Site Management Plan

Former Cibro Petroleum Terminal Site
Island Park, New York

November 25, 2019

Prepared for:

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Certification

I, CHARLES J. MCGUCKIN, certify that I am currently a NYS registered professional engineer and that this Site Management 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).

Charles J. McGuckin, P.E.	November 25, 2019	
NYS Professional Engineer #069509	Date	Signature

Acronym List

Acronym	Definition
AS	Air Sparging
ASP	Analytical Services Protocol
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CAMP	Community Air Monitoring Plan
C/D	Construction and Demolition
CFR	Code of Federal Regulation
CLP	Contract Laboratory Program
COC	Certificate of Completion
CO2	Carbon Dioxide
CP	Commissioner Policy
DER	Division of Environmental Remediation
EC	Engineering Control
ECL	Environmental Conservation Law
ELAP	Environmental Laboratory Approval Program
ERP	Environmental Restoration Program
EWP	Excavation Work Plan
FSP	Field Sampling Plan
GHG	Green House Gas
GWE&T	Groundwater Extraction and Treatment
HASP	Health and Safety Plan
IC	Institutional Control
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYCRR	New York Codes, Rules and Regulations
NYS	New York Sate
O&M	Operation and Maintenance
OM&M	Operation, Maintenance and Monitoring
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
PCB	Polychlorinated Biphenyl.
PID	Photoionization Detector
PRP	Potentially Responsible Party
PRR	Periodic Review Report
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
QEA	Qualitative Exposure Assessment
RA	Remedial Action
RAO	Remedial Action Objective
RWP	Remedial Work Plan
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RP	Remedial Party
RRSCO	Restricted-Residential Soil Cleanup Objective
RSO	Remedial System Optimization
SAC	State Assistance Contract
SCG	Standards, Criteria and Guidelines
SCO	Soil Cleanup Objective
SMP	Site Management Plan
SOP	Standard Operating Procedures
SOW	Statement of Work
SPDES	State Pollutant Discharge Elimination System

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Acronym	Definition
SSDS	Sub-slab Depressurization System
SSSCO	Site Specific Soil Cleanup Objective
SVE	Soil Vapor Extraction
SVI	Soil Vapor Intrusion
TAL	Target Analyte List
TCL	Target Compound List
TCLP	Toxicity Characteristic Leachate Procedure
TIC	Tentatively Identified Compound
TPH	Total Petroleum Hydrocarbons
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VCA	Voluntary Cleanup Agreement
VCP	Voluntary Cleanup Program
VOC	Volatile Organic Compounds

Executive Summary

The following provides a brief summary of the controls implemented for the Site, as well as the inspections, monitoring, maintenance and reporting activities required by this Site Management Plan:

Site Identification: **NYSDEC Site Number: C130153**
Former Cibro Petroleum Terminal Site
7 Washington Avenue, Island Park, New York

Institutional Controls:	1. The property may be used for: Restricted Residential as described in 6 NYCRR Part 375-1.8(g)(2)(ii), Commercial as described in 6 NYCRR Part 375-1.8(g)(2)(iii), and Industrial as described in 6 NYCRR Part 375-1.8(g)(2)(iv).
	2. All Engineering Controls must be operated and maintained as specified in this Site Management Plan (SMP).
	3. All Engineering Controls (ECs) must be inspected at a frequency and in a manner defined in the Site Management Plan (SMP).
	4. The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the New York State Department of Health (NYSDOH) or the Nassau County Department of Health to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department.
	5. Groundwater and other environmental or public health monitoring must be performed as defined in this SMP.
	6. Data and information pertinent to site management of the Controlled Property must be reported at the frequency and in a manner as defined in this SMP.
	7. All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with this SMP.
	8. Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in this SMP.
	9. Operation, maintenance, monitoring, inspection and reporting of any mechanical or physical aspects of the remedy shall be performed as defined in the SMP.
	10. Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by the Environmental Easement**.**

Site Identification: **NYSDEC Site Number: C130153**
Former Cibro Petroleum Terminal Site
7 Washington Avenue, Island Park, New York

Engineering Controls:	1. Cover System
	2. Vapor Barrier (Proposed under new buildings)
	3. Building Sub-Slab Depressurization Systems (Proposed systems under new buildings, as needed)
	4. Active Mechanical Ventilation System(s) (For buildings or portions of buildings where the lowest level is occupied by an automobile parking garage)

Inspections:	*Frequency:*
1. Cover Inspection	Annually
2. Vapor Barrier	Upon Installation
3. SSDS	Upon Installation, Annually
4. Active Mechanical Ventilation System	Upon Installation, Annually
5. Site-Wide Inspection	Annually
Monitoring:	
1. Monitoring Wells - Groundwater	Upon completion of grading, filling and underground utility installation: quarterly for first year. Any change in frequency after one year will need to be approved by the NYSDEC.
2. Sub-slab Soil Vapor Sampling	A sub-slab soil vapor assessment will be performed. After completing construction of any new building, but prior to residential or other permanent occupancy. Subsequent sampling will be based on the results of the initial sub-slab soil vapor assessment.
Maintenance:	
1. As Needed	As needed per results of the annual inspection.
Reporting:	
1. Groundwater Monitoring Report (Included in Periodic Review Report)	Annually
2. Periodic Review Report	Annually

Further descriptions of the above requirements are provided in detail in the latter sections of this Site Management Plan.

1. Introduction

1.1 General

This Site Management Plan (SMP) is a required element of the remedial program for the Former Cibro Petroleum Terminal Site located in Island Park, New York (hereinafter referred to as the "Site"). See Figure 1. The Site is currently in the New York State (NYS) Brownfield Cleanup Program (BCP) Site No. C130153, which is administered by New York State Department of Environmental Conservation (NYSDEC).

Posillico Development Company at Harbor Island, Inc. entered into a BCA on April 14, 2006 with the NYSDEC to remediate the Site. The BCA was amended on July 24, 2017 to include Blue Island Development LLC as an additional Volunteer. A figure showing the Site location and boundaries of this Site is provided in Figure 2. The boundaries of the site are more fully described in the metes and bounds site description that is part of the Environmental Easement provided in Appendix A.

After completion of the remedial work, limited contamination was left at this site, which is hereafter referred to as "remaining contamination". Institutional and Engineering Controls (ICs and ECs) have been incorporated into the Site remedy to control exposure to limited remaining contamination to ensure protection of public health and the environment. An Environmental Easement granted to the NYSDEC and recorded with the Nassau County Clerk, requires compliance with this SMP and all ECs and ICs placed on the Site.

This SMP was prepared to manage the limited remaining contamination at the Site until the Environmental Easement is extinguished in accordance with ECL Article 71, Title 36. This plan has been approved by the NYSDEC, and compliance with this plan is required by the grantor of the Environmental Easement and the grantor's successors and assigns. This SMP may only be revised with the approval of the NYSDEC.

It is important to note that:

- This SMP details the Site-specific implementation procedures that are required by the Environmental Easement. Failure to properly implement the SMP is a violation of the Environmental Easement, which is grounds for revocation of the Certificate of Completion (COC);
- Failure to comply with this SMP is also a violation of Environmental Conservation Law, 6NYCRR Part 375 and the BCA (Index #W1-1075-05-09; Site #C130153) for the Site, and thereby subject to applicable penalties.

All reports associated with the Site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State. A list of contacts for persons involved with the site is provided in Appendix B of this SMP.

This SMP was prepared by Roux Environmental Engineering and Geology, D.P.C. (Roux), on behalf of Posillico Development Company at Harbor Island, Inc. (PDC), in accordance with the requirements of the NYSDEC's DER-10 ("Technical Guidance for Site Investigation and Remediation"), dated May 2010, and the guidelines provided by the NYSDEC. This SMP addresses the means for implementing the ICs and/or ECs that are required by the Environmental Easement for the Site.

1.2 Revisions

Revisions to this plan will be proposed in writing to the NYSDEC's project manager. Revisions will be necessary upon, but not limited to, the following occurring: a change in media monitoring requirements,

upgrades to or shut-down of a remedial system, post-remedial removal of contaminated sediment or soil, or other significant change to the Site conditions. In accordance with the Environmental Easement for the Site, the NYSDEC will provide a notice of any approved changes to the SMP and append these notices to the SMP that is retained in its files.

1.3 Notifications

Notifications will be submitted by the property owner to the NYSDEC, as needed, in accordance with NYSDEC's DER – 10 for the following reasons:

- 60-day advance notice of any proposed changes in site use that are required under the terms of the BCA, 6NYCRR Part 375 and/or Environmental Conservation Law.
- 7-day advance notice of any field activity associated with the remedial program.
- 15-day advance notice of any proposed ground-intrusive activity pursuant to the Excavation Work Plan.
- Notice within 48-hours of any damage or defect to the foundation, structures or EC that reduces or has the potential to reduce the effectiveness of an EC, and likewise, any action to be taken to mitigate the damage or defect.
- Verbal notice by noon of the following day of any emergency, such as a fire; flood; or earthquake that reduces or has the potential to reduce the effectiveness of ECs in place at the Site, with written confirmation within 7 days that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.
- Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action submitted to the NYSDEC within 45 days describing and documenting actions taken to restore the effectiveness of the ECs.

Any change in the ownership of the Site or the responsibility for implementing this SMP will include the following notifications:

- At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser/Remedial Party has been provided with a copy of the BCA, and all approved work plans and reports, including this SMP.
- Within 15 days after the transfer of all or part of the site, the new owner's name, contact representative, and contact information will be confirmed in writing to the NYSDEC.

Table 1 includes contact information for the above notification. The information on this table will be updated as necessary to provide accurate contact information. A full listing of Site-related contact information is provided in Appendix B.

Table 1: Notifications*

Name	Contact Information
NYSDEC Project Manager – Nick Acampora	(631) 444-0322 nick.acampora@dec.ny.gov
NYSDEC Regional Hazardous Waste Engineer – Walter Parish	(631) 444-0240 walter.parish@dec.ny.gov
NYSDEC Site Control Section – Kelly Lewandowski	(518) 402-9569 kelly.lewandowski@dec.ny.gov
NYSDOH Project Manager – Wendy Kuehner	(518) 402-7860 wendy.kuehner@health.ny.gov

* Note: Notifications are subject to change and will be updated as necessary.

2. Summary of Previous Investigations and Remedial Actions

2.1 Site Location and Description

The Site is located in Harbor Island, Nassau County, New York and is identified as Section 43 Block 381 and Lots 35, 36, 102, 314, and 328 on the Nassau County Tax Map (see Figure 2). The Site is an approximately 11.56-acre area and is bounded by Island Parkway South to the north, a narrow strip of land (block and lot information currently unavailable) located between the Site's former timber bulkhead and the new composite-sheet piling bulkhead to the south and east with Wreck Lead Channel and Island Park Canal beyond, and Sheridan Place and Simmons Hassock Creek to the west (see Figure 2 – Site Layout Map). The boundaries of the Site are more fully described in Appendix A –Environmental Easement. The owner(s) of the Site parcel at the time of issuance of this SMP is/are Blue Island Development LLC.

2.2 Physical Setting

2.2.1 Land Use

The Site consists of the following: tidal wetland and undeveloped property. The east and south sides of the Site are bordered by a narrow strip of land located between the new composite bulkhead supported by timber piles and whalers and the former timber bulkhead. This area is not regulated by this SMP or the Environmental Easement discussed below. The north and west sides of the site are bordered by chain-link fence equipped with privacy screen to prevent unauthorized access. The Site is zoned Residential C-A and is currently vacant land. The planned future use of the Site is restricted residential development, which includes multi-family residential buildings and ancillary uses.

The properties in the neighborhood surrounding the Site primarily include single-family residential properties and light industrial and commercial/retail establishments.

