclusion zone (EZ)** around equipment and live loads. 1a. When machines are operating, all workers will remain outside of EZ unless operator is in "HANDS OFF" mode.
2. Assembly of concrete forms (i.e. plywood, lumber, rebar, etc.)	**2a. CONTACT:** Contacting materials being lowered into work area. Potential for cuts and abrasions and to be contacted by nails while assembling. **2b. EXERTION:** Muscle strain. **2c. EXPOSURE:** Noise, dust, fumes. **2d. CAUGHT:** Pinch points, caught between, Crushed	2a. Workers will keep fingers and limbs out of the line-of-fire of tools, equipment and live loads. Workers will use inspected rigging and only attach rigging to manufacturer installed lifting points. Loads will be controlled with non-conductive tag lines from outside the EZ. Wear hard hat. See JSA for applicable cutting tool. 2b. When transporting and working with forms, workers will keep backs straight, knees bent, and loads close to their body. Any load more than 50 lbs., will be lifted by two or more workers or a mechanical lifting device. 2c. Workers will wear hearing protection, face shields and chaps when using all power tools. Fuel powered tools will be fueled away from the work zone in a well-ventilated area. Refueling will be done after a minimum cool down period of 5 minutes. See JSA for applicable cutting tool. 2d. Keep hands away from rigging while hooking/unhooking materials; wear cut resistant gloves.
3. Setup concrete trucks and chute	**3a. CONTACT/CAUGHT:** Potential for truck to contact personnel, fingers to be pinched while setting up chutes. Contact with overhead power lines. **3b. OVEREXERTION:** Strain, pulled muscles.	3a. Spotters will guide concrete trucks into position; wheel chocks will be set before work begins when trucks are parked. Workers will stay out of exclusion zone until truck is parked and secured. Keep hands clear of potential pinch points when assembling chutes. 3a. A minimum clearance of 10 feet shall be maintained from all overhead power lines. That distance may be reduced if shielding is in place or it is determined that lines are low voltage. Refer to site-specific HASP. 3b. All workers will keep back straight and bend their knees when lifting. Two workers or mechanical means will be used when load exceeds 50 lbs.

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Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
4. Pour concrete into forms	**4a. CONTACT:** Splashing from wet concrete.	4a. Portable eye wash stations shall be set up nearby for easy access; wear safety glasses. Nitrile or latex gloves and water proof boots or boot covers shall be worn to eliminate skin contact with concrete. Any concrete splashed onto non-waterproof clothing shall be removed to avoid skin irritation.
	4b. EXPOSURE: Concrete dust.	4b. Stand upwind while mixing dry concrete. Use dust mask or air purifying respirator to avoid silica inhalation.
5. Concrete finishing work with hand tools and/or vibrate to settle and remove air from poured cement,	**5a. ENERGY SOURCE:** Potential for personnel to be exposed to live electricity.	5a. Electrical tools shall be inspected for defects prior to being used. Any extension cords shall be heavy duty rated and be free from defects (no exposed wires). All electrical connections shall be connected to GFCI outlets. Generators shall be run in well ventilated locations.
	5b. OVEREXERTION: Potential muscle strain while vibrating cement, stepping over forms/rebar reinforcements. During use of hand tools to finish concrete, worker can overextend to reach far end of poured area.	5b. Constantly check/observe where you are walking; wear composite or steel-toed boots. Keep back straight and knees bent while settling concrete with vibrator. 5b. If worker needs to reach the far end of a poured area with finishing tools, they shall use extension poles and not over reach to maintain balance. Maintain even footing while using finishing tools. Use spotter during extension pole use.
	5c. CONTACT: Potential hand tools with extension poles/handles to contact nearby workers/pedestrians/vehicles/overhead power lines.	5c. During use of hand tools to finish poured concrete workers will alert work crew. If utilizing extension poles/handles worker will use a spotter to make sure no contact is made with other workers, pedestrians, vehicles or overhead power lines.
6. Cleanup of work area and tools.	**6a. CONTACT/FALL:** Potential slip, trip, and fall on materials and tools left in the work area.	6a. Place additional materials and tools in designated storage areas. Remove any garbage from the work area.

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JOB SAFETY ANALYSIS	Ctrl. No. GEN-005	DATE 4/10/2023	☐ NEW ☒ REVISED	PAGE 1 of 2

JSA TYPE CATEGORY	WORK TYPE	WORK ACTIVITY (Description)
GENERIC	**Construction**	**Cutting with Gas-powered Saw, Sawzall or Plasma Cutter**

DEVELOPMENT TEAM	POSITION / TITLE	REVIEWED BY:	POSITION / TITLE
Ray Greenidge	Sr. Compliance Manager	Brian Hobbs	CHSD

REQUIRED AND / OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT

☒ REFLECTIVE VEST ☒ HARD HAT ☐ LIFELINE / BODY HARNESS ☒ SAFETY GLASSES	☐ GOGGLES ☒ FACE SHIELD (gas powered saw and plasma cutter) ☒ HEARING PROTECTION ☒ SAFETY SHOES: Steel-toed boots	☐ AIR PURIFYING RESPIRATOR ☐ SUPPLIED RESPIRATOR ☒ PPE CLOTHING: Fluorescent Long sleeved shirt and / or reflective safety vest	☒ GLOVES: Cut-resistant, leather, nitrile ☒ OTHER: Chaps for gas powered saw. Welding suit for plasma cutting.

REQUIRED AND / OR RECOMMENDED EQUIPMENT

Sawzall/extension cord

COMMITMENT TO SAFETY- All personnel onsite will actively participate in hazard recognition and mitigation throughout the day by verbalizing SPSAs

Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
1. Set up/ Secure work area.	**1a. CONTACT:** Personnel could enter the work area	1a. Establish the work zone using 42" cones, caution tape, or fixed rigid barrier. Inform others of work activity.
2. Precutting procedure.	**2a. CONTACT:** Improper blade, malfunctioning guards, unsecured materials, flying debris	2a. Inspect all equipment for defects, replace or service if not functioning optimally. Check that all guards are working and in place, replace if missing. Ensure that blades are sharp and clean to avoid binding and/or burning. Cut on flat/secure work surfaces. Do not cut badly warped wood or boards with knots or nails. 2a. Unplug saw before handing it off to another person. 2a. Wear safety glasses, long-sleeved shirt and leather gloves. Utilize job specific PPE such as welding jacket or chaps when using gas powered saw or a plasma cutter.
	2b. EXPOSURE: Loud noises, dust, bright UV light	2b. When using gas powered saw, wet down area to be cut prior to cutting if high dust levels are anticipated. 2b. Wear hearing protection. Wear a dust mask if large amounts of dust are expected; cut upwind if possible. 2b. When plasma cutting, wear a face shield with shaded glasses rated to block UV light generated by the plasma cutter.
	2c. ENERGY SOURCE: Potential for electric shock	2c. Inspect extension cord for damage. If damaged, tag out and repair / replace. Do not operate saw while standing in water. Ensure GFCI protection at outlet or via attachment. 2c. Ensure all electrical equipment is rated for the task.

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Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
3. Saw Cutting.	**3a. CONTACT:** Fingers could be cut, lacerated or amputated by reciprocating blade; also flying debris and sparks	3a. Cut away from body. Keep fingers away from moving blade. No loose clothing. Never leave saw running unattended. Unplug saw before changing blades or making adjustments / repairs. Set-up barrier to contain sparks. Cut on flat/secure work surfaces. 3a. Wear Safety glasses 3a. Ensure that the saw blade stops rotating/reciprocating before placing saw on the ground.
	3b. CONTACT: Amputation and line of fire injury.	3b. Maintain a minimum 15-foot exclusion zone and ensure that operator and other personnel are kept out of the line-of-fire of the equipment.
	3c. FALL: Tripping hazards caused by cutting/grinding debris, extension cords.	3c. Keep debris generated in designated storage containers. Keep work area free of Slip, Trip and Fall hazards. 3c. Do not route extension cords through walking/working path.
	3d. EXERTION/ERGONOMICS: Lifting heavy or awkward materials may cause muscle strain.	3d. Maintain Proper Body Position while operating lifting and moving with equipment. Keep load close to body, knees bent, and back straight. 3d. Take frequent breaks or switch personnel if cutting for an extended period of time.
	3e. EXPOSURE: Personnel may be exposed to fire hazard during Hot Work Activities.	3e. Complete Hot Work Permit, Designate Fire Watch. 3e. Conduct work zone inspection: – Verify that all combustible or flammable materials or equipment fuel sources have been removed from within 35 feet of the proposed hot work. – If combustible or flammable materials or equipment fuel sources have not been removed from within 35 feet of the hot work, verify that engineering and procedural controls have been emplaced: curtains, blankets, wetting, ventilation. 3e. Two 20-lb. Type ABC Fire extinguishers required. 3e. Conduct continuous air monitoring / Lower Explosive Limit (LEL) screenings. Action Level: 10% of the LEL. 3e. If ambient air concentrations exceed LEL Action Levels, STOP WORK and contact supervisor. 3e. Wear hard hat, long sleeved-shirt and safety glasses. Utilize job specific PPE such as welding jacket or chaps and welding glasses when using gas powered saw or a plasma cutter.
4. Secure area when leaving tools unattended.	**4a. CONTACT:** Unauthorized personnel may enter the work area	4a. Unplug saw when not being used. Store equipment in designated storage areas when not being used.
	4b. FALL: Slip/trip/fall	4b. Store tool in designated storage location when it is not being used, secure all extension cords, keep all equipment out of walkways. 4b. Keep work area free of Slip, Trip and Fall Hazards.

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JOB SAFETY ANALYSIS	Ctrl. No. GEN-006	DATE 4/10/2023	☐ NEW ☒ REVISED	PAGE 1 of 2

JSA TYPE CATEGORY:	WORK TYPE:	WORK ACTIVITY (Description):	
Generic	**Drilling**	**Direct Push Soil Borings / Well Installation**	
DEVELOPMENT TEAM	**POSITION / TITLE**	**REVIEWED BY:**	**POSITION / TITLE**
Timothy Zei	Project Hydrogeologist	Raymond Olson	OHSM
		Brian Hobbs	CHSD

REQUIRED AND / OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT

☐ LIFE VEST ☒ HARD HAT ☐ LIFELINE / BODY HARNESS ☒ SAFETY GLASSES	☐ GOGGLES ☐ FACE SHIELD ☒ HEARING PROTECTION: (as needed) ☒ SAFETY SHOES: Composite-toe or steel toe boots	☐ AIR PURIFYING RESPIRATOR ☐ SUPPLIED RESPIRATOR ☒ PPE CLOTHING: Fluorescent reflective vest or high visibility clothing, Long Sleeve Shirt	☒ GLOVES: Leather, Nitrile and cut resistant ☒ OTHER: Insect Repellant, sunscreen (as needed)

REQUIRED AND / OR RECOMMENDED EQUIPMENT

Geoprobe or Truck-Mounted Direct Push Drill Rig, Hand Tools, Photoionization Detector, Multi-Gas Meter (or equivalent), Macrocore liners, Liner Opening Tool, 20 lb. Type ABC Fire Extinguisher, 42" Cones & Flags, "Work Area" Signs, Water

COMMITMENT TO SAFETY- All personnel onsite will actively participate in hazard recognition and mitigation throughout the day by verbalizing SPSAs

EXCLUSION ZONE (EZ): Maintain Minimum Heavy Equipment Exclusion Zone around equipment and loads while it is in motion. The HEEZ must be greater than the swing zone of any moving part of the equipment, tip zone of the equipment, fall zone of the equipment and contents, distance that debris may travel during demolition activities and/or foot print of a structure to be demolished.

"SHOW ME YOUR HANDS"
Driller and helper should show that hands are clear from controls and moving parts

Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
1. Mobilization of drilling rig (ensure the Subsurface Clearance Protocol and Drill Rig Checklist are completed)	**1a. CONTACT:** Equipment/property damage.	1a. The drill rig's tower/derrick will be lowered and secured prior to mobilization. 1a. A spotter should be utilized while moving the drill rig. If personnel move into the path of the drill rig, the drill rig will be stopped until the path is again clear. Use a spotter for all required backing operations. 1a. Set-up the work area and position equipment in a manner that eliminates or reduces the need for backing of support trucks and trailers. 1a. When backing up truck rig with an attached trailer use a second spotter if there is tight clearance simultaneously on multiple sides of the equipment or if turning angles limit driver visibility. 1a. Inspect the driving path for uneven terrain. Level or avoid if needed. 1a. Drill rig should have a minimum **exclusion zone which encompasses its tip radius** for non-essential personnel (i.e., driller helper, geologist) when the rig is moving/ in operation.
	1b. FALL: Slip/trip/fall hazards.	1b. Inspect walking path for uneven terrain, weather-related hazards (i.e., ice, puddles, snow, etc.), and obstructions prior to mobilizing equipment. 1b. Do not climb over stored materials/equipment; walk around. Practice good housekeeping. 1b. Use established pathways and walk on stable, secure ground.
	1c. CONTACT: Crushing from roll-over.	1c Geoprobe should cross all hills/obstructions head on with the mast down to reduce risk of roll-over.
2. Raising tower/derrick of drill rig	**2a. CONTACT:** Overhead hazards.	2a. Prior to raising the tower/derrick, the area above the drilling rig will be inspected for wires, tree limbs, piping, or other structures, that could come in contact with the rig's tower and/or drilling rods or tools. 2a. Maintain a safe distance of 10' from overhead structures.
	2b. CONTACT: Pinch Points/Amputation Points when raising the rig and instability of rig	2b. Inspect the equipment prior to use and avoid pinch/amputation points. 2b. Lower outriggers to ensure stability prior to raising rig tower/derrick. 2b. If the rig needs to be mounted, be sure to use three points of contact.
3. Advancement of drilling equipment and well installation	**3a. CONTACT:** Flying debris	3a. Be aware of and avoid potential line-of-fire hazards and wear required PPE such as eye, ear, and hand protection.
	3b. EXPOSURE: Noise and dust.	3b. Wet borehole area with sprayer to minimize dust. 3b. Stand upwind and keep body away from rig. 3b. Dust mask should be worn if conditions warrant. 3b. Wear hearing protection when the drill rig is in operation.
Assess [1]JOB STEPS	**Analyze [2]POTENTIAL HAZARDS**	**Act [3]CRITICAL ACTIONS**

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3. Advancement of drilling equipment and well installation (Continued)	**3a. CONTACT:** Flying debris **3b. EXPOSURE:** Noise and dust. **3c. FALL:** Slip/trip/fall hazards. **3d. CAUGHT:** Limb/extremity pinching; abrasion/crushing. **3e. CONTACT:** Equipment imbalance during advancement of drill equipment. **3f. EXPOSURE:** Inhalation of contamination/vapors. **3g. EXERTION:** Potential for muscle strain/injury while lifting and installing well casings, lifting sand bags, and/or lifting rods.	3c. Contain drill cuttings and drilling water to prevent fall hazards from developing in work area. 3c. See 1b. 3d. Ensure all Emergency Safety Stop buttons function properly. 3d. Always wear leather gloves when making connections and using hand tools; wear cut-resistant (i.e., Kevlar) gloves when handling cutting tools. 3d. Inspect the equipment prior to use for potential pinch/amputation points. Keep hands away from pinch/amputation points and use of tools is preferable compared to fingers and hands. 3d. Inspect drill head for worn surface or missing teeth; replace if damaged or blunt. 3d. Ensure all jewelry is removed, loose clothing is secured, and PPE is secured close to the body. 3d. All non-essential personnel should stay away from the immediate work area; position body out of the line-of-fire of equipment. 3d. Drillers and helpers will understand and use the "Show Me Your Hands" Policy. 3d. Spinning rods/casing have an **exclusion zone of tip radius** while in operation. 3e. Drillers will advance the borehole with caution to avoid causing the rig to become imbalanced and/or tip. 3e. The blocking and leveling devices used to secure the rig will be inspected by drillers and Roux personnel regularly to see if shifting has occurred. 3e. In addition, personnel and equipment that are non-essential to the advancement of the borehole will be positioned away from the rig at a distance that is at least as far as the boom is high (**minimum exclusion zone**). 3f. Monitor ambient air for dangerous conditions using a calibrated photoionization detector (PID) to periodically monitor the breathing zone of the work area. 3f. If a reading of >5ppm is recorded, the Roux field personnel must temporarily cease work, instruct all Site personnel to step away from the area of elevated readings and inform the Roux PM of the condition. The Roux PM will then recommend additional precautions in accordance with the site specific health and safety plan. 3f. Use a multi-gas meter to monitor ambient air for dangerous conditions (i.e. unsafe levels of carbon monoxide when drilling indoors or the presence of explosive vapors). 3g. Keep back straight and bend at the knees. 3g. Utilize team lifting or mechanical means for objects over 50lbs. 3g. Use mechanical lifting device for odd shaped objects.
4. Remove sample liner.	**4a. EXERTION:** Potential for muscle strain/injury while removing liner from probe rod. **4b. CONTACT:** Pinch points and cuts **4c. EXPOSURE:** Inhalation and/or dermal contact with contaminants.	4a Utilize team lifting or mechanical means for objects over 50lbs. 4a. Use hydraulic liner extruder if available. 4b. Place liner on sturdy surface when opening. 4b. Don cut-resistant gloves and use appropriate liner cutter when opening liners. 4b. Always cut away from the body. 4c. Wear chemical-resistant disposable gloves when handling liners. 4c. See 3f.
5. Decontaminate equipment.	**5a. EXPOSURE/CONTACT**: To contamination (e.g., Separate Phase Hydrocarbons (SPH), contaminated groundwater, vapors). **5b. EXPOSURE:** To chemicals in cleaning solution including ammonia.	5a. Wear chemical-resistant disposable gloves and safety glasses. 5a. Contain decontamination water so that it does not spill. 5a. Use an absorbent pad to clean spills, if necessary. 5a. Spray equipment from side angle, not straight on, to avoid backsplash. 5a. See 3b and 3f. 5b. See 4a. Review SDS to ensure appropriate precautions are taken and understood.

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JOB SAFETY ANALYSIS	Ctrl. No. GEN-007	DATE 4/10/2023	☐ NEW ☒ REVISED	PAGE 1 of 2

JSA TYPE CATEGORY	WORK TYPE	WORK ACTIVITY (Description)
GENERIC	**General Site Activity**	**Driving**

DEVELOPMENT TEAM	POSITION / TITLE	REVIEWED BY:	POSITION / TITLE
Valerie Sabatasso	Project Scientist	Brian Hobbs	CHSD

REQUIRED AND / OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT

☐ LIFE VEST	☐ GOGGLES	☐ AIR PURIFYING RESPIRATOR	☒ GLOVES: Leather/ cut-resistant level 2
☒ HARD HAT: when outside vehicle	☐ FACE SHIELD	☐ SUPPLIED RESPIRATOR	☐ OTHER _____
☐ LIFELINE / BODY HARNESS	☒ HEARING PROTECTION	☒ PPE CLOTHING: high visibility vest, when outside vehicle	
☒ SAFETY GLASSES:when outside vehicle	☒ SAFETY TOE BOOTS: when outside vehicle		

REQUIRED AND / OR RECOMMENDED EQUIPMENT

Motor Vehicle (i.e. car, truck, SUV)

COMMITMENT TO SAFETY- All personnel onsite will actively participate in hazard recognition and mitigation throughout the day by verbalizing SPSAs

EXCLUSION ZONE (EZ): Maintain Minimum Heavy Equipment Exclusion Zone around equipment and loads while it is in motion. The HEEZ must be greater than the swing zone of any moving part of the equipment, tip zone of the equipment, fall zone of the equipment and contents, distance that debris may travel during demolition activities and/or foot print of a structure to be demolished.

Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
1. Driving to/leaving Site	**1a. CONTACT:** Severe injury/disability, property damage, monetary loss (insurance premiums, deductibles, loss of license/job) caused by collision with or struck by other vehicles, obstructions, pedestrians, animals, etc. *Common factors that may lead to CONTACT incident, but not limited to: • distracted driving (cell phone, GPS, radio, billboards, "rubber necking") • lack of situational awareness • unfamiliarity with traffic patterns/road layout • weather conditions (wet/icy roads, hydroplaning, black ice) • weariness • high speeds • obstructed vision (solar glare, debris on windshield, blind spots, large vehicle at the front) • changes in travel pathway (construction, snow banks, non-operational signals, potholes, detours, special events) • improper vehicle maintenance (non-operational signal light, worn tires, cracked windshield, ineffective wipers) • loose or unsecure objects	1a. PLAN AHEAD – review/make yourself familiar with maps and driving directions before beginning the drive to the Site. Do not attempt to drive and review maps/directions at the same time. Pull over and stop your vehicle before looking at maps/directions. 1a. Complete a basic vehicle inspection before driving. Verify Inspection and Registration are current, tires and wipers are in good condition, all lights are functional, all glass/mirrors are undamaged, the horn is functional, roof/hood/trunk are free from accumulated snow and visibility is not impaired due to snow/ice/frost/fog on windows. 1a. Do not hang items in car that can obstruct your view or become projectiles in a collision. 1a. Do not get distracted using touch screen radios or GPS units built into newer models. Keep your eyes on the road and stay alert. 1a. Follow posted speed limits and obey traffic signals and roadway signs. 1a. Always wear your seat belt and shoulder harness when driving. 1a. When driving around large vehicles and trucks, maintain extra space as these vehicles may not be able to see a smaller car too close. 1a. Follow the "Rules of the Road" including: using your turn signals, coming to a complete stop, and allowing vehicles the right of way (yield) when they are when traffic laws require. 1a. Apply the Smith Five Keys® of safe driving • Aim High in Steering® - Expand eye lead time to a minimum of 15 seconds • Get the Big Picture® - Maintain proper a 4 second minimum following distance at all times - Scan mirrors every 5-8 seconds to achieve a circle of awareness - Position your vehicle so you can see relevant/non-relevant objects • Keep Your Eyes Moving® - Try to maintain about 180 degrees of visibility - Avoid blank and fixed stares. Avoid focusing on one object for more than 2 seconds • Leave Yourself an Out® - Avoid traveling in traffic clusters - Surround yourself with space - Anticipate the actions of others

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[2] A hazard is a potential danger. Break hazards into six types: Contact - victim is struck by or strikes an object; Caught - victim is caught on, caught in or caught between objects; Fall - victim falls to ground or lower level (includes slips and trips); Exertion - excessive strain or stress / ergonomics / lifting techniques; Exposure - inhalation/skin hazards; Energy Source – electricity, pressure, compression/tension.
[3] Using the first two columns as a guide, decide what actions or procedures are necessary to eliminate or minimize the risk. List the recommended safe operating procedures. Say exactly what needs to be done - such as "use two persons to lift". Avoid general statements such as, "be careful".

Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
1. Driving to/leaving Site (cont'd)	**1a. CONTACT:** Severe injury/disability, property damage, monetary loss (insurance premiums, deductibles, loss of license/job) caused by collision with or struck by other vehicles, obstructions, pedestrians, animals, etc.	• Make Sure They See You® - Maintain eye contact with on-coming vehicles/pedestrians - Use warning devices (e.g., hand signals, high-lights, horns etc.) - Proper timing is essential 1a. Do not perform reconnaissance or inspections while driving. Your vehicle should be parked in a safe location when viewing or surveying the Site and vicinity 1a. Avoid sudden turns and stops. Don't drive recklessly – be in control of vehicle at all times. 1a. In inclement weather, first determine if work can be POSTPONED. Otherwise, plan according to weather conditions including checking forecast along entirety of travel route (especially, for long distances). Reduce speed as road conditions warrant. Travelling with winter car equipment in the winter is strongly recommended (i.e., shovel, scraper, brush, blanket, extra clothing, flashlight, bag of sand). If your vehicle has 4-wheel drive, review the operators manual and understand operating procedure prior to engaging 4-wheel drive. If at any point on your drive weather becomes too severe to proceed safely pull over if safe to do so or seek nearest cover (e.g., overpass) 1a. If feeling drowsy or sleepy, do not drive. Pull over in a safe place to rest if you experience any signs of drowsiness. Make sure to get adequate sleep the night before an early drive. 1a. Never operate a vehicle under the influence of alcohol or illegal substances or medications affecting your performance. 1a. Keep your eyes on the road. Do not call or talk on cellular phones. Pull over to a safe location if you must answer or make a call. 1a. When parking, pull-through when possible. If backing is required visually inspect area to ensure it is free from obstructions prior to backing in and relying solely on mirrors; use spotters when available.
2. Entering/Exiting Vehicle.	**2a. CAUGHT:** Personal injury (broken fingers/hand) while entering or exiting vehicles **2b. FALL:** Personal injury (twisted ankle, deep contusion, concussion, broken wrist/arm, etc.) from slip/fall on uneven or unstable or slippery surface while exiting/entering vehicle **2c. CONTACT:** Severe injury/disability, property damage, monetary loss (insurance premiums, deductibles, loss of license/job) caused by collision with or struck by other vehicles, obstructions, pedestrians, animals, etc.	2a. Open and close doors slowly. Never put hands or feet in between door and vehicle to avoid pinch points. 2b. When exiting the vehicle make sure your feet are on firm footing and weight is evenly distributed before exiting/standing. In inclement weather use hands to support yourself, by holding the car door and/or steering wheel, when exiting the vehicle. 2c. Check both directions for traffic before opening door. Do not exit vehicle if traffic does not permit you to exit safely 2c. Check anticipated path of door prior to opening, do not open door into any obstructions (e.g., bollards, high curbing)

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JOB SAFETY ANALYSIS	Ctrl. No. GEN-011	DATE: 4/10/2023	☐ NEW ☒ REVISED	PAGE 1 of 2

JSA TYPE CATEGORY	WORK TYPE	WORK ACTIVITY (Description)
Generic	**Construction - Excavation**	**Excavation / Trenching**

DEVELOPMENT TEAM	POSITION / TITLE	REVIEWED BY:	POSITION / TITLE
David Kaiser	Senior Engineer	Brian Hobbs	CHSD
Tim Unalp	SHSO		

REQUIRED AND / OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT

☐ LIFE VEST	☐ GOGGLES	☐ AIR PURIFYING RESPIRATOR	☒ GLOVES: Leather or cut resistant
☒ HARD HAT	☐ FACE SHIELD	☐ SUPPLIED RESPIRATOR	☐ OTHER
☒ LONG SLEEVED SHIRT	☒ HEARING PROTECTION	☒ PPE CLOTHING: Fluorescent reflective vest or high visibility long sleeved clothing	
☐ LIFELINE / BODY HARNESS	☒ SAFETY SHOES: Steel-toe boots		
☒ SAFETY GLASSES			

REQUIRED AND / OR RECOMMENDED EQUIPMENT

Jackhammer, Excavator, Backhoe, Hand Tools, Photoionization Detector, barrels, 42" traffic cones, snow fencing, telescoping poles, temporary chain link fence, ladders, shovels, digging bars, power tools (cut-off saw), Two-way radios, Sheeting, Trench box, Retractable lanyard, Harness

COMMITMENT TO SAFETY- All personnel onsite will actively participate in hazard recognition and mitigation throughout the day by verbalizing SPSAs

EXCLUSION ZONE (EZ): Maintain Minimum Heavy Equipment Exclusion Zone around equipment and loads while it is in motion. The HEEZ must be greater than the swing zone of any moving part of the equipment, tip zone of the equipment, fall zone of the equipment and contents, distance that debris may travel during demolition activities and/or footprint of a structure to be demolished.

Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
1. Pre-Clearance Protocol.	**1a. CONTACT:** Damage to underground utility.	1a. Confirm that (if applicable) "Call Before You Dig" and local utility companies were contacted prior to trenching in order to confirm utility mark outs. Must have a case # before digging.
	1b. ENERGY SOURCE/CONTACT: Property damage; Pressurized water mains may cause lacerations or broken bones. Pressurized gas mains may explode causing serious injury, or death. Underground electric may cause severe burns, shock, or death.	1b. Pre-clearing of the trenching location must be conducted to a minimum of 5 vertical feet below the ground surface (10 feet minimum for Critical Zone) using soft digging methods or hand tools (shovel and non-metallic dig bar) prior to trenching. Supervisor should be contacted to discuss appropriate pre-clearing depth. **1b. Complete subsurface clearance checklist**.
	1c. FALL: Slip, Trip or Fall may cause muscle strains or tears, abrasions, lacerations, or broken bones.	1c. Be aware of the conditions when walking or loading equipment and working. Walk within established pathway avoiding uneven surfaces. Remove potential slip/trip/fall hazards.
2. Set up work zone.	**2a. CONTACT/CAUGHT:** Cuts/lacerations from equipment. Broken bones from contact by vehicle.	2a. Isolate work area from hazards with cones, barricades, and snow fencing, telescoping poles or temporary chain link fence. Utilize a flag person when necessary (i.e., third party traffic in area). Install traffic signs in roadways and for detours. Spotters will maintain and enforce exclusion zone.
	2b. FALL: Slip, Trip or Fall may cause muscle strains or tears, abrasions, lacerations, or broken bones.	2b. See 1c.

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Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
3. Trenching Activity.	**3a. CONTACT:** Serious injury including broken bones, muscle strains or tears, and possibly death due to contact with machine.	3a. Spotter(s) required for all heavy equipment operation. No worker shall be allowed inside the exclusion zone or along the trench/excavation area while any equipment is in operation. A minimum exclusion zone greater than the length of the equipment boom must be established. Workers only allowed in exclusion zone if the operator is in "Hands Off "mode. Operator will not operate equipment until worker is out of exclusion zone. Spotters and operators will have radios for communication, when either loses sight of one another, and/or in case of emergency.
	3b. FALL: Slip, Trip or Fall may cause muscle strains or tears, abrasions, lacerations, or broken bones	3b. Any trench/excavation deeper than 3' must have a ladder within 25' of any worker in the excavation. At least 3'(rungs) of the ladder shall be above the top of the excavation. All spoil piles shall be maintained 2' minimum from edge of excavation. 3b. Any trench/excavation deeper than 6' must have fall protection, retractable lanyard for ladder use, and 42" high guardrails along the edge of the trench/excavation.
	3c. EXPOSURE: Noise, Dust, Concrete- Asphalt, petroleum hydrocarbon vapors may cause damage to ears and lungs	3c. Air monitoring using a calibrated photoionization detector (PID) will be used to monitor the breathing zone of the work area. If a reading of >5ppm is recorded, the oversight personnel must temporarily cease work and instruct all Site personnel to step away from the area of elevated readings.
4. Setting Trench protections if necessary.	**4a. CAUGHT:** Injury due to contact with failed trench, may include muscle strains or tears, abrasions or lacerations, broken bones and possibly death.	4a. To prevent cave-ins and avoid caught by/between, excavations over 4' in depth, unless working in stable rock, shall have engineer approved shoring, sheeting or trench box. Top of protection shall be at least 2' above top of excavation.
	4b. CONTACT/CAUGHT: Injury due to rigging activities and entering exclusion zone during lifting and/or transport of shoring/trench box/material may include muscle strains or tears, abrasions or lacerations, broken bones and possibly death.	4b. Use only inspected rigging with 2, 3 or 4 lift points; wear cut-resistant gloves. Rigging to be hooked up to factory installed hook up points on equipment. Control load with non-conductive tag lines with workers out of exclusion zone. Don't stand underneath suspended load; wear steel toed boots and hard hat.
	4c. FALL: Possible injury due to fall into excavation may include muscle strains or tears, abrasions or lacerations, or broken bones.	4c. Shoring to be set and sides will be backfilled to avoid fall hazards before workers are allowed to enter area. Operator will be in "HANDS OFF" mode before workers enter work area to unhook rigging. An inspected ladder extending 3' above top of the shoring will be used to enter and exit the excavation. Workers will use three points of contact when using the ladder.
5. Secure/Leave Site. If backfilling, see excavation backfilling and compaction JSA for potential hazards and critical actions.	**5a. FALL:** Potential Slip, Trip or Fall - may cause muscle strains or tears, abrasions or lacerations, or broken bones.	5a. See 1c. 5a. All open excavations must be backfilled or secured prior to departure with steel plates, orange construction fence or temporary chain link fencing.

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JOB SAFETY ANALYSIS	Ctrl. No. GEN-015	DATE: 4/10/2023	☐NEW ☒REVISED	PAGE 1 of 2

JSA TYPE CATEGORY	WORK TYPE	WORK ACTIVITY (Description)	
GENERIC	**Site Recon**	**Mobilization/Demobilization**	
DEVELOPMENT TEAM	**POSITION / TITLE**	**REVIEWED BY:**	**POSITION / TITLE**
Tim Unalp	SHSO	Brian Hobbs	CHSD

REQUIRED AND / OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT

☐ LIFE VEST ☒ HARD HAT ☐ LIFELINE / BODY HARNESS ☒ SAFETY GLASSES	☐ GOGGLES ☐ FACE SHIELD ☒ HEARING PROTECTION (as needed) ☒ SAFETY SHOES: Steel Toe or composite toe	☐ AIR PURIFYING RESPIRATOR ☐ SUPPLIED RESPIRATOR ☒ PPE CLOTHING: Fluorescent reflective vest of high-visibility clothing; long sleeve shirt; long pants	☒ GLOVES: Leather, nitrile, and cut resistant (as needed) ☐ OTHER

REQUIRED AND / OR RECOMMENDED EQUIPMENT

Required Equipment: Varies

COMMITMENT TO SAFETY- All personnel onsite will actively participate in hazard recognition and mitigation throughout the day by verbalizing SPSAs

EXCLUSION ZONE (EZ): Maintain Minimum Heavy Equipment Exclusion Zone around equipment and loads while it is in motion. The HEEZ must be greater than the swing zone of any moving part of the equipment, tip zone of the equipment, fall zone of the equipment and contents, distance that debris may travel during demolition activities and/or foot print of a structure to be demolished.

Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
1. Mobilize/demobilize and establish work area	**1a. FALL:** Slip/trips/falls from obstructions, uneven terrain, weather conditions, heavy loads, and/or poor housekeeping.	1a. Use 3 points-of-contact/ensure secure footing when entering and exiting vehicle. 1a. Inspect walking path for uneven terrain, steep hills, obstructions, and/or weather-related hazards (i.e., ice, snow, and puddles) prior to mobilizing equipment. Use established pathways. Walk on stable/secure ground. 1a. Do not climb over stored materials/equipment; walk around. Practice good housekeeping; organize and store equipment neatly in one area at its lowest potential energy. 1a. Wear boots with adequate treads. 1a. Delineate unsafe areas with 42” cones, caution tape and/or flagging.
	1b. CONTACT: Personal injury and/or property damage caused by being struck by Site traffic or equipment used in Site activities.	1b. Observe and maintain the posted speed limits. 1b. When first arriving onsite, park vehicles in designated parking space and/or out of the way locations. Use parking brake on all vehicles and tire chocks on work trucks and trailers. 1b. Check in with Site Manager/Supervisor to ensure coordination with other Site activities and to discuss any special hazards. Ensure that short-service employees (SSE) are identified. 1b. Identify potential traffic sources. 1b. Wear PPE including high visibility clothing or reflective vest. 1b. Use a spotter while moving work vehicles; plan ahead to avoid backing whenever possible. 1b. Maintain a minimum exclusion zone when vehicles are in motion (i.e. greater than swing/tip radius of equipment). When backing up truck rig with an attached trailer use a second spotter if there is tight clearance simultaneously on multiple sides of the equipment or if turning angles limit driver-to-spotter visibility. 1b. Delineate work area with 42” cones, flags, caution tape, and/or other barriers. 1b. Position “Work Area” signs at Site entrances, if possible, or at either side of work area.

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Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
		1b. Position largest vehicle to protect against oncoming traffic. 1b. Face traffic, maintain eye contact with oncoming vehicles, use a spotter, and establish a safe exit route. 1b. Observe potential overhead and ground surface features that may interfere with moving equipment. Clear the path of physical hazards prior to initiating mobilization.
	1c. CAUGHT: Personal injury from pinch points and being in line-of-fire of vehicle and/or equipment.	1c. Make sure driver has engaged parking brake and placed wheel chocks in a position to prevent movement. Be sure that vehicle is parked in front/down gradient (positioned to best block oncoming traffic) of work area. 1c. Wear leather gloves when handling any tools or equipment. Wear cut-resistant gloves (Kevlar or similar) when handling sharp objects/cutting tools/glass. 1c. Keep body parts away from line-of-fire of equipment. 1c. Always carry tools by the handles and/or designated carrier. Ensure sharp-edged tools are sheathed/secure. 1c. Remove any loose jewelry. Avoid wearing loose clothing and/or ensure loose clothing is secure. 1c. Secure all items on the equipment, tighten up any items or features that have potential to shift or break during mobilization.
	1d. OVEREXERTION: Muscle strains while lifting/carrying equipment.	1d. Use body positioning and lifting techniques that avoid muscle strain; keep back straight, lift with legs, turn with whole body, keep load close to body, and never reach with a load. 1d. Ensure that loads are balanced. Use assistance (mechanical or additional person) to carry equipment that is either unwieldy or over 50 lbs.
	1e. EXPOSURE: Personal injury from exposure to biological and environmental hazards.	1e. Inspect area to avoid contact with biological hazards (i.e. poisonous plants, stinging insects, ticks, etc.). 1e. Wear long sleeved clothes treated with Permethrin, apply insect repellant containing DEET to exposed skin, and inspect clothes and skin for ticks during and after work. 1e. Apply sunscreen (SPF 15+) if exposure to sun for 30 minutes or more is expected.
	1f. EXPOSURE: Weather related injuries.	1f. Watch for heat stress symptoms (muscle cramping, exhaustion, dizziness, nausea, rapid and shallow breathing). Take breaks in cool places and hydrate as needed. 1f. Watch for cold stress symptoms (severe shivering, slowing of body movement, weakness, stumbling or inability to walk, collapse). Take breaks in warm areas as needed. 1f. Wear clothing appropriate for weather and temperature conditions (e.g., rain jackets, snow pants, multiple layers). 1f. If lightning is observed, wait 30 minutes in a sheltered location (car is acceptable) before resuming work.
	1g. EXPOSURE: Personal injury from noise hazards.	1g. Wear hearing protection if sound levels exceed 85 dBA (if you must raise your voice for normal conversation).

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JOB SAFETY ANALYSIS	Ctrl. No. GEN-019	DATE: 01/13/2022	☐NEW ☒REVISED	PAGE 1 of 2

JSA TYPE CATEGORY	WORK TYPE	WORK ACTIVITY (Description)
GENERIC	**Site Reconnaissance**	**Site Walk and Inspection**

DEVELOPMENT TEAM	POSITION / TITLE	REVIEWED BY:	POSITION / TITLE
Sara Barrientos	Project Geologist	Brian Hobbs	Corporate Health and Safety Director
Tim Unalp	SHSO	Joe Duminuco	Executive Vice President
		Ray Greenidge	Sr. Compliance Manager

REQUIRED AND / OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT

☐ LIFE VEST ☒ HARD HAT ☐ LIFELINE / BODY HARNESS ☒ SAFETY GLASSES	☐ GOGGLES ☐ FACE SHIELD ☒ HEARING PROTECTION: ear plugs as necessary ☒ SAFETY SHOES: Steel or composite toed	☐ AIR PURIFYING RESPIRATOR ☐ SUPPLIED RESPIRATOR ☒ PPE CLOTHING: High-visibility vest or high-vis outerwear	☒ GLOVES: Leather/cut-resistant/chemical resistant ☒ OTHER: Tyvek and rubber boots as necessary, dust mask as necessary

REQUIRED AND / OR RECOMMENDED EQUIPMENT

Required Equipment: Site map, emergency contact list, documentation of urgent care/hospital routes and / or guide familiar with Site, operating cell phone or walkie-talkie if Site allows, and bug spray.