2.2.2 Geology

The Site is underlain by Cretaceous and Quaternary sediments, which rest unconformably on weathered Precambrian-aged biotite schist and gneissic bedrock. Depth to bedrock in the Long Island area ranges between 200 and 1,800 feet below grade. The late Cretaceous deposits are predominately associated with the Raritan and Magothy Formations, consisting of inter-bedded sand, gravel, silt, and clay. Quaternary sediments of Pleistocene and younger age form the surficial deposits throughout the region and consist of sand, gravel, glacial till, and associated outwash. The findings of the Site investigations indicate that historic fill material and fine to medium grain sands exist above a peat layer that underlies the Site at approximately six to nine feet below grade.

2.2.3 Hydrogeology

Site-specific hydrogeologic conditions consist of a tidally influenced, unconfined aquifer within the shallow fill and glacial fluvial deposits underlying the property. Prior investigations encountered a peat layer approximately four to nine feet below grade. Groundwater elevation varies as a result of tidal effects (approximately +0.14 to +4.91feet relative to NAVD 88), but is approximately four to six feet below grade. Groundwater flows radially from the northwest corner of the property towards the east-southeast and diffuses into the adjacent saltwater bodies. The downward vertical gradient at low tide and the upward vertical

gradient at high tide suggest that the peat layer at the Site impedes vertical groundwater movement between the shallow and deeper soils.

2.3 Investigation and Remedial History

The following narrative provides a remedial history timeline and a brief summary of the available project records to document key investigative and remedial milestones for the Site. Full titles for each of the reports referenced below are provided in Section 8.0 - References.

Oil Product, Inc. began operating the Site as an oil terminal in the 1940s. Cibro Petroleum (Cibro) purchased the property in 1973 and continued to utilize the Site as an oil bulk storage and distribution facility until Site operations were terminated in the late 1980's. Historic petroleum releases occurred during Cibro's former operations at the Site, and have been investigated since 1988 when a NYSDEC Spill Number (#88-05691) was opened. Cibro filed for bankruptcy in the same year as the opening of the Spill Case. Blue Island Development, LLC purchased the property from the Bankruptcy Court on November 2, 2000.

2.3.1 1993/1994 Site Investigation

Subsurface Investigations, Inc. (SI) conducted several soil and groundwater investigations in 1993 and 1994 on behalf of Cibro and issued a draft Remedial Investigation/Feasibility Study report in 1993, and a supplemental soils and groundwater cover letter on June 21, 1994. The available version of this report is incomplete and generally does not include figures depicting sampling locations.

Soil investigation activities included the completion of over 50 test pits; a collection of multiple soil samples across the Site at varying depths; the completion of 12 soil borings; and sample analysis for total petroleum hydrocarbons (TPH), semivolatile compounds (SVOCs), benzene, toluene, ethylbenzene, and xylenes (collectively BTEX); polychlorinated biphenyls (PCBs), dichlorobenzene, and/or lead. Groundwater investigation activities included the installation of six additional monitoring wells to the existing 12-monitoring well network, multiple groundwater sampling events, and analysis of the groundwater samples for VOCs, SVOCs, BTEX, and/or PCBs.

Generally, soil sample results were below Restricted-Residential Soil Cleanup Objectives (RRSCOs), with the exception of SVOC tentatively identified compounds (TICs) and TPH. In addition, PCBs were detected above the RRSCOs in a few samples from the tidal wetland portion of the Site. Generally, groundwater sample results were below NYSDEC Class GA Standards and Guidance Values, with the exception of BTEX. Overall, the investigation found indications of releases of petroleum hydrocarbons from historical Site operations that resulted in impacts to soil and groundwater quality.

2.3.2 2000/2001 Site Investigation

LawGibb Group (LAW) conducted several soil and groundwater investigations in 2000 and 2001 on behalf of Blue Island Development, LLC and issued a summary report titled "Results of Supplemental Soil and Ground-Water Investigation," dated August 6, 2001.

Soil investigation activities included the completion of 80 soil borings to further investigate and delineate areas with previously identified soil impacts. Groundwater investigation activities included the installation of six additional monitoring wells and the completion of multiple groundwater sampling events. Soil and groundwater samples were analyzed for TPH, VOCs using the NYSDEC STARS List (including TICs), SVOCs, Resource Conservation and Recovery Act (RCRA) metals, and/or PCBs.

Generally, soil sample results were below RRSCOs, with the exception of SVOCs and TPH. Groundwater sample results were below Class GA Standards and Guidance Values for all analytes, except for benzene, naphthalene, acenaphthene, benzo(a)anthracene, and chrysene. Petroleum-impacted soils were identified in the shallow and mid zone, with fewer detections and exceedances in soils underlying the peat layer (i.e., typically seven to nine-feet below grade). Overall the investigation found indications of releases of petroleum hydrocarbons from historical Site operations that resulted in impacts to soil and groundwater quality. This investigation did not identify any PCB-impacted soils above RRSCOs. Based on the results of these investigations, Law issued a work plan called "Cleanup Plan for Soil and Groundwater at the Former Cibro Island Park Site," dated February 2001.

2.3.3 2006/2007 Site Investigation

Gannett Fleming Inc. (GFI) conducted soil and soil vapor investigations in 2006 and/or 2007 on behalf of Blue Island Development, LLC to finalize a remedial investigation pursuant to BCP requirements. The results were used to develop the information needed to evaluate and select an appropriate remedy pursuant to a Pilot Test Work Plan dated March 2005 submitted with the BCP application. GFI summarized their findings in the Final Remedial Investigation Report dated May 2008.

Soil investigation activities included the completion of 18 test pits formerly characterized by only TPH and collection of samples to be analyzed for TPH, SVOCs, and VOCs. Soil samples from 11 of the 18 test pits contained VOC TICs and/or SVOC TICs at concentrations exceeding the Site specific soil cleanup objectives (SSSCOs), as defined in the Remedial Work Plan (RWP) and discussed later herein. The highest concentrations of SVOCs were observed in the shallow and mid zone soils (i.e., zero to four-feet below grade), and markedly decreased in the deeper samples. Overall, the investigation found indications of releases of petroleum hydrocarbons from historical Site operations that resulted in impacts to soil quality.

Soil vapor was tested along the northern property line near the residential neighborhood at four locations. Although, in general, soil vapors from the test pits in the petroleum-contaminated area were evident, no soil vapors were detected above applicable standards along the northern property line. NYSDOH has not yet developed guidance on petroleum-related vapors. Therefore, a conservative approach to evaluating the results was taken. Indoor air standards were compared to the outside soil vapor results. If outside soil vapor constituents did not exceed the indoor air standards, then GFI assumed such levels would exist at lower concentrations if detected indoors. Therefore, GFI compared United States Environmental Protection Agency (USEPA) and New Jersey residential indoor air standards to the results of both sets of samples and found that no constituents exceeded the target indoor air concentrations used by either agency.

A qualitative exposure assessment (QEA) was performed to determine the qualitative health risks posed to humans, fish, and wildlife by the chemicals identified in the soil and groundwater on the Site and at the Site's property boundary line. The analysis determines if an exposure pathway exists, and if so, the extent to which it can be mitigated. If there is no pathway, there is no quantifiable risk. The QEA found a pathway for industrial use that could be mitigated with a proper soil management plan and various cap and cover techniques. However, the QEA identified pathways that would require more extensive mitigation under a potential residential-use scenario due to the long-term habitation of the Site with different exposure rates. In general, the QEA found the exposure potential will be adequately mitigated once the contaminated soil is remediated to applicable residential SCOs.

2.3.4 2010/2011 Site Investigation

In 2010, under NYSDEC oversight, PDC collected soil samples from three locations at depths ranging from four to ten feet. PDC also collected one sample from a test pit bottom and a one sample from a soil stockpile containing soils that had been previously treated using chemical oxidants, bio-pile treatment and/or land farming as part of a soil treatment pilot tests conducted in 2006. The samples were analyzed for SVOCs and SVOC TICs. None of the 20 soil samples collected exceeded the RRSCOs. During July and August 2011, at the direction of NYSDEC, soil and sediment samples were collected at 49 locations up to five depths at each location. The samples were examined in the field for gross contamination and volatile organic vapors, and were analyzed for VOCs, SVOC, lead, PCBs, and/or metals.

None of the samples met the criteria in the grossly-contaminated soil definition. Of the samples analyzed for metals, none exceeded the RRSCOs. One sample from location SL-42A slightly exceeded the PCB RRSCO and one sample, SB-44B, exceeded the RRSCOs for benzo(a)anthracene, benzo(a)pyrene, and benzo(a)fluoranthene. Soil samples from 18 of the 49 boring locations contained VOC TICs and/or SVOC TICs at concentrations exceeding SSSCOs.

In August 2011, PDC installed groundwater monitoring wells below the peat layer and in locations to fill gaps in the groundwater monitoring network. None of the 12 shallow and 3 deep wells contained free-product when gauged prior to sampling. The sampling results indicated the highest concentrations and largest number of analytes detected were in two shallow wells and two deep wells closest to the southern property boundary, which is also the location of the former truck filling rack. SVOC(s) and/or VOC(s) were detected at concentrations exceeding the Class GA Values at all four of these downgradient wells. Of the three wells closest to the northern property boundary, only one contained a constituent (acetone) exceeding the Class GA Value. One VOC was detected in the groundwater sample collected on the eastern portion of the Site that exceeded the Class GA Value. The concentration of 1,2,4,5-tetramethylbenzene at upgradient well LMW-2 also exceeded the Class GA Value.

2.3.5 2018/2019 Off-site Sediment Sampling

As required by the RWP, prior to installing the new bulkhead around the eastern and southern sides of the Site, Posillico collected off-site sediment samples from five locations along the existing timber bulkhead from within the adjacent waterways. Two sediment samples were collected from a 10-foot sediment core collected at each sampling location. The samples were analyzed for the following analytes:

- Benzene, ethylbenzene, toluene and xylene (BTEX) using the USEPA Method 8260C;
- Polycyclic Aromatic Hydrocarbons (PAHs) Using the USEPA Method 8270D;
- Metals using the USEPA Method 7471B; and
- Total Organic Carbon using the USEPA Lloyd Kahn Method.

Results of the off-site sediment sampling revealed no concentrations were detected of BTEX or PAHs exceeding the NYSDEC Division of Fish, Wildlife and Marine Resources (DFW) Class A Guidance Values for Sediment. One metal (arsenic) was detected at a concentration of 9.1 ppm, slightly exceeding the Class A Guidance Value of 8.2 ppm, but not exceeding the Class B Guidance Value. A report summarizing the sampling performed and the results was submitted to NYSDEC on February 21, 2019. Based on their review of the results in consolation with the NYSDEC, DFW had no comments or requirements regarding offsite sediment at the Site.

2.3.6 2018 Emerging Contaminants Assessment

In accordance with the request made by NYSDECs in their letter dated April 4, 2018, Posillico Consulting, LLC. prepared the "Work Plan for Activities to Collect Groundwater Samples for PFAS and 1,4-Dioxane Analyses at the Former Cibro Terminal Site ID: 130153." In accordance with this NYSDEC-approved work plan, Posillico sampled three existing Site monitoring wells (GW-1, MW-3R, and MW-2) for polyfluoroalkyl substances (PFAS) and 1,4, Dioxane (i.e., emerging contaminants). The sampling was performed in July 2018. The results indicated relatively low concentrations of ECs in each of the samples, including the laboratory method blank. The PFAS compounds detected in the laboratory's method blank indicate cross-contamination at the laboratory.

Based on the July 2018 sampling and subsequent discussion with NYSDEC representatives, emerging contaminates were determined not to be constituents of concern for the Site. Therefore, no additional sampling or remedial efforts were required for ECs.

2.3.7 2019 Selective Test Pitting Delineation

As part of the RA, test pits were performed at the lateral extents of the excavation areas identified in the RWP in order to collect soil samples and confirm the required later extents of the excavation areas based on the requirements of the RWP. The results of the test pitting were used to confirm the required remedial excavation areas and evaluate soil conditions below the former tank pads within the remedial work areas. Based on these results, the required remedial excavation areas shown in Figure 6 were completed during the RA.