Commitment to Safety – All personnel onsite will actively participate in SPSA performance by verbalizing SPSAs throughout the day.

EXCLUSION ZONE (EZ): Maintain Minimum Heavy Equipment Exclusion Zone around equipment and loads while it is in motion. The HEEZ must be greater than the swing zone of any moving part of the equipment, tip zone of the equipment, fall zone of the equipment and contents, distance that debris may travel during demolition activities and/or foot print of a structure to be demolished.

SITE SECURITY: Prior to site inspection verify appropriate method to address Site Security concerns as it relates to potential criminal activity, homeless population, and/or isolation concerns. Work with the Project Principal and/or Project Manager to address appropriately.

Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
1. Check in with Site contact.	**1a. CONTACT/EXPOSURE/FALL:** Personal injury caused by lack of awareness of site-specific hazards.	1a. Inquire about hazards and other activities taking place at the Site. 1a. Inform Site contact of work scope, timeline and location(s). 1a. Discuss emergency evacuation procedures and muster points with Site contact.
2. Traversing the Site	**2a. CONTACT:** Property damage and personal injury caused by obstructions/vehicles or unauthorized personnel at remote Sites. **2b. FALL:** Uneven terrain and weather conditions. Overgrown shrubs and vines. Equipment in the work zone. **2c. OVEREXERTION:** Muscle strain while carrying equipment. **2d. EXPOSURE:** Biological hazards – ticks; bees/wasps; poison ivy; insects; (Ticks are most active any time the temperature is above freezing, typically from March to November.)	2a. All equipment must be stowed and secured prior to moving. 2a. Maintain speed limit as posted on-site. 2a. When possible, drive on established roadways. 2a. Yield to all pedestrians. 2a. Use pull-through spots or back into parking spots. 2a. Don high visibility clothing/safety vest. If working at remote Site, add orange accessories during hunting season. 2b. Inspect walking path for uneven terrain, weather-related hazards (i.e., ice, puddles, snow, etc.), and obstructions prior to mobilizing equipment. 2b. When possible, use established pathways and walk on stable, secure ground. 2b. Communicate traversing hazards with others. 2c. When carrying equipment to/from work area, use proper lifting techniques; keep back straight, lift with legs, keep load close to body, never reach with a load. Ensure that loads are balanced to reduce the potential for muscle strain. Use the buddy system or mechanical means to maneuver items heavier than 50-lb. If necessary, make multiple trips to carry equipment. 2d. Inspect area to avoid contact with biological hazards. 2d. Ticks: • Treat outer clothing including pants, shirts, socks, boots and hats the evening before with Permethrin (allowing at least two hours before use). • Apply DEET to exposed skin before travelling to the Site and reapply after two hours. • Check for ticks during and after work. 2d. Bees: • Use bee spray as appropriate to deter/eliminate bees.

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	2e. EXPOSURE: Heat Stress & Cold Stress. Personal injury from working in inclement weather conditions.	• Protect exposed skin with insect repellent. 2d. Poison Ivy: • Identify areas of poison ivy and spray with weed killer. Don Tyvek and rubber boots while traversing poison ivy areas. • If skin contacts poison ivy, wash skin thoroughly with soap and water. 2e. Wear sunscreen with SPF 15 or greater on exposed skin whenever 30 minutes or more of sun exposure is expected. 2e. Watch for heat stress symptoms (muscle cramping, exhaustion, dizziness, rapid and shallow breathing). Take breaks as needed. 2e. Watch for cold stress symptoms (severe shivering, slowing of body movement, weakness, stumbling or inability to walk, collapse). Take breaks as needed. 2e. Wear appropriate rain gear as needed. 2e. Take frequent breaks if tired, wet, or cold/hot. Drink water. 2e. If lightning is observed, wait 30 minutes after last thunder boom/lightning bolt in a sheltered location (car acceptable) before starting work again.
3. Walking near heavy equipment and machinery.	**3a. CONTACT:** Personal injury from Site and roadway traffic. Personal injury from flying debris **3b. OVEREXERTION:** Personal injury from lifting/moving/rotating equipment. **3c. EXPOSURE:** Hearing damage from noise generating equipment/processes. Inhalation/exposure to hazardous vapors and or dust. **3d. EXPOSURE:** Working in a remote area.	3a. See 2a. 3a. Maintain an exclusion zone of at least 10'-25' feet from all engaged equipment. 3a. Keep body parts out of the line-of-fire of pinch points. 3a. Wear appropriate PPE always. 3b. See 2c. 3c. Wear hearing protection if >85 dBA. (i.e. noise levels which require you to raise your voice to communicate) 3c. Always wear leather gloves when handling any tools or equipment. 3c. Always wear appropriate PPE based off chemicals present. 3d. Use the "buddy system" whenever possible. If working alone, contact PM upon arrival/departure, as well as during work activities prior to commencing work if applicable. 3d. Always carry a communication device (i.e., cell phone, walkie-talkie) or directional (i.e., map, compass, etc.) when traversing remote areas. 3d. If available, follow Lone Worker Protocol/Procedure.
4. Working in adverse weather conditions.	**4a. EXPOSURE:** Heat Stress & Cold Stress. Personal injury from working in inclement weather conditions.	4a. Watch for heat stress symptoms (muscle cramping, exhaustion, dizziness, rapid and shallow breathing). Take breaks as needed. 4a. Watch for cold stress symptoms (severe shivering, slowing of body movement, weakness, stumbling or inability to walk, collapse). Take breaks as needed. 4a. Wear appropriate rain gear as needed. 4a. Take frequent breaks if tired, wet, or cold/hot. Drink water. 4a. If lightning is observed, wait 30 minutes after last thunder boom/lightning bolt in a sheltered location (car acceptable) before starting work again.
5. Departing Site.	**5a. EXPOSURE:** Exposure to unnecessary hazards should personnel believe Roux is on-Site during an emergency and conduct a search.	5a. Sign out or notify Site contact and Roux Project Manager of your departure.

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[3] Using the first two columns as a guide, decide what actions or procedures are necessary to eliminate or minimize the risk. List the recommended safe operating procedures. Say exactly what needs to be done - such as "use two persons to lift". Avoid general statements such as, "be careful".

JOB SAFETYANALYSIS Ctrl. No. GEN-020	DATE: 01/13/2022	☐NEW ☒REVISED	PAGE 1 of 2

JSA TYPE CATEGORY:	WORK TYPE:	WORK ACTIVITY (Description):	
GENERIC	**Gauging & Sampling**	**Soil Sampling**	
DEVELOPMENT TEAM	**POSITION / TITLE**	**REVIEWED BY:**	**POSITION / TITLE**
MaryBeth Lyons	Project Scientist	Brian Hobbs	CHSD
Tim Unalp	SHSO	Ray Greenidge	Sr. Compliance Manager

REQUIRED AND / OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT

☐ LIFE VEST ☒ HARD HAT ☐ LIFELINE / BODY HARNESS ☒ SAFETY GLASSES ☒ FLAME RESISTANT CLOTHING (as needed)	☐ GOGGLES ☐ FACE SHIELD: ☒ HEARING PROTECTION: (as needed) ☒ SAFETY SHOES: Composite-toe or steel toe boots	☐ AIR PURIFYING RESPIRATOR ☐ SUPPLIED RESPIRATOR ☒ PPE CLOTHING: Fluorescent reflective vest or high visibility clothing	☒ GLOVES: Leather, Nitrile and cut resistant ☒ OTHER: Insect repellant, sunscreen (as needed)

REQUIRED AND / OR RECOMMENDED EQUIPMENT

Recommended Equipment: 42" traffic cones, caution tape, trowel

COMMITMENT TO SAFETY- All personnel onsite will actively participate in hazard recognition and mitigation throughout the day by verbalizing SPSAs.

EXCLUSION ZONE (EZ): Maintain Minimum Heavy Equipment Exclusion Zone around equipment and loads while it is in motion. The HEEZ must be greater than the swing zone of any moving part of the equipment, tip zone of the equipment, fall zone of the equipment and contents, distance that debris may travel during demolition activities and/or foot print of a structure to be demolished.

Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
1. Secure location	**1a. CONTACT:** Personnel and vehicular traffic may enter the work area.	1a. If in an area with foot or vehicle traffic, delineate the work area with 42" traffic cones and/or caution tape to prevent exposure to traffic and inform others of work activity. 1a. Wear reflective vest and/or high visibility clothing. 1a. Face the direction of any vehicular traffic. Position vehicle to protect worker from traffic. 1a. Communicate work activity with adjacent work areas.
	1b. FALL: Tripping/falling due to uneven terrain or entry/exit from excavations.	1b. Inspect pathways and work area for uneven terrain, weather-related hazards (i.e., ice, puddles, snow, etc.), and obstructions. 1b. Use established pathways and walk on stable, secure ground. 1b. Stage equipment and tools in a convenient, stable, and orderly manner. Store equipment at lowest potential energy. 1b. Roux employees should stay 5 feet from in-progress excavations and trenches. Should entry to an excavation be required (when stabilization is complete), ladders must be employed for steep embankments, excavations, pits, and trenches.
	1c. EXPOSURE: Exposure to sun and excessive heat, possibly causing sunburn, heat exhaustion or heat stroke. Exposure to cold temperatures possibly causing cold stress. Skin burn as a result of fire, if applicable. Exposure to explosive vapors due to tank farm operations. Exposure to airborne dust due to high wind speeds. Biological hazards - ticks, bees/wasps, poison ivy, thorns, insects, etc.	1c. Wear sunscreen with an SPF 15 or greater whenever 30 minutes or more of exposure is expected. 1c. Use a tent to shade the work area from direct sunlight particularly when warm temperatures are expected. 1c. Be aware of the location of all Site personnel. 1c. Watch for heat stress symptoms (muscle cramping, exhaustion, dizziness, rapid and shallow breathing). 1c. Watch for cold stress symptoms (severe shivering, slowing of body movement, weakness, stumbling or inability to walk, collapse). 1c. Take breaks for rest and water as necessary. Move to an area that is well shaded or a climate controlled area (i.e., car, site trailer, etc.). 1c. No open flames/heat sources. 1c. Conduct air monitoring and ensure that harmul vapor concentrations are within the levels detailed in the Site Specific HASP. Follow procedures detailed in HASP for exceedances. 1c. Flame retardant clothing must be worn when specified by Site policy. 1c. Cell phones should be disabled when specified by Site policy. 1c. Pre-treat field clothing with Permethrin prior to site visit to kill ticks and insects. 1c. Wear long sleeved shirts and tuck in (or tape) pant legs into socks or boots to prevent ticks from reaching skin. 1c. Spray insect repellant containing DEET on exposed skin when working in overgrown areas of the Site. 1c. Inspect area to avoid contact with biological hazards. 1c. Wear cut-resistant gloves when handling branches, shrubs, etc. that may lie within the walking path. 1c. Wear spoggles if the average wind speeds are above 15 mph. 1c. Personnel shall examine themselves and co-worker's outer clothing for ticks periodically when onsite. 1c. If skin comes in contact with poison ivy, wash skin thoroughly with soap and water. If rash persists after washing, immediately notify your supervisor, the OM and OHSM for possible consultation with a physician at an approved Occupational Health Clinic.

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[3] Using the first two columns as a guide, decide what actions or procedures are necessary to eliminate or minimize the risk. List the recommended safe operating procedures. Say exactly what needs to be done - such as "use two persons to lift". Avoid general statements such as, "be careful".

Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
2. Collect Soil Sample	**2a. CONTACT:** Personal injury from pinch points, cuts, and abrasions from sampling equipment tools, and material within soil sample. Personal injury from contact with moving equipment while sampling. Personal injury from contact with glass sample jars.	2a. Wear cut-resistant (i.e., Kevlar) gloves under chemical-resistant (nitrile) disposable gloves when handling soil samples and sampling jars. 2a. Where possible, use trowel or equivalent tool to avoid contact with soil. 2a. If sampling from bucket of heavy equipment, ensure all equipment is off and operator utilizes the “show me your hands” policy. 2a. See 1a.
	2b. EXPOSURE: Exposure to contamination (impacted soil) and/or lab preservatives.	2b. Wear chemical-resistant (nitrile) disposable gloves over cut resistant gloves to protect hands when handling samples; use containment material or plastic sheeting to protect surrounding areas. 2b. Wear safety glasses to protect eyes from dust or air-borne contaminants that may results from disturbing the soil. 2b. Where possible, remain upgradient from sample location if collecting soil sample from stockpile, drill rig, etc. to avoid breathing contaminant vapors, if they are present. 2b. When collecting soil sample from hand auger, put large zip lock bag over entire auger to prevent spillage of soil on to the ground. 2b. Open sample jars slowly and fill carefully to avoid contact with preservatives.
	2c. EXERTION: Exertion due to repetitive motion and ergonomics.	2c. Utilize a table or raised surface for soil sampling if multiple soil samples are going to be taken to minimize repetitive bending motion.
3. Decontaminate equipment	**3a. EXPOSURE/CONTACT:** Contamination (e.g., Separate Phase Hydrocarbons (SPH), contaminated vapors and/or soil). **3b. EXPOSURE:** Chemicals in cleaning solution including ammonia.	3a. Wear chemical-resistant (nitrile) disposable gloves and safety glasses. 3a. Use an absorbent pad to clean spills. 3a. Properly dispose of used materials/PPE in provided drums in designated drum storage area. 3a. Remain upwind of sample and avoid breathing contaminant vapors, if they are present. 3b. Wear chemical-resistant (nitrile) disposable gloves and safety glasses. 3b. Work on the upwind side of decontamination area. 3b. Use an absorbent pad to clean spills. 3b. Properly dispose of used materials/PPE in provided drums in designated drum storage area. Ensure that all drums are properly labeled and secured.

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JOB SAFETY ANALYSIS	Ctrl. No. GEN-023	DATE: 01/13/2022	☐ NEW ☒ REVISED	PAGE 1 of 2

JSA TYPE CATEGORY	WORK TYPE	WORK ACTIVITY (Description)	
Generic	**Construction**	**Spotting Heavy Machinery**	
DEVELOPMENT TEAM	**POSITION / TITLE**	**REVIEWED BY:**	**POSITION / TITLE**
Levi Curnutte	Project Scientist	Brian Hobbs	CHSD
Tim Unalp	SHSO	Ray Greenidge	Sr. Compliance Manager

REQUIRED AND / OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT

☐ LIFE VEST	☐ GOGGLES	☐ Particulate Respirator	☒ GLOVES: Cut resistant / leather
☒ HARD HAT	☐ FACE SHIELD	☐ SUPPLIED RESPIRATOR	☐ OTHER:
☒ LONG SLEEVED SHIRT	☐ HEARING PROTECTION	☒ PPE CLOTHING: Fluorescent reflective clothing	
☐ LIFELINE / BODY HARNESS	☒ SAFETY SHOES: Steel-/Composite-toe boots/shoes		
☒ SAFETY GLASSES			

REQUIRED AND / OR RECOMMENDED EQUIPMENT

Heavy Machinery (i.e. excavator, payloader, truck, forklift, etc.), two-way radios.

COMMITMENT TO SAFETY- All personnel onsite will actively participate in hazard recognition and mitigation throughout the day by verbalizing SPSAs

EXCLUSION ZONE (EZ): Maintain Minimum Heavy Equipment Exclusion Zone around equipment and loads while it is in motion. The HEEZ must be greater than the swing zone of any moving part of the equipment, tip zone of the equipment, fall zone of the equipment and contents, distance that debris may travel during demolition activities and/or foot print of a structure to be demolished.

Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
1. Prepare for machine activity.	**1a. CONTACT:** Obstructions in the work area may create contact hazards from machinery. **1b. Fall :** Slip/Trip/Fall	1a. Cordon off the work area with safety barrels/cones and a rigid barrier (snow fence, traffic bar, etc.). Communicate that only necessary personnel should be in the work area. Spotter and equipment operator shall enforce the **EZ.** Operator will not operate but shall remain in the hands-off mode while personnel are within the exclusion zone. 1b. Ensure that work area is flat, level and clear of any obstructions or debris before setting up work zone.
2. Spotting.	**2a. CONTACT:** Machine or load contact with personnel, property, or machinery.	2a. Discuss the specifics of the work with the operator and be clear about any hand signals that will be used. Clearly discuss the limits of the assigned work area and the machine's Exclusion Zone. Maintain Exclusion Zone. The Exclusion Zone shall be delineated by using 42-inch traffic cones/barrels and a fixed rigid barrier. 2a. The Minimum Heavy Equipment Exclusion zone is greater than the swing/tip radius of equipment. 2a. Both the spotter and equipment operators shall have 2-way radios/cellular devices on their persons to ensure audible communication in the event any changes or new hazards may arise. 2a. All workers should stay outside of the Exclusion Zone of all equipment unless operator is stopped and in "Hands Off" mode. **(This includes the spotter unless an exception has been established in the Site-specific JSA).** If the Exclusion Zone must be reduced due to work area restrictions, then the spotter and operator shall enforce the reduced Exclusion Zone. 2a. Spotters must make eye contact with the machine operator or all movement ceases until visual contact can be reestablished. 2a. Spotter shall keep an eye out for any issues with the machine the operator may not see and communicate with other work crews and spotters on behalf of the operator. 2a. If the spotter needs to take a break, he must find a replacement before leaving or have the machine stop operations. **No heavy equipment shall operate without a spotter under any circumstances.** 2a. Wear fluorescent clothing/safety vest. 2a. **Do not multitask. Only perform Spotting**

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Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
	2b. FALL: Slip/Trip/Fall	2b. Look where walking to identify and avoid slip/trip/fall hazards. Avoid icy and/or wet surfaces. Remove obstacles if possible. 2b. Use designated walkways during spotting whenever possible. 2b. **Do not walk backwards. Always face the direction you are walking towards.**
	2c. CAUGHT: Caught between machinery and nearby objects.	2c. **Maintain Exclusion Zone.** Do not stand between large, loose or fixed objects or structures and the machinery while it is in motion. Keep in sight of operator at all times while being aware of surrounding structures.
	2d. EXPOSURE: Inhalation of exhaust from machinery.	2d. The spotter will position him/herself upwind of the working machinery, when possible. Spotter will also inform others working within the vicinity of the EZ of proper positioning, if applicable.

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JOB SAFETY ANALYSIS	Ctrl. No. GEN-025	DATE: 04/11/2023	☐ NEW ☒ REVISED	PAGE 1 of 1

JSA TYPE CATEGORY	WORK TYPE	WORK ACTIVITY (Description)
Generic	**General**	**Trucking**

DEVELOPMENT TEAM	POSITION / TITLE	REVIEWED BY:	POSITION / TITLE
Lauren Dolginko	Project Geologist	Brian Hobbs	CHSD
Tim Unalp	SHSO		

REQUIRED AND / OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT

☐ LIFE VEST	☐ GOGGLES	☐ AIR PURIFYING RESPIRATOR	☒ GLOVES: Leather or cut resistant
☒ HARD HAT	☐ FACE SHIELD	☐ SUPPLIED RESPIRATOR	☐ OTHER
☐ LONG SLEEVED SHIRT	☐ HEARING PROTECTION	☒ PPE CLOTHING: Fluorescent reflective vest or high visibility long sleeved clothing	
☐ LIFELINE / BODY HARNESS	☒ SAFETY SHOES: Steel-toe boots		
☒ SAFETY GLASSES			

REQUIRED AND / OR RECOMMENDED EQUIPMENT

Heavy equipment (i.e. trucks)

COMMITMENT TO SAFETY- All personnel onsite will actively participate in Hazard recognition and mitigation throughout the day by verbalizing SPSAs.

EXCLUSION ZONE (EZ): Maintain Minimum Heavy Equipment Exclusion Zone around equipment and loads while it is in motion. The HEEZ must be greater than the swing zone of any moving part of the equipment, tip zone of the equipment, fall zone of the equipment and contents, distance that debris may travel during demolition activities and/or foot print of a structure to be demolished.

Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
1. Set up work zone.	**1a. CONTACT:** Personal injury/property damage caused by obstruction/vehicle.	1a. Establish work zone for manifesting/paperwork by communicating with workers before task begins. Maintain a minimum **Exclusion Zone (EZ)** around all heavy equipment.
2. Loading of truck.	**2a. CONTACT:** Rolling Vehicle could cause bodily harm.	2a. All commercial vehicles without an operator must have their engines off and wheels chocked. Truck and loading area should be on level and stable ground.
	2b. CONTACT: Machine or load may crush personnel, property or machinery.	2b. All machines (Excavator, Lull, Backhoe) must have a spotter. Spotter must communicate contact hazards such as other personnel in the work area, objects in the machine's blind spot, and overhead lines to the operator. Spotter and operator should have 2-way radios or established hand signals to communicate when needed. 2b. Loads must not be swung over other vehicles or personnel. 2b. Maintain **EZ** around all equipment.
	2c. CONTACT: Load shifting during travel.	2c. Secure all loads prior to moving the truck with chains or straps or cribbing. 2c. Any loose soil or debris should be cleaned off truck sides prior to truck mobilization. 2c. All truck beds must be secured prior to traveling.
3. Dumping loads.	**3a. CONTACT:** Truck may flip sideways or backwards.	3a. All workers must stay behind and away from the side of trucks that are dumping to avoid contact with flying debris and the truck potentially tipping sideways or backwards. EZ must be maintained equal to the height of bed while lifted.
4. Exchanging paperwork with truck driver.	**4a. CONTACT/CAUGHT:** Broken bones from contact by vehicle.	4a. Truck driver should exit truck with proper PPE, using the three-point stance, and enter the established work zone to complete paperwork. If Site-specific safety prohibits drivers from exiting the truck, wait until truck is finished loading, with engine turned off, before approaching truck. 4a. Always establish eye contact with driver prior to approaching truck. 4a. Confirm sides of truck have been cleaned/brushed off prior to approaching truck.
	4b. FALL: Slip, Trip or Fall may cause muscle strains or tears, abrasions or lacerations, or broken bones.	4b. Survey walking route to identify slip/trip/fall hazards. Avoid icy/wet surfaces. Remove slip/trip/fall hazards if present. 4b. Communicate with driver and spotter prior to approaching truck. Maintain **EZ** around all heavy equipment.

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JOB SAFETY ANALYSIS	Cntrl. No. GEN-027	DATE: 01/14/2022	☐ NEW ☒ REVISED	PAGE 1 of 2

JSA TYPE CATEGORY	WORK TYPE	WORK ACTIVITY (Description)
GENERIC	**Drilling**	**Pre-Drilling Clearance, Vactron and Air Knife**

DEVELOPMENT TEAM	POSITION / TITLE	REVIEWED BY:	POSITION / TITLE
Courtney Rempfer	Project Scientist	Joseph Midwig	Senior Engineer
Sara Redding	Senior Hydrogeologist	Brian Hobbs	CHSD
		Ray Greenidge	Sr. Compliance Mgr.

REQUIRED AND / OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT

☐ LIFE VEST ☒ HARD HAT ☐ LIFELINE / BODY HARNESS ☒ SAFETY GLASSES	☐ GOGGLES ☒ FACE SHIELD (While Air Knifing) ☒ HEARING PROTECTION (As needed) ☒ SAFETY SHOES: Composite toe or steel toe boots	☐ AIR PURIFYING RESPIRATOR ☐ SUPPLIED RESPIRATOR ☒ PPE CLOTHING: Fluorescent reflective vest or high visibility clothing; long-sleeve shirt	☒ GLOVES: Leather, Nitrile, cut-resistant ☒ OTHER: Dusk mask, insect repellant, sunscreen (as needed)

REQUIRED AND / OR RECOMMENDED EQUIPMENT

Vac-Truck or Vac Drum, Compressor, Jack Hammer, Air Knife. Circular Saw, Hand Tools, Dust Mask, Photoionization Detector, Multi Gas Meter, 42 inch safety cones and flags, Retractable Cone Bars, Caution Tape, 20 lb. Fire Extinguisher, "Work Area" Signs, Pressurized Water Sprayer

Commitment to Safety – All personnel onsite will actively participate in hazard recognition and mitigation throughout the day by verbalizing SPSAs

EXCLUSION ZONE: All non-essential personnel will maintain a distance of 10 feet from drilling equipment while equipment is moving/engaged

Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
1. Verify pre-clearance protocol	**1a. CONTACT:** Underground utility damage; property damage; personal injury.	1a. Confirm that (if applicable) "Call Before You Dig" and local utility companies were contacted prior to starting work in order to confirm utility mark outs. Must have a case # before digging. 1a Walk the Site to evaluate utility markings and review maps (see Site Walk Inspection JSA - GEN-019). Utilities are not always properly marked out, ensure use of observational skills through the pre-clearing checklist. 1a. Review pre-clearing checklist form and sub-surface clearance form. Pre-clearing protocol indicates that clearance must be conducted to a minimum of 5 vertical feet below ground surface or 10 vertical feet below ground surface in the critical zone using hand tools.
	1b. ENERGY SOURCE/CONTACT: Property damage; Pressurized water mains may cause lacerations or broken bones. Pressurized gas mains may explode causing serious injury, or death. Underground electric may cause severe burns, shock, or death.	1b. Pre-clearing of each soil boring/monitoring well location must be conducted to a minimum of 5 vertical feet below the ground surface (10 feet minimum for Critical Zone) using hand tools (shovel and non-metallic dig bar and hand auger) prior to drilling. Supervisor should be contacted to discuss appropriate pre-clearing depth. 1b. MUST Complete subsurface clearance checklist prior to pre-clearance.
	1c. FALL: Slip, Trip or Fall may cause muscle strains or tears, abrasions, lacerations, or broken bones.	1c. Be aware of the conditions when walking or loading equipment and working. Walk within established pathway avoiding uneven surfaces. Remove potential slip/trip/fall hazards.
2. Mobilize/demobilize and establish work area	**2a. SEE MOBILIZATION / DEMOBILIZATION JSA – GEN-015**	2a. See Mobilization / Demobilization JSA.
3. Concrete saw cutting, jack hammer and hand clearance with hand tools, air knife	**3a. CONTACT:** Flying debris striking face or body	3a Maintain 10' minimum exclusion zone. Use the required PPE (i.e., leather/cut proof gloves, safety glasses/face shield). 3a. Use anti-whip devices on compressor hoses. Ensure hose couplings are secure. 3a Wear a face shield to protect face from flying debris when using air knife. 3a. Utilize a traffic cone, cage or physical barriers over the hole during air knife activities to keep flying debris close to ground.
	3b. EXPOSURE: Inhalation/exposure to hazardous vapors and/or concrete dust, noise exposure	3b. Monitor breathing zone with a calibrated PID and/or multi-gas meter. If meters sustain readings greater than recommeneded in the HASP for the specific contaminant of concerns (COCs) the Roux field personnel must temporarily cease work, instruct all Site personnel to step away from the area of elevated readings. Contact PM. 3b. Wet concrete while using saw to minimize dust and wear dust mask to prevent inhalation. 3b. Stand upwind and keep body behind saw. Observers and helpers should avoid line-of-fire for saw blade. Always cut away from body. 3b. No open flames/heat sources.

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[3] Using the first two columns as a guide, decide what actions or procedures are necessary to eliminate or minimize the risk. List the recommended safe operating procedures. Say exactly what needs to be done - such as "use two persons to lift." Avoid general statements such as, "be careful."

	3c. ENERGYSOURCE/CONTACT: Property damage; Pressurized water mains may cause lacerations or broken bones. Pressurized gas mains may explode causing serious injury, or death. Underground electric may cause severe burns, shock, or death.	3b. Wear hearing protection when saw, jackhammer or air compressor are in operation. Otherwise, if sound levels exceed 85 dbA, put on hearing protection. 3c. For air knifing, ensure extention/lance tip reaches the full 5 feet bgs. Air knife should be advanced **AT A MINIMUM** in all four corners of the expected boring location to find any possible arrangement of utilities. 3c. Ensure diameter of soil preclearance hole is at a **MINIMUM 2x** the diameter of any drilling or hard dig equipment that will be entering the hole. 3c. See Complete subsurface clearance protocol for information provided above.
	3d. ERGONOMICS/EXERTION: Muscle strain due to poor body positioning when handling equipment and materials	3d. Use body positioning and lifting techniques that minimizes muscle strain; keep back straight, lift with legs, keep load close to body, and never reach with a load. 3d. Ensure that loads are balanced to reduce the potential for muscle strain. 3d. Two people or a mechanical lifting aid are required when lifting objects over 50 lbs. or when the shape makes the object difficult to lift.
	3e. FALL: Tripping/falling due to uneven terrain, weather conditions, and materials/equipment stored at the Site	3e. Inspect walking path for uneven terrain, weather-related hazards (i.e., ice, puddles, snow, etc.), and obstructions prior to mobilizing equipment. Mob/Demob JSA. 3e. Do not climb over stored materials/equipment; walk around. Practice good housekeeping. 3e. Use established pathways and walk on stable, secure ground. 3e. Equipment and tools will be stored at the lowest point of potential energy and out of the walkway and immediate work area (i.e. tools should not be propped against walls or nearby equipment or vehicles). 3e. Equipment and tools that are not anticipated to be used will be returned to a storage area that is out of the immediate work area. 3e. Ensure power cords and compressed air lines are grouped when used within the work area. 3e. Pre-cleared location will be finished flush to grade as to prevent a slip/trip hazard or coned and taped off.
	3f. CAUGHT: Amputation points associated with the equipment and vacuum hose	3f. Always wear leather gloves when making connections and using hand tools; wear cut-resistant (i.e., Kevlar) gloves when handling cutting tools. 3f. Inspect the equipment prior to use for potential pinch points. 3f. Test all emergency shutdown devices prior to using equipment. 3f. Inspect saw blade for worn surface or missing teeth; switch blade if damaged or blunt. 3f. Ensure all jewelry is removed, loose clothing is secured, and PPE is secured close to the body. 3f. All non-essential personnel shall maintain a 10 foot exclusion zone; position body out of the line-of-fire of equipment. 3f. Drillers and helpers will understand and use the “Show Me Your Hands Policy”.
4. Move drum to staging area using drum cart	**4a. EXPOSURE/CONTACT:** Contamination (e.g., Separate Phase Hydrocarbons (SPH), contaminated groundwater, soil)	4a. Wear Nitrile chemical-resistant gloves under leather or cut proof gloves. 4a. Do not overfill drums. Ensure that the drum lids are attached securely. 4a. All drums will be staged in the designated storage area.
	4b. EXERTION: Muscle strain while maneuvering drums with drum cart/lift gate	4b. See 3d. Do not overfill drums. Use lift gate on back of truck to load and unload drums. Use drum dolly to move drum.
	4c. CAUGHT: Pinch points associated with handling drum lid	4c. Ensure that fingers are not placed under the lid of the drum. Wear leather gloves or cut proof gloves. Use appropriate ratchet while sealing drum lid.
5. Decontaminate equipment.	**5a. EXPOSURE/CONTACT**: To contamination (e.g., Separate Phase Hydrocarbons (SPH), contaminated groundwater, vapors).	5a. Wear chemical-resistant disposable gloves and safety glasses. 5a. Contain decontamination water so that it does not spill. 5a. Use an absorbent pad to clean spills, if necessary. 5a. Spray equipment from side angle, not straight on, to avoid backsplash. 5a. See 3b.
	5b. EXPOSURE: To chemicals in cleaning solution.	5b. See 4a. Review SDS to ensure appropriate precautions are taken and understood.

[1] Each Job or Operation consists of a set of tasks / steps. Be sure to list all the steps needed to perform job.

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[3] Using the first two columns as a guide, decide what actions or procedures are necessary to eliminate or minimize the risk. List the recommended safe operating procedures. Say exactly what needs to be done - such as "use two persons to lift". Avoid general statements such as, "be careful".

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JOB SAFETY ANALYSIS	Ctrl. No. GEN-032	DATE: 04/11/2023	☒ NEW ☐ REVISED	PAGE 1 of 2

JSA TYPE CATEGORY	WORK TYPE	WORK ACTIVITY (Description)
Generic	**Construction**	**Spotting Third-Party Traffic**

DEVELOPMENT TEAM	POSITION / TITLE	REVIEWED BY:	POSITION / TITLE
Douglas Ferraiolo	Project Geologist	Brian Hobbs	CHSD
Jerry Tolosko	VP Principal Hydrogeologist	Rafhael Gandolff	Sr. H&S Specialist

REQUIRED AND / OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT

☐ LIFE VEST	☐ GOGGLES	☐ Particulate Respirator	☒ GLOVES: Cut resistant / leather
☒ HARD HAT	☐ FACE SHIELD	☐ SUPPLIED RESPIRATOR	☐ OTHER:
☒ LONG SLEEVED SHIRT	☐ HEARING PROTECTION	☒ PPE CLOTHING: Fluorescent reflective clothing	
☐ LIFELINE / BODY HARNESS	☒ SAFETY SHOES: Steel-/Composite-toe boots/shoes		
☒ SAFETY GLASSES			

REQUIRED EQUIPMENT

Handheld fluorescent warning flags (1 per spotter), two-way radios.

COMMITMENT TO SAFETY- All personnel onsite will actively participate in hazard recognition and mitigation throughout the day by verbalizing SPSAs

EXCLUSION ZONE (EZ): Maintain Minimum Heavy Equipment Exclusion Zone around equipment, active operations (e.g., excavation, truck loading ,etc.) and loads while it is in motion. The HEEZ must be greater than the swing zone of any moving part of the equipment, tip zone of the equipment, fall zone of the equipment and contents, distance that debris may travel during demolition activities and/or foot print of a structure to be demolished. The HEEZ should not be compromised in any way by third party traffic.

Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
1. Prepare for heavy equipment operations and/or job activity which require traffic stoppage.	**1a. CONTACT:** Third-party traffic in and/or adjacent to the work area may create contact hazards with machinery and site personnel. **1b. Fall :** Slip/Trip/Fall	1a. Cordon off the work area with safety barrels/cones and a rigid barrier (snow fence, traffic bar, etc.). Communicate that only necessary personnel should be in the work area. Spotter and equipment operator shall enforce the **EZ.** Operator will not operate but shall remain in the hands-off mode while personnel are within the exclusion zone. • Spotters must agree on communication via voice and hand signals before the activity begins. • Spotters must be visible and maintain contact with other spotters. • If contact is lost with either spotter, work operations should stop until communication has been re-established. • Spotters should never have additional duties while they are spotting. 1a. Spotters must analyze traffic patterns adjacent to the site to assess which traffic direction will need to be re-directed and what issues must be resolved prior to spotting traffic. 1a. The “Traffic Control Point” is a specific location where the spotter is positioned to direct traffic. 1a. **Spotters should select an appropriate Traffic Control Point where visibility, directions and personal safety will be maximized.** 1b. Ensure that the Traffic Control Point is flat, level and clear of any obstructions or debris before beginning spotting operations.

[1] Each Job or Operation consists of a set of tasks / steps. Be sure to list all the steps needed to perform job.
[2] A hazard is a potential danger. Break hazards into six types: Contact - victim is struck by or strikes an object; Caught - victim is caught on, caught in or caught between objects; Fall - victim falls to ground or lower level (includes slips and trips); Exertion - excessive strain or stress / ergonomics / lifting techniques; Exposure - inhalation/skin hazards; Energy Source – electricity, pressure, compression/tension.
[3] Using the first two columns as a guide, decide what actions or procedures are necessary to eliminate or minimize the risk. List the recommended safe operating procedures. Say exactly what needs to be done - such as "use two persons to lift". Avoid general statements such as, "be careful".

Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
2. Spotting third-party traffic during site operations.	**2a. CONTACT:** Machine or load contact with third party traffic.	2a. Discuss the specifics of the work, limits of the assigned work area, and the machine's Exclusion Zone. Maintain the Exclusion Zone while spotting third-party traffic. 2a. **Spotters and equipment operators shall have 2-way radios/cellular devices on their persons** to ensure audible communication in the event any changes or new hazards may arise. 2a. Spotters must make eye contact with the machine operations and third-party traffic, or all movement ceases until visual contact can be reestablished. 2a. Spotter shall keep an eye out for any traffic issues the operator may not see and communicate with other work crews and spotters accordingly. 2a. If the spotter needs to take a break, he must find a replacement before leaving or stop operations. **Operations which may contact third-party traffic shall not be performed without a spotter under any circumstances.** 2a. Wear fluorescent clothing/safety vest. **Handheld fluorescent warning flags (1 per spotter) are required for spotting third party traffic.** 2a. Establish traffic control by performing all signals / movements with precision and ensuring drivers obey signals. • Break traffic at natural gaps whenever possible to direct opposite sides of traffic • Maintain consistency in the time you allow each direction of traffic to travel. Prioritize major routes over secondary routes. • If breaks do not occur, allow traffic to accumulate on opposite sides of the road before directing it to move. • Allow right turns whenever they do not interfere with traffic and pedestrians. • Make sure opposite lanes are stopped before allowing left turns to be made. 2a. **Do not multitask. Only perform Spotting.**
	2b. FALL: Slip/Trip/Fall	2b. Look where walking to identify and avoid slip/trip/fall hazards. Avoid icy and/or wet surfaces. Remove obstacles if possible. 2b. Use designated walkways during spotting whenever possible. 2b. **Do not walk backwards. Always face the direction you are walking towards.**
	2c. CAUGHT: Caught between machinery and nearby objects.	2c. **Maintain Exclusion Zone.** Do not stand between large, loose or fixed objects or structures and the machinery while it is in motion. Keep in sight of operator at all times while being aware of surrounding structures.
	2d. EXPOSURE: Inhalation of exhaust from machinery.	2d. The spotter will position him/herself upwind of the working machinery, when possible. Spotter will also inform others working within the vicinity of the EZ of proper positioning, if applicable.

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[3] Using the first two columns as a guide, decide what actions or procedures are necessary to eliminate or minimize the risk. List the recommended safe operating procedures. Say exactly what needs to be done - such as "use two persons to lift". Avoid general statements such as, "be careful".

APPENDIX B

Safety Data Sheets (SDSs) for Chemicals Used

Danger

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Trade name : Isobutene
SDS no : SDS-076-CLP
Chemical description : Isobutene
CAS-No. : 115-11-7
EC-No. : 204-066-3
EC Index-No. : 601-012-00-4
Registration-No. : 01-2119456616-32
Chemical formula : C4H8 / CH2=C(CH3)2

1.2. Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses : Industrial and professional uses. Perform risk assessment prior to use.
Test gas/Calibration gas.
Chemical reaction / Synthesis.
Laboratory use.
Contact supplier for more information on uses.
Uses advised against : Consumer use.

1.3. Details of the supplier of the safety data sheet

Company identification : Air Liquide UK Ltd
Station Road, Coleshill
Birmingham, B46 1JY

E-Mail address (competent person) : david.hopper@airliquide.com

1.4. Emergency telephone number

Emergency telephone number : 01675 462695 (Available 24/7)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Physical hazards	Flammable gases, Category 1	H220
	Gases under pressure : Liquefied gas	H280

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :

GHS02 GHS04

Signal word (CLP) : Danger

Hazard statements (CLP) : H220 - Extremely flammable gas.
H280 - Contains gas under pressure; may explode if heated.

Precautionary statements (CLP)

- Prevention : P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- Response : P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381 - In case of leakage, eliminate all ignition sources.
- Storage : P403 - Store in a well-ventilated place.

2.3. Other hazards

: Contact with liquid may cause cold burns/frostbite.

SECTION 3: Composition/information on ingredients

3.1. Substances

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Isobutene	(CAS-No.) 115-11-7 (EC-No.) 204-066-3 (EC Index-No.) 601-012-00-4 (Registration-No.) 01-2119456616-32	100	Flam. Gas 1, H220 Press. Gas (Liq.), H280

Contains no other components or impurities which will influence the classification of the product.

3.2. Mixtures : Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

- Inhalation : Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Perform cardiopulmonary resuscitation if breathing stopped.
- Skin contact : In case of frostbite spray with water for at least 15 minutes. Apply a sterile dressing. Obtain medical assistance.
- Eye contact : Immediately flush eyes thoroughly with water for at least 15 minutes.
- Ingestion : Ingestion is not considered a potential route of exposure.

4.2. Most important symptoms and effects, both acute and delayed

: Refer to section 11.

4.3. Indication of any immediate medical attention and special treatment needed

: None.

SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media : Water spray or fog.
  Dry powder.
- Unsuitable extinguishing media : Carbon dioxide.
  Do not use water jet to extinguish.

5.2. Special hazards arising from the substance or mixture

Specific hazards : Exposure to fire may cause containers to rupture/explode.

Hazardous combustion products : Carbon monoxide.

5.3. Advice for firefighters

Specific methods : Use fire control measures appropriate for the surrounding fire. Exposure to fire and heat radiation may cause gas receptacles to rupture. Cool endangered receptacles with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems.

If possible, stop flow of product.

Use water spray or fog to knock down fire fumes if possible.

Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur. Extinguish any other fire.

Move containers away from the fire area if this can be done without risk.

Special protective equipment for fire fighters : In confined space use self-contained breathing apparatus.

Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters.

Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.

Standard EN 469 - Protective clothing for firefighters. Standard - EN 659: Protective gloves for firefighters.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

: Try to stop release.

Evacuate area.

Monitor concentration of released product.

Consider the risk of potentially explosive atmospheres.

Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.

Eliminate ignition sources.

Ensure adequate air ventilation.

Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.

Act in accordance with local emergency plan.

Stay upwind.

6.2. Environmental precautions

: Try to stop release.

6.3. Methods and material for containment and cleaning up

: Ventilate area.

6.4. Reference to other sections

: See also sections 8 and 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Safe use of the product	:	Do not breathe gas. Avoid release of product into atmosphere. The product must be handled in accordance with good industrial hygiene and safety procedures. Only experienced and properly instructed persons should handle gases under pressure. Consider pressure relief device(s) in gas installations. Ensure the complete gas system was (or is regularily) checked for leaks before use. Do not smoke while handling product. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt. Avoid suck back of water, acid and alkalis. Assess the risk of potentially explosive atmospheres and the need for explosion-proof equipment. Purge air from system before introducing gas. Take precautionary measures against static discharge. Keep away from ignition sources (including static discharges). Consider the use of only non-sparking tools. Ensure equipment is adequately earthed.
Safe handling of the gas receptacle	:	Refer to supplier's container handling instructions. Do not allow backfeed into the container. Protect cylinders from physical damage; do not drag, roll, slide or drop. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Leave valve protection caps in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use. If user experiences any difficulty operating valve discontinue use and contact supplier. Never attempt to repair or modify container valves or safety relief devices. Damaged valves should be reported immediately to the supplier. Keep container valve outlets clean and free from contaminants particularly oil and water. Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment. Close container valve after each use and when empty, even if still connected to equipment. Never attempt to transfer gases from one cylinder/container to another. Never use direct flame or electrical heating devices to raise the pressure of a container. Do not remove or deface labels provided by the supplier for the identification of the content of the container. Suck back of water into the container must be prevented. Open valve slowly to avoid pressure shock.

7.2. Conditions for safe storage, including any incompatibilities

: Observe all regulations and local requirements regarding storage of containers.
Containers should not be stored in conditions likely to encourage corrosion.
Container valve guards or caps should be in place.
Containers should be stored in the vertical position and properly secured to prevent them from falling over.
Stored containers should be periodically checked for general condition and leakage.
Keep container below 50°C in a well ventilated place.
Store containers in location free from fire risk and away from sources of heat and ignition.
Keep away from combustible materials.
Segregate from oxidant gases and other oxidants in store.
All electrical equipment in the storage areas should be compatible with the risk of a potentially explosive atmosphere.

7.3. Specific end use(s)

: None.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Isobutene (115-11-7)	
DNEL: Derived no effect level (Workers)	
Long-term - local effects, inhalation	768.7 mg/m³
Long-term - systemic effects, inhalation	769 mg/m³

PNEC (Predicted No-Effect Concentration) : None established.

8.2. Exposure controls

8.2.1. Appropriate engineering controls

: Provide adequate general and local exhaust ventilation.
Product to be handled in a closed system.
Systems under pressure should be regularly checked for leakages.
Ensure exposure is below occupational exposure limits (where available).
Gas detectors should be used when flammable gases/vapours may be released.
Consider the use of a work permit system e.g. for maintenance activities.

8.2.2. Individual protection measures, e.g. personal protective equipment

: A risk assessment should be conducted and documented in each work area to assess the risks related to the use of the product and to select the PPE that matches the relevant risk. The following recommendations should be considered:
PPE compliant to the recommended EN/ISO standards should be selected.

• Eye/face protection : Wear goggles when transfilling or breaking transfer connections.
Standard EN 166 - Personal eye-protection - specifications.

• Skin protection

- Hand protection : Wear working gloves when handling gas containers.
Standard EN 388 - Protective gloves against mechanical risk.
Wear cold insulating gloves when transfilling or breaking transfer connections.

- Other : Consider the use of flame resistant anti-static safety clothing.
Standard EN ISO 14116 - Limited flame spread materials.
Standard EN 1149-5 - Protective clothing: Electrostatic properties.
Wear safety shoes while handling containers.
Standard EN ISO 20345 - Personal protective equipment - Safety footwear.

• Respiratory protection	:	Gas filters may be used if all surrounding conditions e.g. type and concentration of the contaminant(s) and duration of use are known. Use gas filters with full face mask, where exposure limits may be exceeded for a short-term period, e.g. connecting or disconnecting containers. Recommended: Filter AX (brown). Gas filters do not protect against oxygen deficiency. Standard EN 14387 - Gas filter(s), combined filter(s) and standard EN136, full face masks .
• Thermal hazards	:	None in addition to the above sections.

8.2.3. Environmental exposure controls

: Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance

• Physical state at 20°C / 101.3kPa	:	Gas
• Colour	:	Colourless.
Odour	:	Sweetish. Poor warning properties at low concentrations.
Odour threshold	:	Odour threshold is subjective and inadequate to warn of overexposure.
pH	:	Not applicable for gases and gas mixtures.
Melting point / Freezing point	:	-140.3 °C
Boiling point	:	-7.1 °C
Flash point	:	Not applicable for gases and gas mixtures.
Evaporation rate	:	Not applicable for gases and gas mixtures.
Flammability (solid, gas)	:	Extremely flammable gas.
Explosive limits	:	1.6 - 10 vol %
Vapour pressure [20°C]	:	2.6 bar(a)
Vapour pressure [50°C]	:	6.05 bar(a)
Vapour density	:	Not applicable.
Relative density, liquid (water=1)	:	0.63
Relative density, gas (air=1)	:	2
Water solubility	:	388 mg/l
Partition coefficient n-octanol/water (Log Kow)	:	2.35
Auto-ignition temperature	:	465 °C
Decomposition temperature	:	Not applicable.
Viscosity	:	No reliable data available.
Explosive properties	:	Not applicable.
Oxidising properties	:	Not applicable.

9.2. Other information

Molar mass	:	56 g/mol
Critical temperature [°C]	:	145 °C
Other data	:	Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.

SECTION 10: Stability and reactivity

10.1. Reactivity

: No reactivity hazard other than the effects described in sub-sections below.

10.2. Chemical stability

: Stable under normal conditions.

10.3. Possibility of hazardous reactions

: Can form explosive mixture with air.
May react violently with oxidants.

10.4. Conditions to avoid

: Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
Avoid moisture in installation systems.

10.5. Incompatible materials

: Air, Oxidisers.
For additional information on compatibility refer to ISO 11114.

10.6. Hazardous decomposition products

: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Toxicological effects not expected from this product if occupational exposure limit values are not exceeded.

LC50 inhalation rat (ppm)	≥ 10000

Skin corrosion/irritation : No known effects from this product.

Serious eye damage/irritation : No known effects from this product.

Respiratory or skin sensitisation : No known effects from this product.

Germ cell mutagenicity : No known effects from this product.

Carcinogenicity : No known effects from this product.

Toxic for reproduction : Fertility : No known effects from this product.

Toxic for reproduction : unborn child : No known effects from this product.

STOT-single exposure : No known effects from this product.

STOT-repeated exposure : No known effects from this product.

Aspiration hazard : Not applicable for gases and gas mixtures.

SECTION 12: Ecological information

12.1. Toxicity

Assessment : No ecological damage caused by this product.

EC50 48h - Daphnia magna [mg/l] : No data available.

EC50 72h - Algae [mg/l] : No data available.

LC50 96 h - Fish [mg/l] : No data available.

12.2. Persistence and degradability

Assessment : The substance is readily biodegradable. Unlikely to persist.

12.3. Bioaccumulative potential

Assessment	:	Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9.

12.4. Mobility in soil

Assessment	:	Because of its high volatility, the product is unlikely to cause ground or water pollution. Partition into soil is unlikely.

12.5. Results of PBT and vPvB assessment

Assessment	:	Not classified as PBT or vPvB.

12.6. Other adverse effects

Other adverse effects	:	No known effects from this product.
Effect on the ozone layer	:	None.
Effect on global warming	:	No known effects from this product.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Contact supplier if guidance is required.

Do not discharge into areas where there is a risk of forming an explosive mixture with air. Waste gas should be flared through a suitable burner with flash back arrestor.

Do not discharge into any place where its accumulation could be dangerous.

Ensure that the emission levels from local regulations or operating permits are not exceeded.

Refer to the EIGA code of practice Doc.30 "Disposal of Gases", downloadable at http://www.eiga.org for more guidance on suitable disposal methods.

Return unused product in original container to supplier.

List of hazardous waste codes (from Commission Decision 2000/532/EC as amended) : 16 05 04 *: Gases in pressure containers (including halons) containing hazardous substances.

13.2. Additional information

: External treatment and disposal of waste should comply with applicable local and/or national regulations.

SECTION 14: Transport information

14.1. UN number

UN-No. : 1055

14.2. UN proper shipping name

Transport by road/rail (ADR/RID) : ISOBUTYLENE

Transport by air (ICAO-TI / IATA-DGR) : Isobutylene

Transport by sea (IMDG) : ISOBUTYLENE

14.3. Transport hazard class(es)

Labelling :

2.1 : Flammable gases.

Transport by road/rail (ADR/RID)

Class	:	2
Classification code	:	2F
Hazard identification number	:	23
Tunnel Restriction	:	B/D - Tank carriage : Passage forbidden through tunnels of category B, C, D and E. Other carriage : Passage forbidden through tunnels of category D and E

Transport by air (ICAO-TI / IATA-DGR)

Class / Div. (Sub. risk(s))	:	2.1

Transport by sea (IMDG)

Class / Div. (Sub. risk(s))	:	2.1
Emergency Schedule (EmS) - Fire	:	F-D
Emergency Schedule (EmS) - Spillage	:	S-U

14.4. Packing group

Transport by road/rail (ADR/RID)	:	Not applicable
Transport by air (ICAO-TI / IATA-DGR)	:	Not applicable
Transport by sea (IMDG)	:	Not applicable

14.5. Environmental hazards

Transport by road/rail (ADR/RID)	:	None.
Transport by air (ICAO-TI / IATA-DGR)	:	None.
Transport by sea (IMDG)	:	None.

14.6. Special precautions for user

Packing Instruction(s)

Transport by road/rail (ADR/RID)	:	P200
Transport by air (ICAO-TI / IATA-DGR)		
Passenger and Cargo Aircraft	:	Forbidden.
Cargo Aircraft only	:	200.
Transport by sea (IMDG)	:	P200

Special transport precautions : Avoid transport on vehicles where the load space is not separated from the driver's compartment.

Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency.

Before transporting product containers:

- Ensure there is adequate ventilation.
- Ensure that containers are firmly secured.
- Ensure valve is closed and not leaking.
- Ensure valve outlet cap nut or plug (where provided) is correctly fitted.
- Ensure valve protection device (where provided) is correctly fitted.

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

: Not applicable.

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

EU-Regulations

Restrictions on use : None.

Other information, restriction and prohibition regulations	:	Ensure all national/local regulations are observed.
Seveso Directive : 2012/18/EU (Seveso III)	:	Listed.

National regulations

No additional information available

15.2. Chemical safety assessment

: A CSA has been carried out.

SECTION 16: Other information

Indication of changes	:	Revised safety data sheet in accordance with commission regulation (EU) No 2015/830.
Abbreviations and acronyms	:	ATE - Acute Toxicity Estimate CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008 REACH - Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006 EINECS - European Inventory of Existing Commercial Chemical Substances CAS# - Chemical Abstract Service number LC50 - Lethal Concentration to 50 % of a test population RMM - Risk Management Measures PBT - Persistent, Bioaccumulative and Toxic vPvB - Very Persistent and Very Bioaccumulative STOT- SE : Specific Target Organ Toxicity - Single Exposure CSA - Chemical Safety Assessment EN - European Standard UN - United Nations ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road IATA - International Air Transport Association IMDG code - International Maritime Dangerous Goods RID - Regulations concerning the International Carriage of Dangerous Goods by Rail WGK - Water Hazard Class STOT - RE : Specific Target Organ Toxicity - Repeated Exposure
Training advice	:	Ensure operators understand the flammability hazard.
Further information	:	This Safety Data Sheet has been established in accordance with the applicable European Union legislation.
DISCLAIMER OF LIABILITY	:	Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out. Details given in this document are believed to be correct at the time of going to press. Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted.

End of document

APPENDIX C

COVID-19 Interim Health and Safety Guidance

COVID-19 INTERIM HEALTH AND SAFETY GUIDANCE

CORPORATE HEALTH AND SAFETY MANAGER	:	**Brian Hobbs, CIH, CSP**
EFFECTIVE DATE	:	**03/2020**
REVISION DATE	:	**09/21/2022**
REVISION NUMBER	:	**9**

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APPENDICES

1. PURPOSE

This guidance has been implemented to establish work practices, administrative procedures, and engineering controls to minimize potential exposure to SARS-CoV-2, the virus that causes COVID-19. The following guidance has been developed based on local, state and federal recommendations/requirements regarding COVID-19. The purpose of this document is to supplement existing site-specific Health and Safety Plans (HASPs) and provide interim health and safety guidance to minimize potential exposure to SARS-CoV-2. Should additional scientific information or regulatory information change, this document shall be updated accordingly.

2. SCOPE AND APPLICABILITY

This guidance covers all Roux employees and the subcontractors that Roux oversees. Site specific HASPs shall be developed to incorporate elements of mitigative measures against COVID-19 exposure. If work cannot be carried out in compliance with this guidance, the project shall be further evaluated by the Project Principal (PP), Office Manager (OM), and Corporate Health and Safety Director (CHSD) prior to work authorization.

Roux subcontractors are required to review, comply with, and implement Roux's COVID-19 Interim Health and Safety Guidance while on Site. Subcontractors may implement additional preventative measures as they see fit. All work shall be conducted in a manner consistent with the federal, state, and local guidance as it relates to COVID-19.

3. BACKGROUND

What is COVID-19?

COVID-19 is a respiratory disease caused by SARS-CoV-2, a coronavirus discovered in 2019. The virus spreads mainly from person to person through respiratory droplets produced when an infected person coughs, sneezes, or talks. Some people who are infected may not have symptoms. Multiple variants of the virus that causes COVID-19 are circulating globally. There are currently several vaccines which have been developed which are authorized, recommended and effective at protecting you from getting sick.

What are the symptoms of COVID-19?

Reported illnesses have ranged from mild symptoms to severe illness and death for confirmed COVID-19 cases. Symptoms may appear 2 to 14 days following exposure to the virus. People with these symptoms or combinations of symptoms may have COVID-19:

- Fever or chills
- Cough
- Shortness of breath or difficulty breathing
- Fatigue
- Muscle or body aches
- Headache
- New loss of taste or smell
- Sore throat
- Congestion or runny nose
- Nausea or vomiting
- Diarrhea

This list is not all possible symptoms. The CDC will continue to update this list as they learn more about the virus. For an updated symptom list please reference the following link for CDC Symptoms of Coronavirus.

If someone develops emergency warning signs for COVID-19, they should be instructed to get medical attention immediately. Emergency warning signs can include those listed below; however, this list is not all inclusive. Please consult your medical provider for any other symptoms that are severe or concerning.

- Trouble breathing
- Persistent pain or pressure in the chest
- New confusion
- Inability to wake or stay awake
- Pale, gray, or blue-colored skin, lips, or nail beds, depending on skin tone

How does COVID-19 spread?[1]

Individuals who are within close contact (within 6 feet) of a person with COVID-19 or have direct contact with that person are at greatest risk of infection.

COVID-19 spreads in three main ways:

- Breathing in air when close to an infected person who is exhaling small droplets and particles that contain the virus.
- Having these small droplets and particles that contain virus land on the eyes, nose, or mouth, especially through splashes and sprays like a cough or sneeze.
- Touching eyes, nose, or mouth with hands that have the virus on them.

Transmission of SARS-CoV-2 from inhalation of virus in air farther than six feet from an infectious source can occur.

Some infections can be spread by exposure to virus in small droplets and particles that can linger in the air for minutes to hours. These viruses may be able to infect people who are further than 6 feet away from the person who is infected or after that person has left the space. This kind of spread is referred to as **airborne transmission** and is an important way that infections like tuberculosis, measles, and chicken pox are spread. Per published reports, factors that increase the risk of SARS-CoV-2 infection under these circumstances include:

- Enclosed spaces with inadequate ventilation or air handling within which the concentration of exhaled respiratory fluids, especially very fine droplets and aerosol particles, can build-up in the air space.
- Increased exhalation of respiratory fluids if the infectious person is engaged in physical exertion or raises their voice (e.g., exercising, shouting, singing).
- Prolonged exposure to these conditions, typically more than 15 minutes.

Spread from contact with contaminated surfaces or objects is less common.

Respiratory droplets can also land on surfaces and objects. It is possible that a person could get COVID-19 by touching a surface or object that has the virus on it and then touching their own mouth, nose, or eyes. Spread from touching surfaces is not thought to be a common way that COVID-19 spreads.

4. TRAINING REQUIREMENTS

All employees with potential exposure to COVID-19 shall be provided training that incorporates COVID-19 exposure mitigation strategies, such as implementation of proper social distancing, personal hygiene (e.g., handwashing), as well as disinfection procedures, as outlined by CDC guidelines.

5. EXPOSURE RISK POTENTIAL

Worker risk of occupational exposure to COVID-19 can vary from very high, high, medium, or lower (caution) risk. This level of exposure is dependent on several factors, which can include industry type; need for contact within 6 feet of people known to be or suspected of being infected with COVID-19; density of work environment; and industrial setting (i.e., healthcare building, occupied interior work area, minimal ventilation).

Provided below is background risk level information taken from the U.S. Department of Labor Occupational Safety and Health Administration Guidance on preparing workplaces for COVID-19. Risk evaluations for each project shall be conducted by the PP and OM in consultation with the CHSD to ensure Roux employees and subcontractors remain within the lower exposure (caution) category. If it is identified there is a medium exposure risk or higher, further evaluation and mitigative measures shall be evaluated to reduce overall exposure risk prior to work authorization.

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1 How COVID-19 Spreads https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/how-covid-spreads.html#edn1

Very High Exposure Risk (Activities not conducted by Roux)

Very high exposure risk includes occupations/work activities with high potential for exposure to known or suspected sources of COVID-19 during specific medical, postmortem, or laboratory procedures. This can include but is not limited to:

- Healthcare workers (e.g., doctors, nurses, dentists, paramedics, emergency medical technicians) performing aerosol-generating procedures (e.g., intubation, cough induction procedures, bronchoscopies, some dental procedures and exams, or invasive specimen collection) on known or suspected COVID-19 patients.
- Healthcare or laboratory personnel collecting or handling specimens from known or suspected COVID-19 patients (e.g., manipulating cultures from known or suspected COVID-19 patients).
- Morgue workers performing autopsies, which generally involve aerosol-generating procedures on the bodies of people who are known to have, or suspected of having, COVID-19 at the time of their death.

High Exposure Risk (Activities not conducted by Roux)

High exposure risk occupations/work activities include exposure to known or suspected COVID-19 positive individuals. This can include but not limited to:

- Healthcare delivery and support staff (hospital staff who must enter patients' rooms) exposed to known or suspected COVID-19 patients.
- Medical transport workers (ambulance vehicle operators) moving known or suspected COVID-19 patients in enclosed vehicles.
- Mortuary workers involved in preparing bodies for burial or cremation of people known to have, or suspected of having, COVID-19 at the time of death.
- Those who have frequent or sustained contact with coworkers, including under close working conditions indoors or in poorly ventilated spaces in various types of industrial, manufacturing, agriculture, construction, and other critical infrastructure workplaces.
- Those who have frequent indoor or poorly ventilated contact with the general public, including workers in retail stores, grocery stores or supermarkets, pharmacies, transit and transportation operations, law enforcement and emergency response operations, restaurants, and bars.

Medium Exposure Risk

Medium exposure risk occupations/work activities include those that require frequent and/or close contact with (i.e., within 6 feet for a cumulative total of 15 minutes or more over a 24-hour period)) people who may be infected with COVID-19, but who are not known or suspected to be COVID-19 positive. For most of our worksites, it is assumed there is on-going community transmission for COVID-19. Therefore, workers who work at sites and may have contact with the general public, other contractors, high-population-density work environments (i.e., greater than 10 people) fall within medium exposure risk group category. This can include, but is not limited to, sampling events that require two or more workers to collect and log samples in close contact or work occurring in an interior space with limited ventilation and several workers present.

Lower Exposure Risk (Caution)

Lower exposure risk (caution) occupations/work activities are those that do not require close contact (within 6 feet for a cumulative total of 15 minutes or more over a 24-hour period) with other people. During these activities, there is limited contact (i.e., within 6 feet of) the general public or other workers. Workers in this category have minimal occupational contact with the public and other coworkers. This includes construction oversight that does not require close contact, sampling or gauging events performed by one worker and our remote workers as well as office workers who do not have frequent close contact with coworkers, clients, or the public.

6. CDC FULLY VACCINATED GUIDANCE

You are up to date with your COVID-19 vaccines if you have completed a COVID-19 vaccine primary series and received the most recent booster dose recommended for you by CDC. Additional information concerning vaccinations can be found at the following link.

7. COVID-19 HEALTH SCREENING

7.1 Roux Employees

Depending on local/state/client requirements, Roux employees may self-attest to a COVID-19 Daily Health Questionnaire that is to be completed at home through a mobile application on scheduled workdays. The purpose of this program is to ensure business continuity as well as mitigate any potential exposure to our employees and others if it is determined employees are at-risk for contracting COVID-19. As part of this self-attestation, all employees are required to take their temperatures daily at home to confirm they do not have a fever (≥ 100.4). Employees who answer yes to any of these questions are instructed to contact their Office Manager and/or Department Head immediately and should not enter the office or go to a field site. Information shall be used to determine appropriate internal response in consultation with the Human Resources Director (HRD) and CHSD.

Below, you will find our COVID-19 Daily Health Questionnaire that all Roux employees are required to self-attest to **every scheduled workday by 9:30 AM.** If employees do not promptly fill out the questionnaire by the time listed above, there will be additional follow up by HR, H&S, and/or OMs.

According to the U.S. Centers for Disease Control and Prevention & the World Health Organization, COVID-19 Symptoms include:

- *Fever (≥100. 4°F) or chills*
- *Cough*
- *Shortness of breath or difficulty breathing*
- *Fatigue*
- *Muscle or body aches*
- *Headache*
- *New loss of taste or smell*
- *Sore throat*
- *Congestion or runny nose*
- *Nausea or vomiting*
- *Diarrhea*

Have you experienced any of the COVID-19 related symptoms noted above in the last 14 days? Please Note: We do not expect employees to answer "yes" to the symptoms question if these are symptoms you normally experience due to another condition or medication.

- *Yes*
- *No*

Have you been in close contact with someone who is suspected or confirmed to have COVID-19 or who is under investigation for COVID-19 within the last 14 days? * Close contact as defined by the CDC is being within 6 feet of someone who has COVID-19 for a cumulative total of 15 minutes or more over a 24-hour period.*

- *Yes*
- *No*

Have you traveled outside of the country, been on a cruise ship and/or traveled to areas within the United States which have state mandated travel restrictions in the last 14 days?

- *Yes*
- *No*

Have you tested positive for COVID-19 within the last 14 days?

- *Yes*
- *No*

7.2 Subcontractors

Depending on local/state/client requirements, Subcontractors who shall perform work onsite may be required to attest to the fitness of their work crew on a daily basis. This requires each worker to self-assess by asking themselves the four questions listed in the section above and also contained within the Roux Subcontractor Work Crew COVID-19 Daily Health Attestation. If any crew member answers "Yes" to any of the questions, that worker is not to report to the field site and should seek proper medical advice in accordance with local, state and federal guidelines. In addition if required by local/state/client requirements, the Sub-Contractor shall self-attest to vaccination status in order for the Field Team to ensure conformance with updated guidance for fully vaccinated individuals should state/local/client requirements allow. See Section 6. CDC Fully Vaccinated Guidance.

On a daily basis, the subcontractor supervisor must provide the Subcontractor Work Crew COVID-19 Daily Health Attestation complete with the names of all work crew fit to be on the Site for that day (i.e., who have answered "No" to all questions on the self-assessment) to Roux's Project Manager or Site Supervisor. The Subcontractor must notify Roux if there have been any "Yes" responses daily. Subcontractors shall not be required to provide the name or any other personal information of any employee who has answered "Yes" to any of the self-assessment questions, however, the Subcontractor should provide the date and times that the employee has been onsite in the prior 14 days. Records shall be maintained within the project files indicating health screening has been performed, records shall be retained for not less than 14 days following the date of submission. The Roux Subcontractor Work Crew COVID-19 Daily Health Check Attestation can be found within Appendix A.

8. SELF-ISOLATION & QUARANTINE

8.1 Self-Isolation

What if I am asked to self-isolate at home and when can I return from home isolation?

Depending on the situation, if you are COVID-19 positive or suspected to have COVID-19, employees may be required to self-isolate in their homes, as per CDC or local health department guidelines. Roux shall follow CDC guidance in areas where local/state requirements allow. The following table below outlines CDC isolation guidance.

Day 0 is your first day of symptoms or a positive viral test. Day 1 is the first full day after your symptoms developed or your test specimen was collected. If you have COVID-19 or have symptoms, isolate for at least 5 days.

IF YOU Tested positive for COVID-19 or have symptoms, regardless of vaccination status:	**Stay home for at least 5 days** Stay home for 5 days and isolate from others in your home. Wear a well-fitted mask if you must be around others in your home.	**Ending isolation if you had symptoms** End isolation after 5 full days if you are fever-free for 24 hours (without the use of fever-reducing medication) and your symptoms are improving. **Ending isolation if you did NOT have symptoms** End isolation after at least 5 full days after your positive test. **If you were severely ill with COVID-19** You should isolate for at least 10 days. Consult your doctor before ending isolation.	**Take precautions until Day 10** **Wear a mask** Wear a well-fitted mask for 10 full days any time you are around others inside your home or in public. Do not go to places where you are unable to wear a mask. **Avoid travel** **Avoid being around people who are at high risk**

8.2 Quarantine

Employees may be required to self-quarantine due to potential exposure with a suspected and/or confirmed COVID-19 positive individual as well as recent travel as per local/state guidelines. Consult with your OM regarding whether your situation requires quarantine following close contact. People in quarantine should stay home, separate themselves from others, monitor their health, and follow directions from their state or local health department.

8.2.1 Travel Related Quarantine/Testing

All travel out of state must be communicated with the OM and/or Department Head prior to departure. Please note, some federal/state/local entities require submissions of traveler health forms and potentially require additional testing for COVID-19. It is expected all Roux employees will comply with such federal/state/local travel requirements.

9. WORKPLACE CONTROLS

During the project planning phase, worksite evaluations shall be carried out by the PP and OM in consultation with the CHSD to determine risk exposure levels for work activities. If it is determined there is a high exposure risk level or higher, additional workplace controls shall be evaluated and implemented as required in addition to the basic infection prevention measures outlined below in Section 10. Additional workplace controls can include engineering controls (i.e., ventilation, physical barriers), administrative controls (i.e., minimizing contact between workers, rotating shifts, site specific training), and additional personal protective equipment (i.e., respiratory protection). If exposure risk cannot be mitigated, potential project postponement may be necessary at the discretion of the OM in consultation with the CHSD.

A Job Safety Analysis (JSA) has been developed and is provided in Appendix B, which summarizes and applies concepts within this guidance, including the infection prevention measures listed below. This JSA shall be required for all fieldwork in areas where there is community-based transmission of COVID-19.

10. INFECTION PREVENTION MEASURES

The following is basic infection prevention and personal hygiene practices which shall be implemented for all Roux field activities as well as in the office setting.

- ***Personal Hygiene***
  - Wash your hands often with soap and water for at least 20 seconds.
    - If soap and water are not available, use an alcohol-based sanitizer that contains at least 60% alcohol.
    - Key times to wash your hands include after blowing your nose, coughing or sneezing, after using the restroom, and before eating or preparing food.
  - Do not touch your eyes, face, nose and mouth with unwashed hands.
  - Cover your mouth and nose with a tissue when you cough or sneeze or use the inside of your elbow.
  - Throw potentially contaminated items (e.g., used tissues) in the trash.
- ***Avoid Close Contact/Secondary Contact with People and Potentially Contaminated Surfaces***
  - Apply appropriate social distance (6+ feet), as appropriate.
  - Do not work in areas with limited ventilation with other Site workers (e.g., small work trailer which lacks HVAC system).
  - Morning tailgate/safety meetings are recommended to occur outside or in well ventilated work trailers.
  - Contact your lab/equipment vendor to confirm equipment is properly disinfected prior to being shipped.
  - Do not carpool with others unless all individuals are comfortable with traveling together.
  - For company owned vehicles limit sharing of vehicles with coworkers. If unable to limit sharing of company owned vehicles, properly clean vehicle before driving with a focus on commonly touched surfaces (e.g., steering wheels, shifters, buttons, etc.).
  - Use caution when using public restrooms, portable toilets. Use paper towel as a barrier when touching door handles and faucets.
- ***Cleaning and Disinfecting***
  - Clean high touched surfaces daily. Examples of high-touch surfaces include: counters, tables, doorknobs, handles, stair rails, desks, toilets, faucets, and sinks. In most situations, regular cleaning (at least once a day) is enough to sufficiently remove virus that may be on surfaces. However, if certain conditions apply, you may choose to disinfect after cleaning. When there is no confirmed or suspected COVID-19 cases known to have been in a space, cleaning once a day is usually enough to sufficiently remove virus that may be on surfaces and help maintain a healthy facility.
  - You may want to either clean more frequently or choose to disinfect in addition to cleaning in shared spaces if the space:
    - Is a high traffic area, with a large number of people,
    - Is poorly ventilated,
    - Does not provide access to handwashing or hand sanitizer, or
    - The space is occupied by individuals at increased risk for severe illness.

If a someone who tested or is presumed COVID-19 positive and has been in your facility within the last 24 hours, you should clean and disinfect the space. This will be done in consultation with the CHSD.

The following outlines cleaning and disinfection protocols for specific types of surfaces as required. Please consult with the CHSD when developing site-specific cleaning and disinfection protocols.

- ***Hard (Non-porous) Surfaces***
  - If surfaces are dirty, they should be cleaned with a detergent/soap and water prior to disinfection.
  - Refer to the manufacturer's instructions to ensure safe and effective use of the product and wear appropriate personal protective equipment (e.g., gloves, safety glasses, face shield).
  - Many products require:
    - Keeping surface wet for a period of time (i.e., contact time).
      - Refer to manufacturer's instructions outlining adequate contact time.
    - Precautions such as wearing gloves and making sure you have good ventilation during use of the product.
  - Disposable gloves should be removed aseptically and discarded after cleaning. Wash hands immediately following removal of gloves. Refer to Appendix C for how to remove gloves aseptically.
  - If products on EPA List N: Disinfectants for Coronavirus (COVID-19) are not available, bleach solutions can be used if appropriate for the surface and will be effective against coronaviruses when properly diluted.
    - Most household bleach contains 5%–9% sodium hypochlorite. Do not use a bleach product if the percentage is not in this range or is not specified, such as some types of laundry bleach or splash-less bleach as these are not appropriate for disinfection.
    - Follow the directions on the bleach bottle for preparing a diluted bleach solution. If your bottle does not have directions, you can make a bleach solution for disinfecting by mixing:
      - 5 tablespoons (1/3 cup) of bleach per gallon of room temperature water; OR
      - 4 teaspoons of bleach per quart of room temperature water.
    - Follow the manufacturer's application instructions for the surface. If instructions are not available, leave the diluted bleach solution on the surface for at least 1 minute before removing or wiping. This is known as the "contact time" for disinfection. The surface should remain visibly wet during the contact time.
    - Ensure proper ventilation during and after application (for example, open windows).
    - Never mix household bleach (or any disinfectants) with any other cleaners or disinfectants. This can cause vapors that may be very dangerous to breathe in.
    - Make a new diluted bleach solution daily. Bleach solutions will not be as effective after being mixed with water for over 24 hours. Products with EPA-approved emerging viral pathogen claims are expected to be effective against COVID-19. Follow the manufacturer's instructions for all cleaning and disinfecting products (e.g., concentration, application method and contact time, etc.).
- ***Soft (Porous) Surfaces***
  - For soft (porous) surfaces, remove visible contamination if present and clean with appropriate cleaners indicated for use on the surfaces. After cleaning:
    - Launder items as appropriate in accordance with the manufacturer's instructions. If possible, launder using the warmest appropriate water setting for the item and dry items completely; or
    - Use products with the EPA-approved emerging viral pathogens that claim they are suitable for porous surfaces.

- ***Electronics***
  - For electronics such as tablets, touch screens, keyboards, remote controls, etc. remove visible contamination if present.
    - Follow the manufacturer's instructions for all cleaning and disinfection products.
    - Consider use of wipeable covers for electronics.
    - If no manufacturer guidance is available, consider the use of alcohol-based wipes or sprays containing at least 70% alcohol to disinfect touch screens. Dry surfaces thoroughly to avoid pooling of liquids.
- ***Linens, Clothing, and Other Items that Go in the Laundry***
  - Although it is unlikely field clothing would become potentially contaminated with COVID-19, it is recommended that field staff regularly launder field clothing following any field event upon returning home.
  - In order to minimize the possibility of dispersing the virus from potentially contaminated clothing, do not shake dirty laundry.
  - Wash items as appropriate in accordance with the manufacturer's instructions. If possible, launder items using the warmest appropriate water setting for the items and dry items completely.
  - Clean and disinfect hampers or other containers used for transporting laundry according to guidance listed above.
- ***Office/Site Specific-Cleaning and Disinfection Protocols***
  - Each office and long-term field site shall develop internal cleaning and disinfecting practices, which can be broken into three categories: routine cleaning; enhanced cleaning and disinfecting; and deep cleaning and disinfecting.
  - In the instance there is someone who is suspected or confirmed positive for COVID-19 and has worked at the office or field site within the last 24 hours, deep cleaning and disinfecting shall be considered. The CHSD shall work with the OM and Office Health and Safety Manager (OHSM) to evaluate site-specific measures that shall be carried out prior to deep cleaning and disinfecting. If more than 24 hours have passed since the person who is sick or diagnosed with COVID-19 has been in the space, cleaning shall be carried out. You may choose to also disinfect depending on certain conditions and in consultation with the CHSD.
  - If deep cleaning and disinfection is carried out the following will be considered:
    - Closing off all areas potentially affected and wait at least several hours before you clean and disinfect.
    - Areas should remain closed off until cleaning and disinfecting takes place; if able, ventilation shall be increased in the space (e.g., opening doors, windows, increasing CFM).

11. FACE COVERINGS

The CDC recommends the use of face coverings/masks in public settings where other social distancing measures are difficult to maintain. Masks are required on planes, buses, trains and other forms of public transportation traveling into, within, or out of the United States and in U.S. indoor transportation hubs such as airports and stations. The use of face coverings is to supplement and NOT replace the existing practices outlined above.

Based on existing studies and on-going recommendations and/or requirements from federal, state, and local entities, Roux is recommending the use of face coverings, when appropriate. Appropriate use is defined when local authorities or clients require the use of face coverings in conjunction with established social distancing, or if an employee elects to use a cloth covering on their own accord. Roux will provide appropriate face coverings that shall meet the basic requirements outlined by the CDC guidance.

Face Coverings (i.e., masks) should:

- Have two or more layers;
- Completely cover the nose and mouth;
- Fit snugly against the sides of the face and not have any gaps; and
- Have a nose wire to prevent air from leaking out of the top of the mask.

When donning and doffing the face covering, individuals should avoid touching their eyes, nose, and mouth. Following removal of the face covering, employees should wash their hands immediately using the guidelines described in Section 10 Infection Prevention Measures-Personal Hygiene above. Face coverings should be routinely washed depending on the frequency of use.

APPENDIX A

Roux Subcontractor Work Crew
COVID-19 Daily Health Screening Questionnaire

Subcontractor Work Crew
COVID-19 Daily Health Attestation

Date:	
Company Name:	
Supervisor Name:	Signature:
Project Name:	
Site Address:	
Number of Workers on site:	

Prior to entry onto a field site, the following questions shall be asked by the Subcontractor Supervisor to their work crew. **Subcontractors and Field Teams shall self-attest to vaccination status in order to ensure compliance with state/local guidance for fully vaccinated and unvaccinated individuals.**

It is preferred this questionnaire is completed for each individual prior to their arrival at the field site. If the answer to any of these questions is YES, the worker is not to report to the field site and seek proper medical advice, in accordance with CDC Guidelines. **The Subcontractor Supervisor must provide this form on a daily basis to the Roux primary contact for the project and notify Roux of any YES responses.**

1. Have you experienced any signs/symptoms of COVID-19 such as fever (≥100.4°F), cough, shortness of breath, chills, fatigue, muscle/body aches, headache, new loss of taste or smell, sore throat, congestion or runny nose, nausea/vomiting or diarrhea in the last 5 days?

2. Have you been in close contact* with someone who is suspected or confirmed to have COVID-19 or who is under investigation for COVID-19 within the last 5 days?

*Close contact as defined by the CDC is being within 6 feet of someone who has COVID-19 for a cumulative total of 15 minutes or more over a 24-hour period. Those who are up to date on COVID-19 vaccinations or had confirmed COVID-19 within the past 90 days (you tested positive using a viral test) you do not need to quarantine.

3. Have you traveled outside of the country, been on a cruise ship and/or traveled to areas within the United States which have state mandated travel restrictions in the last 5 days?

4. Have you tested positive for COVID-19 within the last 5 days?

Please list the crew member's names on site for the day.

1.	8.
2.	9.
3.	10.
4.	11.
5.	12.
6.	13.
7.	14.