2.3.8 Summary of Findings

Provided below is a summary of the impacts to soil and groundwater at the Site based on the results of the various investigation performed through December 2012. This information has also been supplemented by observations and testing performed in connection with the remediation of the Site in 2018 and 2019.

2.3.8.1 Soil

The findings of the Site investigations indicate that historic fill material and fine to medium grain sands exist above a peat layer which underlies the Site at approximately six to nine feet below grade. Specific conclusions with regard to soil conditions are as follows:

1. In general, exceedances of RRSCOs were due to total VOC TICs and total SVOC TICs and not individual Target Compound List (TCL) VOCs and SVOCs.
2. The highest concentrations of VOCs were detected in the vicinity of the truck filling rack (southeast) in shallow and mid-zone soil.
3. The highest concentrations of SVOCs were detected in the vicinity of the truck filling rack (southeast) in shallow and mid-zone soil.
4. Petroleum-like odors were observed in the sampling locations predominately located in the southeastern portion of the Site.
5. No metals were detected at concentrations above the RRSCOs.
6. The frequency of exceedances of SSSCOs in surface and shallow soils was lower than that of deep soils.
7. As documented in the 2011 SRI, residual contamination exists to at least nine feet below grade, but no exceedances of SSSCOs were detected below the peat layer.
8. PCBs were historically detected at concentrations above the RRSCOs in the southwest portion of the Site in the tidal wetland area. Additional investigations in this area in 2001 did not indicate

exceedances of RRSCO, only unrestricted SCOs. One sample in the 2011 data set from a different location than was sampled in the past slightly exceeded the RRSCO. Due to the ecologically sensitive nature of the tidal wetland area, NYSDEC determined that no remediation or engineering controls would be required for this area.

9. Groundwater sampling for polyfluoroalkyl substances (PFAS) and 1,4, Dioxane (i.e., emerging contaminants or ECs) was performed in July 2018. None of these compounds were determined to be constituents of concern for the Site based on the sampling results. Therefore, no additional sampling or remedial efforts were required for ECs.

2.3.8.2 Groundwater

Groundwater at the Site is tidally influenced. Specific conclusions of the investigations with regard to groundwater are as follows:

1. Measured tidal fluctuations in groundwater surface elevation ranged from elevation 0.14 to 3.08 (NAVD 88) in the shallow monitoring wells. Generally, the tidal influence on groundwater elevation decreases with increasing distance from the adjacent waterways. Tidal fluctuation had no significant impact on groundwater flow direction. Groundwater flows radially away from the northwest portion of the Site towards the east-southeasterly direction, generally away from the adjacent residential areas.
2. VOCs were detected at concentrations exceeding Class GA values in seven monitoring wells based on historic sampling. The highest concentrations of VOCs were detected in monitoring wells closest to the truck filling rack.
3. SVOCs were detected at concentrations exceeding Class GA Values in four out of twelve monitoring wells based on the most recent round of groundwater sampling. The highest concentrations of SVOCs were detected in the monitoring wells closest to the truck filling rack.
4. The analytic data generally indicates a lesser degree of petroleum impacts in groundwater below the peat layer that in groundwater above the peat layer.
5. No metals were detected at concentrations exceeding the SSSCOs in Site soils. Therefore, metals were not identified as a constituent of concern for the Site. Since metals are not a constituent of concern, groundwater was not sampled for metals during subsequent investigations.

2.3.8.3 Soil Vapor

Soil vapor was sampled for petroleum related VOCs along the northern property line near the residential neighborhood at four off-Site locations. Results of the soil vapor samples collected did not identify any concentrations above the applicable standards.

2.4 Remedial Action Objectives

Remedial Action Objectives (RAOs) are goals developed for the protection of human health and the environment. Definition of these objectives requires an assessment of the contaminants and media of concern, potential migration pathways, exposure routes, and receptors. Typically, remediation goals are established based on Standards, Criteria, and Guidance (SCGs) intended to protect human health and the environment. The RAOs consist of the following:

1. Reduce the contaminant mass by removing and replacing contaminated soil and source material in soil;
2. Protect on-site workers and the surrounding community from exposure to Site-related contaminants during remedial construction and development; and
3. Establish institutional and engineering controls for the Site to protect future occupants, maintenance personnel and the surrounding community from potential exposure to Site-related contaminants remaining after Site development.

The RAOs for the Site as listed in the Decision Document dated May 27, 2014 and Decision Document Amendment dated June 2018 are as follows:

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.

RAOs for Environmental Protection

- Reduce the discharge of contaminants to surface water.
- Remove the source of ground or surface water contamination.

Soil

RAOs for Public Health Protection

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

RAOs for Environmental Protection

- Prevent or reduce the migration of contaminants that would result in groundwater or surface water contamination.
- Prevent impacts to biota from ingestion/direct contact with soil causing toxicity or impacts from bioaccumulation through the terrestrial food chain.

Surface Water

RAOs for Public Health Protection

- Prevent ingestion of contaminated water.
- Prevent contact or inhalation of contaminants from impacted water bodies.
- Prevent surface water contamination which may result in fish advisories.

RAOs for Environmental Protection

- Prevent impacts to biota from ingestion/direct contact with surface water causing toxicity and impacts from bioaccumulation through the marine or aquatic food chain.

Sediment

RAOs for Public Health Protection

- Prevent direct contact with contaminated sediments.

RAOs for Environmental Protection

- Prevent release(s) of contaminant(s) to sediments that would result in surface water levels in excess of (ambient water quality criteria).

In accordance with the Decision Document and Decision Document Amendment, the Site-specific remedy approved to achieve the RAOs included: excavation and off-site disposal of impacted soils exceeding the

criteria listed below, to a maximum depth at which shoring, dewatering, or disruption of the peat layer was not required; and the placement of a clean fill cover layer with a minimum of two feet thickness. The Track 4 Restricted Use Site-specific SCOs (SSSCO) include:

- Soil exceeding RRSCOs for Target VOCs and Target SVOCs;
- Soil exceeding 10 parts per million (ppm) total of the 10 VOC TICs detected at the highest concentrations;
- Soil exceeding 100 ppm total of the 20 SVOC TICs detected at the highest concentrations; and
- Grossly contaminated soil, as defined in 6 NYCRR Part 375-1.2(u).

Site soils and concrete from the subsurface that did not exceed the SSSCOs were utilized as backfill, as well as other soils and concrete imported to the Site, as detailed below.

In accordance with the NYSDEC-approved RWP, impacts to groundwater and potential impacts to soil vapor beneath the Site are anticipated to be addressed through the excavation and disposal of impacted soil and source removal. After completion of the remedial action, potential groundwater and soil vapor impacts will be monitored in accordance with this SMP. Consistent with 6 NYCRR Part 375 requirements, the proposed remedies for the Site were fully protective of public health and the environment, taking into account the current, intended, and potential future land use.

As part of the remedial action, concrete tank pads and other subsurface obstructions above the peat layer were removed, with the exception of historic timber pilings and two landward bulkheads that are present throughout and adjacent to the Site.

2.5 Remaining Contamination

The Remedial Action (RA) was designed to reduce the concentration of Site contaminants through excavation of source material from the subsurface that exceeded the Track 4 SSSCOs. As per the Decision Document, a minimum two-foot thick Site cover was installed in areas where the upper two feet of exposed surface exceeded the SCOs. The Track 4 cleanup track permits the remedial program to include the use of long-term IC and/or ECs to address all residually contaminated media left in place following implementation of the RA.

2.5.1 Soil

Portions of the Site were excavated, backfilled, and capped with a demarcation layer and clean fill cover, as shown on Figure 4. Petroleum-impacted soil exceeding the SSSCOs remains below the demarcation layer and clean fill cap. Petroleum-impacted soil exceeding the SSSCOs remains offsite along the northern site boundary as identified in documentation sample PDC-PX-M1-N. The demarcation layer is installed at the elevations and depths shown on Figure 3. A minimum of two feet of clean fill meeting the NYSDEC Restricted Residential and Protection of Groundwater SCOs overlies the demarcation layer. Additional limited petroleum impacts also remain within the peat layer beyond the extent of the demarcation layer and clean fill cap in several locations as shown on Figure 4.

The demarcation layer has been installed at varying depths in order to accommodate the proposed property redevelopment (e.g., utilities, foundations, etc.) to be installed primarily above the demarcation layer. However, future construction and/or repairs may require soil disturbances at depths below the demarcation layer. Activities such as excavation, backfilling, drilling, or driving activities performed below the demarcation layer will be performed in accordance with the Excavation Work Plan provided in Appendix C.

The remainder of the Site was cleared, grubbed, and rough-graded, but no remedial excavation was performed in accord with the approved RWP. No structures remain on the Site. All former concrete tank pad structures and other known concrete structures were removed and processed on-site in accordance with the Town of Hempstead Demolition Permit and NYSDEC Part 360 Registration Facility Permit. The processed concrete was used as general fill in accordance with the NYSDEC Division of Environmental Remediation (DER) Case-Specific Beneficial Use Determination (BUD). A majority of the timber piles associated with the former tank pad foundations remain in place below grade at the Site. Some of these piles were cut off at the top of the peat layer. Others were cut or driven to the bottom of the respective remedial excavation area. Some piles less than 20 feet in length were inadvertently removed as the remedial excavations progressed. Removal of the timber piles is not permitted without the approval of the NYSDEC.

The Site is planned for redevelopment as a multi-family residential community. During Site redevelopment, new timber piles will be installed through the clean cap and demarcated areas. Existing timber piles may be removed/replaced as part of the installation process for new load-bearing timber piles to support the new buildings and infrastructure. If any of the existing piles are removed, the remaining void space must be filled with bentonite grout to mitigate the potential for vertical migration of any remaining petroleum contamination.

As part of the remedial efforts the site was returned to its original grade of approximately 5.5 feet above NAVD 88. Additional clean fill was also imported to be used above the clean fill cap and across the Site for future development purposes. The importation of additional clean fill is proposed to continue until the Site grade is increased to between 7 and 16 feet above NAVD 88 in accordance with the development plan for the Site. All additional clean fill materials will be imported in accordance with requirements of the attached Excavation Work Plan (Appendix C).

PCBs were historically detected at concentrations above the RRSCOs in the southwest portion of the Site in the tidal wetland area. Additional investigations performed in this area in 2001 did not indicate exceedances of RRSCO, only unrestricted SCOs. One sample in the 2011 data set from a different location than was sampled in the past slightly exceeded the RRSCO. Due to the ecologically sensitive nature of the tidal wetland area, NYSDEC determined that no remediation or engineering controls would be required for this area. Tables 6 and 7 and Figure 4 summarize the results of all soil samples collected that exceed the SSSCOs at the Site after completion of remedial action.

2.5.2 Groundwater

In accordance with the NYSDEC-approved RWP, impacts to groundwater are anticipated to be addressed through the excavation and disposal of impacted soil and source removal. Groundwater will continue to be monitored as part of this SMP. Previous monitoring wells were removed or destroyed during performance of the RA, with the exception of two downgradient wells located in the in the tidal wetland.

Four (4) groundwater monitoring wells will be installed upon completion of grading, filling and underground utility installation (see Figure 5).

Groundwater Samples will be analyzed for TCL VOCs USEPA Method 8260 and TCL SVOCs USEPA Method 8270. Samples will be collected in accordance with the Field Sampling Plan provided in Appendix E and Quality Assurance Project Plan (QAPP) provided in Appendix F.

The groundwater monitoring wells will be designed by a professional engineer or professional geologist and associated documents (e.g., well construction design) will be provided to the NYSDEC for review and

approval prior to construction. The two existing monitoring wells in the tidal wetland are not anticipated to be utilized as part of the SMP.

2.5.3 Soil Vapor

Historical soil vapor sampling was limited to assessing off-site conditions along the northern property boundary. In accordance with the NYSDEC-approved RWP, impacts to soil vapor beneath the Site are anticipated to be addressed through the excavation and disposal of impacted soil and source removal. An initial soil vapor assessment will be performed as part of this SMP and is discussed in more detail in Section 4. The need for on-going vapor monitoring will be discussed in the first PRR following the soil vapor assessment.

A proactive precautionary vapor barrier and SSDS, as needed, will be installed below each newly constructed building slab to provide a mitigative pathway to prevent potential vapor intrusion into the new structures. The SSDS will be designed by a professional engineer and associated documents (e.g., Operation and Maintenance Manual) will be provided to the NYSDEC for review and approval prior to construction. Buildings or portions of buildings where the lowest level is occupied by an automobile parking garage will utilize an active mechanical ventilation system meeting the 2015 International Mechanical Code (IMC) ventilation airflow rates for enclosed parking garages in lieu of SSDS and vapor barrier systems.

Soil vapor samples will be collected as part of a soil vapor intrusion assessment upon completing construction and prior to occupancy of each new building constructed at the Site. Based on the results of the soil vapor intrusion assessment, the SSDS may be retrofitted for active use, as required by NYSDEC or NYSDOH. Soil vapor samples shall be collected from directly beneath the soil vapor barrier installed below each new building constructed at the Site. Samples will be collected in accordance with the QAPP and analyzed for USEPA Method TO-15. Samples results will be sent to NYSDEC and NYSDOH for review and approval of proposed plan. A soil vapor intrusion assessment shall not be required for buildings or any portion of a new building where the lowest level is occupied by an automobile parking garage and active mechanical ventilation system will be operated.

3. Institutional and Engineering Control Plan

3.1 General

Since limited remaining contamination may exist at the Site, ICs and ECs are required to protect human health and the environment. This IC/EC Plan describes the procedures for the implementation and management of all IC/ECs at the Site. The IC/EC Plan is one component of the SMP and is subject to revision by the NYSDEC.

This plan provides:

- A description of all IC/ECs on the Site;
- The basic implementation and intended role of each IC/EC;
- A description of the key components of the ICs set forth in the Environmental Easement;
- A description of the controls to be evaluated during each required inspection and periodic review;
- A description of plans and procedures to be followed for implementation of IC/ECs, such as the implementation of the Excavation Work Plan (EWP) (as provided in Appendix C) for the proper handling of the limited remaining contamination that may be disturbed during maintenance or redevelopment work on the Site extending beneath the clean cap and demarcation layer; and
- Any other provisions necessary to identify or establish methods for implementing the IC/ECs required by the site remedy, as determined by the NYSDEC.

3.2 Institutional Controls

A series of ICs are required by the Amended Decision Document to: (1) implement, maintain and monitor Engineering Control systems; (2) prevent future exposure to the limited remaining contamination; and, (3) limit the use and development of the Site to Restricted Residential, Commercial and Industrial uses only. Adherence to these ICs on the Site is required by the Environmental Easement and will be implemented under this SMP. ICs identified in the Environmental Easement may not be discontinued without an amendment to or extinguishment of the Environmental Easement. The IC boundaries are shown on Figure 2. These ICs are:

- The property may be used for: Restricted Residential, Commercial, or Industrial uses;
- All ECs must be operated and maintained as specified in this SMP;
- All ECs must be inspected at a frequency and in a manner defined in the SMP;
- The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the Nassau County Department of Health to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department;
- Groundwater and other environmental or public health monitoring must be performed as defined in this SMP;
- Data and information pertinent to Site management must be reported at the frequency and in a manner as defined in this SMP;
- All future activities that will disturb remaining contaminated material (i.e., below demarcation or in other areas detailed in Section 2.5.1) must be conducted in accordance with this SMP;
- Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in this SMP;

- Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical component of the remedy shall be performed as defined in this SMP; and
- Access to the Site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by the Environmental Easement.

3.3 Engineering Controls

3.3.1 Clean Fill Cap

Exposure to the limited remaining contamination remaining at the Site is prevented by a cover system placed over areas where the upper two feet of exposed surface soil exceeded the applicable SSSCOs or exhibits gross contamination. This cover system is comprised of a minimum of 24-inches of clean fill as defined by the RWP. The soil cover was placed over a demarcation layer. Fill material brought to the site met the requirements for the identified Site use as set forth in 6 NYCRR Part 375-6.7(d). Figure 3 presents the location of the cover system and applicable demarcation layers. The Excavation Work Plan (EWP) provided in Appendix C outlines the procedures required to be implemented in the event the cover system is breached, penetrated or temporarily removed, and any underlying limited remaining contamination may be disturbed. Encountering the limited remaining contamination is only expected in cases where disturbance of soil below the clean fill cap is required or within the tidal wetland area. All of the Site will also be covered with additional clean fill material beyond the areas of the clean fill cap as part of the Site development. This additional clean fill is not intended as an engineering control for the Site and disturbance of the additional clean fill is not anticipated to result in uncovering any remaining contamination in areas not also covered by the clean fill cap.

Procedures for the inspection of this cover are provided in the Monitoring and Sampling Plan included in Section 4 of this SMP. Any work conducted pursuant to the EWP must also be conducted in accordance with the procedures defined in a Health and Safety Plan (HASP) and associated Community Air Monitoring Plan (CAMP) prepared for the Site and provided in Appendices D and E, respectively.

3.3.2 Vapor Barrier

Buildings will be constructed with vapor barriers below the concrete floor slabs with continuous water stops within required construction joints. The vapor barrier will consist of a sheet membrane or fluid applied coating, or equivalent to be approved by a professional engineer. All proposed vapor barrier products will be submitted to NYSDEC for approval prior to use. All vapor barrier materials are to be installed in accordance with the manufactures requirements and inspected by a professional engineer or individual working under their supervision.

The vapor barrier will be designed by a professional engineer and associated documents will be provided to the NYSDEC for review and approval prior to construction. The professional engineer or person under their supervision shall inspect the vapor barrier after installation to confirm it is installed in accordance with the manufacturer's specifications and any defects or damage identified are repaired prior to construction of the new building slab.

3.3.3 Sub-slab Depressurization System

A SSDS will be installed, as needed, below each newly constructed building slab and associated vapor barriers , in order to provide a mitigative pathway to manage potential vapor that may accumulate beneath the vapor barriers. A passive SSDS may be used to provide a preferential pathway to ambient area to

mitigate potential vapor-intrusion pathways between the vapor source (soil and groundwater) and the receptor (building interior). This is accomplished by installing a layer of permeable sub-slab material, installation of piping, and soil vapor barrier beneath floors. The passive SSDS is designed to function by providing a preferential pathway for sub-slab soil vapor to, if present, migrate to the exterior of the building, rather than enter the building. This system will be installed for passive operation with the ability to be retrofitted for active use based on the results of the soil vapor assessment discussed in Section 4.0 or as required by NYSDEC or NYSDOH. An active SSDS would utilize a blower to apply a negative pressure differential.

The SSDS will be designed by a professional engineer and associated documents (e.g., Operation and Maintenance Manual) will be provided to the NYSDEC for review and approval prior to construction.

3.3.4 Active Mechanical Ventilation System

Buildings or portions of buildings where the lowest level is occupied by an automobile parking garage will utilize an active mechanical ventilation system meeting the 2015 International Mechanical Code (IMC) ventilation airflow rate for enclosed parking garages in lieu of SSDS and vapor barrier systems. The systems will be designed and constructed in accordance with IMC Chapter 4, Section 404, Paragraph 404.2 which requires 0.75 cubic feet per minute, per square foot of air exchange. The active mechanical ventilation systems will be designed and inspected upon installation by a qualified professional engineer licensed in New York State.

3.3.5 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when monitoring indicates that the remedy has achieved the remedial action objectives identified by the decision document. The framework for determining when remedial processes are complete is provided in Section 6.4 of NYSDEC DER-10.

3.3.5.1 Clean Fill Cap

The composite cover system is a permanent control and the quality and integrity of this system will be inspected by a professional engineer or person working under their supervision at defined, regular intervals in accordance with this SMP in perpetuity.

3.3.5.2 Vapor Barrier

The vapor barrier is a permanent control and the quality and integrity of this system will be inspected by a professional engineer or person working under their supervision during installation and during any future modifications in accordance with this SMP in perpetuity.

3.3.5.3 Sub-Slab Depressurization System (SSDS)

Based on the soil vapor assessment, the need for a SSDS will be determined. The quality and integrity of this system will be inspected by a professional engineer or person working under their supervision during installation and after any future modifications in accordance with this SMP. The SSDS will not be removed or its use discontinued unless prior written approval is granted by the NYSDEC and the NYSDOH. In the event that monitoring data indicates that the SSDS may no longer be required, a proposal to discontinue the SSDS will be submitted by the remedial party to the NYSDEC and NYSDOH.

3.3.5.4 Active Mechanical Ventilation System

The active mechanical ventilation system is proactive precautionary control used to both mitigate any potential soil vapor intrusion, as well as the necessity to mitigate the hazards related to automobile exhaust inside active parking garages. The quality and integrity of this system will be inspected a professional engineer or person working under their supervision during installation and after any future modifications in accordance with this SMP. The active mechanical ventilation system will not be removed or its use discontinued unless the applicable buildings or building area(s) are no longer used for automobile parking and prior written approval is granted by the NYSDEC and the NYSDOH.

3.3.5.5 Monitoring Wells Associated with Monitored Natural Attenuation

Groundwater monitoring activities to assess natural attenuation will continue, as determined by the NYSDEC with consultation with NYSDOH, until residual groundwater concentrations are found to be consistently below [or trending towards] ambient water quality standards, the site SCGs, or have become asymptotic at an acceptable level over an extended period. In the event that monitoring data indicates that monitoring for natural attenuation may no longer be required, a proposal to discontinue the monitoring well network will be submitted by the remedial party. Monitoring will continue until permission to discontinue is granted in writing by the NYSDEC.

Due to the project Site location along the waterfront and shallow groundwater, the pending project Site redevelopment for multi-family usage may require dewatering to occur during construction of building footings, utility installations and Site drainage construction. As such, dewatering procedures will be developed based upon established groundwater and Site conditions and provided to the NYSDEC for its approval prior to implementation during onsite construction activities.

4. Monitoring and Sampling Plan

4.1 General

This Monitoring and Sampling Plan describes the measures for evaluating the overall performance and effectiveness of the remedy. This Monitoring and Sampling Plan may only be revised with the approval of the NYSDEC. Details regarding the sampling procedures, data quality usability objectives, analytical methods, etc. for all samples collected as part of site management for the Site are included in the QAPP provided in Appendix F. The proposed sampling locations are shown on Figure 5.

This Monitoring and Sampling Plan describes the methods to be used for:

- Sampling and analysis of all appropriate media (e.g., groundwater, soil vapor, soils);
- Assessing compliance with applicable NYSDEC SCGs, particularly groundwater standards and Part 375 SCOs for soil; and
- Evaluating Site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment.

To adequately address these issues, this Monitoring and Sampling Plan provides information on:

- Sampling locations, protocol and frequency;
- Information on all designed monitoring systems;
- Analytical sampling program requirements;
- Inspection and maintenance requirements for monitoring wells;
- Monitoring well decommissioning procedures; and
- Annual inspection and periodic certification.

Monitoring of the performance of the remedy and overall reduction in contamination on-site will be conducted for the periods specified for Table 2, below. The frequency thereafter will be determined in consultation with NYSDEC and based on the results of the monitoring performed. Trends in contaminant levels in groundwater will be evaluated to determine if the remedy continues to be effective in achieving remedial goals. Reporting requirements are provided in Section 7 of this SMP.