APPENDIX B

Job Safety Analysis-Working in Areas Affected by COVID-19

JOB SAFETY ANALYSIS	Ctrl. No. CVD-19	DATE: 01/10/2022	☐ NEW ☒ REVISED	PAGE 1 of 2

JSA TYPE CATEGORY	WORK TYPE	WORK ACTIVITY (Description)
Generic	**Fieldwork**	**Working in Areas Affected by Coronavirus**

DEVELOPMENT TEAM	POSITION / TITLE	REVIEWED BY:	POSITION / TITLE
Kristina DeLuca	Health and Safety Specialist	Brian Hobbs	CHSD

REQUIRED AND / OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT

☐ LIFE VEST	☐ GOGGLES	☐ AIR PURIFYING RESPIRATOR	☒ GLOVES – Leather/cut-resistant in field and nitrile as needed
☒ HARD HAT – In field	☐ FACE SHIELD	☐ SUPPLIED RESPIRATOR	
☐ LIFELINE / BODY HARNESS	☐ HEARING PROTECTION	☒ PPE CLOTHING – High visibility vest in field	☐ OTHER
☒ SAFETY GLASSES – In field	☒ SAFETY SHOES – Steel/composite toe in fie		

REQUIRED AND / OR RECOMMENDED EQUIPMENT

Face covering/mask, nitrile gloves, hand soap, water source, hand sanitizer, disinfectant spray and disinfectant wipes.

Commitment to Safety – All personnel onsite will actively participate in SPSA performance by verbalizing SPSAs throughout the day.

SOCIAL DISTANCING: Maintain 6' of distance between yourself and all other people at all times. If you do not believe the scope of work can be conducted while maintaining this distance, contact your Project Manager immediately.

Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
1. Project Preplanning	N/A	• Review and follow COVID-19 CDC, Roux, Client and local orders/protocols. • Ensure all workers are fit for duty - anyone feeling sick should remain at home even if symptoms do not align with COVID-19. If a worker has been in contact with someone potentially positive or positive for COVID-19, contact your Office Manager. • Determine PPE needs and ensure adequate supply of disinfectant wipes/spray, soap and water or hand sanitizer at Site. Due to high demands and limited supply, plan ahead. • Use the minimum number of employees necessary to safely complete the work.
2. Mobilization	**Exposure:** Becoming infected or infecting co-workers	**Personal/Rental/Roux Owned Vehicle** • Avoid carpooling, unless all individuals are up to date on vaccinations. • Verify workers/other people are not approaching vehicle prior to exiting the vehicle. Maintain 6' of distance from general public, as appropriate. **Public Transportation** • Public transit should not be used unless absolutely necessary. Consider renting a car rather than taking public transit. If public transit is required, wear appropriate face covering/mask and apply social distancing (6 ft). Wash hands or use hand sanitizer immediately after. **Hotel Stay (Refer to COVID-19 H&S Guidance for more info)** • If a hotel stay is deemed necessary for the given field work, ensure that you clean your room upon initial arrival. • Place the "Do Not Disturb" placard on the room while away and limit housekeeping services to the extent feasible during your stay to minimize the reintroduction and spread of the virus from others.. Wash hands or use hand sanitizer often.
3. Tailgate Meeting	**Exposure:** Becoming infected or infecting co-workers	• Perform outside or indoors in areas with ample ventilation. • If unvaccinated, maintain at least a 6+ ft distance between you and others. • Discuss primary infection prevention measures listed below. • Discuss COVID-19 symptoms with coworkers and subcontractors to ensure fitness for duty. Anyone exhibiting signs or symptoms should be instructed to leave the Site, contact your Project Manager.

[1] Each Job or Operation consists of a set of tasks / steps. Be sure to list all the steps needed to perform job.
[2] A hazard is a potential danger. Break hazards into six types: Contact - victim is struck by or strikes an object; Caught - victim is caught on, caught in or caught between objects; Fall - victim falls to ground or lower level (includes slips and trips); Exertion - excessive strain or stress / ergonomics / lifting techniques; Exposure - inhalation/skin hazards, energy source; Energy Source – electricity, pressure, compression/tension.
[3] Using the first two columns as a guide, decide what actions or procedures are necessary to eliminate or minimize the risk. List the recommended safe operating procedures. Say exactly what needs to be done - such as "use two persons to lift". Avoid general statements such as, "be careful".

4. Site Activities	**Exposure:** Becoming infected or infecting co-workers	• Coordinate field activities at the beginning of the day (i.e. Tailgate meeting) to minimize time spent in crowded spaces or overlap while completing job tasks. • Don face coverings as appropriate. • Apply social distancing (6+ ft) when interacting with others if unvaccinated. If anyone comes within 6 ft of you while conducting work and your work prevents you from moving away, politely ask them to move back. If others are unable to move from your space, stop work and leave area. • Minimize shaking hands or touching others. • Minimize sharing of equipment or other items with co-workers and subcontractors unless wearing appropriate PPE (e.g. nitrile gloves), as appropriate. • If anyone is experiencing COVID-19 signs or symptoms in your vicinity, stop work and leave the area. • Do not work in areas with limited ventilation with others. • Cover your mouth and nose with tissue or paper towel or with your elbow when coughing or sneezing and wash hands or use hand sanitizer immediately after. If sick contact SHSO/PM and leave Site immediately. • Clean work surfaces/areas with approved cleaners you're responsible for (ex: desk, office doorknob, computer, etc.) at least daily. • Avoid public spaces and going out to eat by bringing your own lunch to the Site. If performing work in high density urban areas, it is recommended all food must be consumed at or in your vehicle or within designated work trailer. Wash hands or use hand sanitizer before eating and immediately after.

Primary Infection Prevention Measures

- Wash your hands often with soap and water for at least 20 seconds.
  - If soap and water are not available, use an alcohol-based sanitizer that contains at least 60% alcohol. Key times to wash hands include after blowing your nose, coughing or sneezing, after using the restroom, and before eating or preparing food.
- Do not touch your eyes, face, nose and mouth with unwashed hands.
- Cover your mouth and nose with a tissue when you cough or sneeze or use the inside of your elbow. Throw potentially contaminated items (e.g. used tissues) in the trash.
- Avoid close contact/secondary contact with people and potentially contaminated surfaces.
  - Apply appropriate social distance (6+ feet).
  - Minimize handshaking/touching others and use caution when accessing public spaces.
- Clean frequently touched surfaces daily. Commonly touched items can include but are not limited to tables, doorknobs, light switches, countertops, handles, desks, phones, keyboard, toilets, sinks and field equipment. If surfaces are dirty, they should be cleaned with soap and water prior to disinfection. If surface cannot be cleaned/disinfected, then wash hands or use sanitizer as soon as possible.

[1] Each Job or Operation consists of a set of tasks / steps. Be sure to list all the steps needed to perform job.
[2] A hazard is a potential danger. Break hazards into six types: Contact - victim is struck by or strikes an object; Caught - victim is caught on, caught in or caught between objects; Fall - victim falls to ground or lower level (includes slips and trips); Exertion - excessive strain or stress / ergonomics / lifting techniques; Exposure - inhalation/skin hazards; Energy source – electricity, pressure, compression/tension.
[3] Using the first two columns as a guide, decide what actions or procedures are necessary to eliminate or minimize the risk. List the recommended safe operating procedures. Say exactly what needs to be done - such as "use two persons to lift". Avoid general statements such as, "be careful".

APPENDIX C

How to Remove Gloves

How to Remove Gloves

To protect yourself, use the following steps to take off gloves

1

Grasp the outside of one glove at the wrist. Do not touch your bare skin.

2

Peel the glove away from your body, pulling it inside out.

3

Hold the glove you just removed in your gloved hand.

4

Peel off the second glove by putting your fingers inside the glove at the top of your wrist.

5

Turn the second glove inside out while pulling it away from your body, leaving the first glove inside the second.

6

Dispose of the gloves safely. Do not reuse the gloves.

7

Clean your hands immediately after removing gloves.

APPENDIX D

Heat Illness Prevention Program

HEAT ILLNESS
PREVENTION PROGRAM

CORPORATE HEALTH AND SAFETY DIRECTOR	:	**Brian Hobbs, CIH, CSP**
EFFECTIVE DATE	:	**10/2019**
REVISION DATE	:	**03/2023**
REVISION NUMBER	:	**2**

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1. PURPOSE

Roux Associates, Inc. and its affiliated **companies**, Roux Environmental Engineering and Geology, D.P.C, and Remedial Engineering (collectively, "Roux") has established this heat illness prevention program to assist in preventing workplace accidents, injuries, and illnesses associated with temperature extremes. Roux is committed to taking every precaution to protect employees who might be exposed to heat stress, including establishing safe work practices, heat illness prevention controls, and emergency preparedness, which will be detailed in this plan.

2. SCOPE AND APPLICABILITY

Roux's Heat Illness Prevention Program applies to all employees who may be exposed to heat stress in the field.

3. ROLES AND RESPONSIBILITIES

The Heat Illness Prevention Program Administrator for Roux is the Corporate Health and Safety Director (CHSD), Brian Hobbs, CIH, CSP. The daily administration of the program is delegated to the Operations Manager (OM) and Office Health and Safety Manager (OHSM). The CHSD has the authority, responsibility, and overall accountability for the comprehensive implementation of this program.

All managers and supervisors shall implement and maintain the heat illness prevention program in work areas where there is a potential for heat stress.

Management Responsibilities

Management (i.e., Project Managers, Project Principals, OM) must provide the following to promote compliance and foster a good safety culture:

- Comply with applicable standards.
- Inform employees of the provisions of the heat illness prevention program and ensure understanding.
- Provide sufficient water, shade, rest areas, and other heat illness controls for employees.
- Assist with establishing work practices to minimize heat stress risks, such as acclimatization, required rest periods, employee monitoring, and strategic scheduling.
- Encourage employees to report hazardous conditions or heat illness symptoms.
- Provide training to any employee who could possibly be exposed to the risk of heat illness.

Employee Responsibilities

Employees are expected to actively participate in the organization's heat illness prevention program, which includes the following responsibilities:

- Receive appropriate training with regards to heat stress.
- Understand core concepts of heat illness prevention and follow guidelines to mitigate risks.
- Recognize the signs and symptoms of heat illness and immediately report them.
- Cooperate with workplace inspections and incident investigations.

Effective Communication

All Roux employees shall be accountable for ensuring there is effective communication with both the field team and their subcontractors. Communication between Roux employees project leads (e.g., Project Principal, Project Managers) and subcontractors (if applicable) will be established and maintained, so that employees can quickly contact should there be a change in condition or someone at the Site exhibits signs/symptoms of heat stress. These

types of incidents would follow Roux's Incident Investigation and Reporting Management Program 2.12 and Roux's Injury Illness Prevention Program 2.22.

4. HAZARD IDENTIFICATION AND ASSESSMENT

Prior to scheduled field work, the project team shall ensure a hazard assessment is conducted as it relates to heat stress. This will include a determination of how much heat and exertion employees are likely to be exposed to based on the work activity.

Factors that can increase heat stress can include the following:

- Temperatures at the work site;
- Humidity;
- A lack of air movement or exchange;
- The amount of time employees spend working in the heat;
- The time of day work takes place;
- Sources of radiant heat (e.g., sunlight, fire, or hot furnace);
- Work activities that produce heat (e.g., welding);
- Physical contact with warm or hot objects or liquids;
- The clothing and PPE employees are required to wear; and/or
- Physically strenuous work.

Results of the hazard analysis should be used to determine appropriate controls for mitigating heat stress, whenever possible, for planning acclimatization and for developing work schedules that rotate workers to limit employee exposure. Typically, the Site Supervisor (SS) or Site Health and Safety Officer (SHSO) shall conduct worksite observations to assure all employees follow heat illness prevention procedures and that hazards are sufficiently controlled. However, all employees should be continuously evaluating work site conditions and be able to recognize heat stressors in order to prevent heat illnesses.

5. TRAINING

All Roux employees shall be trained on the topics listed below prior to beginning work, which may potentially expose workers to heat stress.

Training Topics

- The environmental, behavioral, and personal risk factors for heat illness, such as radiant heat sources, exertion, clothing and PPE, and use of alcohol or drugs.
- Types of heat illnesses, common symptoms, and appropriate emergency response for each.
- The knowledge that mild symptoms may quickly become more severe or life-threatening.
- The importance of immediately reporting any signs or symptoms of heat illness to the supervisor.
- The employer's responsibility to provide shade, water, access to first aid, and cool-down rests during work and the employee's freedom to exercise their rights under this standard without fear of retaliation.
- The employer's heat stress plan and its procedures:
  - Procedures for employees who are newly assigned to work in high heat areas.

  - The organization's acclimatization methods, as applicable.
  - Heat wave procedures.
  - Heat illness and emergency response, including contact information.
- The importance of frequent consumption of water and the taking of rest breaks.
- How heat illness prevention applies to employees' specific tasks.

Increasing Training Effectiveness:

- The SS/SHSO will hold daily tailgates with the field team to go over daily work tasks and basic safety information including Job Safety Analysis (JSA) review as well as incorporate elements such as current weather and effects on the work activities for the day.
- If a heat wave or high heat is anticipated, OHSMs and/or OMs will provide communications to Roux employees prior to their shifts and remind them of any special high heat procedures.

6. DRINKING WATER

Employees shall be given access to potable drinking water. Access to water will be provided as near as possible to where employees are working, and there shall be enough locations so employees will have sufficient water. Water should be fresh and pure, free of taste or smell that would discourage employees from drinking, comfortably cool, and obtained from an approved source.

The recommendation is that during warm or hot weather, employees drink four 8-ounce glasses of water, or a total of one quart per hour, throughout the entire work shift. Easy access to sufficient potable drinking water throughout the work shift encourages employees to drink.

During a heat wave, water shall be replenished more often to keep available and cool. Water containers (and all spouts and levers) must be kept clean. If able, provide single use drinking cups with appropriate waste receptacle. Accessible sanitation facilities shall also be maintained at work Sites as appropriate.

SS/SHSO are responsible for the following:

- Drink sufficient water before, during, and after work shifts to maintain hydration.
- Encourage frequent drinking of small amounts of water throughout the shift. In high heat environments, remind field staff and subcontractors that drinking extra water may be necessary.
- Discourage the choosing of drinks with caffeine or sugar that may possibly dehydrate employees instead of water. Also, discourage the drinking of alcohol.
- Monitor the water supply.
- If employees become dehydrated and are unable to alleviate symptoms with the steps below, get them immediate medical attention.

Field Staff/Subcontractors are responsible for the following:

- Drink sufficient water before, during, and after work shifts to maintain hydration. Drink up to 4 cups of water per hour, especially during hot weather.
- Be aware that in high heat situations, you may need to drink more water.
- Monitor yourself and others for signs of dehydration. If you feel dehydrated:
  - Follow Roux's Incident Notification Flowchart;

- Rest in the shaded resting area; and
- Drink water in small amounts, but frequently.

7. ACCESS TO SHADE

Access to shaded areas will be provided to Roux staff, as needed. Employees are encouraged to use these areas when they feel overheated. Roux's SS/SHSO shall oversee the proper implementation of shaded areas and will communicate these locations on a daily basis with the Field Team.

Depending on the Site, shaded areas can include the following:

- Pop-up Tents
- Canopies
- Umbrellas
- Structures mechanically ventilated or open to air movement
  - Garage
- Conex mounted RV canopies
- Full and thick tree canopies that block direct sunlight
- Buildings
- Enclosed areas only if they provide cooling comparable to shade in open air
  - Vehicles with air conditioning

Shaded Area Requirements

Shade shall be strong enough to cool employees down and other shadows should not be visible in the shade. Shade will be provided by Roux when the air temperature exceeds 80°F. If the temperature is less than 80°F, shade will be available and provided upon request. The SS/SHSO will monitor conditions to determine when the air will exceed (and is exceeding) 80°F. For most Sites, air will be monitored hourly and shade will be setup immediately if 80°F is exceeded.

Shade shall be located as close as practical to areas where employees are working and is easily accessible. These areas will be considered safe and free from other hazards. Shaded areas should be large enough to accommodate all employees who are on a break, resting, or recovering without crowding. Should natural vegetation be used for shade, the SS/SHSO will evaluate shade for effectiveness.

Field Staff Responsibilities

Field Staff should take ordinary rest breaks in the shaded areas and monitor themselves for signs of heat stress, and go to the shaded area when they need to cool down. Any issues or problems with shaded areas should be reported to the SS/SHSO for the Site.

If shaded areas are used for a preventative cool-down, the SS/SHSO will ensure the affected employees will remain in the shade until they begin to feel better. The SS/SHSO will continue to monitor the employees and ask them if they are experiencing symptoms of a heat illness. Employees shall not be sent back to work before symptoms have ended and at a minimum at least 10 minutes of rest.

8. MONITORING AND SCHEDULING

Monitoring

The SS/SHSO and Field Team will continue to monitor themselves and others for signs of heat illness. The SS/SHSO will monitor when the air temperature exceeds 80°F. Throughout the summer, weather and temperature will be monitored at least two weeks ahead, and the work schedule will be planned to accommodate the expected weather.

Scheduling

Scheduling accommodations may include:

- Working during cooler hours of the day
- Working at night
- Stopping work early
- Rescheduling work activities
- Increasing frequency of breaks

In general, strenuous work activities shall be rescheduled to the coolest parts of the day.

Special precautions are required for temperatures above 80°F, 95°F, and heat waves. These precautions are provided in sections below.

9. ACCLIMATIZATION AND NEW EMPLOYEE PROCEDURES

Roux requires employees to be acclimatized in order for them to better tolerate heat in the workplace. Acclimatization is the physical process of adapting to a different thermal environment, allowing a better toleration of heat. Acclimatization procedures require gradual exposure that gives the employee time to adjust to each level of exposure. Acclimatization is essential for new employees, but is necessary for all employees when the temperature significantly changes. Heat stress is much more likely if these procedures are not followed.

The SS/SHSO is responsible for observing new employees during their first 14 days of employment in high heat areas.

Re-acclimatization is necessary if employees are absent from high heat environments for a week or more or the temperature increases significantly.

10. HEAT WAVE AND EXTREME HEAT PROCEDURES

Heat Wave Procedures

A heat wave is defined as consistent temperatures over 80°F or if the temperature is 10° higher than the average daily temperatures in the preceding 5 days.

SS/SHSO and Project Management (e.g., PP, PM) shall closely observe and monitor employees during a heat wave. The Field Teams should institute a ratio of one SS to 20 or fewer employees, a mandatory buddy system, or a consistent practice for supervisors to check on employees. Pre-shift meetings to review high heat procedures with employees will be carried out to emphasize work rest schedules, drinking water, shade, etc.

Extreme Heat Procedures

When work site temperatures equal or exceed 95°F, the employer will enact extreme heat procedures:

- Employees will be closely observed by the SS/SHSO for signs of heat illness. New employees will be supervised for acclimatization.
- Effective communication and monitoring will be assured through the use of periodic check ins with the SS/SHSO via phone. Communications between employees and Project Management (e.g., PP/PM) will be established and maintained. Mandatory 10-minute break periods are required for every two hours worked. SS/SHSO must enforce this rule.
- Pre-shift safety tailgate meetings will occur to review procedures and to remind employees to drink water and take cool-down rests if needed. SS/SHSO shall remind employees to rest and drink water. Employees should drink more water than usual.

11. EMERGENCY RESPONSE PROCEDURES

Roux is dedicated to providing prompt appropriate care for all employees who report or show symptoms of heat illness. If an employee shows signs of heat illness, they will be monitored and shall not be left alone or sent home without being offered first aid or emergency medical services. If on-Site personnel require any medical treatment, the following steps will be taken:

1. Notify Roux's Project and Corporate Management Team for any work-related injury and/or illness occurrence, and communicate with the contracted Occupational Health Care Management Provider, AllOne Health (AOH), immediately following the notifications provided above.
2. Based on discussions with the Project Team, Corporate Management, and the AOH evaluation, if medical attention beyond onsite First Aid is warranted, transport the injured / ill person (IP) to the Urgent Care Center, or notify the Fire Department or Ambulance Emergency service and request an ambulance or transport the victim to the hospital, and continue communications with Corporate Management Team. An Urgent Care/Hospital Route map with locations and directions are provided within Site Specific Health and Safety Plans.
3. First aid medical support will be provided by onsite personnel trained and certified in First Aid, Cardio Pulmonary Resuscitation (CPR), Automatic External Defibrillation (AED), and Blood-Borne Pathogens (BBP) Awareness, until relieved by emergency medical services (EMS).
4. The SHSO and Project Manager will perform a Loss Investigation (LI) and the Project Team will complete the final Loss Report.

12. HEAT-RELATED ILLNESSES

Heat Stress

Heat stress is a significant potential hazard and can be associated with heavy physical activity and/or the use of personal protective equipment (PPE) in hot weather environments. For these reasons, the company will provide potable drinking water and access to shade or other areas of relief (i.e., air-conditioned vehicles, work trailers). Supervisors, prior to supervising personnel in the field as well as all personnel involved with the field work of a project, are trained in this HASP that includes preventing heat-related illnesses and the below procedures in response to heat-related symptoms and illness. Since much of our work is dependent upon environmental factors beyond our control, we must closely monitor air temperature and humidity and be aware of avoiding radiant heat sources and providing as much air circulation as possible wherever we work. Physical factors that need to be evaluated as part of our Job Safety Analysis (JSA) reviews include the level of physical activity and duration of work and the type (i.e., color, weight breathability) of the clothing we select. In addition, personal factors such as age, weight, fitness, drug/alcohol use, and prior history of heat-related illness need to be considered.

Heat cramps are brought on by prolonged exposure to heat. As an individual sweats, water and salts are lost by the body, resulting in painful muscle cramps. The signs and symptoms of heat stress are as follows:

- Severe muscle cramps, usually in the legs and abdomen;
- Exhaustion, often to the point of collapse; and
- Dizziness or periods of faintness.

First aid treatment includes, but is not limited to, shade, rest, and fluid replacement. Typically, the individual should recover within one-half hour while being monitored constantly. If the individual has not improved substantially within 30 minutes and the body temperature has not decreased, the individual should be transported to a hospital for medical attention.

Heat Exhaustion

Heat exhaustion may occur in a healthy individual who has been exposed to excessive heat while working or exercising. The circulatory system of the individual fails as blood collects near the skin to rid the body of excess heat through transference. The signs and symptoms of heat exhaustion are as follows:

- Rapid and shallow breathing;
- Weak pulse;
- Cold and clammy skin with heavy perspiration;
- Skin appears pale;
- Fatigue and weakness;
- Dizziness; and
- Elevated body temperature.

First aid treatment include, but is not limited to, cooling the victim, elevating the feet, and replacing fluids. If the individual is not substantially improved within 30 minutes and the body temperature has not decreased, the individual should be transported to the hospital for medical attention.

Heat Stroke

Heat stroke occurs when an individual is exposed to excessive heat and stops sweating. This condition is classified as a MEDICAL EMERGENCY requiring immediate cooling of the victim and transport to a medical facility. The signs and symptoms of heat stroke are as follows:

- Dry, hot red skin;
- Body temperature approaching or above 105 degrees F;
- Confusion, altered mental state, slurred speech;
- Seizures;
- Large (dilated) pupils; and
- Loss of consciousness – the individual may go into a coma.

First aid treatment requires immediate cooling and transportation to a medical facility. Heat stress is a significant hazard if any type of protective equipment (semi-permeable or impermeable) that prevents evaporative cooling is worn in hot weather environments.

13. OTHER HEAT CONTROLS

Clothing and PPE

Employees should choose clothing that is reflective, light-colored, lightweight, loose-fitting and breathable. Clothing should cover the exposed parts of the body. In direct sun, hard hats with a brim or bill may be helpful. Should specialized cooling garments be applicable, please consult with your OM/OHSM/CHSD.

Managing Employee Risk Factors

It is recommended that employees are aware of how their health can affect their risk of heat stress. The following increases ones risk for a heat related illness:

- A poor level of physical fitness
- Obesity
- Chronic or acute illnesses
- Conditions such as diabetes, heart disease, or high blood pressure
- Certain medications, such as diuretics
- Age (60+)

Employees should:

- Maintain their health outside of work
- Be aware of the effects of medications
- Drink adequate amounts of water
- Eat light, cool meals during work shifts and save heavy meals until after the shift is over
- Do not skip meals: food helps replace electrolytes when sweating
- Take breaks as needed
- Do not consume alcohol prior to working in a hot environment

APPENDIX E

Personal Protective Equipment (PPE) Management Program

PERSONAL PROTECTIVE EQUIPMENT
MANAGEMENT PROGRAM

CORPORATE HEALTH AND SAFETY DIRECTOR	:	**Brian Hobbs, CIH, CSP**
EFFECTIVE DATE	:	**01/2019**
REVIEW DATE	:	**03/2023**
REVISION NUMBER	:	**4**

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1. PURPOSE

Roux Associates, Inc. and its affiliated companies, Roux Environmental Engineering and Geology, D.P.C., and Remedial Engineering (collectively, "Roux") has instituted the following program to establish guidelines for the selection of personal protective equipment (PPE) for use by Roux personnel performing field activities in hazardous environments. PPE is not meant to be a substitute for engineering, work practice, and/or administrative controls, but PPE should be used in conjunction with these controls to protect employees in the workplace. Clothing, body coverings, and other accessories designed to prevent worker exposure to workplace hazards are all types of PPE. To ensure adequate PPE employee-owned PPE is evaluated on a case-by-case basis to insure its adequacy, maintenance and sanitation.

2. SCOPE AND APPLICABILITY

These guidelines apply to all PPE selection decisions to be made in implementing the Roux program. The foundations for this program are the numerous Occupational Health and Safety Administration (OSHA) standards related to PPE cited in 29 CFR 1910 Subpart I, 29 CFR 1926 Subpart E, and the hazardous environment work employee protection requirements under the OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER) standard at 29 CFR 1910.120 and 1926.65. To ensure hazard assessments are documented, the levels of protection, types of protection, and tasks requiring protection are covered in site-specific Health and Safety Plans (HASPs) and Job Safety Analyses (JSAs).

3. PROCEDURES

Due to the varied nature of site activities and the different potential hazards associated with different sites, several aspects must be considered when selecting PPE. The following text describes PPE selection logic and provides guidelines and requirements for the appropriate selection and use of PPE.

3.1 Introduction

To harm the body, chemicals must first gain entrance. The intact skin and respiratory tract are usually the first body tissues that are exposed to chemical contaminants. These tissues provide barriers to some chemicals but in many cases, are damaged themselves or are highly permeable by certain chemical compounds. PPE therefore is used to minimize or eliminate chemical compounds from coming into contact with these first barrier tissues.

The proper selection of equipment is important in preventing exposures. The Project Manager (PM) or health and safety personnel making the selection will have to take several factors into consideration. The level of protection, type, and kind of equipment selected depends on the hazardous conditions. In some cases, additional selection factors include cost, availability, compatibility with other equipment, and performance. An accurate assessment of all these factors must be made before work can be safely carried out.

3.1.1 Training

Training shall be provided to all field-based employees in the proper use and care of PPE. Training shall include, but is not limited to, the initial 40-hour HAZWOPER training, annual 8-hour HAZWOPER refresher training, and site-specific PPE training. The training program includes when PPE is necessary; what types of PPE are necessary; how to don, doff, adjust and wear PPE; the limitations of PPE; the proper care, maintenance, useful life and disposal of PPE. In addition, retraining shall be conducted when workplace changes require a change in PPE when an employee demonstrates a lack of knowledge or improper use of PPE is identified. Training certifications are provided to employees that include the date of training and certification subject.

3.2 Types of PPE

The type and selection of PPE must meet certain general criteria and requirements as required under OSHA 29 CFR 1910.132 (General Industry) and 1926.95 (Construction). In addition to these general requirements, specific requirements and specifications exist for some types of PPE that form the basis of the protective clothing scheme. All manufacturer's recommendations for PPE care and use shall be followed. All PPE shall be maintained in a sanitary and reliable condition. Additionally, proper fit and/or size shall be evaluated to ensure adequate protection for all employees. Should PPE become defective, it shall be immediately removed from service and discarded.

The following is a list of the common types of specific PPE and the specific requirements for the PPE type, where applicable:

1. Hard Hats - Regulated by 29 CFR 1910.135 and 1926.100; and, specified in ANSI Z89.1.
2. Face Shields and Safety Glasses - Regulated by 29 CFR 1910.133 and 1926.102; and, specified in ANSI Z87.1.
3. Respiratory Protection - Regulated by 29 CFR 1910.134 and 1926.103.
4. Hand Protection - Not specifically regulated.
5. Foot Protection - Regulated by 29 CFR 1910.136 and 1926.96; and, specified in ANSI Z41.1.
6. Protective Clothing (e.g., fully encapsulated suits, aprons) - Not specifically regulated.

3.3 Protective Clothing Selection Criteria

3.3.1 Chemicals Present

The most important factor in selecting PPE is the determination of what chemicals the employee may be exposed to. On field investigations, the number of chemicals may range from a few to several hundred. The exact chemicals or group of chemicals present at the site (certain groups tend to require similar protection) can be determined by collecting and analyzing samples of the air, soil, water, or other site media. When data are lacking, research into the hazardous materials used or stored at the site can be used to infer potential chemical exposures on the site.

The most appropriate clothing shall be selected once the known, or suspected chemicals have been identified and taken into consideration based on the type of work to be performed.

Protective garments are made of several different substances for protection against specific chemicals. There is no universal protective material. All will decompose, be permeated by, or otherwise fail to protect under given circumstances. Fortunately, most manufacturers make guides to the use of their products (i.e., Dupont's Tyvek™ Permeation Guide). These guides are usually for gloves and coveralls and typically provide information regarding chemical degradation rates (failure of the material to maintain structural integrity when in contact with the chemical), and may provide information on the permeation rate (whether or not the material allows the chemical to pass through). When permeation tables are available, they shall be used in conjunction with degradation tables to determine the most appropriate protective material for the specific chemical hazard(s).

During most site work, chemicals are usually in mixed combinations, and the protective materials are not in continuous contact with pure chemicals for long periods of time; therefore, the selected material may be adequate for the particular chemical of most concern and type of work being performed, yet not the "best" protecting material for all site chemicals and activities. Selection shall depend upon the most hazardous

chemicals based on their hazards and concentrations. Sometimes layering (i.e., using several different layers of protective materials) affords the best protection.

3.3.2 Concentration of the Chemical(s)

One of the major criteria for selecting protective material is the concentration of the chemical(s) in air, liquid, and/or solid state. Airborne and liquid chemical concentrations should be compared to the OSHA standards and/or American Conference of Governmental Industrial Hygienists (ACGIH) and National Institute for Occupational Safety and Health (NIOSH) guidelines to determine the level of skin or other absorptive surface (e.g., eyes) protection needed. While these standards are not designed specifically for skin exposed directly to the liquid, they may provide skin designations indicative of chemicals known to have significant skin or dermal absorption effects. For example, airborne levels of PCBs on-site may be low because it is not very volatile, so the inhalation hazard may be minimal; however, PCB-containing liquid coming in direct contact with the skin may cause overexposure. Thus, PCBs have been assigned a skin designation in both the OSHA and ACGIH exposure limit tables.

3.3.3 Physical State

The characteristics of a chemical may range from nontoxic to extremely toxic, depending on its physical state. Inorganic lead in soil would not be considered toxic to site personnel, unless it became airborne, since it is generally not absorbed through the intact skin. However, organic lead in a liquid could be readily absorbed through the skin. Soil is frequently contaminated with hazardous materials. Concentrations will vary from a few parts per million to nearly one hundred percent by volume. The degree of hazard is dependent on the type of soil and concentration of the chemical. Generally speaking, "dry" soils that have not become airborne do not pose a hazard to site personnel if they take minimal precautions, such as wearing some type of lightweight gloves.

3.3.4 Length of Exposure

The length of time a material is exposed to a chemical increases the probability of a breakthrough. Determinations of actual breakthrough times for short-term exposures indicate that several different materials can be used that would be considered inadequate under long-term exposures. It should be kept in mind that during manufacturer’s permeation testing, a pure (100% composition) liquid is usually placed in direct contact with the material producing a worst-case situation.

3.3.5 Abrasion

When selecting protective clothing, the job the employee is engaged in must be taken into consideration. Persons moving drums or performing other manual tasks may require added protection for their hands, lower chest and thighs. The use of leather gloves and a heavy apron over other normal protective clothing will help prevent damage to the normal PPE, and thus reduce worker exposures.

3.3.6 Dexterity

Although protection from skin and inhalation hazards is the primary concern when selecting PPE, the ability to perform the assigned task must be maintained. For example, personnel cannot be expected to perform work that requires fine dexterity if they must wear a thick glove. Therefore, the PPE selection process must consider the task being performed and provide PPE alternatives or techniques that allow dexterity to be maintained while still protecting the worker (e.g., wearing tight latex gloves over more bulky hand protection to increase dexterity).

3.3.7 Ability to Decontaminate

If disposable clothing cannot be used, the ability to decontaminate the materials selected must be taken into consideration. Once a chemical makes contact with the material, the PPE must be cleaned before it can be reused. If the chemical has completely permeated the material, the clothing cannot be adequately decontaminated, and the material should be discarded.

3.3.8 Climactic Conditions

The human body works best with few restraints from clothing. Protective clothing adds a body burden by increasing weight, restricting movement, and preventing the body's natural cooling process. In severe situations, a modified work program must be used.

Some materials act differently when they are very hot and very cold. For example, PVC becomes almost brittle in very cold temperatures. If there are any questions about the stability of the protective materials under different conditions, the manufacturer should be contacted prior to using PPE in the field.

3.3.9 Work Load

Like climactic conditions, the type of work activity may affect work duration and the ability of personnel to perform certain tasks. Similarly, the amount of protective materials a person wears will affect their ability to perform certain tasks. For example, a person in a total encapsulating suit, even at 72°F, cannot work for more than a short period of time without requiring a break.

The work schedule should be adjusted to maintain the health of the employees. Modified work practices may include allowing more time for individual job tasks and implementing work/rest cycles per NIOSH and ACGIH thermal stress recommendations. Special consideration should be given to the selection of clothing that both protects the worker and adds the least burden when personnel are required to perform strenuous tasks. Excessive bodily stress frequently represents the most significant hazard encountered during field work.

3.4 Types of Protective Materials

1. Cellulose or Paper: suitable for nuisance dusts and coarse fibers.
2. Natural and Synthetic Fibers
    a. Tyvek™: suitable small sized hazardous particles, including lead, asbestos, and mold.
    b. Tychem™: suitable for a variety of hazards from light liquid splashes to heavy exposures of industrial chemicals and agents.
    c. Nomex™: suitable for flame-resistance, radiation resistance, acids, alkalis, fluorocarbon refrigerants (CFCs), and non-polar solvents.
3. Elastomers
    a. Polyethylene: suitable for polar substances and solvents.
    b. Saran™ : suitable for flame-resistance, acids, alkalis, oils, and organic solvents.
    c. Polyvinyl Chloride (PVC): suitable for alcohols, oils, inorganic acids, alkalis, and salts.
    d. Neoprene: suitable for polar/non-polar substances, petroleum mixtures, and ≤ 200 F heat resistance.
    e. Butyl Rubber: suitable for polar substances and solvents.
    f. Viton: suitable for non-polar substances, petroleum mixtures, and ≤ 200 F heat resistance.

g. Nitrile: suitable for polar/non-polar substances and petroleum mixtures.

3.5 Protection Levels

3.5.1 Level A Protection

Level A protection (a fully encapsulated suit) is used when skin hazards exist or when there is no known data that positively rule out skin and other absorption hazards. Per the Roux Respiratory Protection Management Program, Roux employees are not authorized to enter an IDLH atmosphere; therefore, the program does not allow the use of supplied-air respirators (SARs) or self-contained breathing apparatus (SCBA). At no time will Level A work be performed without the consent of the CHSD and OM.

The following conditions suggest a need for Level A protection:

- Confined facilities where probability of skin contact is high;
- Sites containing known skin hazards;
- Sites with no established history to rule out skin and other absorption hazards;
- Atmosphere immediately dangerous to life and health (IDLH) through the skin absorption route;
- Site exhibiting signs of acute mammalian toxicity (e.g., dead animals, illnesses associated with past entry into site by humans);
- Sites at which sealed drums of unknown materials must be opened;
- Total atmospheric readings on the Photoionization Detector (PID), Flame Ionization Detector (FID), and similar instruments indicate 500 to 1,000 ppm of unidentified substances; and
- Extremely hazardous substances (e.g., cyanide compounds, concentrated pesticides, Department of Transportation Poison "A" materials, suspected carcinogens and infectious substances) are known or suspected to be present and skin contact is possible.

The following items constitute Level A protection:

- Open circuit, pressure-demand self-contained breathing apparatus (SCBA);
- Totally encapsulated suit;
- Gloves, inner (surgical type);
- Gloves, outer;
- Chemical protective;
- Boots, chemical protective, steel toe and shank;
- Radiation detector (if applicable); and
- Communications.

3.5.2 Level B Protection

Level B protection is utilized when the highest level of respiratory protection is needed but hazardous material exposure to the few unprotected areas of the body is unlikely.

The following conditions suggest a need for Level B protection:

- The type and atmospheric concentration of toxic substances have been identified and they require the highest level of respiratory protection;

- IDLH atmospheres where the substance or concentration in the air does not present a severe skin hazard;
- The type and concentrations of toxic substances do not meet the selection criteria permitting the use of air-purifying respirators; and
- It is highly unlikely that the work being done will generate high concentrations of vapors, gases or particulates, or splashes of materials that will affect the skin of personnel.

Personal protective equipment for Level B includes:

- Open circuit, pressure-demand SCBA;
- Chemical protective clothing:
- Overalls and long-sleeve jacket; or
- Coveralls;
- Gloves, inner (surgical type); gloves, outer, chemical protective;
- Boots, chemical protective, steel toe, and shank; and
- Communications optional.

3.5.3 Level C Protection

Level C protection is utilized when both skin and respiratory hazards are well defined, and the criteria for using negative pressure respirators have been fulfilled (i.e., known contaminants and contaminant concentrations, acceptable oxygen levels, approved filter/cartridge available, known cartridge service life, etc.). Level C protection may require an emergency escape respirator during specific initial entry and site reconnaissance situations or when applicable after that.

Personal protective equipment for Level C typically includes:

- full facepiece air-purifying respirator;
- emergency escape respirator (optional);
- chemical protective clothing:
  - overalls and long-sleeved jacket; or
  - coveralls;
- gloves, inner (surgical type);
- gloves, outer, chemical protective; and
- boots, chemical protective, steel toe, and shank.

3.5.4 Level D Protection

Level D is the basic work uniform. Personal protective equipment for Level D includes:

- Coveralls;
- Safety boots/shoes;
- Eye protection;
- Hand protection;

- Reflective traffic safety vest (mandatory for traffic areas or railyards);
- Hard hat (with face shield is optional); and
- Emergency escape respirator is optional.

3.5.5 Level E Protection

Level E protection is used when radioactivity above 10 millirems per hour (mrems/hr) is detected at the site. Personal protective equipment for Level E includes:

- Coveralls;
- Air purifying respirator (i.e., P100 or equivalent);
- Time limits on exposure;
- Appropriate dermal protection for the type of radiation present, and
- Radiation dosimetry and ambient monitoring.

3.5.6 Additional Considerations

Fieldwork will contain a variety of situations due to chemicals in various concentrations and combinations. These situations may be partially ameliorated by following the work practices listed below:

1. Foot protection is needed on every site. If the ground to be worked on is contaminated with liquid, and it is necessary to walk in the chemicals, some sort of protective shoe coverings or "booties" can be worn over the boots. Shoe coverings should be designed with soles to help prevent slips. Using disposable shoe coverings when contacting liquid contamination can cut down on overall decontamination requirements. If non-liquids are to be encountered, a Tyvek™ bootie could be used. The advantage of booties is questionable if the ground contains any sharp objects. Boots should be worn with either cotton or wool socks to help absorb perspiration.
2. If the site situation requires the use of hard hats, chin straps should be used if a person will be stooping over where his/her hat may fall off. Respirator straps should not be placed over the hard hats, as this will affect the fit of the respirator.