Table 2: Post-Remediation Inspection and Monitoring Schedule

Inspection/ Monitoring Task	Goal of Inspection/Monitoring Task	Frequency of Inspection/ Monitoring Task
Inspection		
Site-wide Cover System Inspection	Confirm Site-Wide Cover System has not been compromised	Annually; first inspection to occur no more than 15 months after issuance of COC
Site-wide Inspection	Confirm compliance with all ICs and effectiveness of ECs.	Annually; first inspection no more than 15 months after issuance of the COC

Inspection/ Monitoring Task	Goal of Inspection/Monitoring Task	Frequency of Inspection/ Monitoring Task
Inspection		
Vapor Barrier	Confirm compliance with engineering design	Upon Installation
SSDS	Confirm compliance with engineering design, confirm SSDS is not damaged or altered without NYSDEC/NYSDOH approval	Upon Installation, Inspect Annually by visually assessing all accessible components of the SSDS
Active Mechanical Ventilation	Confirm compliance with engineering design, confirm system is operating and is properly maintained	Upon Installation, Inspect Annually by visually assessing all accessible components of the system and any controls/monitoring devises
Monitoring		
Groundwater	Collect samples and analyze for TCL VOCs and TCL SVOCs including TICs to assess effectiveness of remedy	Quarterly for first year beginning upon completion of grading, filling and underground utility installation. The proposed sampling frequency for subsequent years will be submitted to NYSDEC for approval.
Soil Vapor	Obtain sub-slab soil vapor samples as part of a soil vapor assessment from directly below the vapor barrier within the footprint of each future buildings to determine the potential of vapor intrusion. Samples to be analyzed for VOCs (USEPA Method TO-15).	After completing construction of any new building, but prior to residential or other permanent occupancy.

4.2 Site–Wide Inspection

Site-wide inspections will be performed annually. Modification to the frequency or duration of the inspections will require approval from the NYSDEC. Site-wide inspections will also be performed after all severe weather conditions that may affect ECs or monitoring devices. During these inspections, an inspection form will be completed as provided in Appendix H – Site Management Forms. The form will compile sufficient information to assess the following:

- Compliance with all ICs, including Site usage;
- An evaluation of the condition and continued effectiveness of ECs;
- General Site conditions at the time of the inspection;
- The Site management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection; and
- Confirm Site records are up to date.

Inspections of all remedial components installed at the Site will be conducted. A comprehensive Site-wide inspection will be conducted and documented according to the SMP schedule, regardless of the frequency of the Periodic Review Report. The inspections will determine and document the following:

- Whether ECs continue to perform as designed;
- If these controls continue to be protective of human health and the environment;
- Compliance with requirements of this SMP and the Environmental Easement;
- Achievement of remedial performance criteria; and
- If Site records are complete and up to date.

Reporting requirements are outlined in Section 7 of this plan.

Monitoring of the Site cover system will occur during completion of the Site-wide inspection for as long as the Environmental Easement is in effect to ensure the system's integrity. The location and details of the Site cover system are shown on Figure 3.

Monitoring will consist of visual inspection of the Site cover system to document that no activity has caused a breach of the cover system without notification to NYSDEC and restoration of the cover system upon completion. Monitoring will also include evaluating the integrity of the accessible portions of the concrete foundation or slab on grade, of any new building(s) constructed on the Site. If any penetrating cracks or openings are identified, they shall be screened for organic vapors with a photo-ionization detector and any readings shall be noted. In addition, any penetrating cracks or openings in the floor shall then be properly sealed. This inspection will not include occupied residential areas.

The results of the inspection will be included in the PRR. In addition, the Site cover system must be inspected and recertified any time a disturbance in the system occurs. The inspection frequency is subject to change with the approval of the NYSDEC. Unscheduled inspections and/or sampling may take place when a suspected failure of the Site cover system has been reported or an emergency occurs that is deemed likely to affect the operation of the system.

Disturbance of the underlying demarcation layers or EC components is governed by the Environmental Easement. In the unlikely event of an unanticipated accidental or required disturbance of the Site cover system, the response procedure is outlined in Appendix C.

Inspections will also be performed in the event of an emergency. If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs that reduces or has the potential to reduce the effectiveness of ECs in place at the Site, verbal notice to the NYSDEC must be given by noon of the following day. In addition, an inspection of the Site will be conducted within 5 days of the event to verify the effectiveness of the IC/ECs implemented at the Site by a qualified environmental professional, as determined by the NYSDEC. Written confirmation must be provided to the NYSDEC within 7 days of the event that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.

4.3 SSDS and Active Mechanical Ventilation System Monitoring and Sampling

4.3.1 SSDS Monitoring

Monitoring of the SSDS will be performed on a routine basis, as identified in Table 2 (above). Modification to the frequency or sampling requirements will require approval from the NYSDEC. A visual inspection of the complete system will be conducted during each monitoring event. Unscheduled inspections and/or sampling may take place when a suspected failure of the SSDS has been reported or an emergency occurs that is deemed likely to affect the operation of the system. The SSDS will be designed by a professional engineer and associated documents (e.g., remedial system monitoring requirements and schedule, inspection checklist) will be submitted to the NYSDEC for review and approval prior to installation (and will be added to this SMP). If the system is not performing within specifications; maintenance and repair, as per the Operation and Maintenance Plan, is required immediately.

4.3.2 Active Mechanical Ventilation System Monitoring

Monitoring of the active mechanical ventilation system will be performed on a routine basis, as identified in Table 2 (above). Modification to the frequency will require approval from the NYSDEC. A visual inspection of the complete system will be conducted during each monitoring event. Unscheduled inspections may take place when a suspected failure of the system has been reported or an emergency occurs that is deemed likely to affect the operation of the system. The active mechanical ventilation system will be designed by a professional engineer in accordance with the IMC and inspected by the professional engineer after installation and annually thereafter. If the system is not performing within specifications; maintenance and repair, as per the Operation and Maintenance Plan, is required immediately.

4.4 Post-Remediation Media Monitoring and Sampling

Samples shall be collected from the groundwater and soil vapor. Sampling locations, required analytical parameters, and schedule, are provided in Table 2. Modification to the frequency or sampling requirements will require approval from the NYSDEC.

Detailed sample collection and analytical procedures and protocols are provided in Appendix E – Field Sampling Plan and Appendix F – Quality Assurance Project Plan.

4.4.1 Groundwater Sampling

Groundwater monitoring will be performed quarterly to assess the performance of the remedy for the first year. Groundwater sampling will be performed using low-flow sampling methods as detailed in Appendix E. Samples will be analyzed for TCL VOCs and TCL SVOCs. Modification to the frequency or sampling requirements will require approval from the NYSDEC.

The network of monitoring wells shall be installed upon completion of redevelopment or once all filling, grading, underground utility installation, and other earthwork activities have been completed to avoid damage to the proposed monitoring wells. The network of monitoring wells shall be installed to monitor upgradient, on-site and downgradient groundwater conditions at the Site. The network of on-Site wells has been designed based on the following criteria:

- Table 3 summarizes the wells identification number, as well as the purpose, location, depths, diameter and screened intervals of the wells. As part of the groundwater monitoring, one upgradient

well, one mid-site well and two downgradient wells are sampled to evaluate the effectiveness of the remedial system.

- The proposed monitoring well locations are shown on Figure 5.
- This SMP will be updated to include the specific well construction details once those monitoring wells have been installed.

Table 3: Monitoring Well Construction Details

Monitoring Well ID	Well Location	Anticipated Coordinates (longitude/ latitude)	Well Diameter (inches)	Anticipated Elevation (NAVD88)			
				Casing	Surface	Screen Top	Screen Bottom
PR-MW-1	Upgradient	TBD	2	TBD	TBD	TBD	TBD
PR-MW-2	Mid-Site	TBD	2	TBD	TBD	TBD	TBD
PR-MW-3	Downgradient	TBD	2	TBD	TBD	TBD	TBD
PR-MW-4	Downgradient	TBD	2	TBD	TBD	TBD	TBD

If biofouling or silt accumulation occurs in the on-Site monitoring wells, the wells will be physically agitated/surged and redeveloped. Additionally, monitoring wells will be properly decommissioned and replaced, if an event renders the wells unusable.

Repairs and/or replacement of wells in the monitoring well network will be performed based on assessments of structural integrity and overall performance.

The NYSDEC will be notified prior to any repair or decommissioning of any monitoring well for the purpose of replacement, and the repair or decommissioning and replacement process will be documented in the subsequent Periodic Review Report. Well decommissioning without replacement will be done only with the prior approval of the NYSDEC. Well abandonment will be performed in accordance with NYSDEC's guidance entitled "CP-43: Groundwater Monitoring Well Decommissioning Procedures." Monitoring wells that are decommissioned because they have been rendered unusable will be replaced in kind in the nearest available location, unless otherwise approved by the NYSDEC.

The sampling frequency may only be modified with the approval of the NYSDEC. This SMP will be modified to reflect changes in sampling plans approved by the NYSDEC.

Deliverables for the groundwater monitoring program are specified in Section 7 – Reporting Requirements.

4.4.2 Soil Vapor Sampling

Soil vapor sampling and methane gas monitoring will be performed after completing construction of any new building, but prior to it being used for residential or other permanent occupancy.. Samples will be collected to assess the performance of the remedy. Modification to the frequency or sampling requirements will require approval from the NYSDEC.

The network of on-site soil vapor sample locations has been designed based on the following criteria: proposed building locations (see Figure 5). The soil vapor samples will be collected from directly below the building's vapor barrier.

Table 4: Soil Vapor Sampling Details

Soil Vapor Sampling ID	Sampling Location	Anticipated Coordinates (longitude/ latitude)	Analysis	Field Screening	Sample Depth Below Grade	Surface Elevation (NAVD88)	Sample Elevation (NAVD88)
PR-SV-1	Building 1	TBD	VOCs TO-15	Methane	TBD	TBD	TBD
PR-SV-2	Building 2	TBD	VOCs TO-15	Methane	TBD	TBD	TBD
PR-SV-3	Building 3	TBD	VOCs TO-15	Methane	TBD	TBD	TBD
PR-SV-4	Building 4	TBD	VOCs TO-15	Methane	TBD	TBD	TBD
PR-SV-5	Building 5	TBD	VOCs TO-15	Methane	TBD	TBD	TBD
PR-SV-6	Building 6	TBD	VOCs TO-15	Methane	TBD	TBD	TBD
PR-SV-7	Building 7	TBD	VOCs TO-15	Methane	TBD	TBD	TBD
PR-SV-8	Building 8	TBD	VOCs TO-15	Methane	TBD	TBD	TBD
PR-SV-9	Building 9	TBD	VOCs TO-15	Methane	TBD	TBD	TBD
PR-SV-10	Building 10	TBD	VOCs TO-15	Methane	TBD	TBD	TBD
PR-SV-11	Building 11	TBD	VOCs TO-15	Methane	TBD	TBD	TBD
PR-SV-12	Building 12	TBD	VOCs TO-15	Methane	TBD	TBD	TBD
PR-SV-13	Building 13	TBD	VOCs TO-15	Methane	TBD	TBD	TBD

The sampling frequency may only be modified with the approval of the NYSDEC. This SMP will be modified to reflect changes in sampling plans approved by the NYSDEC.

Deliverables for the soil vapor sampling program are specified in Section 7 – Reporting Requirements.

4.4.3 Monitoring and Sampling Protocol

All sampling activities will be recorded in a field book and associated sampling log as provided in Appendix E - Site Management Forms. Other observations (e.g., groundwater monitoring well integrity, etc.) will be noted on the sampling log. The sampling log will serve as the inspection form for the monitoring network. Additional detail regarding monitoring and sampling protocols are provided in the Site-specific Field Activities Plan provided as Appendix E of this document.

5. Operation and Maintenance Plan

5.1 General

There are currently no ECs requiring operation and maintenance at the Site.

ECs, including e SSDSs (as needed) and active mechanical ventilation systems, are planned to be installed in connection with the proposed redevelopment of the Site. Section 5 will be updated and provided to the NYSDEC for review and approval prior to operation of the ECs requiring operation and maintenance.

This Operation and Maintenance Plan will provide a brief description of the measures necessary to operate, monitor, and maintain the mechanical components of the remedy selected for the Site. This Operation and Maintenance Plan will include:

- Procedures necessary to allow individuals unfamiliar with the Site to operate and maintain the SSDS or active mechanical ventilation system; and
- Will be updated periodically to reflect changes in Site conditions or the manner in which the SSDS or active mechanical ventilation system are operated and maintained.

A copy of this Operation and Maintenance Manual, along with the complete SMP, is to be maintained at the Site. This Operation and Maintenance Plan is not to be used as a stand-alone document, but as a component document of this SMP.

6. Periodic Assessments/Evaluations

6.1 Climate Change Vulnerability Assessment

Increases in both the severity and frequency of storms/weather events, an increase in sea level elevations along with accompanying flooding impacts, shifting precipitation patterns and wide temperature fluctuation, resulting from global climactic change and instability, have the potential to significantly impact the performance, effectiveness and protectiveness of a given site and associated remedial systems. Vulnerability assessments provide information so that the site and associated remedial systems are prepared for the impacts of the increasing frequency and intensity of severe storms/weather events and associated flooding.

This section provides a summary of vulnerability assessments that will be conducted for the site during periodic assessments, and briefly summarizes the vulnerability of the site and/or engineering controls to severe storms/weather events and associated flooding.

6.1.1 Flood Plain

The south and east sides of the Site are bounded by the bulkhead of the respective water bodies. The Site is currently within the 100-year flood zone. The Site's current development plan shows the Site grade will be raised to approximate +12 feet relative to NAVD 88 in all locations that buildings are currently planned (i.e., to meet the FEMA 500-year flood elevation). As such the buildings, monitoring wells, and SSDS are unlikely to be affected by typical flood events, due to the elevated grade, however, floods could cause temporary shutdown of equipment if power is affected.

6.1.2 Erosion

The Site will be primarily covered by buildings and pavement. Stabilized landscaping will be present for any existing slopes. Vegetated slopes will be stabilized to prevent erosion. Areas where more significant grade changes are present may utilize retaining walls to avoid steep slopes that are prone to erosion.

6.2 Green Remediation Evaluation

NYSDEC's DER-31 Green Remediation requires that green remediation concepts and techniques be considered during all stages of the remedial program including site management, with the goal of improving the sustainability of the cleanup and summarizing the net environmental benefit of any implemented green technology. This section of the SMP provides a summary of any green remediation evaluations to be completed for the site during site management, and as reported in the Periodic Review Report (PRR).

The assessment will include a discussion of several components of sustainability, including waste generation, energy usage, emissions, water usage, and land and/or ecosystems. A preliminary summary of each component as it relates to the Site is provided below:

- Waste Generation
  - Only minimal amounts of wastewater and soil cuttings resulting from monitoring well installation, development, and sampling will be generated.
- Energy Usage
  - Current and proposed ECs use no electricity.

- Emissions
  - Soil vapor collected by a passive SSDS are limited and shall be emitted from the roof of each building. It is likely some methane will off-gas from the site via the SSDSs, given the presence of a peat layer beneath.
- Water Usage
  - No water is expected to be used by the remedial system.
- Land/Ecosystems
  - Current plans include new landscaping and protection of the existing NYSDEC wetland.

Methods proposed to reduce energy consumption, resource usage, waste generation, and water usage, etc. will be included in the PRR.

6.2.1 Timing of Green Remediation Evaluations

For major remedial system components, green remediation evaluations and corresponding modifications will be undertaken as part of a formal Remedial System Optimization (RSO), or at any time that the Project Manager feels appropriate, e.g., during significant maintenance events or in conjunction with storm recovery activities.

Modifications resulting from green remediation evaluations will be routinely implemented and scheduled to occur during planned/routine operation and maintenance activities. Reporting of these modifications will be presented in the PRR.

6.2.2 Remedial Systems

Remedial systems will be operated properly considering the current Site conditions to conserve materials and resources to the greatest extent possible. Consideration will be given to operating rates and use of reagents and consumables. Spent materials will be sent for recycling, as appropriate.

Remedial system types and associated parameters to be evaluated include, but are not limited to, the SSDSs.

6.2.3 Frequency of System Checks, Sampling and Other Periodic Activities

Transportation to and from the Site and use of consumables in relation to visiting the Site in order to conduct system checks and or collect samples and shipping samples to a laboratory for analyses have direct and/or inherent energy costs. The schedule and/or means of these periodic activities will be prepared so that these tasks can be accomplished in a manner that does not impact remedy protectiveness but reduces expenditure of energy or resources.

Consideration shall be given to:

- Reduced sampling frequencies;
- Reduced site visits and system checks;
- Installation of remote sensing/operations and telemetry;
- Coordination/consolidation of activities to minimize travel to and from the Site; and
- Use of mass transit for site visits, where available.

6.3 Remedial System Optimization

A RSO study will be conducted any time that the NYSDEC or the remedial party requests in writing that an in-depth evaluation of the remedy is needed. An RSO may be appropriate if any of the following occur:

- The remedial actions have not met or are not expected to meet RAOs in the time frame estimated in the Decision Document;
- The management and operation of the remedial system is exceeding the estimated costs;
- The remedial system is not performing as expected or as designed;
- Previously unidentified source material may be suspected;
- Site conditions change due to development, change of use, change in groundwater use, etc.;
- There is an anticipated transfer of the site management to another remedial party or agency; and
- A new and applicable remedial technology becomes available.

An RSO will provide a critique of a site's conceptual model, give a summary of past performance, document current cleanup practices, summarize progress made toward the site's cleanup goals, gather additional performance or media specific data and information and provide recommendations for improvements to enhance the ability of the present system to reach RAOs or to provide a basis for changing the remedial strategy.

The RSO study will focuses on overall site cleanup strategy, process optimization and management with the intent of identifying impediments to cleanup and improvements to site operations to increase efficiency, cost effectiveness and remedial time frames. Green remediation technology and principals are to be considered when performing the RSO.

7. Reporting Requirements

7.1 Site Management Reports

All site management inspection, maintenance and monitoring events will be recorded on the appropriate Site management forms provided in Appendix H. These forms will be updated as necessary with NYSDEC approval and are subject to NYSDEC revision.

All applicable inspection forms and other records, including media sampling data and system maintenance reports, generated for the Site during the reporting period will be provided in electronic format to the NYSDEC in accordance with the requirements of Table 5 and summarized in the Periodic Review Report.

Table 5: Schedule of Interim Monitoring/Inspection Reports

Task/Report	Reporting Frequency*
Groundwater Monitoring Report (Included in Periodic Review Report)	Annually
Soil Vapor Assessment (Included in Periodic Review Report)	Annually
Periodic Review Report	Annually

*The frequency of events will be conducted as specified until otherwise approved by the NYSDEC.

All interim monitoring/inspections reports will include, at a minimum:

- Date of event or reporting period;
- Name, company, and position of person(s) conducting monitoring/inspection activities;
- Description of the activities performed;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet);
- Type of samples collected (e.g., sub-slab vapor, indoor air, outdoor air, etc.);
- Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation, etc.);
- Sampling results in comparison to appropriate standards/criteria;
- A figure illustrating sample type and sampling locations;
- Copies of all laboratory data sheets and the required laboratory data deliverables required for all points sampled (to be submitted electronically in the NYSDEC-identified format);
- Any observations, conclusions, or recommendations; and
- A determination as to whether contaminant conditions have changed since the last reporting event.

Routine maintenance event reporting forms will include, at a minimum:

- Date of event;
- Name, company, and position of person(s) conducting maintenance activities;
- Description of maintenance activities performed;
- Any modifications to the system;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet); and

- Other documentation such as copies of invoices for maintenance work, receipts for replacement equipment, etc., (attached to the checklist/form).

Non-routine maintenance event reporting forms will include, at a minimum:

- Date of event;
- Name, company, and position of person(s) conducting non-routine maintenance/repair activities;
- Description of non-routine activities performed;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents (included either on the form or on an attached sheet); and
- Other documentation such as copies of invoices for repair work, receipts for replacement equipment, etc. (attached to the checklist/form).

Data will be reported in digital format as determined by the NYSDEC. Currently, data is to be supplied electronically and submitted to the NYSDEC EQuIS™ database in accordance with the requirements found at this link http://www.dec.ny.gov/chemical/62440.html.

7.2 Periodic Review Report

A Periodic Review Report (PRR) will be submitted to the Department beginning sixteen (16) months after the Certificate of Completion or equivalent document is issued. After submittal of the initial Periodic Review Report, the next PRR shall be submitted annually to the Department or at another frequency as may be required by the Department. In the event that the Site is subdivided into separate parcels with different ownership, a single Periodic Review Report will be prepared that addresses the Site described in Appendix A -Environmental Easement. The report will be prepared in accordance with NYSDEC's DER-10 and submitted within 30 days of the end of each certification period. Media sampling results will also be incorporated into the Periodic Review Report. The report will include:

- Identification, assessment and certification of all ECs/ICs required by the remedy for the Site.
- Results of the required annual Site inspections and severe condition inspections, if applicable.
- All applicable site management forms and other records generated for the Site during the reporting period in the NYSDEC-approved electronic format, if not previously submitted.
- A summary of any discharge monitoring data and/or information generated during the reporting period, with comments and conclusions.
- Data summary tables and graphical representations of contaminants of concern by media (groundwater, soil vapor, etc.), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These will include a presentation of past data as part of an evaluation of contaminant concentration trends.
- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted in digital format as determined by the NYSDEC. Currently, data is supplied electronically and submitted to the NYSDEC EQuIS™ database in accordance with the requirements found at this link: http://www.dec.ny.gov/chemical/62440.html.
- A Site evaluation, which includes the following:
    - The compliance of the remedy with the requirements of the Site-specific RWP and Decision Document;
    - The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications;

- Any new conclusions or observations regarding Site contamination based on inspections or data generated by the Monitoring and Sampling Plan for the media being monitored;
- Recommendations regarding any necessary changes to the remedy and/or Monitoring and Sampling Plan; and
- Trends in contaminant levels in the affected media will be evaluated to determine if the remedy continues to be effective in achieving remedial goals as specified by the Decision Document.
- The overall performance and effectiveness of the remedy.

7.2.1 Certification of Institutional and Engineering Controls

Following the last inspection of the reporting period, a professional engineer licensed to practice in New York State will prepare, and include in the Periodic Review Report, the following certification as per the requirements of NYSDEC DER-10:

"For each institutional or engineering control identified for the site, I certify that all of the following statements are true:

- *The inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under my direction;*
- *The institutional control and/or engineering control employed at this site is unchanged from the date the control was put in place, or last approved by the Department;*
- *Nothing has occurred that would impair the ability of the control to protect the public health and environment;*
- *Nothing has occurred that would constitute a violation or failure to comply with any site management plan for this control;*
- *Access to the site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of this control;*
- *If a financial assurance mechanism is required under the oversight document for the site, the mechanism remains valid and sufficient for the intended purpose under the document;*
- *Use of the site is compliant with the environmental easement;*
- *The engineering control systems are performing as designed and are effective;*
- *To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program and generally accepted engineering practices;*
- *The information presented in this report is accurate and complete;*
- *No new information has come to my attention, including groundwater monitoring data from wells located at the site boundary, if any, to indicate that the assumptions made in the qualitative exposure assessment of off-site contamination are no longer valid; and*
- *The assumptions made in the qualitative exposure assessment remain valid. (to be added to the certification every five years).*

I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, [name], of [business address], am certifying as [Owner/Remedial Party or Owner's/Remedial Party's Designated Site Representative] for the site."

The Periodic Review Report will be submitted, in electronic format, to the NYSDEC Central Office, Regional Office in which the Site is located and the NYSDOH Bureau of Environmental Exposure Investigation. The Periodic Review Report may need to be submitted in hard-copy format, as requested by the NYSDEC project manager.