   Some types of protective materials conduct heat and cold readily. In cold conditions, natural material clothing should be worn under protective clothing. Protective clothing should be removed prior to allowing a person "to get warm." Applying heat, such as with a space heater, to the outside of the protective clothing may drive contaminant permeation. In hot weather, under clothing will absorb sweat. It is recommended that workers use all cotton undergarments.
3. Body protection should be worn and taped to prevent anything from running into the top of the boot. Gloves should be worn and taped to prevent substances from entering the top of the glove. Duct tape is preferred, but masking tape can be used. When aprons are used, they should be taped across the back for added protection. However, this should be done in such a way that the person has mobility.
4. Atmospheric conditions such as precipitation, temperature, wind direction, humidity, wind velocity, and pressure determine the behavior of contaminants in air or the potential for volatile materials to become airborne. These parameters should be considered in determining the need for and the level of protection.
5. A program must be established for periodic air monitoring during site operations. Without an air monitoring program, any changes to air quality would go undetected and might jeopardize on-site personnel. Monitoring can be done with various types of air pumps and filtering devices followed by laboratory analysis of the filtration media, personnel dosimeters, and periodic walk-throughs by personnel carrying real-time direct-reading survey instruments.

6. For operations in the exclusion zone, different levels of protection may be selected, and various types of chemical-resistant clothing may be worn. This selection should be based on the job function, reason for being in the area, and the potential for skin contact with, or inhalation of, the chemicals present.
7. Escape masks must be readily available when levels of respiratory protection do not include a SCBA and the possibility of an IDLH atmosphere exists. The use and placement of escape masks should be made on a case-by-case basis. Escape masks should be strategically located at the site in areas that have higher possibilities of vapors, gases or particulates.

APPENDIX F

Subsurface Utility Clearance Management Program

SUBSURFACE UTILITY CLEARANCE MANAGEMENT PROGRAM

CORPORATE HEALTH AND SAFETY DIRECTOR	:	**Brian Hobbs, CIH, CSP**
EFFECTIVE DATE	:	**01/2019**
REVIEW DATE	:	**03/2023**
REVISION NUMBER	:	**3**

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APPENDICES

1. PURPOSE

Roux Associates, Inc. and its affiliated companies, Roux Environmental Engineering and Geology, D.P.C., and Remedial Engineering (collectively, "Roux") has instituted the following program for completing proper utility mark-outs and for conducting subsurface clearance activities. This establishes a method to ensure, to the greatest extent possible, that utilities have been identified and contact and/or damage to underground utilities and other subsurface structures will be avoided. For the purpose of this program, a structure is defined as any underground feature that may present a potential source(s) of energy, such as, but not limited to, utility vaults, bunkers, piping, electrical boxes, wires, conduits, culverts, utility lines, underground tanks, and ducts.

2. SCOPE AND APPLICABILITY

The Subsurface Utility Clearance Management Program applies to all Roux employees, its contractors, and subcontractors. Employees are expected to follow this program for all intrusive work involving Roux or other personnel (e.g., contractors/subcontractors) working for Roux unless the client's requirements are more stringent. Intrusive work activities can include, but are not limited to, digging or scraping the ground surface, including, but not limited to, excavation; test pitting or trenching; soil vapor sampling or the installation of soil borings, soil vapor monitoring points and wells, or monitoring wells; and drilling within concrete slabs on grade.

Deviation from the program, regardless of the specific work activity or location, must be pre-approved based on the client's site knowledge, experience, site conditions, and additional documentation on the site. Any exceptions shall be documented through Roux Subsurface Variance Form located within the Roux Health & Safety Application or through OKTA. Approval is required by the Project Principal (PP) and the Operations Manager (OM) in consultation with the Office Health and Safety Manager (OHSM) or Corporate Health and Safety Director (CHSD) prior to mobilization. Depending on the work location, more stringent federal, state, local, or client requirements may apply. It is the responsibility of the Project Team to identify such requirements prior to mobilization.

3. PROCEDURES

3.1 Before Intrusive Activities/Job Planning Process

Obtain, review, and field verify relevant historical site data that may include: as-builts/site plans; easement/right-of-way information; historical aerial photos/development plans; local/state permitting records; previous site investigation/boring logs; and/or interviews with site representative/client.

If there is the potential for unexploded ordinances or munitions, consultation with your OM and CHSD is required prior to site operations.

During the project kick-off meeting for intrusive activities, the Project Manager (PM) will review the Roux Subsurface Utility Clearance Checklist and Utility Verification (Appendix A) / Site Walkthrough Record (Appendix B) and the below bullet points with the project field team:

- Review the work scope to be performed with the site owner/tenant to determine if it may impact any utilities;
- Determine the need for utility owner companies to be contacted or to have their representatives on site;

- Where mark-outs terminate at the property boundary, consider the use of private utility locating / GPR / geophysical-type services. Use of private utility locating firms, however, does not eliminate the legal requirement for the subcontractor (e.g., driller, excavation firm) to submit a request for Public Utility Mark-outs. Also, the information provided by the service may be inaccurate and unable to locate subsurface utilities and structures in urban areas, landfills, urban fill areas and below reinforced slabs, etc. They should not be relied upon as the only means of performing utility clearance;
    - A mark-out is defined as the process of contracting with a competent and qualified company to confirm the presence or absence of underground utilities and structures. This process will clearly mark-out and delineate utilities that are identified so that intrusive work activities can be performed without causing disturbance or damage to the subsurface utilities and structures. After utility mark-outs are completed the soft Digging must completed prior to intrusive work.
- Documented description of the dig site, which is included in the project's Health and Safety Plan (HASP), and one call report will be maintained in the field and distributed amongst Roux personnel, its contractors, and subcontractors; and
- Documentation of the actual placement of mark outs in the field shall be collected using dated pictures, videos and/or sketches with distance from markings to fixed objects. All documentation shall be maintained within the project file.

3.2 Utility Mark Out

- Ensure the Mark-out / Stake-out Request Information Sheet (or one-call report) is complete and accurate for the site, including address and cross streets, and review for missing utilities.
    - Note: utility mark-out organizations do not have contracts with all utilities and it is often necessary to contact certain utilities separately, such as the local water and sewer authorities.
- Have written confirmation prior to mobilizing to the site that the Project Team or Roux personnel performing the intrusive activity has correctly completed the mark-out notification process, including requesting mark-outs, waiting for mark-outs to be applied to ground surfaces at the site, and receiving written confirmation of findings (via fax or email) from utility operators for all known or suspected utilities in the proposed area of intrusive activity, and provided utility owner written confirmation to Roux personnel for review and project files documentation.
- Do not begin any intrusive activity until all utility mark-outs have been completed (i.e., Did all utilities mark-out the site?) and any unresolved mark-out issues are finalized. Perform a site walk to review the existing utilities and determine if the utility locators have located said utilities.

  (Note: The Tolerance Zone is defined as three feet plus half of the diameter or half of the greatest dimension (for elliptical sewers, duct banks, and other non-cylindrical utilities) of a utility and three feet from the outside edge of any subsurface structure.)
- For non-subscribing utility owners or if public one-call service is not available, perform due diligence and request further information regarding utility type, construction details, location and burial depth directly from public service providers/utility owners. Request utility mark-out by each public service provider/utility owner as applicable. Confirm contact and response by each public utility owner on the Subsurface Utility Clearance Checklist.
- If utilizing a Private Markout, ensure the contractor has a plan regarding what types of technology will be used based on Table 1 in Appendix C: Private Utility Technology Applications and Considerations. If possible, it is recommended that multiple technologies are used to sweep each location/work area. Use tracer wire to locate the utility (when tracer wires are present). Record the results of the private utility mark-out on the Utility Verification/Site Walkthrough Record form.

3.3 Site Visit/Utility Walkthrough

Before mobilization with the subcontractor or during the pre-work safety tailgate with the subcontractor, perform a site walkthrough after utility mark-outs have been completed to determine whether additional potential hazards are present and look for visible signs of utilities that may be present. Outlined below are considerations regarding a site walk before intrusive activities.

- Identify overhead utilities that may impede equipment mobilization or work zones to ensure adequate clearance distance, as specified within the site-specific Health and Safety Plan (HASP).

The presence of any of the following may indicate potential subsurface structures:

- Locations of buildings, equipment, and features like area lights, signs, sprinkler systems, phones, drains, natural gas meters, manholes, etc.;
- Warning tape, which is often a sign of underground services;
- Material like pea gravel, sand, or other non-native materials can indicate the presence of tanks or lines or any deviations from the established native soil or backfill conditions;
- Red concrete, which is often used for electrical duct banks;
- Evidence of damaged utilities, such as piping materials, insulation, or odors present in the work area; and
- Other utilities including fire hydrants, electrical transformers, pipeline markers, valve covers, steam lines, and valve box covers, clean-outs, etc.

By observing the path between the main service line and the connection point, it may be possible to determine the likely routing of on-site utilities. However, this method should not be relied upon solely, and proper risk mitigation strategies should be in place before proceeding with any ground disturbance activities.

For sites with potential underground storage tanks present (UST) the following guidance applies:

- Identify if the product piping is either rigid or flexible.
- Conduct a visual examination of the tank field, observation wells, dispensers, vent stacks, and UST fill points to determine their location.
- Locate and become familiar with the emergency shutoff button/switch, if present.
- Determine the orientation, arrangement, and location of the tanks, as well as their size and capacity, through the examination of visible features at grade, such as fill ports and extractor covers, and by consulting any available as-built drawings.

3.4 Guidance on Preferred Methods of Clearing the Subsurface

At least one of the methods listed below should be carried out during pre-clearing activities. The Project Team is responsible for evaluating risks associated with the Scope of Work to determine which method is selected.

The following approaches shall be considered and implemented based on the Scope of Work.

- Soft Digging
    - This is the preferred method of utility clearance when clearing higher-risk utilities. Soil should be cleared through the use of a vacuum truck/equivalent, an accompanying air knife (preferred), or a water lance to break up and loosen the soil for removal with the vacuum.

- Hand Digging
    - Soil should be broken up and removed using a shovel or other appropriate hand tools without excessive force. Limit the use of dig bars or other tools that, if used incorrectly, can significantly damage utilities.
- Hand Augering
    - The hand auger must be turned slowly without excessive force. Rounded edge augers are preferred. Hand augers should not be used in pea stone/pea gravel where utilities may be present and could potentially be damaged by the hand auger. The abrupt absence of soil recovery in a hand auger could indicate utilities as pea gravel or sand may have spilled out of the auger (exception: native soil conditions that typically result in poor hand auger recoveries).

3.4.1 Guidance for Tools and Equipment

Personnel performing pre-clearance activities shall keep tools and equipment in safe working order and be properly inspected before use. If tools or equipment are broken, they will be tagged and removed from service. The following specify additional guidelines regarding tools and equipment:

- Hand digging tools must have a non-conductive handle, such as fiberglass, wood, or composite, or fully insulated handles and potential contact surfaces.
- Blades on shovels and post-hole diggers should have rounded or blunt edges.
- Pick axes or pointed spades should not be used for physical clearance.
- Crow bars, pinch bars, or pry bars should not be used to break hardened soil or backfill, except when authorized by the SS lead to loosen materials like bricks or larger stones.
- Electric-powered equipment must have ground fault protection.
- Should there be refusal or difficulty with advancing hand tools, the contractor shall stop work and notify the Roux SS/SHSO immediately.

3.5 During Intrusive Activities

Remove any surface coverings (i.e., pavement, brush, debris, etc.) to ensure workers have clear visibility of the work area and subsurface conditions. Avoid mechanical jack hammering over known lines unless they are de-energized, locked-out/tagged-out and potential repairs are planned or if the utility has been completely disconnected prior.

Install Pre-Clearance exploratory test holes using one of the techniques, as outlined in Section 3.4, for the first 5-ft below land surface (BLS) at each location before conducting intrusive mechanized activities.

- The size of the pre-clearance exploratory test hole should be, at a minimum, twice the diameter of any downhole tool or boring device. Note: Pre-Clearance exploratory test holes should be defined in the SOW/proposal provided to the client to prevent project delays and to allow adequate time for PM and PP to evaluate alternative approaches for the project. Alternative approaches will need to be pre-approved by the OM.
- For direct push applications (CPT, Geoprobe®, etc.) the borehole clearance diameter shall be at least 125% of the diameter of the largest tool being pushed through the subsurface (e.g., tip, rod, sampler, etc.), to the minimum required depth.
- For excavations, all utilities need to be marked and then exposed by hand following the protocols in this program. Pre-clearing for excavations may be performed by the “moat” technique (i.e., soft Digging around the perimeter). In these cases, dig in small lifts (<12” for first 5 feet) using a dedicated spotter.)

- For Tolerance Zone work, unless otherwise agreed upon with the Utility Operator, work within the tolerance zone requires verification by means of pre-clearance test holes specified in Section 3.4 to expose the utility. Once structures have been verified, a minimum clearance of three feet must be maintained between the utility and any powered equipment. If considered a high risk utility, additional requirements may be necessary and required by the Operator of the utility. Consultation with the OM and CHSD may be appropriate.

The PM, field team lead or personnel performing oversight is to:

- Ensure the mark-out remains valid. (In certain states, there are limits regarding the duration of time after the mark-out was applied to the ground surface work can be started or interrupted.) Additionally, the mark-outs must be maintained, documented, and in many cases, refreshed periodically to be considered valid. This will be accomplished through calls to the one call center.
- Ensure intrusive activities are only performed within the safe boundaries of the mark-out as detailed in the One-Call Report.
- Halt all work if intrusive activities have resulted in the discovery of an unmarked utility. Roux personnel shall notify the facility owner/operator and the one call center. All incidents such as this will be reported as per Roux Incident Investigation and Reporting Management Program.
- Halt all work if intrusive activities must take place outside of the safe boundaries of a mark-out and only proceed after new mark-outs are performed.
- Halt the intrusive activities and immediately consult with the PP if an unmarked utility is encountered.
- Completing any subsurface utility incident reports that are necessary.
- If a utility cannot be found as marked, Roux personnel shall notify the facility owner/operator directly or through the one-call center. Following notification, the excavation/mechanical intrusive work may continue unless otherwise specified in state law.
- Contractors/subcontractors must contact the one-call center to refresh the ticket when the excavation continues past the life of the ticket. State law dictates ticket life; however, at a maximum, ticket life shall not exceed 20 working days.

3.6 Stop Work Authority

Each Roux employee has Stop Work Authority that he or she will execute upon determination of any imminent safety hazard, emergency situation, or other potentially dangerous situation, such as hazardous weather conditions. This Stop Work Authority includes subsurface clearance issues such as the adequacy of a mark-out or identification during intrusive operations of an unexpected underground utility. Authorization to proceed with work will be issued by the PM/PP in consultation with the OHSM after such action is reviewed and resolved. The PM will initiate and execute all management notifications and contact emergency facilities and personnel when this action is appropriate.

Appendix A - Roux Subsurface Utility Clearance Checklist

Roux Subsurface Utility Clearance Checklist ***Date of Revision: 3/2023***

Work site set-up and work execution

ACTIVITY	Yes	No	N/A	COMMENTS INCLUDING JUSTIFICATION IF RESPONSE IS NO OR NOT APPLICABLE
Daily site safety meeting conducted, SPSAs performed, JSAs reviewed, appropriate work permits obtained (if applicable).				
HASP is available and reviewed by site workers / visitors.				
Subsurface Utility Clearance Procedure has been reviewed with all site workers.				
Mechanical intrusive work activities may not be performed at any location without authorization from the Roux Site Supervisor (SS). Clearance activities may not be performed at any location unless the SS is physically present.				
Work area secured; traffic control established as needed. Emergency shut-off switch located. Fire extinguishers / other safety equipment available as needed.				
Utility mark-outs (public / private) clear and visible. Provide Excavator's Stake-Out Reference Number / Request Date / Time.				
Tolerance zone work identified. Intrusive work activities cannot be performed in areas that are in direct conflict with any markings made by public or private locators.				
Unless the PP & OM authorizes it, all boreholes and test pit locations must be physically cleared before using mechanized equipment. Required minimum physical clearance depths and diameters are as follows: • Physically clear to a depth of 5 feet bls. • The size of the pre-clearance exploratory test hole must be, at a minimum, twice the diameter of any downhole tool or boring device. • For direct push applications (CPT, Geoprobe®, etc.) the borehole clearance diameter shall be at least 125% to the diameter of the largest tool being pushed through the subsurface (e.g., tip, rod, sampler, etc.).				
Work execution plan reviewed and adhered to (ground disturbance methods, clearance depths, any special utility protection requirements, or any other execution requirements; especially for Tolerance Zone work).				

Mechanical intrusive work is prohibited within 3-feet distance in all directions from subsurface structures that will be intentionally exposed during pre-clearance. Any removal of material within 3-feet of the subsurface structure may only proceed by hand using non-conductive tools/compressed air if authorized by state law and the owner/operator of the utility.				
All equipment onsite must maintain the appropriate horizontal distance from any point on the equipment to the nearest overhead electrical power line. Refer to site-specific HASP and local/utility company requirements.				
Verbal endorsement received from Roux PM and OM for any required field deviations to work execution plan.				

Key Reminders for Execution

The Subsurface Utility Clearance Protocol should be referenced to determine all requirements while executing subsurface work. The bullet points below are intended as general reminders only and should not be relied upon solely.

- The size of the pre-clearance exploratory test hole must be at a minimum twice the diameter of any downhole tool or boring device.
- For direct push applications (CPT, Geoprobe®, etc.) the borehole clearance diameter shall be at least 125% to the diameter of the largest tool being pushed through the subsurface (e.g., tip, rod, sampler, etc.), to the minimum required depth.
- The tolerance zone is defined as three feet plus half of the diameter or half of the greatest dimension (for elliptical sewers, duct banks, and other non-cylindrical utilities) of a utility and three feet from the outside of any subsurface structure.
- For excavations, all utilities need to be marked and then exposed by hand, following the protocols in this program. Pre-clearing for excavations may be performed by the “moat” technique (i.e., soft digging around the perimeter). In these cases, dig in small lifts (<12” for first five feet) using a dedicated spotter.) For Tolerance Zone work, unless otherwise agreed upon with the Utility Operator, work within the tolerance zone requires verification by means of hand-dug test holes to expose the utility. Once structures have been verified, a minimum clearance of three feet must be maintained between the utility and any powered equipment.

Appendix B - Utility Verification/Site Walkthrough Record

Employee Name: _____

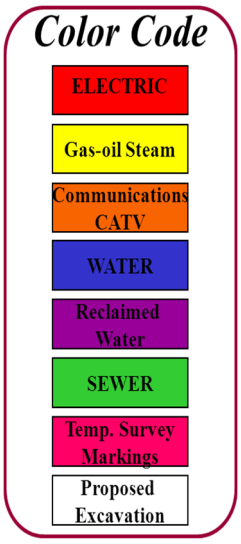
Date: _____

Instructions: For each utility suspected at the job site, indicate the location on the job site, approximate burial depth, and means of detecting the utility. Leave blank if that utility is not believed to be present.

Utility	Description of Utility Location Identified Onsite	Approx. Depth (bls)	Method / Instrumentation used to determine Utility Location	Utility Owner Response (Date/Time)	Mark Out Indicates (Clear / Conflict)
Electrical Lines					
Gas Lines					
Pipelines					
Steam Lines					
Water Lines					
Sanitary and Stormwater Sewer lines					
Pressured Air-Lines					
Tank Vent Lines					
Fiber Optic Lines					
Underground Storage Tanks					
Phone Lines/ Other					

* bls - below land surface

Site Sketch Showing Utilities:



Other Comments / Findings:

Completed by: _____

Signature: _____ Date: _____

Appendix C – Private Utility Technology Applications and Considerations

Technology ⇒ Utility/Object ⇓	Radio Frequency Electro-Magnetic Detector (connection to utility, or induction without connection)	Radio Frequency Electro-Magnetic Detector (passive sweep)	Ground Penetrating Radar (GPR)⊙	Acoustic Plastic Pipe Locator	Beacon, Sonde or Conductive Rodder Insertion	EM-61 (time domain electromagnetics) Ξ	
Power/Instrument Line (Energized/Signaled) □	✱ G	G	G	R	R	G	
Power Line (Non-energized) □	✱ G	R	G	R	R	G	
Sewer/Water Line (Metallic) □	✱ G	Y	G	Y	G	G	
Sewer/Water Line (Non-metallic)	R	R	G	G	✱ G	R	
Instrument / Telecomm Lines (Non-energized)	✱ G	R	G	R	R	Y Only if metallic	
Hydrocarbon Transmission Line (Pipeline)◆ □	✱ G	R	G	R	R	G	
Metallic/Non-Metallic Line (with Tracer Wire)	✱ G	Y	G	Y	Y	G metallic	Y non-metallic
Metallic/Non-Metallic Line (without Tracer Wire)	G metallic	R non-metallic	R	✱ G	Y	Y	G metallic	R non-metallic
Metal or Fiberglass UST	R	R	✱ G	R	R	G metallic	R non-metallic

Additional Considerations

Technology ⇒ Variable ⇓	Radio Frequency Electro-Magnetic Detector	Ground Penetrating Radar (GPR)⊙	Acoustic Pipe Locator	Beacon, Sonde, or Conductive Rodder Insertion	EM-61 Ξ
Moist Soil	G	Y	G	G	G
Dry Soil	Y	G	Y	G	G
Clay	Y	R	G	G	G
Concrete w/Rebar	R	Y	G	G	R
Long Horizontal Profile	G	G	G	G	G
Short Horizontal but Deep Vertical Profile	Y	G	R	R	G
Access to Line✚	G	N/A	G	G	G
No Access to Line✚	G (induction or passive) R (direct connect)	G	R	R	G G
Ferrous Metal	G	G	G	G	G
Non-ferrous Metal	Y	G	G	G	G
Adjacent or crossing conductive utility(ies)	Y	N/A	N/A	N/A	Y

Each site will be unique. Do not use this table as the sole criteria for technology selection. Use it as a starting point to assess available, applicable technology(s).

✱ Indicates best technology for given object. Site structures, rebar in concrete, shallow groundwater tables, perched storm water, etc. can significantly affect performance and reliability of any electro/magnetic method. Other utilities which cross or are adjacent to the target line can cause the EM signal to bleed or jump to the other utility line.

□ Metallic lines that have power running through them or can be connected to a tracer signal generator.

◆ Natural gas pipeline locating technicians must be trained/certified (in the U.S. requires DOT and Office of Pipeline Safety standards, other regions may have similar certification or requirements).

⊙ Most sensitive to interpretation. The skill, training and experience of operator are critical.

Ξ Emerging technology with limited availability.

✚ Access: induce unique electronic signature, apply acoustical impulse or insert conductive rodder/beacon/sonde.

Green Generally, an applicable technology **Yellow** May or may not be applicable **Red** Not generally applicable

APPENDIX G

Heavy Equipment Exclusion Zone Policy

HEAVY EQUIPMENT EXCLUSION ZONE MANAGEMENT PROGRAM

CORPORATE HEALTH AND SAFETY DIRECTOR	:	**Brian Hobbs, CIH, CSP**
EFFECTIVE DATE	:	**01/2019**
REVIEWED DATE	:	**03/2023**
REVISION NUMBER	:	**2**

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1. PURPOSE

The Exclusion Zone Management Program aims to establish the minimum clearance distance that must be maintained between workers and heavy equipment while equipment is in operation (i.e., engaged or moving). The intent is to have no personnel or equipment entering the Exclusion Zone while the equipment is in operation or moving to ensure that Roux and Subcontractor employees are unnecessarily exposed to the hazards of the equipment.

2. SCOPE AND APPLICABILITY

This Management Program applies to all Roux Associates, Inc. and its affiliated companies, Roux Environmental Engineering and Geology, D.P.C., and Remedial Engineering (collectively, "Roux") employees and their subcontractors performing fieldwork and are potentially exposed to heavy equipment. Heavy equipment includes, but is not necessarily limited to, excavation equipment, drill rigs, vacuum trucks, forklifts, lull telehandlers, man lifts, bobcats, delivery trucks, etc.

3. PROCEDURES

As specified in the following sections of this program, Exclusion Zones must be established and maintained during activities involving the movement/operation of heavy equipment. The Exclusion Zone requirements apply to all personnel on the site but are primarily focused on personnel required to work near the equipment. The exclusion zone is in effect when heavy equipment is moving or engaged (e.g., movement of an arm or bucket of an excavator, rotation of an auger, lifting of a load with a forklift, raising/lowering of a man lift, etc.).

1. The Exclusion Zone must meet the following minimum requirements:
   - A minimum distance of 10 feet from all heavy equipment and loads being moved by the equipment;
   - Greater than the swing/reach radius of any moving part on the heavy equipment (i.e., for large equipment, this may mean an exclusion zone distance larger than 20 feet);
   - Greater than the fall zone of equipment and their contents; and
   - Greater than the tip-over distance of the heavy equipment.

   The size of the Exclusion Zone will need to be determined on a task-specific basis considering the size of the heavy equipment in use and the task being performed. Prior to all heavy equipment operations, the Exclusion Zone(s) distance must be specifically identified in the Job Planning Process and incorporated in the pre-job tailgate meeting with the subcontractor(s), including any updates to our Job Safety Analysis (JSA).
2. The spotter (or another authorized individual) should be responsible for enforcing the Exclusion Zone and not conducting any other task. The spotter should be positioned immediately outside of the Exclusion Zone within a clear line of sight of the equipment operator. The spotter must signal the operator to stop work if anyone or anything has the potential to enter or compromise the Exclusion Zone. The operator should stop work if the spotter is not within their line of sight. If a spotter must be within the Exclusion Zone, they must be in a designated area outside the swing/tip radius, fall zone, line of fire of lifted loads, etc. If multiple pieces of equipment are being used, one spotter may be adequate so long as there is a clear line of sight and the spotter can control the zone(s). Radios would be required since hand signals would not be adequate if two pieces of equipment were running.

3. If an individual must enter the Exclusion Zone, the designated Spotter must signal the Equipment Operator to stop the equipment. Once the equipment is no longer moving (e.g., movement of an arm of an excavator is STOPPED, lifting of a load with a forklift STOPPED, raising/lowering of a man lift is STOPPED, etc.), the operator must bring the boom/arm to the ground ensuring a “Zero Energy State” and DISENGAGE THE CONTROLS and STOP and SIGNAL BY “SHOWING HIS HANDS.” This signal will indicate that it is safe for the person to enter the limits of the Exclusion Zone to perform the required activity. The equipment must remain completely stopped/disengaged until all personnel exited the Exclusion Zone's boundaries and the designated Spotter has signaled by “SHOWING HIS HANDS” to the Equipment Operator that it is safe to resume operations.
4. When entering the limits of the Exclusion Zone, personnel must, at a minimum:
    - Establish eye contact with the operator and approach the heavy equipment in a manner that is in direct line of sight to the Equipment Operator;
    - Never walk under any suspended loads or raised booms/arms of the heavy equipment; and
    - Identify a travel path free of Slip/Trip/Fall hazards.
5. The Exclusion Zone should be delineated using cones with orange snow fences or solid poles between the cones, barrels, tape, or other measures. For work in rights-of-way, rigid barriers, such as Jersey barriers or temporary chain link fences, should be used. For certain types of widespread or moving/mobile equipment operations, such delineation may not be practicable around equipment or individual work areas. In such instances, it is expected that the entire operation will be within a larger secure work area or that additional means will be utilized to ensure the security of the work zone.

All subcontractors who provide heavy equipment operations to field projects must implement a program that meets or exceeds the expectations described above as well as any additional requirements that may be required on a client or site-specific basis. Logistics involving heavy equipment should be understood and discussed prior to the field event during the job planning phase.

3.1 Exceptions

It is recognized that certain heavy equipment activities may require personnel to work within the limits of the Exclusion Zone as specified in this program. Such activities may include certain excavation clearance tasks, drill crew activities, or construction tasks. However, any such activity must be pre-planned, emphasizing limiting the amount and potential exposure of any activity required within the zone. The critical safety steps to mitigate the hazards associated with working within the Exclusion Zone must be defined in the JSA and potentially other project-specific plans (i.e., critical lift plans, etc.), and approved by the Roux Project Principal (PP), Office Health and Safety Manager (OHSM) and client representative, if required, prior to implementation.

4. TRAINING

Many Roux projects have different requirements that are client-specific or site-specific in nature. However, all Roux employees are provided initial training, as well as annually thereafter, on our Heavy Equipment Exclusion zone policy.

5. STOP WORK AUTHORITY

All Roux employees and their subcontractors have stop-work authority. Upon initial hire, all Roux employees are provided initial safety orientation, including stop work authority. All Roux employees and subcontractors are encouraged to stop work whenever any task or operation presents unreasonable risk or employees are

unsure how to carry out work safely. This includes upon observing any questionable safety-related behavior or condition, they are to stop work immediately and discuss the behavior or condition with the individual(s) involved. Upon stopping work, the following actions will be taken:

- Notify the affected parties to include the Project Manager (PM) and Site Health and Safety Officer (SHSO);
- Work to correct the situation or not proceed until the situation is corrected by the PM or SHSO;
- Resume work only when told to proceed by either the PM or SHSO;
- The SHSO will document the Stop-Work intervention in the field logbook;
- Stop-Work interventions will be reported to the PP for review to ensure the interventions are closed; and
- The PP will share learnings from the interventions, as appropriate, throughout the firm, to demonstrate the importance of the Stop-Work interventions.

Please note: Any form of retribution or intimidation directed at any individual or company for exercising their right to issue a stop work authority will not be tolerated.

Incident Investigation and Reporting Management Program

☐ **Roux Environmental Engineering and Geology, D.P.C.**
☐ **Roux Associates, Inc.** ☐ **Remedial Engineering, P.C.**

ACCIDENT REPORT

Brian Hobbs, Corporate Health and Safety Director
Cell: (631) 807-0193; Office: (631) 630-2416

PART 1: ADMINISTRATIVE INFORMATION

Project #: _____
Project Name: _____
Project Location (street address/city/state)**:**
_____
_____
Client Corporate Name / Contact / Address / Phone #:
_____
_____
_____
_____
_____

Immediate Verbal Notifications Given To:

Corporate Health & Safety	☐Yes	☐No
Office Health & Safety	☐Yes	☐No
Office Manager	☐Yes	☐No
Project Principal	☐Yes	☐No
Project Manager	☐Yes	☐No
Client Contact	☐Yes	☐No

REPORT STATUS (time due):
☐ Initial (24 hr) ☐ Final (5-10 days)
Date: _____ Date: _____

Accident Report Delivered To:

Corporate Health & Safety	☐Yes	☐No
Office Health & Safety	☐Yes	☐No
Office Manager	☐Yes	☐No
Project Principal	☐Yes	☐No
Project Manager	☐Yes	☐No

REPORT TYPE: ☐ Loss ☐ Near Loss Estimated Costs: $ _____

OSHA CASE # Assigned by Corporate Health & Safety if Applicable:

Corporate Health & Safety Confirmed Final Accident Report
☐Yes ☐No

DATE OF INCIDENT: _____

TIME INCIDENT OCCURRED: _____ ☐AM ☐PM

INCIDENT LOCATION – City, State, and Country (If outside U.S.A.)
_____

INCIDENT TYPES: (Select most appropriate if Loss occurred.)
From lists below, please select the option that best categories the incident. When selecting an injury or illness, also indicate the severity level.

☐**INJURY** ☐**ILLNESS**

----------**Severity Level**----------

☐Fatality ☐First Aid ☐Medical
☐Restricted Work ☐Lost Time Treatment

OTHER INCIDENT TYPES

☐Spill / Release
Material involved:_____
Quantity (U.S. Gallons): _____

☐Misdirected Waste ☐Consent Order ☐NOV
☐Property Damage ☐Exceedance
☐Motor Vehicle ☐Fine / Penalty

ACTIVITY TYPE (Check most appropriate one.)

☐CAMP ☐Construction ☐Drilling ☐Driving ☐Excavation / Trenching
☐Gauging ☐O&M ☐Other Soil Work (e.g. Compaction) ☐Sampling ☐Site Walk/Inspection
☐Subsurface Clearance ☐Trucking ☐Waste Mgmt. ☐Work Area Prep. ☐Other

INJURY TYPE (Check all applicable.)

☐Abrasion ☐Amputation ☐Burn ☐Cold/Heat Stress ☐Inflammation ☐Laceration
☐Occupational Illness ☐Puncture ☐Rash ☐Repetitive Motion ☐Sprain/Strain ☐Other_____

BODY PART AFFECTED (Check all applicable.)

☐Respiratory ☐Neck ☐Chest ☐Abdomen ☐Groin ☐Back
☐Shoulder ☐Arm ☐Wrist ☐Hand/Fingers ☐Eye ☐Head
☐Face ☐Leg ☐Knee ☐Ankle ☐Foot/Toes ☐Other_____

I. PERSON(S) DIRECTLY / INDIRECTLY INVOLVED IN INCIDENT (Attach additional information as necessary/applicable.)

Name/Phone # of Each Person Directly/Indirectly Involved in Incident:	Designate: Roux/Remedial Employee Roux/Remedial Subcontractor Client Employee Client Contractor Third Party	As applicable, Current Occupation; Yrs in Current Occupation; Current Position; and Yrs in Current Position:	As applicable, Employer Name; Address; and Phone #:	As applicable, Supervisor Name; and Phone #:
1)				
2)				

II. PERSONS INJURED IN INCIDENT (Attach additional information as necessary/applicable.)					
Name/Phone # of Each Person Injured in Incident:	Designate: Roux/Remedial Employee Roux/Remedial Subcontractor Client Employee Client Contractor Third Party	As applicable, Current Occupation; Yrs in Current Occupation; Current Position; and Yrs in Current Position:	As applicable, Employer Name; Address; and Phone #:	As applicable, Supervisor Name; and Phone #:	Description of Injury:
1)					
2)					

III. PROPERTY DAMAGED IN INCIDENT (Attach additional information as necessary/applicable.)				
Property Damaged:	Property Location:	Owner Name, Address & Phone #:	Description of Damage:	Estimated Cost:
1)				
2)				$

IV. WITNESSES TO INCIDENT (Attach additional information as necessary/applicable.)		
Witness Name:	Address:	Phone #:
1)		
2)		

PART 2: WHAT HAPPENED AND INCIDENT DETAILS

PROVIDE FACTUAL DESCRIPTION OF INCIDENT (e.g., describe loss/near loss, injury, response / treatment).

I. AUTHORITIES/GOVERNMENTAL AGENCIES NOTIFIED (Attach additional information as necessary/applicable.)				
Authority/Agency Notified:	Name/Phone #/Fax # of Person Notified:	Address of Person Notified:	Date & Time of Notification:	Exact Information Reported/Provided:

II. PUBLIC RESPONSES TO INCIDENT (if applicable)				
Response/Inquiry By: (check one)	Entity Name:	Name/Phone # of Respondent/ Inquirer:	Address of Entity/Person:	Date & Time of Response/Inquiry:
☐ Newspaper ☐ Television ☐ Community Group ☐ Neighbors ☐ Other _____				
Describe Response/Inquiry:				
Roux/Remedial Response:				

(Check all that apply.) (Attach photos, drawings, etc. to help illustrate the incident.)
ATTACHED INFORMATION: ☐Photo ☐Sketches ☐Vehicle Acord Form ☐Police Report ☐Other

Name(s) of person(s) who prepared Initial and Final Report:	**Title(s):**	**Phone number(s):**

PART 3: INVESTIGATION TEAM ANALYSIS

Date Investigation Started (MM/DD/YYYY):

Factors, Root Causes, and Solution (FRCS): Complete FRCS form and answer all 7 factor questions. If answering NO to Factors 1 – 4 identify root cause(s) and explain why QIs) occurred. If answering YES to Factors 5 – 7 circle the root cause(s). Transfer the solutions guidance that addresses each root cause from the FRCS form to this form. Attach your completed FRCS Worksheet. If Factors 1-7 do not apply to the incident, write "External Cause" in the Factor column below and leave the remaining fields blank.

DESCRIPTION OF UNDESIRABLE BEHAVIOR/CONDITION

1.

2.

FACTOR(S) AND SOLUTION(S): HOW TO REDUCE POSSIBILITY OF INCIDENT RECURRING
Selection of factors and solutions reflects the analysis of investigation team and is not meant to be a legally binding conclusion as to the Root Cause and/or solution.

CAUSAL FACTOR/ BEHAVIOR/ CONDITION	ROOT CAUSE	SOLUTION(S) [Must Match Root Cause(s)]	PERSON RESPONSIBLE	AGREED DUE DATE	ACTUAL COMPLETION DATE

INVESTIGATION TEAM:

PRINT NAME	JOB POSITION	DATE	SIGNATURE

QUALITY REVIEW Correct root cause(s) identified? Do root cause(s) and solution(s) match? Are solution(s) feasible / maintainable?

Name: **Job Title:**

PART 4: Date Solutions were Implemented & Validated (Were Solutions Effective?)

Date	Solution	Verifier / Validator Name and Job Title	**Details** (of I & V performed)

APPENDIX I

Fatigue Management Program

FATIGUE MANAGEMENT PROGRAM

CORPORATE HEALTH AND SAFETY DIRECTOR	:	**Brian Hobbs, CIH, CSP**
EFFECTIVE DATE	:	**01/2020**
REVIEW DATE	:	**03/2023**
REVISION NUMBER	:	**1**

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1. PURPOSE AND APPLICABILITY

Roux Associates, Inc. and its affiliated companies, Roux Environmental Engineering and Geology, D.P.C, and Remedial Engineering (collectively, "Roux") has implemented this program to establish controls to ensure Roux employees are aware of fatigue and assist with the overall control of factors that cause fatigue. Hazards that contribute to overall worker fatigue will be properly identified and managed in order to prevent incidents that can result in personal injury, environmental damage, and/or property damage. This program applies to all locations or projects where employees could be impacted by worker fatigue.

2. CONSEQUENCES OF FATIGUE

Definitions of fatigue vary between industries, regions, and professional perspectives. Confusion over the terminology relating to fatigue, and the causes of fatigue can pose a challenge to managing the associated risk. Therefore, a single definition of fatigue should be identified and used consistently. The definition of fatigue used in this document, and proposed for broader use in industry, is that provided in ANSI/API RP 755: *Reduced mental and physical functioning caused by sleep deprivation and/or being awake during normal sleep hours. This may result from extended work hours, insufficient opportunities for sleep, failure to use available sleep opportunities, or the effects of sleep disorders, medical conditions, or pharmaceuticals which reduce sleep or increase sleepiness.*

Fatigue can contribute to the risk of accidents by impairing performance in many different ways:

- Diminished ability to perform certain tasks (e.g., slowed reaction times; periods of delayed response or no response (lapses) during vigilance-based tasks; increased errors of omission (forgetting to do something); impaired selective attention; reduced accuracy of short-term memory.
- Changes in emotional state and willingness to apply effort (e.g., being quieter or more withdrawn than usual, lacking in energy, lacking in motivation, and being irritable/grumpy).
- Changes in the way we communicate (e.g., diminished ability to communicate effectively).

Observable signs of fatigue include fidgeting, rubbing eyes, yawning, frequent blinking, staring blankly, long blinks, difficulty keeping eyes open, and head nodding. Head nodding and difficulty keeping eyes open are associated with extreme levels of fatigue and are symptoms of what is termed "micro-sleeps," short periods of time (seconds) when the brain disengages from the environment (by ceasing to process visual information and sounds), and we slip uncontrollably into a light sleep for a short time. The characteristic head nodding associated with micro-sleeps is caused by the muscles in the neck relaxing as we enter light sleep.