7.3 Corrective Measures Work Plan

If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to the failure of an institutional or engineering control, a Corrective Measures Work Plan will be submitted to the NYSDEC for approval. This plan will explain the failure and provide the details and schedule for performing work necessary to correct the failure. Unless an emergency condition exists, no work will be performed pursuant to the Corrective Measures Work Plan until it has been approved by the NYSDEC.

7.4 Remedial Site Optimization Report

In the event that an RSO is to be performed (see Section 6.3, upon completion of an RSO, an RSO report must be submitted to the Department for approval). The RSO report will document the research/ investigation and data gathering that was conducted, evaluate the results and facts obtained, present a revised conceptual Site model and present recommendations. RSO recommendations are to be implemented upon approval from the NYSDEC. Additional work plans, design documents, HASPs etc., may still be required to implement the recommendations, based upon the actions that need to be taken. A final engineering report and update to the SMP may also be required.

The RSO report will be submitted, in electronic format, to the NYSDEC Central Office, Regional Office in which the Site is located, Site Control and the NYSDOH Bureau of Environmental Exposure Investigation.

8. References

Remedial Investigation/Feasibility Study, Volume I of III, Former Cibro Petroleum Terminal, Subsurface Investigations, August 1993.

New York State Department of Environmental Conservation Division of Water Technical and Operational Guidance Series (1.1.1) Ambient Water Quality Standards and Groundwater Effluent Limitations (TOGS) June 1998.

Site Investigation Work Plan, Law Environmental Consultants, Inc., November 2000.

Cleanup Plan for Soil and Groundwater at the Former Cibro Island Part Site, Law Environmental Consultants, Inc., February 2001.

Results of Supplemental Soil and Ground-Water Investigation, Law Environmental Consultants, Inc., August 6, 2001.

Permit issued by NYSDEC, February 25, 2003, for Waterfront and Shoreline Enhancement, #2-6304-00427/00005.

Voluntary Brownfield Cleanup Agreement, Site Number C130153, Index Number W1-1075-05-09, October 3, 2003.

New York State Department of Environmental Conservation Brownfield Cleanup Program Guide, May 2004.

New York State Department of Environmental Conservation Concrete Crushing Registration letter, November 29, 2004.

Interim Remedial Measure (IRM) Pilot Test Workplan and Supplemental Data Collection for the Former Cibro Island Park Site, Gannett Fleming, Inc., March 2005.

Phase I Environmental Site Assessment Former Cibro Brothers' Terminal, Metron Development Services, March 2, 2005.

Supplemental Data Collection Addendum to the Pilot Test Workplan for the Former Cibro Island Park Site, Metron Development Services, May 2006.

Citizen Participation Plan for Former Cibro Petroleum Terminal Site, New York State Department of Environmental Conservation, June 2006.

New York State Department of Health, Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006.

Environmental Assessment Form, Urbitran Associates, December 2006.

NYCRR Subpart 375-1, General Remedial Program Requirements; 6 NYCRR Subpart 375-3, Brownfield Cleanup Program; and 6 NYCRR Subpart 375-6, Remedial Program Soil Cleanup Objectives, December 14, 2006.

Final Remedial Investigation Report, Gannett Fleming Engineers, PC, May 2008.

New York State Department of Environmental Conservation letter to Posillico Development Company at Harbor Island, Inc. Re: BCP #C130153, Former Cibro Terminal Site, Harbor Island – Island Park, August 15, 2008.

Resolved Disputes and Remaining Outstanding Issues letter, Knauf Shaw LLP, September 30, 2008.

Update of Resolved Disputes, Continued Outstanding Issues & Proposed Final Resolutions Subject to State Approval letter, Knauf Shaw LLP, November 4, 2008.

New York State Department of Environmental Conservation letter to Posillico Development Company at Harbor Island, Inc. Re: BCP #C130153, Former Cibro Terminal Site, Harbor Island – Island Park, November 26, 2008.

New York State Department of Environmental Conservation Final DER-10 Technical Guidance for Site Investigation and Remediation, May 2010.

New York State Department of Environmental Conservation CP-51 Soil Cleanup Guidance, October 21, 2010.

New York State Department of Environmental Conservation SPDES General Permit for Stormwater Discharges from Construction Activity Permit No. GP-0-10-001.

New York State Groundwater Quality Standards, 6 NYCRR Part 703.

Supplemental Remedial Investigation Field Work, Subject to April 2011 Supplemental Remedial Investigation Work Plan & November 9, 2010, Stipulation of Discontinuance, Posillico Consulting, LLC, December 9, 2011.

New York State Department of Environmental Conservation letter to Posillico Development Company at Harbor Island, Inc. Re: BCP C130153, Former Cibro Terminal, Washington Avenue, Island Park, May 7, 2012.

TRC Engineers, Inc. letter report to Mr. Michael Posillico, regarding Groundwater Flow Direction and Tidal Influence Study, June 22, 2012.

TRC Engineers, Inc. Remedial Work Plan, Former Cibro Petroleum Terminal Site, November 2017.

New York State Department of Environmental Conservation, Decision Document Amendment, Former Cibro Petroleum Terminal Site, June 2018.

TABLES

1. Notifications (Embedded)
2. Post Remediation Inspection and Monitoring Schedule (Embedded)
3. Monitoring Well Construction Details (Embedded)
4. Soil Vapor Sampling Details (Embedded)
5. Schedule of Interim Monitoring/Inspection Reports (Embedded)
6. Summary of Volatile Organic Compounds in End-Point Confirmation and Documentation Samples
7. Summary of Semivolatile Organic Compounds in End-Point Confirmation and Documentation Samples

Notes Utilized Throughout Tables	
Soil Tables	
J -	Estimated value
U -	Indicates that the compound was analyzed for but not detected
B -	The analyte was found in an associated blank as well as in the sample
T -	Indicates that a quality control parameter has exceeded laboratory limits
ft bls -	Feet below land surface
DUP -	Duplicate sample
NA -	Compound was not analyzed for by laboratory
µg/kg -	Micrograms 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 Restricted Residential SCO	

Table 6. Summary of Volatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-RI-TP1	PDC-RI-TP2	PDC-RI-TP3	PDC-RI-TP4	PDC-RI-TP5	PDC-RI-TP6	PDC-RI-TP7
			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):	3 - 3	3 - 3	2 - 2	2.5 - 2.5	6 - 6	5 - 5	5 - 5
1,1,1-Trichloroethane	100000	ug/kg		1.0 U	0.63 U	1.7 UT	1.0 U	0.99 U	0.90 U	1.2 U
1,1-Dichloroethane	26000	ug/kg		1.0 U	0.63 U	1.7 U	1.0 U	0.99 U	0.90 U	1.2 U
1,1-Dichloroethene	100000	ug/kg		1.0 U	0.63 U	1.7 U	1.0 U	0.99 U	0.90 U	1.2 U
1,2,4-Trimethylbenzene	52000	ug/kg		0.76 J	0.63 U	0.33 J	1.0 U	0.99 U	0.15 J	0.14 J-
1,2-Dichlorobenzene	100000	ug/kg		1.0 U	0.63 U	1.7 U	1.0 U	0.99 U	0.90 U	1.2 U
1,2-Dichloroethane	3100	ug/kg		1.0 U	0.63 UT	1.7 UT	1.0 UT	0.99 U	0.90 U	1.2 U
1,3,5-Trimethylbenzene	52000	ug/kg		0.26 J	0.63 U	1.7 U	1.0 U	0.99 U	0.90 U	1.2 U
1,3-Dichlorobenzene	49000	ug/kg		1.0 U	0.63 U	1.7 U	1.0 U	0.99 U	0.90 U	1.2 U
1,4-Dichlorobenzene	13000	ug/kg		1.0 U	0.63 U	1.7 U	1.0 U	0.99 U	0.90 U	1.2 U
1,4-Dioxane	13000	ug/kg		20 U	13 U	35 U	20 U	20 U	18 U	24 U
2-Butanone (MEK)	100000	ug/kg		2.8 J	1.2 J	37	7.9	13	10	17
Acetone	100000	ug/kg		24	6.6	190	62	77	72	150
Benzene	4800	ug/kg		1.0 U	0.63 U	0.59 J	0.65 J	0.99 U	0.90 U	1.2 U
Carbon tetrachloride	2400	ug/kg		1.0 U	0.63 U	1.7 U	1.0 U	0.99 U	0.90 U	1.2 U
Chlorobenzene	100000	ug/kg		1.0 U	0.63 U	1.7 U	1.0 U	0.99 U	0.90 U	1.2 U
Chloroform	49000	ug/kg		1.0 U	0.63 U	1.7 U	1.0 U	0.99 U	0.90 U	1.2 U
cis-1,2-Dichloroethene	100000	ug/kg		1.0 U	0.63 U	1.7 U	1.0 U	0.99 U	0.90 U	1.2 U
Ethylbenzene	41000	ug/kg		1.0 U	0.63 U	1.7 U	1.0 U	0.99 U	0.21 J	0.27 J
m+p-Xylene	--	ug/kg		NA	NA	NA	NA	NA	NA	NA
Methylene chloride	100000	ug/kg		1.0 U	0.63 U	1.7 U	1.0 U	0.99 U	0.90 U	1.2 U
MTBE	100000	ug/kg		1.0 U	0.63 U	1.7 U	1.0 U	0.99 U	0.90 U	1.2 U
n-Butylbenzene	100000	ug/kg		1.0 U	0.63 U	0.49 J	1.0 U	0.99 U	0.90 U	1.2 UJ
n-Propylbenzene	100000	ug/kg		1.0 U	0.63 U	0.48 J	1.0 U	0.99 U	0.90 U	0.25 J
o-Xylene	--	ug/kg		NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	100000	ug/kg		0.11 J	0.63 U	0.53 J	0.13 J	0.99 U	0.90 U	0.85 J
tert-Butylbenzene	100000	ug/kg		1.0 U	0.63 U	1.7 U	1.0 U	0.99 U	0.90 U	1.2 UJ
Tetrachloroethene	19000	ug/kg		1.0 U	0.63 U	1.7 U	1.0 U	0.99 U	0.90 U	1.2 U
Toluene	100000	ug/kg		1.0 U	0.63 U	7.7	6.1	0.66 J	1.8	2.3
trans-1,2-Dichloroethene	100000	ug/kg		1.0 U	0.63 U	1.7 U	1.0 U	0.99 U	0.90 U	1.2 U
Trichloroethene	21000	ug/kg		1.0 U	0.63 U	1.7 U	1.0 U	0.99 U	0.90 U	1.2 U
Vinyl chloride	900	ug/kg		1.0 UT	0.63 U	1.7 U	1.0 U	0.99 UT	0.90 UT	1.2 U
Xylenes (total)	100000	ug/kg		0.90 J	1.3 U	1.2 J	0.72 J	0.57 J	0.69 J	1.1 J
VOC Total TICs	10000	ug/kg		117.7	24.4	1144	128.5	0	123.9	1031