3. TRAINING REQUIREMENTS

All technical employees are provided an initial employee orientation before they can perform fieldwork. The orientation shall be provided by the Operations Manager (OM), Office Health and Safety Manager (OHSM), or their designee. Fatigue management shall be incorporated within this initial orientation and provided to employees annually thereafter as appropriate. At a minimum, the following information should be communicated:

- How to recognize and control fatigue;
- Work and personal habits; and
- Reporting fatigue to supervision.

Pre-employment physicals, including drug screening, as appropriate, are required prior to fieldwork activities.

4. WHAT CAUSES FATIGUE?

Fatigue is determined by a multitude of work-related and individual factors, some of which are listed below. In order to provide comprehensive protection from the impaired performance caused by fatigue, site-specific procedures are developed to minimize the overall risk of fatigue.

Work-related factors contributing to fatigue can include:

- Shift schedule design;
- Overtime and on-call arrangements;
- Commute;
- Environmental conditions;
- Access to food and water;
- Type of work;
- Task design; and
- Breaks within shifts.

Individual factors contributing to fatigue can include:

- Sleep environment/disorders;
- Health;
- Domestic commitments;
- Knowledge of fatigue reduction strategies;
- Age; and
- Secondary employment.

5. NOTIFICATIONS AND RESPONSIBILITIES

The following individuals have responsibilities for notification under this policy.

Employee: Roux employees who are using prescription or non-prescription drugs that may affect their ability to perform their work safely are encouraged to identify themselves to the Roux PM or Human Resources (HR) prior to reporting to the job site and to provide the PM/HR with up-to-date information on the medication and its effects.

Project Principals (PPs) and Project Managers (PMs): PPs are responsible for notifying the PM/HR when an employee self-identifies as using prescription or non-prescription drugs that may affect their ability to perform their work safely. When required by the Client contract or policy, the Roux PP (or PM if delegated this authority by the PP) shall also provide applicable notice to the client's designated representative. The notice should be completed in advance using any applicable client notification forms and shall be acknowledged/approved by the client representative prior to the employee commencing work. The Roux PM shall notify the field manager/supervisor, who will be responsible for field observation of the employee while on their project and for making sure that co-workers are aware of the employee's situation. All personnel is expected to watch out for the self-identified employee.

6. PROCEDURES

- Site-specific HASPs shall include language to address and control hazards associated with the use of prescription and nonprescription drugs**,** as applicable.
- Daily tailgate safety briefings and Job Safety Analysis (JSA) reviews will include discussions surrounding fatigue management. Content will include such items as:
  - Limiting work hours;
  - Job rotation;
  - Allowing for sufficient sleep;
  - Ergonomic controls;
  - JSA task analysis;
  - Rest breaks;
  - Types of medications that can cause fatigue; and
  - Avoidance, where possible, of the use of medications that increase fatigue.
- Ergonomically designed equipment will be selected and provided as deemed appropriate through a JSA. Ergonomic equipment can include, but is not limited to:
  - Providing antifatigue mats for standing;
  - Lift assist devices for repetitive lifting;
  - Proper lighting and control of temperature where possible;
  - Ergonomic-friendly mouse (for computer), wrist supports and adjustable chairs; and
  - Providing diagrams and other literature to employees to show good ergonomic body positioning techniques for office and field activities.

APPENDIX J

Silica Exposure Control Program

SILICA EXPOSURE CONTROL
MANAGEMENT PROGRAM

CORPORATE HEALTH AND SAFETY DIRECTOR	:	**Brian Hobbs, CIH, CSP**
EFFECTIVE DATE	:	**01/2022**
REVIEW DATE	:	**03/2023**
REVISION NUMBER	:	**1**

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APPENDICES

1. PURPOSE

Roux Associates, Inc. and its affiliated companies, Roux Environmental Engineering and Geology, D.P.C, and Remedial Engineering (collectively, "Roux") have implemented this Program to establish controls for occupational respirable crystalline silica exposure. The Written Silica Exposure Control Program (Program) applies to Roux personnel who are potentially exposed to airborne concentrations of respirable crystalline silica at or above regulatory and industry action levels and exposure limits. Potential for respirable crystalline silica exposure may result from field operations, work activities, or proximity to work locations where airborne silica is being emitted. This Program also applies to subcontractors, superintendents, foremen, or safety personnel who may be responsible for overseeing Roux's subcontractor operations that have the potential to expose Roux personnel to airborne concentrations of silica.

Occupational Safety and Health Administration (OSHA) 29 CFR 1926.1153: *Respirable Crystalline Silica* (Construction Industry) and 29 CFR 1910.1053: *Respirable Crystalline Silica* (General Industry), contain regulatory requirements specific to occupational respirable crystalline silica exposure. This Written Silica Exposure Control Program is developed in accordance with the requirements in 29 CFR 1926.1153(g).

2. DEFINITIONS

Crystalline silica is a common mineral found in the earth's crust. Materials like sand, stone, concrete, and mortar contain crystalline silica. The following definitions provide additional information regarding respirable crystalline silica exposure and were adapted from OSHA 29 CFR 1926.1153:

- *Respirable Crystalline Silica*: Quartz, cristobalite, and/or tridymite silica contained in airborne particles are determined to be respirable by a sampling device designed to meet the characteristics for respirable-particle-size-selective samplers specified in the International Organization for Standardization (ISO) 7708:1995: Air Quality—Particle Size Fraction Definitions for Health-Related Sampling.
- *Employee Exposure*: The exposure to airborne respirable crystalline silica that would occur if an employee were not using respiratory protection or engineering controls. Activities such as abrasive blasting with sand; sawing brick or concrete; sanding or drilling into concrete walls; grinding mortar; manufacturing brick, concrete blocks, stone countertops, or ceramic products; and cutting or crushing stone result in worker exposure to respirable crystalline silica dust. Industrial sand used in certain operations, such as foundry work and hydraulic fracturing (fracking), is also a source of respirable crystalline silica exposure. Workers who inhale these very small crystalline silica particles are at increased risk of developing serious silica-related diseases, including:
    - Silicosis, an incurable lung disease that can lead to disability and death;
    - Lung cancer;
    - Chronic obstructive pulmonary disease (COPD); and
    - Kidney disease.
- *Action Level*: A concentration of airborne respirable crystalline silica of 25 micrograms per cubic meter ($\mu g/m^3$), calculated as an 8-hour Time-Weighted Average (TWA). The employer shall assess the exposure of workers who have the potential for respirable crystalline silica exposure at or above the action level.
- *Permissible Exposure Limit (PEL)*: A concentration of airborne respirable crystalline silica of 50 micrograms per cubic meter ($\mu g/m^3$), calculated as an 8-hour Time-Weighted Average (TWA).

3. SCOPE AND APPLICABILITY

The practices and procedures described in this Program include:

- Job tasks in the workplace that involve potential exposure to respirable crystalline silica;
- Engineering controls, work practices, and respiratory protection are used to limit employee exposure to respirable crystalline silica;
- Housekeeping measures used to limit employee exposure to respirable crystalline silica;
- Administrative controls are used to restrict access to work areas, when necessary, to minimize the number of employees exposed to respirable crystalline silica; and
- Employee training and awareness.

4. SITE-SPECIFIC HAZARDS

This Program describes the site-specific hazards associated with projects involving potential exposure to airborne concentrations of respirable crystalline silica. These work tasks include, but are not limited to:

- Use of stationary masonry saws used to cut concrete, tile, concrete masonry block, sheetrock, gypsum fiber roof board, or any other product containing quartz.
- Handheld power saws used to cut concrete, asphalt, concrete masonry block, sheetrock, gypsum fiber roof board, or any other product containing quartz.
- Walk-behind saws used to cut concrete or asphalt.
- Rig-mounted or free-standing core saws or drills (including impact and rotary hammer drills) used to penetrate the concrete, concrete masonry block, sheetrock, gypsum fiber roof board, or any other structural component or product containing quartz.
- Jackhammers and handheld powered chipping tools used to demolish or modify concrete, concrete masonry block, or any other structural component or product containing quartz.
- Vehicle-mounted hammers or chipping tools are used to demolish concrete, concrete masonry block, or any other structural component or product containing quartz.
- Handheld grinders or cut-off wheels used for mortar removal or cutting/grinding of concrete, concrete masonry block, sheetrock, gypsum fiber roof board, or any other structural component or product containing quartz.
- Walk-behind milling machines or bead blasters used for surfacing activities on concrete, concrete masonry block, asphalt, or any other product containing quartz.
- Installation or demolition of sheetrock, including mudding, taping, and texturizing activities with quartz-containing materials.
- Hand or power tool sanding of painted surfaces. Current latex paint products contain quartz, and the painted substrate (sheetrock, concrete masonry block, concrete) contains quartz.
- Drivable asphalt milling machines used to mill asphalt roadways or walkways.
- Ball mills or crushing equipment used to size products containing quartz.
- All housekeeping operations are associated with the activities described above.

Roux employees who work in proximity to operations with the potential for generating airborne respirable crystalline silica must be aware of safe work practices and take all necessary precautions to avoid and minimize exposure.

5. TRAINING REQUIREMENTS

Per OSHA 29 CFR 1926.1153(i)(2), Roux employees who are potentially exposed to airborne concentrations of respirable crystalline silica will be provided training to demonstrate knowledge and understanding of the following:

- Health hazards associated with exposure to respirable crystalline silica;
- Specific tasks in the field or workplace that could result in exposure to respirable crystalline silica;
- Specific engineering controls, work practices, and respiratory protection requirements to mitigate potential respirable crystalline silica exposure;
- The contents of 29 CFR 1926.1153; and
- The identity of the competent person.

Each employee will have access to safety data sheets (as applicable) and will be provided information on the health hazards associated with respirable crystalline silica exposure, including cancer, lung, immune system, and kidney effects. In addition, Roux employees will be provided training and information regarding specific work activities identified in this Program that may result in respirable crystalline silica exposure. Employee training will provide a discussion of respirable crystalline silica hazards and exposure assessment of anticipated job tasks. The implementation of air monitoring, specific engineering and/or work practice control measures, personal protective equipment (PPE) including respiratory protection, and medical surveillance will be performed per *29 CFR 1926.1153 Table 1—Specified Exposure Control Methods When Working With Materials Containing Crystalline Silica* requirements. Please refer to Appendix A for Table 1 control measures. Employee training will also include the identification of a competent person for respirable crystalline silica exposure assessment and the determination of control methods.

6. COMPETENT PERSON REQUIREMENTS & RESPONSIBILITIES

Roux shall identify a Competent Person to inspect and oversee all activities with potential airborne respirable crystalline silica exposure. Subcontractors working on projects within the scope of this Program shall appoint a Competent Person capable of executing the duties described herein. The Competent Person must have training in the inspection of work areas and equipment and in the determination of safe working conditions. This person shall have a working knowledge of the 1926.1153 standards, shall be capable of identifying airborne silica hazards, shall determine the need for initial and additional exposure monitoring, shall recommend and implement engineering and work practice controls, shall establish levels of PPE, and shall have the authority to take action to eliminate hazards and correct incidences of noncompliance.

7. SAFE WORK PRACTICES

The requirements of this section are to be followed by Roux employees and other on-Site personnel who may be exposed to airborne concentrations of respirable crystalline silica at or above the regulatory limits.

7.1. EXPOSURE ASSESSMENT

Roux will either comply with and implement all controls required by *29 CFR 1926.1153 Table 1—Specified Exposure Control Methods When Working With Materials Containing Crystalline Silica* **or** conduct an initial exposure assessment in accordance with 29 CFR 1926.1153(d)(2). An exposure assessment is not necessary where it can

be demonstrated that engineering controls used in Table 1 are effective at maintaining potential respirable crystalline silica exposure well below regulatory limits:

- An exposure assessment is required when employees may be exposed to airborne silica at or above the action level in order to determine the extent to which employees are exposed, and the appropriate exposure controls required.
- An initial determination of exposure shall be made at the beginning of operations. The determination shall consist of the collection of personal air samples representative of a typical full shift, including at least one sample for each similar exposure group in each work area, either for each shift or for the shift with the highest potential exposure level.
- During the initial exposure assessment, personnel shall be protected by respiratory protection as specified in *29 CFR 1926.1153 Table 1—Specified Exposure Control Methods When Working With Materials Containing Crystalline Silica* until workplace airborne concentrations are determined.
- During the initial exposure assessment and all phases of work, personnel shall be provided with protective clothing and equipment, hygiene facilities, and training as applicable.
- Whenever a change in equipment, process, controls, or personnel occurs or a new task has been initiated, an additional exposure assessment is required.
- When an assessment determines that exposure has occurred above the action level, but below the PEL, additional monitoring shall be required at least every 6 months, additional monitoring shall continue until such time that the monitoring results fall below the action level on two separate occasions at least 7 days apart.
- When monitoring yields results above the PEL, quarterly monitoring is required. Quarterly monitoring may be suspended when additional monitoring results fall below the action level on two separate occasions at least 7 days apart.
- Air monitoring may be unwarranted where the Competent Person can clearly demonstrate, in the absence of air monitoring data, that a work activity will not create airborne silica concentrations in excess of the action level. Where a negative exposure determination is reached without air monitoring, the Competent Person must develop a written program as to why exposures are not expected to exceed the action level.

7.2. COMMUNICATION OF HAZARDS

This written compliance Program shall be made available to all Roux employees. In addition, owners, subcontractors, and other personnel in proximity to work locations where airborne respirable crystalline silica is being emitted shall also be provided the Program.

7.3. CONTROL METHODS

A site-specific written compliance program shall be established and implemented prior to the start of operations within the scope of this Program. The written Program shall outline the control methods for maintaining employee exposure below the PEL.

Engineering and work practice controls, including administrative controls, shall be implemented to reduce and maintain employee exposure to silica at or below the PEL, to the extent that such controls are feasible.

Where all feasible engineering and work practice controls that can be instituted are not sufficient to reduce employee exposure to or below the PEL, such controls shall be used to reduce employee exposure to the lowest feasible level in conjunction with respiratory protection.

Respiratory protection shall be selected based on guidance in 1926.1153 *Table 1—Specified Exposure Control Methods When Working With Materials Containing Crystalline Silica* or based on a Certified Industrial Hygienist's or

Competent Person's assessment of the potential airborne silica exposure that may be created by the means and methods of work (high energy operations with high airborne dust generation or low energy operations with low dust generation).

In addition to exposure control methods provided in Table 1, all affected Roux and subcontractor personnel shall comply with the following work practices to properly mitigate respirable crystalline silica exposure:

- When using mechanical ventilation to control exposure, regularly evaluate the system's ability to effectively control exposure, including particulate filters, ducting, and mechanical components.
- If administrative controls are used to limit exposure, establish and implement a job rotation schedule that includes employee identification, exposure duration, and anticipated exposure levels where each affected employee is located.
- If vacuuming is the method selected, specialized vacuums with High-efficiency Particulate Air (HEPA) filtration are required. Methods to use and empty vacuums in a manner that minimizes the reentry of silica into the workplace shall be described and used. Use of household vacuums with HEPA filters are not allowed at any time for the collection of dust or debris that contains silica.
- Never use compressed air to remove silica from any surface unless it is used in conjunction with a ventilation system designed to capture the airborne dust created while using the compressed air.
- Maintain all surfaces as free as possible from accumulations of silica. Select methods for cleaning surfaces and floors that minimize the likelihood of silica becoming airborne (such as using a HEPA vacuum).
- Employees shall not eat, drink, smoke, chew tobacco or gum, or apply cosmetics in any areas where exposure to silica is above the PEL and/or Action Level (in other words, regulated areas).
- Do not allow employees to leave the workplace wearing any protective clothing or equipment that is required to be worn during their work shift without HEPA vacuum removal of dust.

7.4. PERSONAL PROTECTIVE EQUIPMENT & RESPIRATORY PROTECTION

Roux employees shall be provided, at no cost, protective work clothing and equipment including cotton coveralls or similar full-body clothing, gloves, hats, shoes or disposable shoe coverlets, face shields, vented goggles, or other appropriate PPE. Half-mask and/or full-facepiece air-purifying respirators (APR) with an OSHA assigned protection factor (APF) of at least 10 will be used as the appropriate respiratory protection for work operations with the potential for respirable crystalline silica exposure at or above the action level. Full-facepiece APRs with an OSHA APF of 25 are required for mortar removal using handheld grinders equipped with a shroud and dust collection system. Respiratory protection must be used for the following conditions:

- During periods when employee exposure to airborne respirable crystalline silica exceeds the Action Level.
- For work operations where engineering and work-practice controls are not sufficient to reduce employee exposure to or below the Action Level.
- During periods when an employee requests a respirator.
- During periods when respirators are required to provide interim protection while conducting initial exposure assessments.
- Powered air-purifying respirators (PAPR) shall be provided to employees who request such a respirator to use where it will provide adequate protection..

8. MEDICAL SURVEILLANCE REQUIREMENTS

Roux shall institute medical surveillance for any employees required by this Program to wear respiratory protection for 30 or more days per year. Initial medical surveillance consists of medical and work history with emphasis on: past, present, and anticipated exposure to crystalline silica exposure , dust and other agents affecting the respiratory system; any history of respiratory system dysfunction, including signs and symptoms of respiratory disease (e.g., shortness of breath, cough, wheezing); history of tuberculosis; and smoking status and history; a physical examination with emphasis on the respiratory system; chest X-ray (a single posterior-anterior radiographic projection or radiograph of the chest at full inspiration recorded on either film (no less than 14 x 17 inches and no more than 16 x 17 inches) or digital radiography systems), interpreted and classified according to the International Labor Office (ILO) International Classification of Radiographs of Pneumoconiosis by a NIOSH-certified B Reader; a pulmonary function test to include forced vital capacity (FVC) and forced expiratory volume in one second (FEV1) and FEV1/FVC ratio, administered by a spirometry technician with a current certificate from a NIOSH approved spirometry course; testing for latent tuberculosis infection; and any other tests deemed appropriate by the Occupational Medicine Provider. Subcontractors are responsible for implementing a medical surveillance program for their employees.

APPENDIX A - 29 CFR 1926.1153 Table 1—Specified Exposure Control Methods When Working with Materials Containing Crystalline Silica

Table 1: Specified Exposure Control Methods When Working with Materials Containing Crystalline Silica

Equipment/Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 hours/shift	>4 hours/shift
(i) Stationary masonry saws	Use saw equipped with integrated water delivery system that continuously feeds water to the blade. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	None	None
(ii) Handheld power saws (any blade diameter)	Use saw equipped with integrated water delivery system that continuously feeds water to the blade. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions:		
	• When used outdoors	None	APF 10
	• When used indoors or in an enclosed area	APF 10	APF 10
(iii) Handheld power saws for cutting fiber-cement board (with blade diameter of 8 inches or less)	For tasks performed outdoors only: • Use saw equipped with commercially available dust collection system • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions • Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency	None	None
(iv) Walk-behind saws	Use saw equipped with integrated water delivery system that continuously feeds water to the blade. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions:		
	• When used outdoors	None	None
	• When used indoors or in an enclosed area	APF 10	APF 10
(v) Drivable saws	For tasks performed outdoors only:		

Equipment/Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 hours/shift	>4 hours/shift
	• Use saw equipped with integrated water delivery system that continuously feeds water to the blade. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions	None	None
(vi) Rig-mounted core saws or drills	Use tool equipped with integrated water delivery system that supplies water to cutting surface. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	None	None
(vii) Handheld and stand-mounted drills (including impact and rotary hammer drills)	Use drill equipped with commercially available shroud or cowling with dust collection system. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism. Use a HEPA-filtered vacuum when cleaning holes.	None	None
(viii) Dowel drilling rigs for concrete	For tasks performed outdoors only: • Use shroud around drill bit with a dust collection system. Dust collector must have a filter with 99% or greater efficiency and a filter-cleaning mechanism	APF 10	APF 10
(ix) Vehicle-mounted drilling rigs for rock and concrete	Use dust collection system with close capture hood or shroud around drill bit with a low-flow water spray to wet the dust at the discharge point from the dust collector.	None	None
	OR		
	Operate from within an enclosed cab and use water for dust suppression on drill bit.	None	None

Equipment/Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 hours/shift	>4 hours/shift
(x) Jackhammers and handheld powered chipping tools	Use tool with water delivery system that supplies a continuous stream or spray of water at the point of impact:		
	• When used outdoors	None	APF 10
	• When used indoors or in an enclosed area	APF 10	APF 10
	OR		
	Use tool equipped with commercially available shroud and dust collection system.		
	Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.		
	Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism:		
	• When used outdoors	None	APF 10
	• When used indoors or in an enclosed area	APF 10	APF 10
(xi) Handheld grinders for mortar removal (*i.e.*, tuckpointing)	Use grinder equipped with commercially available shroud and dust collection system.	APF 10	APF 25
	Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.		
	Dust collector must provide 25 cubic feet per minute (cfm) or greater of airflow per inch of wheel diameter and have a filter with 99% or greater efficiency and a cyclonic pre-separator or filter-cleaning mechanism.		
(xii) Handheld grinders for uses other than mortar removal	For tasks performed outdoors only: • Use grinder equipped with integrated water delivery system that continuously feeds water to the grinding surface	None	None
	• Operate and maintain tool in accordance with manufacturer's		

Equipment/Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 hours/shift	>4 hours/shift
	instructions to minimize dust emissions		
	OR		
	• Use grinder equipped with commercially available shroud and dust collection system • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions		
	Dust collector must provide 25 cubic feet per minute (cfm) or greater of airflow per inch of wheel diameter and have a filter with 99% or greater efficiency and a cyclonic pre-separator or filter-cleaning mechanism:		
	• When used outdoors	None	None
	• When used indoors or in an enclosed area	None	APF 10
(xiii) Walk-behind milling machines and floor grinders	Use machine equipped with integrated water delivery system that continuously feeds water to the cutting surface.	None	None
	Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.		
	OR		
	Use machine equipped with dust collection system recommended by the manufacturer.	None	None
	Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.		
	Dust collector must provide the air flow recommended by the manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism.		
	When used indoors or in an enclosed area, use a HEPA-filtered vacuum to remove loose dust in between passes.		

Equipment/Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 hours/shift	>4 hours/shift
(xiv) Small drivable milling machines (less than half-lane)	Use a machine equipped with supplemental water sprays designed to suppress dust. Water must be combined with a surfactant.	None	None
	Operate and maintain machine to minimize dust emissions.		
(xv) Large drivable milling machines (half-lane and larger)	For cuts of any depth on asphalt only: • Use machine equipped with exhaust ventilation on drum enclosure and supplemental water sprays designed to suppress dust.	None	None
	• Operate and maintain machine to minimize dust emissions.		
	For cuts of four inches in depth or less on any substrate:		
	• Use machine equipped with exhaust ventilation on drum enclosure and supplemental water sprays designed to suppress dust.	None	None
	• Operate and maintain machine to minimize dust emissions.		
	OR		
	Use a machine equipped with supplemental water spray designed to suppress dust. Water must be combined with a surfactant.	None	None
	Operate and maintain machine to minimize dust emissions.		
(xvi) Crushing machines	Use equipment designed to deliver water spray or mist for dust suppression at crusher and other points where dust is generated (e.g., hoppers, conveyers, sieves/sizing or vibrating components, and discharge points).	None	None
	Operate and maintain machine in accordance with manufacturer's instructions to minimize dust emissions		
	Use a ventilated booth that provides fresh, climate-controlled air to the operator, or a remote control station.		

Equipment/Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 hours/shift	>4 hours/shift
(xvii) Heavy equipment and utility vehicles used to abrade or fracture silica-containing materials (*e.g.*, hoe-ramming, rock ripping) or used during demolition activities involving silica-containing materials	Operate equipment from within an enclosed cab.	None	None
	When employees outside of the cab are engaged in the task, apply water and/or dust suppressants as necessary to minimize dust emissions.	None	None
(xviii) Heavy equipment and utility vehicles for tasks such as grading and excavating but not including: Demolishing, abrading, or fracturing silica-containing materials	Apply water and/or dust suppressants as necessary to minimize dust emissions.	None	None
	OR		
	When the equipment operator is the only employee engaged in the task, operate equipment from within an enclosed cab.	None	None

APPENDIX K

Ergonomics Management Program

ERGONOMICS MANAGEMENT PROGRAM

CORPORATE HEALTH AND SAFETY MANAGER	**:**	**Brian Hobbs, CIH, CSP**
EFFECTIVE DATE	**:**	**01/2019**
REVIEW DATE	**:**	**03/2023**
REVISION NUMBER	**:**	**1**

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APPENDIX

1. PURPOSE AND BACKGROUND

Roux Associates, Inc. and its affiliated companies, Roux Environmental Engineering and Geology, D.P.C., and Remedial Engineering (collectively, "Roux") has instituted the following program to aide in preventing back injuries and other work-related musculoskeletal disorders (WMSDs) or cumulative trauma injuries to personnel. Ergonomic issues involving WMSDs can arise not only in the office, but also in the field and when driving. WMSDs are disorders of the muscles, nerves, tendons, ligaments, joints, cartilage, blood vessels, or spinal discs. WMSDs may include muscle strains and tears, ligament sprains, joint and tendon inflammation, pinched nerves, and spinal disc degeneration.

2. SCOPE AND APPLICABILITY

This program applies to all tasks where Roux personnel and contractors perform manual lifting and have the potential for material handling and ergonomic stresses. It is the responsibility of the Corporate Health and Safety Manager (CHSM) to aide in developing and training Office Health and Safety Managers (OHSM) and Site Health and Safety Officers (SHSO) to implement this program.

3. PROCEDURES

3.1 Safe Lifting Practices Management

A. Evaluate all assignments to assess if they can be completed without risk of back injury e.g., moving boxes, computers, equipment, etc.).

B. Require that heavier items be stored on lower shelving units; ideally between knee and shoulder height.

C. Recognize lifting-intensive tasks (poor lift design, high frequency, and/or excessive weight) and provide the means by which personnel can perform lifting duties without risk of injury e.g., carts, dollies, trucks with lift gates).

D. Secure outside assistance if personnel cannot safely accomplish the job e.g., additional staff, contract movers).

E. Contact the OHSM or SHSO when assistance is necessary to evaluate a lifting task that may pose a back-injury/WMSD risk to assigned personnel.

F. Ensure that personnel receive the required training outlined below.

3.2 Training Management

A. Personnel who may have lifting or other ergonomic issues receive training that includes the following topics:

1. Recognizing potential hazards and how to correct and prevent them.
2. Proper workstation set up and maintenance.
3. How to avoid unnecessary physical stress and strain.
4. How to comfortably handle lifting jobs without undue strain.
5. Proper use of equipment.
6. Stretching and strengthening exercises to minimize risk of injury.

3.3 Office Moves and Relocations

A. Utilize professional movers for moving office furniture for both offsite moves and interoffice moves.
    1. Desks, file cabinets, bookcases, etc.
    2. Intensive moving of file boxes
    3. Any other heavy equipment or materials.
B. Ensure that the moving contractor is appropriately evaluated and insured.
C. Assure as applicable that all unstable items (e.g., bookcases) are secured to prevent tip over in transit, and when placed.

3.4 Workplace Evaluations

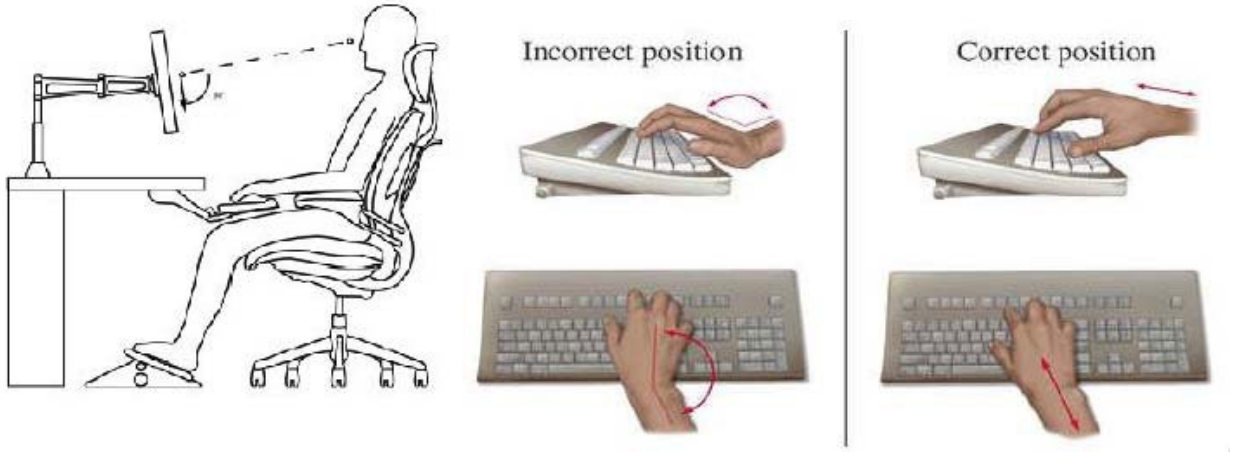
At the request of personnel, workstation evaluations of office workstations are available through the OHSM. As it relates to site-specific activities, guidelines will be specified within site-specific Job Safety Analyses (JSA) that are covered prior to any work activity. JSAs include information on the procedural steps, hazards and how to control specific hazards as it relates to specific tasks. Ergonomic hazards are identified and controls are recommended depending upon the specific activity.

4. OFFICE ERGONOMICS

There is no single “correct” posture that will fit everyone. An ergonomic injury or illness can be easily avoided through ergonomic education and following basic design goals of an office desk.

Repetitive motions are one of the key causes for ergonomic injuries/illnesses and working at an office desk for a prolonged time significantly increases the potential for an ergonomic injury or illness. Highly repetitive tasks that involve long periods of static posture may require several short rest breaks called “micro breaks.” During these breaks, employees are encouraged to stand, stretch, and move around. This provides rest and allows muscles time to recover. Alternately the employee can try to vary their work tasks throughout the day to break up highly repetitive tasks.

4.1 Office Ergonomic Set-up Recommendations



- Top of the monitor should be at or just below eye level to avoid awkward neck posture, and positioned directly in front of you.
- Head and neck should be balanced and in-line with torso.
- Elbows should be close to the body and supported by arm rests.
- Hips and knees should be approximately at a 90-degree angle. The back of the knee should be slightly higher than the seat pan to allow blood to circulate freely.
- The lumbar curve of the back should be supported.
- Keep your wrist and hands in-line with forearms.
- Avoid crossing legs. Feet should be firmly on the ground or on a footrest.
- Keep monitor and keyboard as close as possible; this will keep you in a sound posture.
- The mouse should be located on the same level as the keyboard.
- Take advantage of how your chair can be adjusted to your body.
- Vary work task to cut down on repetitive motion.
- Take short breaks to stretch muscles and to rest the eyes.
- Keep items most frequently used close to you.

5. DRIVING ERGONOMIC GUIDANCE

5.1 Typical Problems from Frequent Driving

- Neck, back and shoulder pain;
- Cramps, pressure points, and poor circulation in the legs and buttocks;
- Immediately after driving, there is an increased chance of low back injury from lifting; and
- Long-term potential for degeneration of spinal discs and disc herniation.

5.2 Chronic Back and Neck Injuries from Driving are Caused by Two Main Risk Factors

- Sitting for long periods of time; and
- Whole-body vibration.

5.3 Long-Term Sitting

When you sit, your pelvis rolls backward and the small part of your back flattens out. This increases the pressure in the discs of the spine. In this position, the discs are less prepared to handle the vibrations from your car.

Ligaments in your back help to hold the spine together as you move. These ligaments will stretch and slacken if you sit down for a long time. After standing up, they remain slack for a while and cannot support the spine as they normally do.

If your seat is not correctly adjusted, you could develop pressure points in the buttocks and back of the legs and muscle strain in the lower back.

Continuous upper back and neck muscle work is often required to hold the head in position, especially if vibration is present. Continuous muscle activity can lead to muscle strain.

Holding a foot pedal down over a long period may cause stiffness and spasm in the legs and lower back.

5.4 Whole-Body Vibration

Whole-body vibration stimulates bursts of back muscle activity. This causes neck and back muscles to tire more quickly and decreases the support these muscles can give to the spine. Even if the muscles are working very lightly, activity for an extended time without rest will lead to fatigue and increase the risk of back injury.

Long-term exposure to whole-body vibration is a common way to develop a herniated disc in your back. The increased disc pressure from sitting speeds up this process.

5.5 Ergonomic Driving Tips

1) Before you even get into your car, remove everything from your pocket(s)—anything that can add pressure points to your body while you drive.
2) Move your car seat all the way to the back, get in, and begin adjusting until you feel comfortable. Have the seat adjusted to approximately a 100° angle, which will decreases pressure on your lower back.

3) If your seatbelt is too tight or uncomfortable, pick up some soft, thick fabric and wrap it around your seatbelt.
4) If the back of the seat is uncomfortable, a lumbar support pillow can be used.
5) Adjust all mirrors to fit your body and line of sight. You shouldn't have to crane your neck to see what's going on around you. For blind spots, small mirrors can be purchased and placed on the side-view mirrors or dashboard to help you see.
6) Keep items you may need while driving in the front seat, such as tissue paper and sunglasses. Twisting and reaching in the car are awkward postures, not to mention the danger it leads to while operating a vehicle.
7) If you are on a long driving trip, take frequent breaks; get out of the car and stretch. Take a quick walk if possible. It's also a good idea to rest your eyes for a bit.
8) The best posture for gripping the steering wheel is keeping two hands on the wheel except when shifting gears. Change your hand postures frequently to improve circulation and reduce fatigue.
    a. **Common Postures to be Avoided:**
        i. **Death Grip** – Your grip should be light. If your knuckles are white, you are gripping too hard.
        ii. **The one arm cool dude** – One wrist at the 12 o'clock position on the wheel with the fingers over the top. This causes compression of the soft tissues of the wrist, as well as reducing circulation of the neck and shoulder (and also will result in bone-to-bone contact with your face in the event the air bag were to deploy).
        iii. **Arms straight out** – You should be able to drive with your shoulders relaxed and your arms close to the sides of your body.
        iv. **One arm propped on your window** – This posture decreases circulation at the neck and shoulder and may compress soft tissue on the arm/wrist.

Appendix A — Symptom Solver

Symptom Solver

Discomfort Associated with Hands or Wrists

Possible Cause of Symptoms	Suggested Solutions
• Resting heavily on the hand, forearm or elbow that hurts. • Heavy use of a calculator. • High force when using the space bar. • Mouse size is too big or too small. • Heavy use of the mouse with one hand. • Heavy use of the number pad on the keyboard. • “Planting” your palms or wrists in a fixed position when typing or using the mouse. • Dropping your wrists to the work surface when typing • Resting wrists when typing. • Working surface or keyboard is too high or too low. • The wrist rest is too high or the edges are square and hard. • Typing or mousing on hard work surfaces with blunt edges. • The keyboard is sloping towards you.	• Do not rest heavily on either hand. • Use a wrist rest for your calculator. • Avoid high force when using the space bar. • Change mouse to one that fits you correctly. • Alternate hands using the mouse and switch to keyboard shortcuts (page 5). • Use proper keyboard and mouse techniques (page 5). • Use auto-text entries to minimize typing (page 5). • Use the wrist rest correctly (page 6). • Adjust the keyboard, keyboard platform or desk surface to just below your elbow height with the upper arm in line and comfortable against the body. • Adjust the keyboard so the keyboard lies flat.

Discomfort Associated with Headaches or Blurry Vision

Possible Cause of Symptoms	Suggested Solutions
• Image on the screen is not clear. • Staring or concentrating on your monitor for long periods of time. • Dry eyes.	• Position your monitor to reduce reflection. • Adjust the brightness and contrast settings to fit you. • Rest your eyes occasionally by switching tasks or looking away from the monitor. • The distance between your eyes and your monitor should be one arm’s length away from you. • Blink frequently to keep your eyes lubricated when doing computer work.

Discomfort Associated with Head or Neck

Possible Cause of Symptoms	Suggested Solutions
• Holding your head at an awkward angle. • Monitor is too high and/or is not centered with your keyboard. • Looking up and down between the keyboard and screen as you type. • Leaning forward to view the monitor. • Tilting your head back to accommodate your eye glasses. • Cradling the telephone between your head and shoulder. • Twisting your neck to look at a copy on your desk.	• Adjust the monitor correctly. (Pg. 6) • Take a touch-typing course. • Enlarge the font size. • Center the monitor with your keyboard. • Do not cradle the telephone. Hold the phone, use a headset or use your speaker phone. • Use a copy holder to avoid twisting your neck as you type.

Discomfort Associated with the Forearms or Elbows

Possible Cause of Symptoms	Suggested Solutions
• The position of your mouse or keyboard is causing you to extend your reach. • Leaning on your work surface while typing or using the mouse. • Resting your forearms heavily on the arms of your chair. • Extended reach of the mouse.	• Position the mouse close to and on the same level as your keyboard. • Sit up straight and allow your hands to “float” above the keyboard without resting your wrists. • Adjust the arm rests of the chair so your forearms are just barely touching them. • Do not lean heavily on arm rests.

Discomfort Associated with the Shoulders

Possible Cause of Symptoms	Suggested Solutions
• The position of your mouse is causing you to extend your reach. • Leaning to one side while you are using the keyboard or mouse. • Cradling the telephone between your head and shoulder. • Extended reaching ether side or behind you for the telephone.	• Position the mouse to and on the same level as the keyboard. • Sit up straight with your back against the back of your chair with your feet on the ground. • Center the keyboard with your monitor. • Hold the telephone, use a headset, or use speaker phone. • Reposition frequently used items closer to you.

Discomfort Associated with Upper and Lower Back

Possible Causes of Symptoms	**Suggested Solutions**
• Leaning forward to type or write. • Improperly supported back. • Cradling the phone between your head and shoulder.	• Adjust the monitor correctly. • Adjust the chair so that your lumber back is supported by the chair. • Position your keyboard and mouse close to the body. • Do not cradle the telephone. Hold the phone, use a headset, or use speaker phone. • Sit with your shoulders and hips directly in front of the keyboard and monitor. • Sit up straight with your back against the back of your chair with your feet on the ground or on a footrest.

Discomfort Associated with Legs/Feet

Possible Causes of Symptoms	**Suggested Solutions**
• Awkward posture of your feet or legs. • Tucking your feet under your legs or chair. • Feet not touching the floor or your legs are extended out in front of you.	• Sit up straight and do not lean to one side or the other. • Adjust the chair seat pan so there is space between your knees and the seat. • Place feet flat on the floor. • Use a footrest if your feet do not reach. • Clear the area below your desk so there is room for your legs and feet.

APPENDIX D

SVES Blower System Submittal Package

EnviroTrac
Environmental Services

SUBMITTAL/TRANSMITTAL FORM

FROM:	EnviroTrac Ltd. 5 Old Dock Road Yaphank, New York 11980 Phone: (631) 924-3001 Fax: (631) 924-5001	**DATE SENT: 12/06/23**
TO:	**Roux Inc.** 209 Shafter Street Islandia, NY 11749 Attn: David E. Kaiser, P.E.	***DATE RECEIVED:_____***

PROJECT:

Soil Vapor Extraction System
27-10 49th Avenue, Long Island City, New York

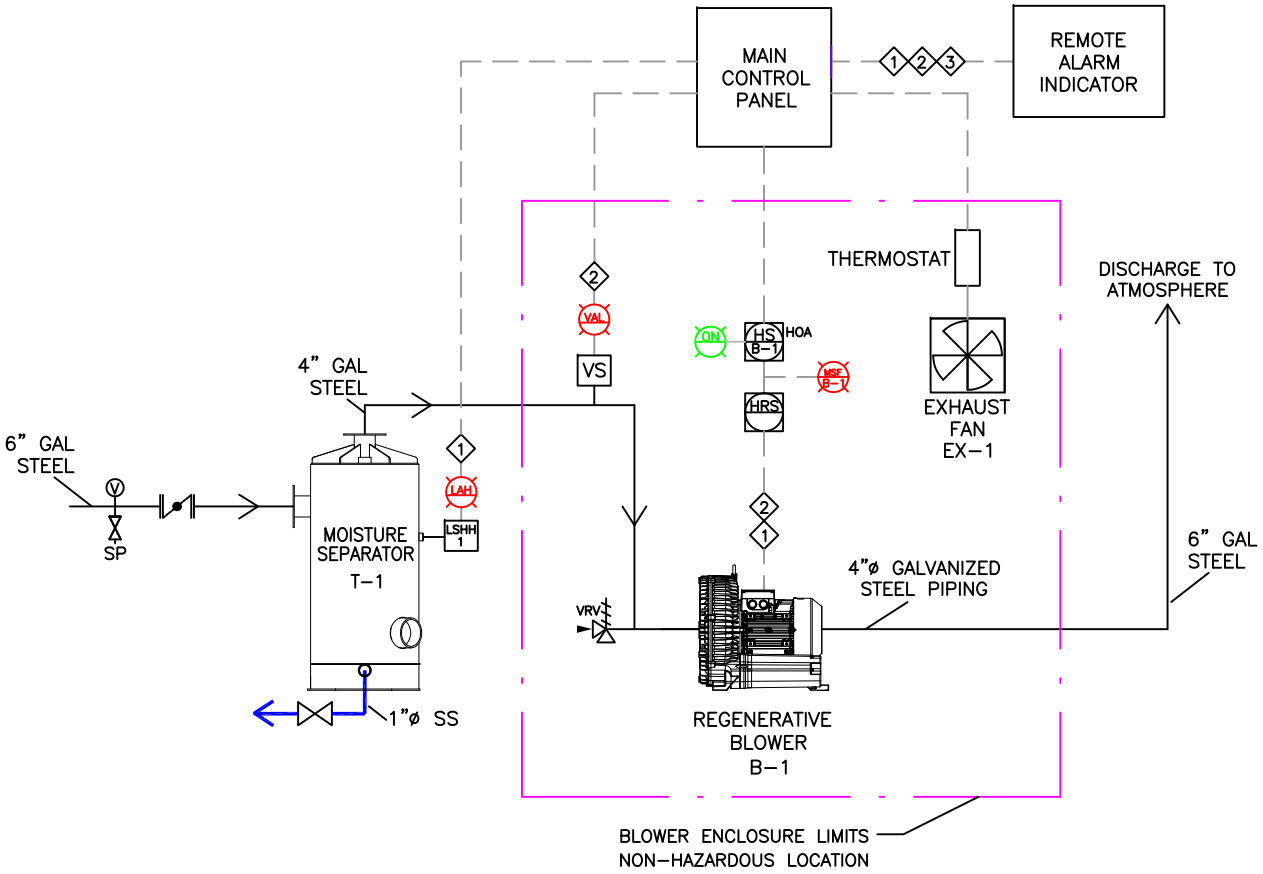
We are transmitting (Herewith ☒, Under separate cover ☐, Electronic ☒, Hard copy ☐), the following:

Item No.(s)	Submittal Description	Submittal No.	Revision to Previous Submittal:
1	Figure 1 – SVE System P&ID	01	☐ Yes ☒ No
2	SVE Blower Specifications	02	☐ Yes ☒ No
3	Blower Enclosure Specifications	03	☐ Yes ☒ No
4	Moisture Separator Specifications	04	☐ Yes ☒ No
5	Moisture Separator Level Switch Specifications	05	☐ Yes ☒ No
6	Vacuum Switch Specifications	06	☐ Yes ☒ No
7	Vacuum Gauge Specifications	07	☐ Yes ☒ No
8	Remote Alarm Indicator Specifications	08	☐ Yes ☒ No

Remarks:_____

Copy to: File

Signed: James W. Benson



SYSTEM LEGEND:

- VACUUM GAUGE
- LS — LEVEL SWITCH
- VS — VACUUM SWITCH
- BUTTERFLY VALVE
- BALL VALVE
- SP — SAMPLE PORT
- VRV — VACUUM RELIEF VALVE
- UNION
- HS — HAND SWITCH PANEL MOUNTED
- HRS — RUN TIME METER
- CONTROL PANEL INDICATOR LIGHT
- CONTROL PANEL INTERLOCK
- ELECTRIC LINE
- AIR FLOW DIRECTION
- CONDENSATE WATER FLOW DIRECTION
- ENCLOSURE LIMITS

INDICATOR LIGHT INDEX:

- LAH — LEVEL ALARM HIGH
- VAL — VACUUM ALARM LOW
- MSF B-1 — MOTOR STARTER FAILURE
- ON — MOTOR RUN INDICATOR

INTERLOCK SCHEDULE:

1. HIGH LEVEL IN T-1 – SHUT DOWN B-1, ACTIVATE REMOTE ALARM.
2. LOW VACUUM – ACTIVATE REMOTE ALARM.
3. MOTOR STARTER FAULT – SHUT DOWN B-1, ACTIVATE REMOTE ALARM.

NOTES:

BLOWER: ATLANTIC BLOWER MODEL NO: AB-850 (10 HP, 3 PH, TEFC)
MOISTURE SEPARATOR T-1: ESD/W2W MODEL NO: AWS80-6

DRAWN/REVISED BY: JW
REVISION DATE: DEC. 5, 2023

FIGURE: 1

DRAWING TITLE

PROPOSED SOIL VAPOR EXTRACTION SYSTEM PROCESS AND INSTRUMENTATION DIAGRAM

PREPARED FOR

27-10 49TH AVENUE
LONG ISLAND CITY, NEW YORK

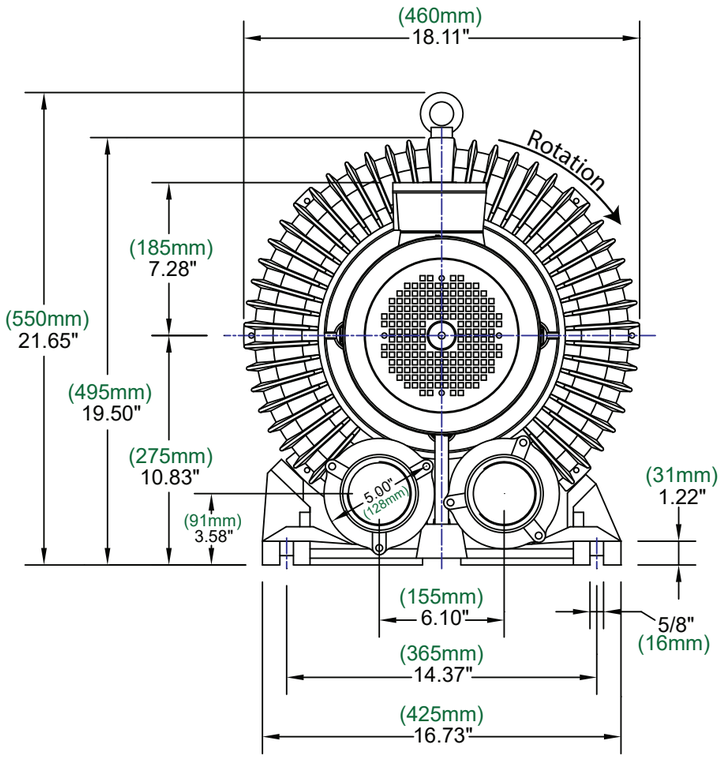
EnviroTrac
ENVIRONMENTAL SERVICES
5 OLD DOCK ROAD, YAPHANK, NEW YORK 11980
PHONE: (631)924-3001 FAX: (631)924-5001

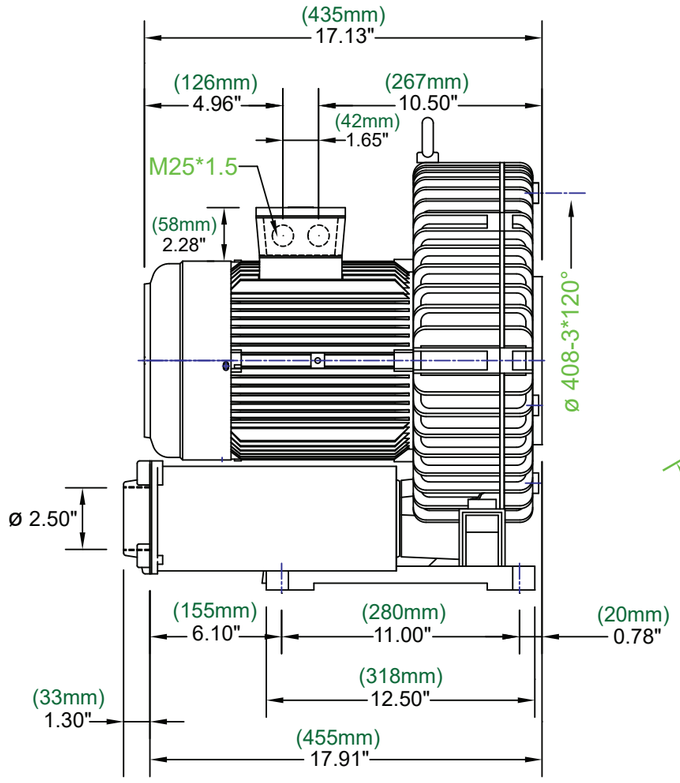
atlantic blowers

Phase	Model Number	Curve Number	Frequency (Hz)	KW	HP	Max Flow (SCFM)	Max Pressure ("H_2O)	Maximum Vacuum	Sound Level (db)	Inlet Diameter	Voltage	Current (A)	Weight (lbs)
3	AB-850	A21	60Hz	7.50	10.00	464	134	129	80	2.50"	220-275/380-480	36.5Δ/20.8Y	185
			50Hz	6.50	8.70	387	90	87	72		200-240/345-415	30.4Δ/17.3Y	

**Sound db measured at 3 ft.

MODEL NO. : AB-850 SINGLE STAGE



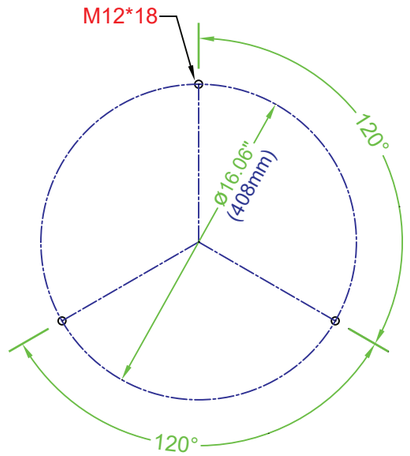


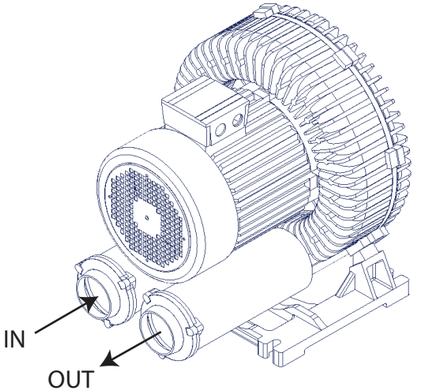
Key

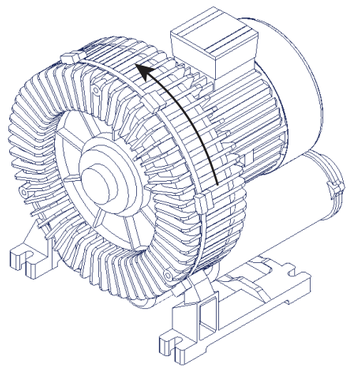
60Hz

50Hz

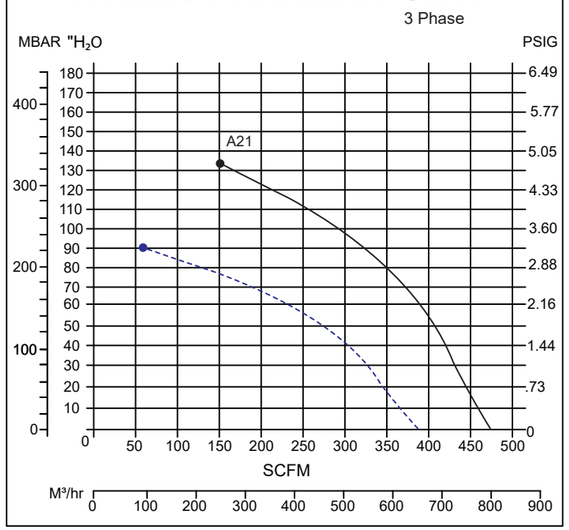
Standard Conditions
-Sea Level (14.69 PSI)
-60°F (15°C)
-0% Relative Humidity



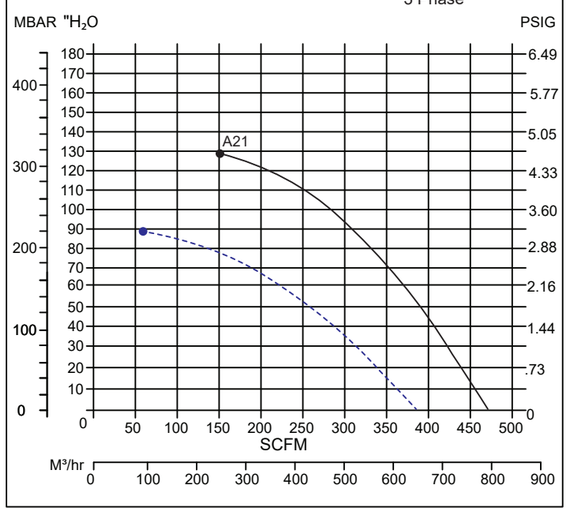




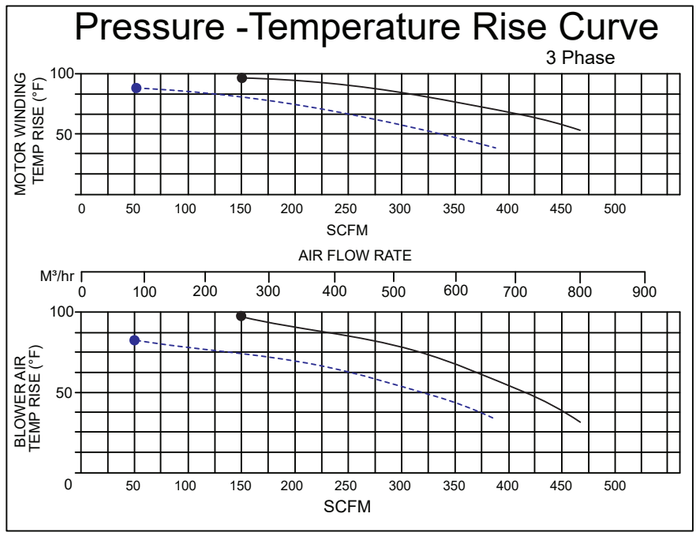
Pressure Performance Curve



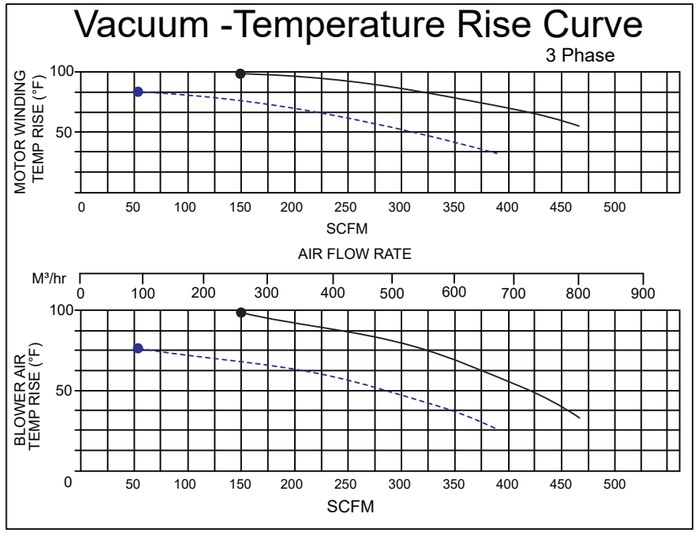
Vacuum Performance Curve



Pressure -Temperature Rise Curve



Vacuum -Temperature Rise Curve



Disclaimer

(214) 233-0280
www.atlanticblowers.com

Blower Enclosure - Zombie Box Model-Peacemaker Medium

ALL-WEATHER, PORTABLE, SOUNDPROOF ENCLOSURES AND SYSTEMS

All of our products and components are engineered and manufactured in the USA

US Patent - 9,641,043

Others Pending

PEACEMAKER - PORTABLE NOISE ENCLOSURE

PeaceMaker enclosure offers up to a -20 dBA reduction in noise *about 99% quieter operation (equipment & environment conditional).

For extra noise reduction and longevity: The Black 'ArmorPlate' color option is an industrial rubberized coating that gives another 2-3 db noise reduction and helps prevent oxidation and tarnish of the galvanized steel.

Don't forget to add the ZPipe Exhaust system and Rubber base pad!

We strongly recommend adding the acoustic rubber base mat for **ALL enclosures! (Rubber Base pads are not included in price)

- Max allowable generator dimensions for MEDIUM: 26 x 20 x 20
- Max allowable generator dimensions for LARGE : 36 x 30 x 30

NOTE: **For proper ventilation** - generators over 10KW, or equipment with multiple cylinders, choose the **Extra Large enclosure**.

Size:

Medium

Color:

Metal

ZombieBox | Noise Control Systems

Patented & others Pending | US Patent 9,641,043

'Make Peace with Power'

ZombieBox International
127 W. Juanita Ave
Ste. 103
Mesa, AZ 85210
www.zombie-box.com
Phone: 623.670.8100
E-mail: info@zombie-box.com

The world's first and ONLY, patented, portable noise control system for generators and outdoor power equipment

ZombieBox | Noise Control Systems

Patented & others Pending | US Patent 9,641,043

'Make Peace with Power'

ZombieBox Noise Control Systems – Portable Soundproofing Enclosures
Our rugged and durable enclosures can be assembled in minutes and deployed easily to reduce the noise intensity and volume of almost ANY portable or standby generator by up to 4X!

Structural & Safety **-**

- Self-supporting, weatherproof against rain, snow and 110mph wind
- 22 gauge galvanized steel construction – 1/16" tolerance fit
- Fully guarded ventilation & penetrations – vermin & rodent proof
- Tamper & Theft resistant 3 point lockable lid – secures all panels
- 4 point internal removable brackets – for secure anchoring
- **No Tools** required for setup - **No Permits** required for installation

*All electrical components and materials meet **NFPA**, **ASTM** and **UL** certification requirements – ZombieBox assemblies & products do not require or hold separate manufacturer certificates or listings

ZombieBox International
127 W. Juanita Ave
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ZombieBox | Noise Control Systems

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'Make Peace with Power'

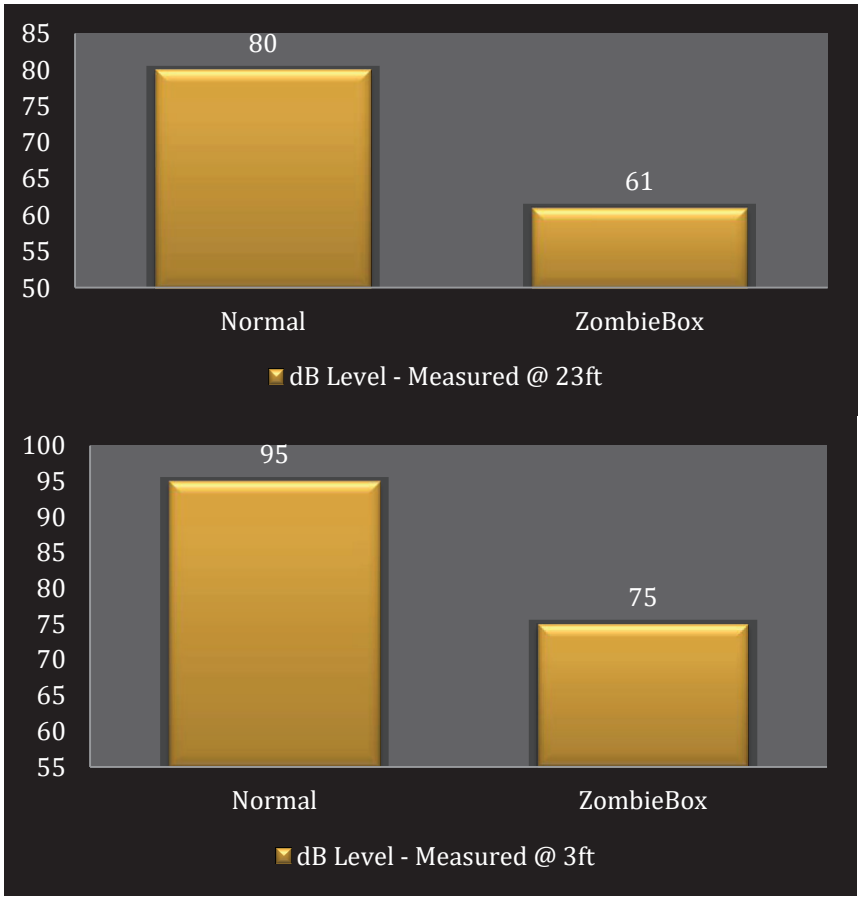
Acoustical Performance -

Sound Pressure Level (SPL) Decibel (dB) Reduction Testing:

- 125Hz to 8kHz | Weight: A | Range: 40-70 dB, 60-90 dB | 50% Load
- Source Unit: Generac 16 – 22kw portable & Standby generators
- Test conditions used: 3/4in rubber isolator pad and Armor Plate rubberized coating

**Independently replicated ASTM E596-96 procedures - actual dB varies with generator, configuration, load and environmental factors*

Noise Reduction				
Model/Color	**Without Z-Pipe**		**With Z-Pipe**	
	ZombieBox	*PeaceMaker*	*ZombieBox*	*PeaceMaker*
Metal	-15db	-20db	-18db	-23db
ArmorPlate	-17db	-22db	-20db	-25db



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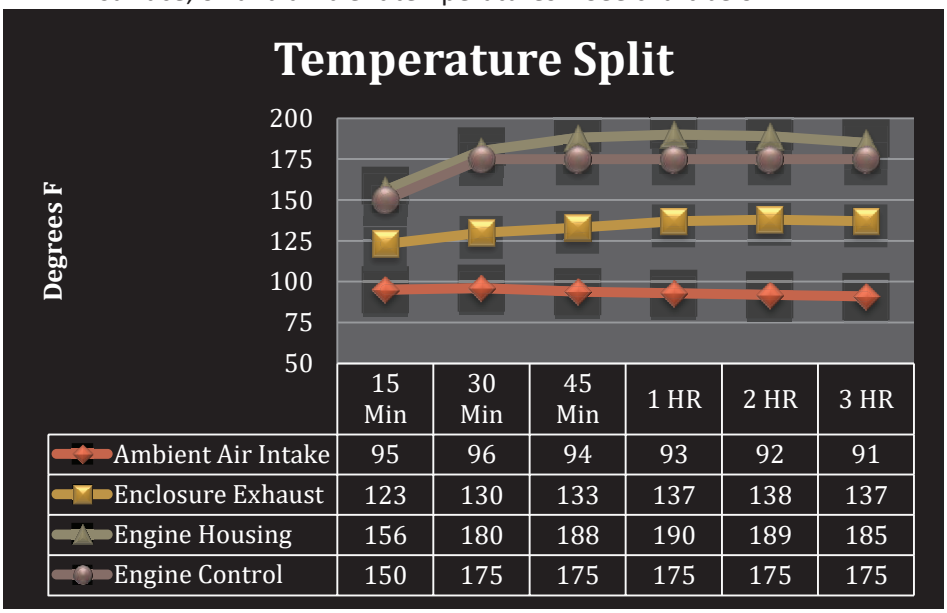
ZombieBox | Noise Control Systems

Patented & others Pending | US Patent 9,641,043

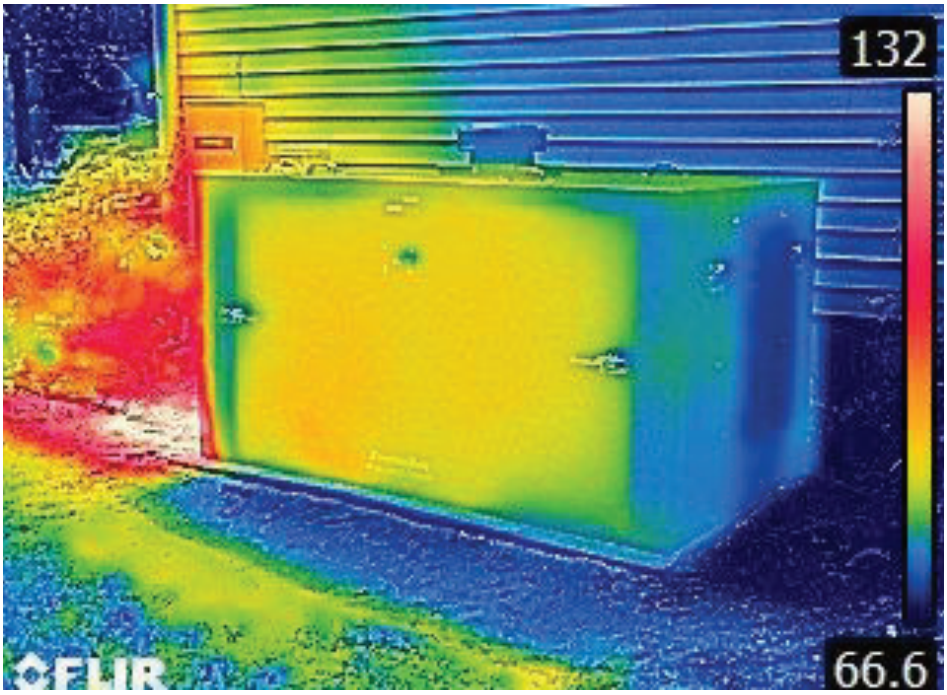
'Make Peace with Power'

Thermal Performance –

- Normal operating conditions: 50% Load, exhausted to exterior of box
- Dissipation rates consistent with standard operation ranges for surface, oil and ambient temperatures – See chart below



	15 Min	30 Min	45 Min	1 HR	2 HR	3 HR
Ambient Air Intake	95	96	94	93	92	91
Enclosure Exhaust	123	130	133	137	138	137
Engine Housing	156	180	188	190	189	185
Engine Control	150	175	175	175	175	175



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Moisture Separator #AWS80-6

ESD Waste2Water, Inc.
Partnership for a Cleaner Tomorrow

Air / Water Separators

ESD Waste2Water, Inc. ESD custom fabricates Air / Water Separators for Soil Vapor Extraction and Dual Phase Extraction applications. Made of structurally sound, light-weight marine grade 5052 aluminum, our separators can withstand full vacuum applications and are completely corrosion resistant. Unlike carbon steel based separators, ESD Separators resist both internal chemical corrosion and the harshest external environmental conditions. The aesthetic qualities of ESD Separators are never compromised by oxidation. ESD Separators never experience corrosive pitting leaks, because our designs render expensive internal/external epoxy mastic coatings entirely unnecessary.

ESD Separators are available in many standard sizes and can be custom designed with a wide variety of options, including pump out systems, level gauging, additional particulate filtration, and baffling for high entrained

UL® Certified to UL-508A Standards

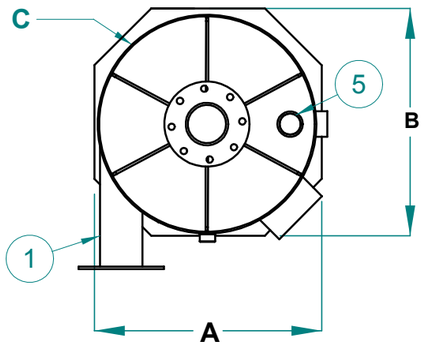
Thank you for allowing ESD to provide a solution to your equipment needs.

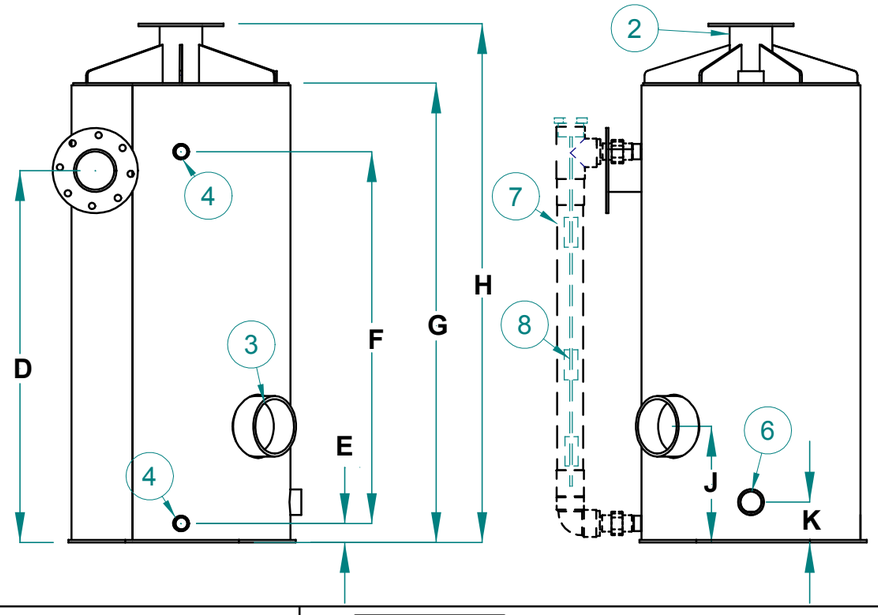
ESD Waste2Water, Inc.
495 Oak Road
Ocala, FL 34472
Tel: 800.277.3279 Fax: 352.680.9278
www.waste2water.com

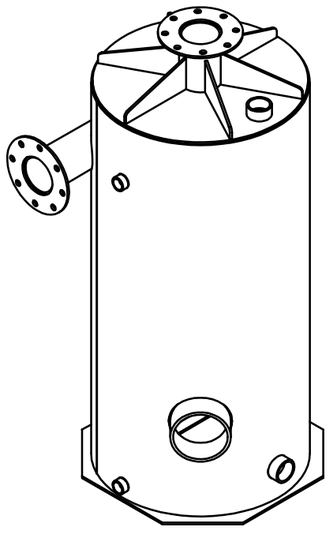
STANDARD AWS SPECIFCATION

TYPE	WORKING VOLUME @(LSH)	AVAILABLE CONNECTION TYPE																CLEAN OUT PIPE	A	B	C (DIA.)	D	E	F	G	H	J
		FLANGE						MNPT					FNPT														
		2"	3"	4"	6"	8"	10"	2"	3"	4"	6"	8"	2"	3"	4"	6"	8"										
AWS30	12 GAL	X	X	X	-	-	-	X	X	X	-	-	X	X	X	-	-	6"	-	-	16 1/4"	25"	2"	19"	30"	33 1/2"	6"
AWS60	24 GAL	X	X	X	X	-	-	X	X	X	X	-	X	X	X	-	-	6"	24"	24"	23"	25"	2"	23"	30"	36 1/2"	6"
AWS80	47 GAL	X	X	X	X	-	-	X	X	X	X	-	X	X	X	-	-	8"	24"	24"	23"	39"	2"	39"	48"	54 3/4"	12"
AWS120	50 GAL	X	X	X	X	X	-	X	X	X	X	-	X	X	X	-	-	8"	24"	24"	23"	49"	2"	49"	60"	66 3/4"	12"
AWS220	107 GAL	-	X	X	X	X	X	X	X	X	X	-	X	X	X	-	-	8"	34"	34"	33 1/2"	49"	2"	49"	60"	66 3/4"	12"

RECOMMENED AIR FLOW (ACFM)						
	2"	3"	4"	6"	8"	10" *
ACFM	120	280	320	500	750	1000







ITEM #	DESCRIPTION
1	INLET PIPE (SEE TABLE FOR AVAILABLE SIZE AND CONNECTION TYPE)
2	OUTLET PIPE (SEE TABLE FOR AVAILABLE SIZE AND CONNECTION TYPE)
3	CLEAN OUT
4	1" FNPT (MULTI LEVEL PROBE)
5	2" FNPT
6	2" FNPT
7	SIGHT TUBE 2" CLEAR PVC
8	MULTI LEVEL PROBE

NOTES:
1.MATERIAL : 1/8" & 3/16" ALUMINUM SHT 5052
2. PROBE (SIGHT TUBE) : 2" CLEAR PVC
3. CUSTOM SIZES AVAILABLE

ESD Waste2Water, Inc.

495 Oak Road
Ocala, FL 34472
Phone (800) 277-3279
Fax (352) 680-0059

SCALE VERIFCATION

THIS BAR REPRESENTS ONE INCH ON ORIGNAL DRAWING

1"

USE TO VERIFY DRAWING

SIZE: B **SHEET #:** 1 OF 1

SCALE: NTS

UPDATED BY:

DRAWN BY: J.ANDREWS

APPROVED BY: N/A

COMPLETED: 06/15/10

UPDATED:

AWS SPECIFICATIONS
GENERAL LAYOUT

JOB NUMBER:

PRODUCT NUMBER: **AWS**

FILE NAME: "AWS SPEC.dft"

Model L6 FLOTECT® Float Switch

Specifications - Installation and Operating Instructions

Explosion-Proof; UL and CSA Listed -
Class I, Groups *A, B, C, & D
Class II, Groups E, F & G
Directive 94/9/EC (ATEX) Compliant for
II 2 G EEx d IIC T6 Process Temp≤75°C CE Ex
*(Group A, stainless steel body only)

SPECIFICATIONS

Service: Liquids compatible with wetted materials.
Wetted Materials:
Float: Solid polypropylene or 304 SS.
Lower Body: Brass or 303 SS.
Magnet: Ceramic.
External Float Chamber (Tee): Matches lower body choice of brass or 303 SS.
Other: Lever Arm, Spring, Pin, etc.: 301 SS.
Temperature Limit: -4 to 220°F (-20 to 105°C) Standard, MT high temperature option 400°F (205°C)(MT not UL, CSA or ATEX). ATEX compliant AT option ambient temperature -4 to 167°F (-20 to 75°C) process temperature: -4 to 220°F (-20 to 105°C).
Pressure Limits: See next page.
Enclosure Rating: Weatherproof and Explosion-proof. Listed with UL and CSA for Class I, Groups A, B, C and D; Class II, Groups E, F, and G. (Group A on stainless steel body models only). CE 0344 Ex II 2 G EEx d IIC T6 Process Temp≤75°C.
EC-Type Certificate No.: KEMA 04ATEX2128
Switch Type: SPDT snap switch standard, DPDT snap switch optional.
Electrical Rating: UL models: 5A @ 125/250 VAC (V~). CSA and ATEX models: 5A @ 125/250 VAC (V~); 5A res., 3A ind. @ 30 VDC (V⎓). MV option: .1A @ 125 VAC (V~). MT option: 5A @125/250 VAC (V~). [MT option not UL, CSA or ATEX].
Electrical Connections: UL models: 18 AWG, 18″ (460 mm) long. ATEX/CSA models: terminal block.
Upper Body: Brass or 303 SS.
Conduit Connection: 3/4″ male NPT standard, 3/4″ female NPT on junction box models.
Process Connection: 1″ male NPT on models without external float chamber, 1″ female NPT on models with external float chamber.
Mounting Orientation: Horizontal with index arrow pointing down.
Weight: Approximately 1 lb (.5 kg) without external float chamber, 1.75 lb (.8 kg) with external float chamber.
Specific Gravity: See next page.

Example	L6	EP	B	B	S	3	B	MT		L6EPB-B-S-3-B-MT level switch; brass upper housing, brass lower housing, brass tee with Polypropylene spherical float, SPDT snap switch, and high temperature option
Series	L6									Series L6 level switch
Construction		EP								Explosion proof and weatherproof
Upper Body Material			B S							Brass 303 Stainless Steel
Lower Body Material				B S						Brass 303 Stainless Steel
Circuit (Switch) Type					S D					SPDT DPDT
Line Size						3 4 5 6				1″ NPT 1-1/4″ NPT (No tee models only) 1-1/2″ NPT (No tee models only) 2″ NPT
Tee and Float Options							0 A B C H L S			No Tee, Solid Polypropylene Spherical Float* No Tee, 304 SS Cylindrical Float Brass Tee, Solid Polypropylene Spherical Float* No Tee, 304 SS Spherical Float Brass Tee, 304 SS Spherical Float 303 SS Tee, 304 SS Spherical Float 303 SS Tee, Solid Polypropylene Spherical Float*
Switch Options								MV MT		Gold Contacts on snap switch for dry circuits (see specifications for ratings) High Temperature switch rated 400°F (205°C) (see specifications for ratings)*
Options									AT CSA GL ID JCT TBC TOP	ATEX approved construction (with JCT option standard) CSA approved construction (with JCT option standard)* Ground Lead* Customer Information on standard nameplate Weatherproof and explosion-proof junction box* Terminal Block Connector* Top Mounted (No tee models only)*

* Options that do not have ATEX

Attention: Units without the "AT" suffix are not Directive 94/9/EC (ATEX) compliant. These units are not intended for use in potentially hazardous atmospheres in the EU. These units may be CE marked for other Directives of the EU.

W.E. ANDERSON DIV., DWYER INSTRUMENTS, INC.
P.O. BOX 358 • MICHIGAN CITY, INDIANA 46361 U.S.A.
Phone: 219/879-8000
Fax: 219/872-9057
www.dwyer-inst.com
e-mail: info@dwyer-inst.com

MAXIMUM PRESSURE CHART

Model Number	Float	Minimum Sp. Gr.	Pressure Rating psig (bar)
L6EPB-B-S-3-A	Cylindrical SS	0.5	200 (13.8)
L6EPB-B-S-3-B	Polypropylene	0.9	250 (17.2)
L6EPB-B-S-3-C	Round SS	0.7	350 (24.1)
L6EPB-B-S-3-H	Round SS	0.7	250 (17.2)
L6EPB-B-S-3-O	Polypropylene	0.9	1000 (69.0)
L6EPB-S-S-3-A	Cylindrical SS	0.5	200 (13.8)
L6EPB-S-S-3-C	Round SS	0.7	350 (24.1)
L6EPB-S-S-3-L	Round SS	0.7	350 (24.1)
L6EPB-S-S-3-O	Polypropylene	0.9	2000 (138)
L6EPB-S-S-3-S	Polypropylene	0.9	2000 (138)

WETTED MATERIALS CHART

Model	Brass	Bronze	Ceramic	Polypropylene	301SS	303SS	304SS
B-S-3-A	X		X		X		X
B-S-3-B	X	X	X	X	X		
B-S-3-C	X		X		X		X
B-S-3-H	X	X	X		X		X
B-S-3-O	X	X	X	X	X		
S-S-3-A			X	X	X		X
S-S-3-C			X		X	X	X
S-S-3-L			X		X	X	X
S-S-3-O			X	X	X	X	
S-S-3-S			X	X	X	X	

INSTALLATION

Unpack switch and remove any packing material found inside lower housing or float chamber.

Switch must be installed with body in a horizontal plane and arrow on side pointing down.

If switch has an external float chamber (tee), connect it to vertical sections of 1″ NPT pipe installed outside vessel walls at appropriate levels. If unit has no external float chamber, it must be mounted in a 1″ NPT half coupling welded to the vessel wall. The coupling must extend through the wall.

Inspect and clean wetted parts at regular intervals.

ELECTRICAL CONNECTIONS

Connect wire leads in accordance with local electrical codes and switch action required. N.O. contacts will close and N.C. contacts will open when liquid level causes float to rise. They will return to “normal” condition on decreasing liquid level. Black = common, Blue = N.O. and Red = N.C.

For units supplied with both internal and external grounds the ground screw inside the housing must be used to ground the control. The external ground screw is for supplementary bonding when allowed or required by local code. Some CSA listed models are furnished with a separate green ground wire. Such units must be equipped with a junction box, no supplied but available on special order.

EC-Type Certificate Installation Instructions:
Cable Connection

The cable entry device shall be certified in type of explosion protection flameproof enclosure “d”, suitable for conditions of use and correctly installed. For ambient temperatures over 70°C, cable and cable glands suitable for at least 90°C shall be used.

Conduit Connection

An EEx d certified sealing device such as a conduit seal with setting compound shall be provided immediately to the entrance of the valve housing. For ambient temperatures over 70°C, the wiring and setting compound in the conduit seal shall be suitable for at least 90°C.

Note: ATEX units only: The temperature class is determined by the maximum ambient and or process temperature. Units are intended to be used in ambient of -20°C≤ Tamb ≤75°C. Units may be used in process temperatures up to 105°C providing the enclosure and switch body temperatures do not exceed 75°C. The standard Temperature Class is T6 Process Temp ≤75°C.

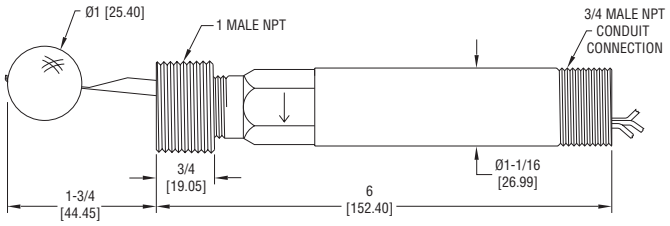
All wiring, conduit and enclosures must meet applicable codes for hazardous areas. Conduits and enclosures must be properly sealed. For outdoor or other locations where temperatures vary widely, precautions should be taken to prevent condensation inside switch or enclosure. Electrical components must be kept dry at all times.

CAUTION: To prevent ignition of hazardous atmospheres, disconnect the device from the supply circuit before opening. Keep assembly tightly closed when in use.

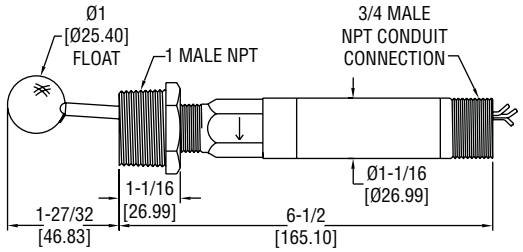
MAINTENANCE

Inspect and clean wetted parts at regular intervals. The cover should be in place at all times to protect, the internal components from dirt, dust and weather and to maintain hazardous location ratings. Disconnect device from the supply circuit before opening to prevent ignition of hazardous atmosphere.

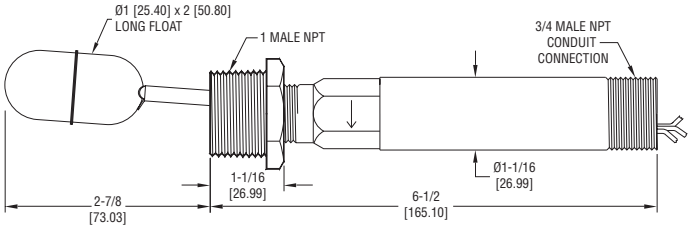
FLOTECT® MODEL L-6 FLOAT SWITCH — DIMENSION DRAWINGS



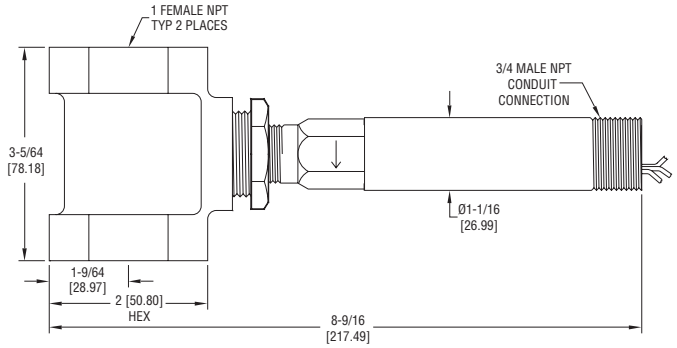
Polypropylene Float



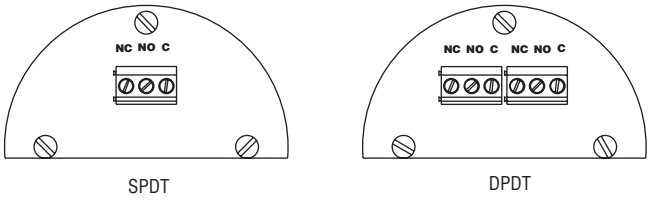
Round Stainless Steel Float



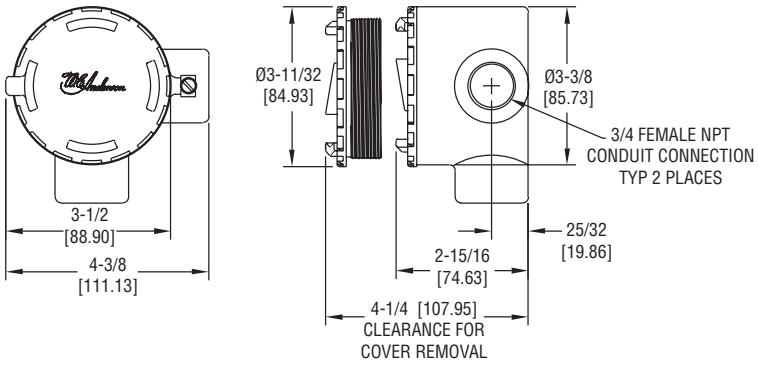
Cylindrical Stainless Steel Float



With External Chamber (Tee)



Terminal Connections CSA, ATEX Enclosures



CSA, ATEX Conduit Enclosure

Limited Warranty: The Seller warrants all Dwyer instruments and equipment to be free from defects in workmanship or material under normal use and service for a period of one year from date of shipment. Liability under this warranty is limited to repair or replacement F.O.B. factory of any parts which prove to be defective within that time or repayment of the purchase price at the Seller's option provided the instruments have been returned, transportation prepaid, within one year from the date of purchase. All technical advice, recommendations and services are based on technical data and information which the Seller believes to be reliable and are intended for use by persons having skill and knowledge of the business, at their own discretion. In no case is Seller liable beyond replacement of equipment F.O.B. factory or the full purchase price. This warranty does not apply if the maximum ratings label is removed or if the instrument or equipment is abused, altered, used at ratings above the maximum specified, or otherwise misused in any way.

THIS EXPRESS LIMITED WARRANTY IS IN LIEU OF AND EXCLUDES ALL OTHER REPRESENTATIONS MADE BY ADVERTISEMENTS OR BY AGENTS AND ALL OTHER WARRANTIES, BOTH EXPRESS AND IMPLIED. THERE ARE NO IMPLIED WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE FOR GOODS COVERED HEREUNDER.

Buyers Remedies: THE BUYER'S EXCLUSIVE AND SOLE REMEDY ON ACCOUNT OF OR IN RESPECT TO THE FURNISHING OF NON-CONFORMING OR DEFECTIVE MATERIAL SHALL BE TO SECURE REPLACEMENT THEREOF AS AFORESAID. THE SELLER SHALL NOT IN ANY EVENT BE LIABLE FOR THE COST OF ANY LABOR EXPENDED ON ANY SUCH MATERIAL OR FORM ANY SPECIAL, DIRECT, INDIRECT OR CONSEQUENTIAL DAMAGES TO ANYONE BY REASON OF THE FACT THAT IT SHALL HAVE BEEN NON-CONFORMING OR DEFECTIVE.

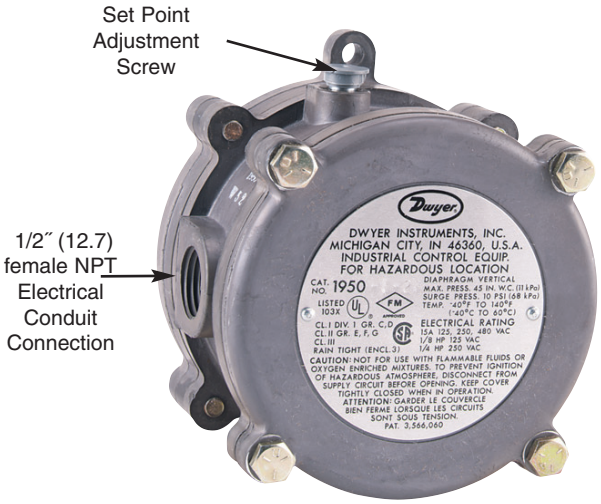
W.E. ANDERSON DIV., DWYER INSTRUMENTS, INC.
P.O. BOX 358 • MICHIGAN CITY, INDIANA 46361 U.S.A.

Phone: 219/879-8000
Fax: 219/872-9057

www.dwyer-inst.com
e-mail: info@dwyer-inst.com

Series 1950 Explosion-Proof Differential Pressure Switches

Specifications - Installation and Operating Instructions



Series 1950 Explosion-Proof Differential Pressure Switches combine the best features of the Dwyer Series 1900 Pressure Switch with an integral explosion-proof and weather-proof housing. Each unit is UL & CSA listed; FM approved for use in Class I, Groups C & D; Class II, Groups E, F, & G; and Class III atmospheres (NEMA 7 & 9). They are totally rain-tight for outdoor installations. Twelve models allow set-points from .03 to 20 inches w.c. and from .5 to 50 psi (3.4 to 345 kPa).

Easy access to the SPDT switch for electrical hook-up is provided by removing the top plate of the three-part aluminum housing. Adjustment to the set point of the switch can be made without disassembling the housing. The unit is very compact, about half the weight and bulk of equivalent conventional explosion-proof switches.

CAUTION

For use only with air or compatible gases. Use of the Model 1950 switch with explosive media connected to the Low pressure port (including differential pressure applications in such media) is not recommended. Switch contact arcing can cause an explosion inside the switch housing which, while contained, may render the switch inoperative. If switch is being used to sense a single positive pressure relative to atmosphere, run a line from the low pressure port to a non-hazardous area free of combustible gases. This may increase response time on -0 and -00 models.

NOTE: The last number-letter combination in the model number identifies the switch's electrical rating (number) and diaphragm material (letter). The 2F combination is standard as described in the physical data above. In case of special models, a number 1 rating is the same as 2; a number 3 or 4 rating is 10A 125, 250, 480 VAC; 1/8 H.P. 125 VAC; 1/4 H.P. 250 VAC; a number 5 or 6 rating is 1A 125 VAC. Letter B indicates a Buna-N diaphragm; N = Neoprene; S = Silicone; and V = Viton®.

UL and CSA Listed, FM Approved For

CL. I GR. C, D - CL. II GR. E, F, G - CL. III

Series 1950 Switches

Operating ranges and deadbands

To order specify Model Number	Operating Range: Inches, W.C.	Approximate Dead Band	
		At Min. Set Point	At Max. Set Point
1950-02-2S	0.03 to 0.10	0.025	0.05
1950-00-2F	0.07 to 0.15	0.04	0.05
1950-0-2F	0.15 to 0.5	0.10	0.15
1950-1-2F	0.4 to 1.6	0.15	0.20
1950-5-2F	1.4 to 5.5	0.3	0.4
1950-10-2F	3.0 to 11.0	0.4	0.5
1950-20-2F	4.0 to 20.0	0.4	0.6
Model Number	**Operating Range: PSI**	**Approximate Dead Band**	
		Min. Set Point	Max. Set Point
1950P-2-2F	0.5 to 2.0	0.3 psi	0.3 psi
1950P-8-2F	1.5 to 8.0	1.0 psi	1.0 psi
1950P-15-2F	3.0 to 15.0	0.9 psi	0.9 psi
1950P-25-2F	4.0 to 25.0	0.7 psi	0.7 psi
1950P-50-2F	15.0 to 50	1.0 psi	1.5 psi

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Wetted Materials: Consult factory.
Temperature Limits: -40 to 140°F (-40 to 60°C); 0 to 140°F (-17.8 to 60°C) for 1950P-8, 15, 25, and 50. -30 to 130°F (-34.4 to 54.4°C) for 1950-02.
Pressure Limits:
Continuous: 1950's - 45″ w.c. (0.11 bar);
1950P's - 35 psi (2.41 bar); 1950P-50 only - 70 psi (4.83 bar).
Surge: 1950's - 10 psi (0.69 bar), 1950P's - 50 psi (3.45 bar), 1950P-50 only - 90 psi (6.21 bar).
Enclosure Rating: IP64, NEMA 3, 7 and 9.
Switch Type: Single-pole double-throw (SPDT).
Electrical Rating: 15 A @, 125, 250, 480 VAC, 60 Hz. Resistive 1/8 HP @ 125 VAC, 1/4 HP @ 250 VAC, 60 Hz.
Electrical Connections: 3 screw type, common, normally open and normally closed.
Process Connections: 1/8″ female NPT.
Mounting Orientation: Diaphragm in vertical position. Consult factory for other position orientations.
Set Point Adjustment: Screw type on top of housing.
Weight: 3.25 lb (1.5 kg); 1950-02 model, 4.4 lb (2 kg).
Agency Approvals: CE, UL, CSA, FM.

RESPONSE TIME: Because of restrictive effect of flame arrestors, switch response time may be as much as 10-25 seconds where applied pressures are near set point.

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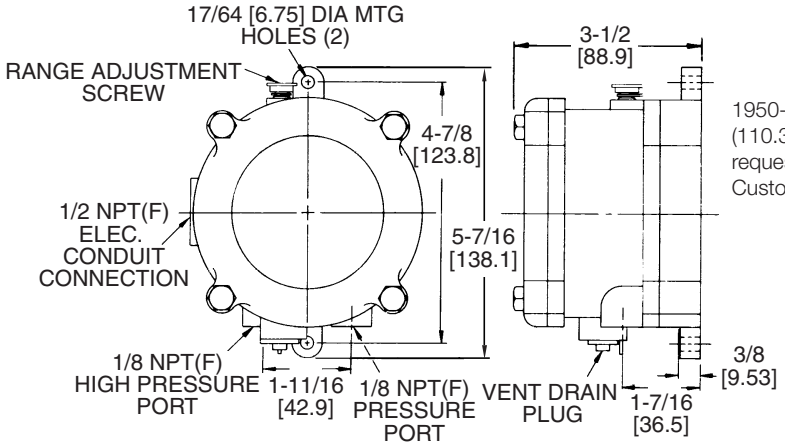

1950-02: 7-3/4″ (196.9) dia. x 4-11/32″ (110.3) depth. For complete dimensions request drawing 28-700175-00 from our Customer Service Department

1950 Switch Outline Dimensions

INSTALLATION

1. Select a location free from excess vibration and corrosive atmospheres where temperatures will be within the limits noted under Specifications on reverse. Switch may be installed outdoors or in areas where the hazard of explosion exists. See reverse for specific types of hazardous service.

2. Mount standard switches with the diaphragm in a vertical plane and with switch lettering and Dwyer nameplate in an upright position. Some switches are position sensitive and may not reset properly unless they are mounted with the diaphragm vertical.

3. Connect switch to source of pressure, vacuum or differential pressure. Metal tubing with 1/4″ O.D. is recommended, but any tubing which will not restrict the air flow can be used. Connect to the two 1/8″ female NPT pressure ports as noted below:

A. Differential pressures - connect pipes or tubes from source of greater pressure to high pressure port marked HIGH PRESS, and from source of lower pressure to low pressure port marked LOW PRESS.

B. Pressure only (above atmospheric pressure) - connect tube from source of pressure to high pressure port. The low pressure port is left open to atmosphere.

C. Vacuum only (below atmospheric pressure) - connect tube from source of vacuum to low pressure port. The high pressure port is left open to atmosphere.

4. To make electrical connections, remove the three hex head screws from the cover and after loosening the fourth captive screw, swing the cover aside. Electrical connections to the standard single pole, double throw snap switch are provided by means of terminals marked “COM” (common), “NO” (norm open), “NC” (norm closed). The normally open contacts close and the normally closed contacts open when pressure increases beyond the set point. Switch loads for standard models should not exceed the maximum specified current rating of 15 amps resistive. Switch capabilities decrease with an increase in ambient temperature, load inductance, or cycling rate. Whenever an application involves one or more of these factors, the user may find it desirable to limit the switched current to 10 amps or less in the interest of prolonging switch life.

ADJUSTMENT: To Change the Set point

1. Remove the plastic cap and turn the slotted Adjust-ment Screw at the top of the housing clockwise to raise the set point pressure and counter-clockwise to lower the set point. After calibration, replace the plastic cap and re-check the set point.

2. The recommended procedure for calibrating or checking calibration is to use a “T” assembly with three rubber tubing leads, all as short as possible and the entire assembly offering minimum flow restriction. Run one lead to the pressure switch, another to a manometer of known accuracy and appropriate range, and apply pressure through the third tube. Make final approach to the set point very slowly. Note that manometer and pressure switch will have different response times due to different internal volumes, lengths of tubing, fluid drainage, etc. Be certain the switch is checked in the position it will assume in use, i.e. with diaphragm in a vertical plane and switch lettering and Dwyer nameplate in an upright position.

3. For highly critical applications check the set point adjustment and if necessary, reset it as noted in step A.

MAINTENANCE

The moving parts of these switches need no maintenance or lubrication. The only adjustment is that of the set point. Care should be taken to keep the switch reasonably clean. Periodically the vent drain plug should be rotated, then returned to its original position. This will dislodge deposits which could accumulate in applications where there is excessive condensation within the switch. The Series 1950 Explosion-Proof Differential Pressure Switch is not field serviceable and should be returned if repair is needed (field repair should not be attempted and may void warranty). Be sure to include a brief description of the problem plus any relevant application notes. Contact customer service to receive a return goods authorization number before shipping.

Printed in U.S.A. 3/05 FR# 26-440332-00 Rev. 10

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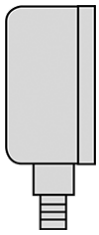
McMASTER-CARR®

Ultra-Low Vacuum Gauge with 1/4 NPT Male Bottom Connection

4" Dial Diameter, 304 Stainless Steel Case

4106K2



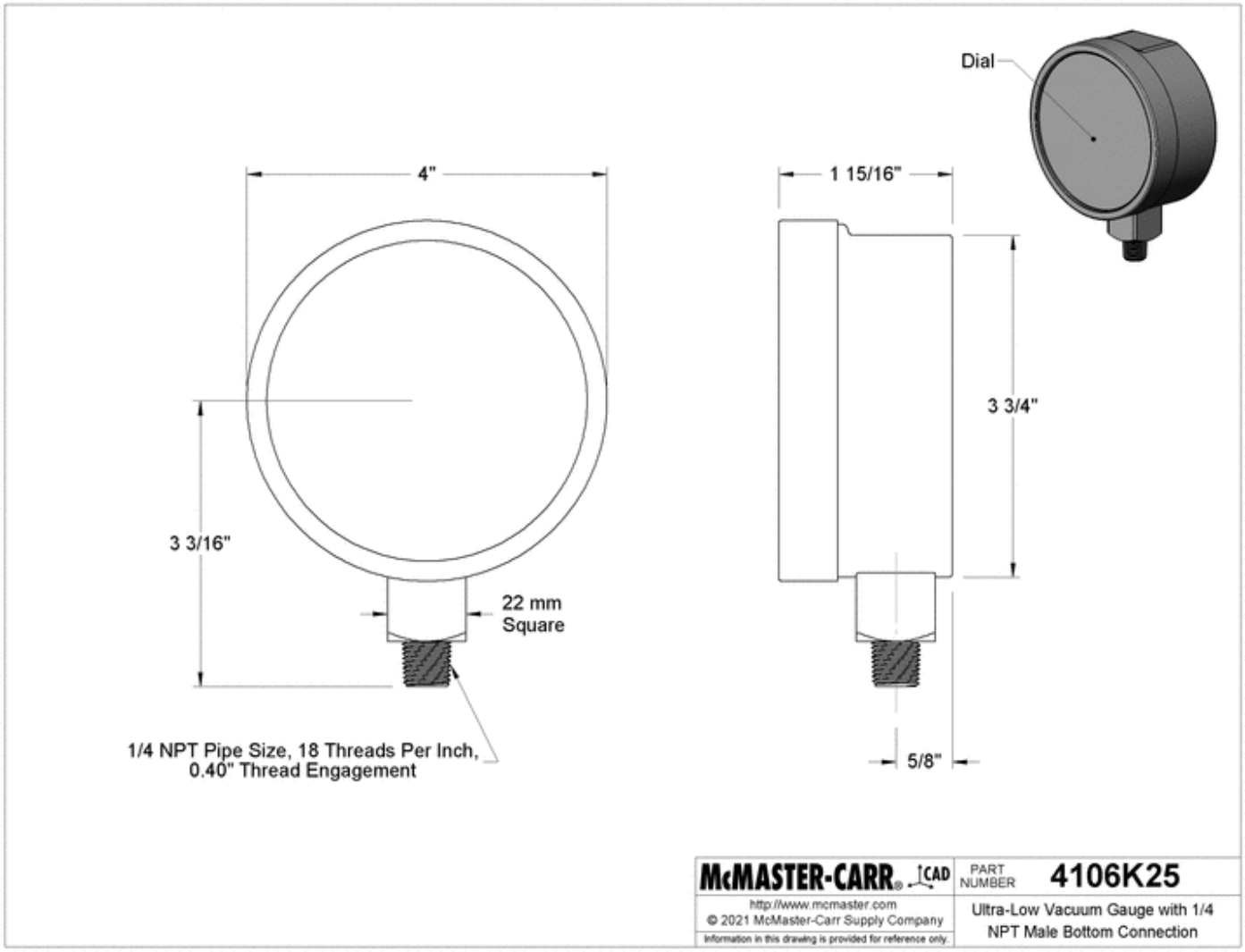
Bottom Connection

Measures	Vacuum
For Use With	Air
Display Type	Dial
Dial Type	Dry
Dial Diameter	4"
Pipe Size	1/4
Scale Type	Single
Scale	in. of H_2O
Environment Temperature Range	0° to 140° F
Process Temperature Range	0° to 175° F
Connection Type	Pipe
Pipe Connection Type	Threaded
Thread Type	NPT
Gender	Male
Case Material	304 Stainless Steel
Connection Material	Brass
Lens Material	Glass
Accuracy	±1%
Accuracy Scale	Full Scale
Accuracy Grade	Not Graded
Connection Location	Bottom
Graduation Marks	2 in. of h_2o
Numeric Increments	20 in. of h_2o
Vacuum Range	-100 to 0 in. of h_2o
RoHS	RoHS 3 (2015/863/EU) compliant with exemption 6(c) - Lead in copper alloy
REACH	REACH (EC 1907/2006) (01/17/2022, 223 SVHC) Compliant
DFARS	Specialty Metals COTS-Exempt
Country of Origin	Switzerland
Schedule B	902620.0000
ECCN	EAR99

Accommodate applications with very low vacuum with these gauges. Use them with vacuum pumps, packaging equipment, and in suction lines to measure and display vacuum.

Gauges with 304 stainless steel case have better corrosion resistance than gauges with steel case.

Vacuum Range, in. of H_2O: -100 to 0



The information in this 3-D model is provided for reference only.

KELE ALARM INDICATION STATION
AIS

DESCRIPTION

The **Kele Model AIS Alarm Indication Station** features an indication light, alarm horn and an alarm horn silence switch. Upon an alarm contact closure, the LED indicator will light and the horn will sound. The horn can be silenced through the alarm silence switch, while the visual indication will continue to be lighted until the alarm condition has been corrected.

SEQUENCE OF OPERATION

Upon an alarm contact closure, the LED indicator will light, and the horn will sound. The horn can be silenced through the alarm silence switch, while the visual indication will continue to be lighted until the alarm condition has been corrected. A power interruption or open alarm contact will reset the AIS.

FEATURES

- ***Long lasting, red LED indication***
- ***Distinct continuous audible tone***
- ***Horn silence switch***
- ***Compact and rugged design***
- ***Available in 24 VDC, 24 VAC, or 120 VAC***
- ***Bright yellow panel face***

AIS Series

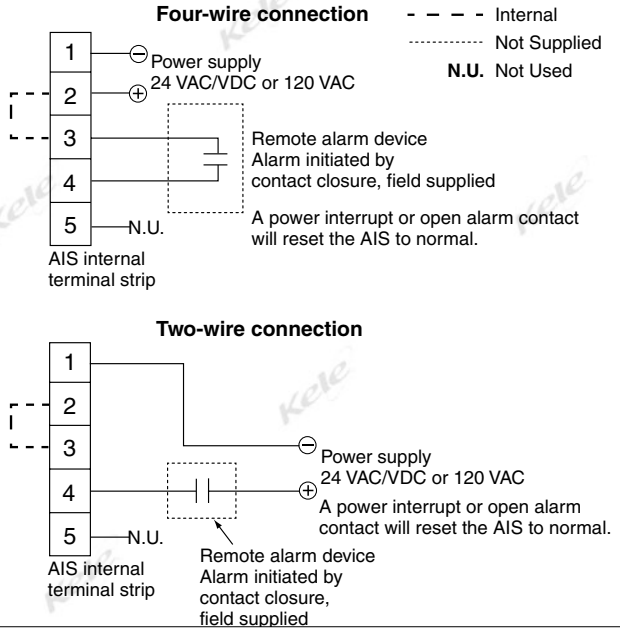
APPLICATION

- ***Refrigerant leak alarm indication***
- ***Water level alarm indication***
- ***Pressure alarm indication***
- ***High/Low temperature limits***
- ***Gas leak indication***
- ***Humidity limit alarm indication***
- ***Vibration limit***
- ***Voltage/Current level limit***
- ***Any contact closure alarm application***

SPECIFICATIONS

Supply Voltage	24 VAC @ 2.4 VA, 24 VDC @ 100 mA max., 120 VAC
Relay Output	
AIS-24D	24 VDC, 50 mA min
AIS-24A	24 VAC, 90 mA min
AIS-120A	120 VAC, 70 mA min
Alarm Horn	80 db
Mounting	Four screws through back
Dimensions	7.09"H x 4.33"W x 4.52"D (18.0 x 11.0 x 11.47 cm)
Enclosure Rating	NEMA 4, Polystyrene, impact resistant, knock-outs
Weight	1.1 lb (0.5 Kg)
Approvals	RoHS
Warranty	1 year

WIRING



ORDERING INFORMATION

MODEL	DESCRIPTION	
AIS	Alarm indication station	
	12VD	12 VDC powered
	24D	24 VDC powered
	24A	24 VAC powered
	120A	120 VAC powered

AIS – **120A**

Example: **AIS-24A** 24 VAC powered alarm indication station

APPENDIX E

NYSDEC Fact Sheet – February 2024

FACT SHEET

Brownfield Cleanup Program

27-10 49th Avenue

27-10 49th Avenue
Long Island City, NY 11101

Site No. C241219
NYSDEC Region 2

February 2024

Remedy Proposed for Brownfield Site Contamination; Public Comment Period Announced

The public is invited to comment on a proposed remedy being reviewed by the New York State Department of Environmental Conservation (NYSDEC), in consultation with the New York State Department of Health (NYSDOH), to address contamination related to the 27-10 49th Avenue site ("site") located at 27-10 49th Avenue Long Island City, Queens County. Please see the map for the site location.

Based on the findings of the investigation, NYSDEC in consultation with the New York State Department of Health (NYSDOH) has determined that the site poses a significant threat to public health or the environment. This decision is based on the potential for off-site migration of contaminants via soil vapor. To address this threat, NYSDEC has developed the proposed remedy summarized below.

How to Comment: NYSDEC is accepting written comments about the proposed plan, called a "Draft Remedial Action Work Plan (RAWP)" for 45 days, from **January 31 through March 16, 2024**.

- Access the RAWP and other project documents online through the DECinfo Locator: https://www.dec.ny.gov/data/DecDocs/C241219/.
- Documents also are available at the locations identified at left under "Where to Find Information."
- Please submit comments to the NYSDEC project manager listed under Project-Related Questions in the "Who to Contact" area at left.

Draft Remedial Work Plan: The proposed commercial use remedy consists of:

- Expanding the existing soil vapor extraction system (SVES) to further prevent the off-site migration of contaminated soil vapor;
- Maintaining the existing cover system, which consists of the building and asphalt or concrete pavement, to prevent contact with residual soil contamination;
- Implementing a Health and Safety Plan and Community Air Monitoring Plan during all ground-intrusive activities;
- Implementation of a Site Management Plan to ensure the remedy remains effective; and
- Recording of an Environmental Easement to ensure proper use of the site.

Where to Find Information

Access project documents through the DECinfo Locator and at these locations:
https://www.dec.ny.gov/data/DecDocs/C241219/

Queens Library at Long Island City
37-44 21 Street
Long Island City, NY 11101
718-752-3700

Queens Community Board 2
43-22 50th Street, Room 2B
Woodside, NY 11377
718-533-8773
qn02@cb.nyc.gov

Who to Contact

Comments and questions are welcome and should be directed as follows:

Project-Related Questions
Michael MacCabe, P.E.
Project Manager
NYSDEC
625 Broadway
Albany, NY 12233-7016
518-402-9687
michael.maccabe@dec.ny.gov

Project-Related Health Questions
Arunesh Ghosh
NYSDOH
Bureau of Environmental Exposure Investigation
Empire State Plaza, Rm 1787
Albany, NY 12237
518-486-1443
beei@health.ny.gov

For more information about New York's Brownfield Cleanup Program, visit:
www.dec.ny.gov/chemical/8450.html

BROWNFIELD CLEANUP PROGRAM

The proposed remedy was developed by Hunters Point SG, LLC ("applicant") after performing a detailed investigation of the site under New York's Brownfield Cleanup Program (BCP). A Remedial Investigation Report, which describes the results of the site investigation and an Interim Remedial Measure Construction Completion Report are also available for review at the locations identified on Page 1.

Next Steps: NYSDEC will consider public comments, revise the cleanup plan as necessary, and issue a final Decision Document. NYSDOH must concur with the proposed remedy. After approval, the proposed remedy becomes the selected remedy. The applicant may then design and perform the cleanup action to address the site contamination, with oversight by NYSDEC and NYSDOH.

Site Description: The 0.866-acre site is located in Long Island City at the intersection of 49th Avenue and 27th Street. The property is bound to the west by 27th Street, to the south by a commercial property, to the north by 49th Avenue and to the east by the Dutch Kills. The site is relatively flat and consists of a two-story building with a parking lot located on the eastern side of the site. Historically, the first floor of the building has historically been used as a warehouse and petroleum repackaging area. Previously the site was also used for vehicle maintenance. The site is presently occupied by a ride service company and is not proposed for redevelopment.

Additional site details, including environmental and health assessment summaries, are available on NYSDEC's Environmental Site Remediation Database (by entering the site ID, C241219) at:
https://www.dec.ny.gov/cfmx/extapps/derexternal/index.cfm?pageid=3

Interim Remedial Measure (IRM): An expedited cleanup, called an "Interim Remedial Measure" (IRM), is conducted at a site when a source of contamination or exposure pathway (the way in which a person may contact contamination) can be effectively addressed without extensive investigation and evaluation. The following IRM was conducted at the site:

- Removal and proper disposal of an oil/water separator, two hydraulic lifts and any associated contaminated soil;
- Excavation and off-site disposal of subsurface materials from within the building footprint to achieve the proposed restricted commercial use soil cleanup objectives;
- Collection and analysis end-point soil samples and post-remedial groundwater samples to evaluate the effectiveness of the remedy;
- Installation and operation of a sub-slab depressurization system within the on-site building to prevent migration of volatile organic compound (VOC) vapors into the building; and
- Installation and operation of an SVES system to reduce VOC contamination in soil vapor beneath the parking lot.

Summary of the Investigation: The primary contaminants of concern are chlorinated VOCs which are present site-wide in soil vapor. Other low-level contamination was identified in the soil and groundwater and attributed to presence of historic fill at the site.

Brownfield Cleanup Program: New York's Brownfield Cleanup Program (BCP) encourages the voluntary cleanup of contaminated properties known as "brownfields" so that they can be reused and redeveloped. These uses may include recreation, housing, business or other uses. A brownfield site is any real property where a contaminant is present at levels exceeding the soil cleanup objectives or other health-based or environmental standards, criteria or guidance adopted by NYSDEC that are applicable based on the reasonably anticipated use of the property, in accordance with applicable regulations.

For more information about the BCP, visit:
https://www.dec.ny.gov/chemical/8450.html

We encourage you to share this fact sheet with neighbors and tenants, and/or post this fact sheet in a prominent area of your building for others to see.

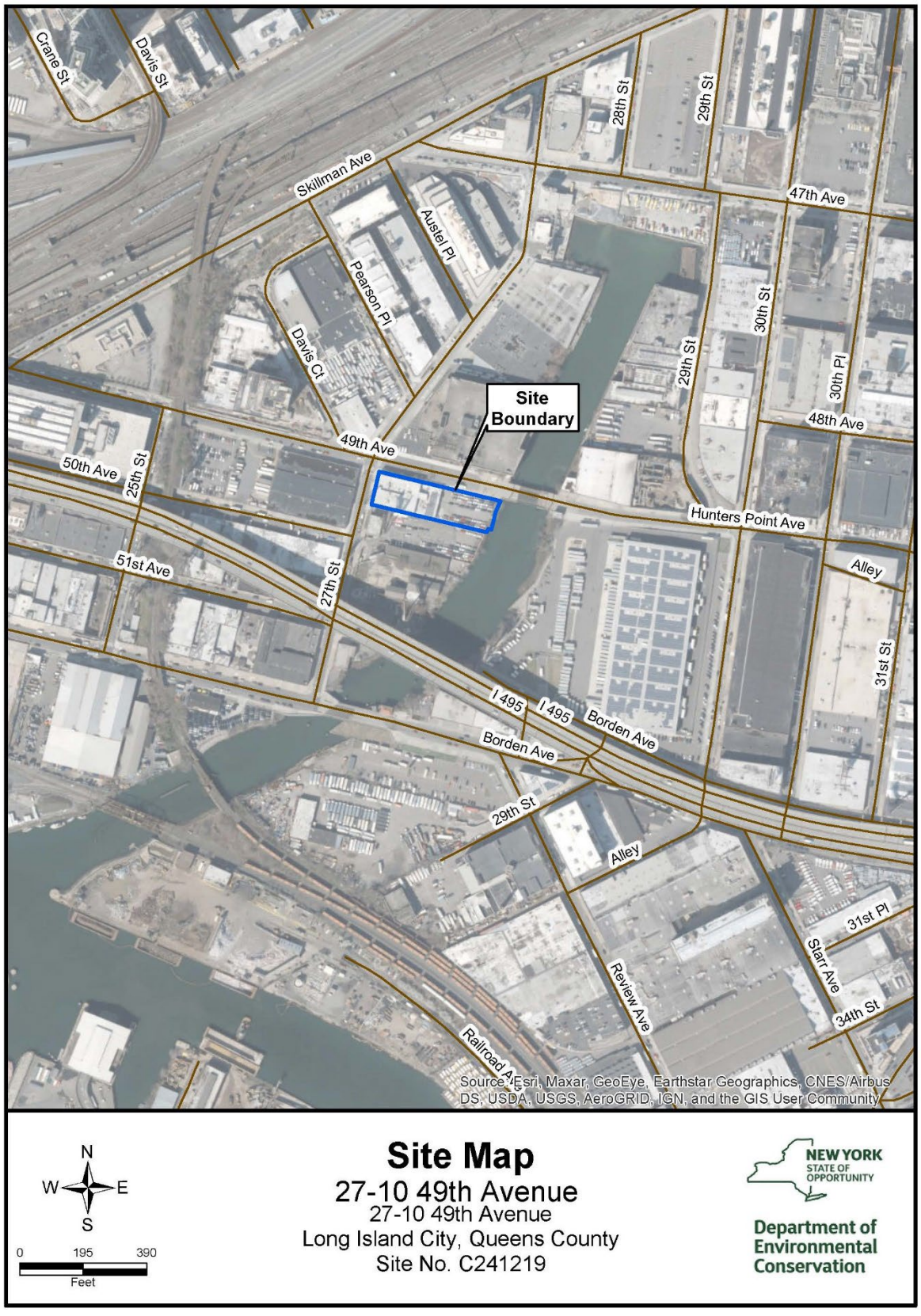
Stay Informed With DEC Delivers
Sign up to receive site updates by email:
www.dec.ny.gov/chemical/61092.html

Note: Please disregard if you already have signed up and received this fact sheet electronically.

DECinfo Locator
Interactive map to access DEC documents and public data about the environmental quality of specific sites: https://www.dec.ny.gov/pubs/109457.html

BROWNFIELD CLEANUP PROGRAM

Site Location



NEW YORK STATE | Department of Environmental Conservation

Kathy Hochul, Governor | **Basil Seggos**, Commissioner www.dec.ny.gov

Translation Available. Don't see your language? Ask!

English	To have this document translated into a language you can understand, contact the person below. There is no charge for the translation.
Español **Spanish**	Si necesita la traducción de este documento a un idioma que pueda entender, comuníquese con la persona indicada abajo. La traducción es gratis.
简体字 **Simplified Chinese**	如需將此文件翻譯成您能理解的語言版本，請聯絡下方人員。本次翻譯不收取費用。
Русский **Russian**	Чтобы получить перевод этого документа на понятный вам язык, свяжитесь с представителем, данные которого указаны ниже. Плата за эту услугу не взимается.
אידיש **Yiddish**	צו האבן די דאקומענט איבערגעטייטשט אין א שפראך וואס איר קענט פארשטיין, פארבינדט זיך מיט די פערזאן אונטן. די איבערטייטשונג איז פריי פון אפצאל.
বাঙালি **Bengali**	এই নথিটি আপনি বুঝতে পারেন এমন একটি ভাষায় অনুবাদ করতে, নিম্নলিখিত ব্যক্তির সাথে যোগাযোগ করুন। অনুবাদের জন্য কোন চার্জ দিতে হবে না।
한국어 **Korean**	이 언어를 본인이 이해할 수 있는 언어로 받아보려면 아래 담당자에게 문의하십시오. 번역료는 없습니다.
Kreyòl Ayisyen **Haitian Creole**	Pou yo ka tradwi dokiman sa nan yon lang ou ka konprann, kontakte moun ki anba a. Ou p'ap peye anyen pou tradiksyon an.
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العربية **Arabic**	لترجمة هذا المستند إلى لغة يمكنك فهمها، تواصل مع الشخص أدناه. لا يتم تطبيق رسوم مقابل الترجمة.
Języky Polski **Polish**	Aby uzyskać tłumaczenie tego dokumentu na język, który jest dla Ciebie zrozumiały, skontaktuj się z poniższą osobą. Za tłumaczenie nie jest pobierana żadna opłata.

Contact: Michael MacCabe, 518-402-9687, michael.maccabe@dec.ny.gov