Table 6. Summary of Volatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-RI-TP8	PDC-RI-TP9	PDC-RI-TP10	PDC-RI-TP11	PDC-RI-TP12	PDC-RI-TP13
			Sample Date:	11/15/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018
			Sample Depth (ft bls):	6 - 6	6 - 6	6 - 6	3 - 3	3 - 3	3 - 3
1,1,1-Trichloroethane	100000	ug/kg		0.87 U	0.90 U	0.90 U	0.94 U	0.94 U	0.90 U
1,1-Dichloroethane	26000	ug/kg		0.87 U	0.90 U	0.90 U	0.94 U	0.94 U	0.90 U
1,1-Dichloroethene	100000	ug/kg		0.87 U	0.90 U	0.90 U	0.94 U	0.94 U	0.90 U
1,2,4-Trimethylbenzene	52000	ug/kg		0.87 U	0.90 U	0.19 J	0.94 U	0.94 U	0.24 J
1,2-Dichlorobenzene	100000	ug/kg		0.87 U	0.90 U	0.90 U	0.94 U	0.94 U	0.90 U
1,2-Dichloroethane	3100	ug/kg		0.87 U	0.90 U	0.90 U	0.94 U	0.94 U	0.90 UT
1,3,5-Trimethylbenzene	52000	ug/kg		0.87 U	0.90 U	0.13 J	0.94 U	0.94 U	0.90 U
1,3-Dichlorobenzene	49000	ug/kg		0.87 U	0.90 U	0.90 U	0.94 U	0.94 U	0.90 U
1,4-Dichlorobenzene	13000	ug/kg		0.87 U	0.90 U	0.90 U	0.94 U	0.94 U	0.90 U
1,4-Dioxane	13000	ug/kg		17 U	18 U	18 U	19 U	19 U	18 U
2-Butanone (MEK)	100000	ug/kg		14	7	9.5	4.7 U	7.4	20
Acetone	100000	ug/kg		72 T	60	65	9.7	70	110
Benzene	4800	ug/kg		0.87 U	0.90 U	0.90 U	0.94 U	0.94 U	0.37 J
Carbon tetrachloride	2400	ug/kg		0.87 U	0.90 U	0.90 U	0.94 U	0.94 U	0.90 U
Chlorobenzene	100000	ug/kg		0.87 U	0.90 U	0.90 U	0.94 U	0.94 U	0.90 U
Chloroform	49000	ug/kg		0.87 U	0.90 U	0.90 U	0.94 U	0.94 U	0.90 U
cis-1,2-Dichloroethene	100000	ug/kg		0.87 U	0.90 U	0.90 U	0.94 U	0.94 U	0.90 U
Ethylbenzene	41000	ug/kg		0.49 J	0.90 U	0.90 U	0.94 U	0.94 U	0.20 J
m+p-Xylene	--	ug/kg		NA	NA	NA	NA	NA	NA
Methylene chloride	100000	ug/kg		0.87 U	0.90 U	0.90 U	0.94 U	0.94 U	0.90 U
MTBE	100000	ug/kg		0.87 U	0.90 U	0.90 U	0.94 U	0.94 U	0.90 U
n-Butylbenzene	100000	ug/kg		0.87 U	0.90 U	0.90 U	0.94 UJ	0.94 U	0.90 U
n-Propylbenzene	100000	ug/kg		0.87 U	0.90 U	0.90 U	0.94 U	0.94 U	0.90 U
o-Xylene	--	ug/kg		NA	NA	NA	NA	NA	NA
sec-Butylbenzene	100000	ug/kg		0.87 U	0.90 U	0.094 J	0.94 U	0.94 U	0.17 J
tert-Butylbenzene	100000	ug/kg		0.87 U	0.90 U	0.17 J	0.94 U	0.94 U	0.20 J
Tetrachloroethene	19000	ug/kg		0.87 U	0.90 U	0.90 U	0.94 U	0.94 U	0.90 U
Toluene	100000	ug/kg		0.94	0.87 J	1	0.94 U	1.2	3.7
trans-1,2-Dichloroethene	100000	ug/kg		0.87 U	0.90 U	0.90 U	0.94 U	0.94 U	0.90 U
Trichloroethene	21000	ug/kg		0.87 U	0.90 U	0.90 U	0.94 U	0.94 U	0.90 U
Vinyl chloride	900	ug/kg		0.87 U	0.90 UT	0.90 UT	0.94 U	0.94 UT	0.90 U
Xylenes (total)	100000	ug/kg		1.7 U	0.64 J	0.62 J	0.27 J	0.67 J	0.92 J
VOC Total TICs	10000	ug/kg		965	0	35.6	0	43.9	867

Table 6. Summary of Volatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-RI-TP14	PDC-RI-TP-8 DUP	PDC-RI-TP11-1-AP	PDC-RI-TP11-1-BP	PDC-RI-TP11-2-AP
			Sample Date:	11/15/2018	11/15/2018	12/6/2018	12/6/2018	12/6/2018
			Sample Depth (ft bls):	3 - 3	6 - 6	3 - 3	4.5 - 4.5	5 - 5
1,1,1-Trichloroethane	100000	ug/kg		0.91 U	0.89 U	1.0 U	4.7 U	1.1 U
1,1-Dichloroethane	26000	ug/kg		0.91 U	0.89 U	1.0 U	4.7 U	1.1 U
1,1-Dichloroethene	100000	ug/kg		0.91 U	0.89 U	1.0 U	4.7 U	1.1 U
1,2,4-Trimethylbenzene	52000	ug/kg		0.91 U	0.89 U	1.3	4.1 J	1.1 U
1,2-Dichlorobenzene	100000	ug/kg		0.91 U	0.89 U	1.0 U	4.7 U	1.1 U
1,2-Dichloroethane	3100	ug/kg		0.91 UT	0.89 U	1.0 U	4.7 U	1.1 U
1,3,5-Trimethylbenzene	52000	ug/kg		0.91 U	0.89 U	1.0 U	2.4 J	1.1 U
1,3-Dichlorobenzene	49000	ug/kg		0.91 U	0.89 U	1.0 U	4.7 U	1.1 U
1,4-Dichlorobenzene	13000	ug/kg		0.91 U	0.89 U	1.0 U	4.7 U	1.1 U
1,4-Dioxane	13000	ug/kg		18 U	18 U	21 U	95 U	23 U
2-Butanone (MEK)	100000	ug/kg		8	17	4.5 J	6.6 J	1.3 J
Acetone	100000	ug/kg		60	120 T	45	130 B	35
Benzene	4800	ug/kg		0.91 U	0.89 U	1.0 U	4.7 U	1.0 J
Carbon tetrachloride	2400	ug/kg		0.91 U	0.89 U	1.0 U	4.7 U	1.1 U
Chlorobenzene	100000	ug/kg		0.91 U	0.89 U	1.0 U	4.7 U	1.1 U
Chloroform	49000	ug/kg		0.91 U	0.89 U	1.0 U	4.7 U	1.1 U
cis-1,2-Dichloroethene	100000	ug/kg		0.91 U	0.89 U	1.0 U	4.7 U	1.1 U
Ethylbenzene	41000	ug/kg		0.91 U	0.89 U	0.31 J	2.1 J	0.69 J
m+p-Xylene	--	ug/kg		NA	NA	NA	NA	NA
Methylene chloride	100000	ug/kg		0.91 U	0.89 U	0.33 J	4.7 U	1.4
MTBE	100000	ug/kg		0.91 U	0.89 U	1.0 U	4.7 U	1.1 U
n-Butylbenzene	100000	ug/kg		0.91 U	0.89 U	6	4.7 U	1.1 U
n-Propylbenzene	100000	ug/kg		0.91 U	0.89 U	1.9	4.7 U	1.1 U
o-Xylene	--	ug/kg		NA	NA	NA	NA	NA
sec-Butylbenzene	100000	ug/kg		0.91 U	0.89 U	6.5	4.7 U	0.31 J
tert-Butylbenzene	100000	ug/kg		0.91 U	0.89 U	2	4.7 U	1.1 U
Tetrachloroethene	19000	ug/kg		0.91 U	0.89 U	1.0 U	4.7 U	1.1 U
Toluene	100000	ug/kg		0.62 J	1.3	2.7	95	14
trans-1,2-Dichloroethene	100000	ug/kg		0.91 U	0.89 U	1.0 U	4.7 U	1.1 U
Trichloroethene	21000	ug/kg		0.91 U	0.89 U	1.0 U	4.7 U	1.1 U
Vinyl chloride	900	ug/kg		0.91 U	0.89 U	1.0 U	4.7 U	1.1 U
Xylenes (total)	100000	ug/kg		0.68 J	0.59 J	1.3 J	3.5 J	1.9 J
VOC Total TICs	10000	ug/kg		9.2	478	1867	26	742

Table 6. Summary of Volatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-RI-TP11-3	PDC-RI-TP11-3Peat	PDC-PX-TP3-1	PDC-PX-TP3-2	PDC-PX-TP3-3
			Sample Date:	12/6/2018	12/6/2018	12/6/2018	12/6/2018	12/6/2018
			Sample Depth (ft bls):	4 - 6	6.5 - 6.5	-	-	-
1,1,1-Trichloroethane	100000	ug/kg		1.2 U	3.9 U	4.5 U	1 U	0.98 U
1,1-Dichloroethane	26000	ug/kg		1.2 U	3.9 U	4.5 U	1 U	0.98 U
1,1-Dichloroethene	100000	ug/kg		1.2 U	3.9 U	4.5 U	1 U	0.98 U
1,2,4-Trimethylbenzene	52000	ug/kg		1.2 U	3.9 U	4.5 U	1 U	0.98 U
1,2-Dichlorobenzene	100000	ug/kg		1.2 U	3.9 U	4.5 U	1 U	0.98 U
1,2-Dichloroethane	3100	ug/kg		1.2 U	3.9 U	4.5 U	1 U	0.98 U
1,3,5-Trimethylbenzene	52000	ug/kg		1.2 U	3.9 U	4.5 U	1 U	0.98 U
1,3-Dichlorobenzene	49000	ug/kg		1.2 U	3.9 U	4.5 U	1 U	0.98 U
1,4-Dichlorobenzene	13000	ug/kg		1.2 U	3.9 U	4.5 U	1 U	0.98 U
1,4-Dioxane	13000	ug/kg		24 U	77 U	90 U	20 U	20 U
2-Butanone (MEK)	100000	ug/kg		6.0 U	6.4 J	10 J	3.7 J	1.7 J
Acetone	100000	ug/kg		19 B	71 B	150	56	24
Benzene	4800	ug/kg		1.2 U	3.9 U	4.5 U	0.48 J	0.98 U
Carbon tetrachloride	2400	ug/kg		1.2 U	3.9 U	4.5 U	1 U	0.98 U
Chlorobenzene	100000	ug/kg		1.2 U	3.9 U	4.5 U	1 U	0.98 U
Chloroform	49000	ug/kg		1.2 U	3.9 U	4.5 U	1 U	0.98 U
cis-1,2-Dichloroethene	100000	ug/kg		1.2 U	3.9 U	4.5 U	1 U	0.98 U
Ethylbenzene	41000	ug/kg		1.2 U	2.9 J	4.5 U	1 U	0.98 U
m+p-Xylene	--	ug/kg		NA	NA	NA	NA	NA
Methylene chloride	100000	ug/kg		0.75 BJ	2.0 BJ	1.1 J	1.8	1.5
MTBE	100000	ug/kg		1.2 U	3.9 U	4.5 U	1 U	0.98 U
n-Butylbenzene	100000	ug/kg		1.2 U	3.9 U	4.5 U	1 U	0.98 U
n-Propylbenzene	100000	ug/kg		1.2 U	3.9 U	4.5 U	1 U	0.98 U
o-Xylene	--	ug/kg		NA	NA	NA	NA	NA
sec-Butylbenzene	100000	ug/kg		1.2 U	3.9 U	4.5 U	1 U	0.98 U
tert-Butylbenzene	100000	ug/kg		1.2 U	3.9 U	4.5 U	1 U	0.98 U
Tetrachloroethene	19000	ug/kg		1.2 U	3.9 U	4.5 U	1 U	0.98 U
Toluene	100000	ug/kg		0.76 J	38	7.9	2.9	0.62 J
trans-1,2-Dichloroethene	100000	ug/kg		1.2 U	3.9 U	4.5 U	1 U	0.98 U
Trichloroethene	21000	ug/kg		1.2 U	3.9 U	4.5 U	1 U	0.98 U
Vinyl chloride	900	ug/kg		1.2 U	3.9 U	4.5 U	1 U	0.98 U
Xylenes (total)	100000	ug/kg		2.4 U	1.3 J	1.8 J	2 U	0.59 J
VOC Total TICs	10000	ug/kg		0	0	36	17.1	0

Table 6. Summary of Volatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-TP3-4	PDC-PX-TP3-5	PDC-PX-J5-K5-B	PDC-PX-J5-K5-B DUP	PDC-PX-J5-K5-N
			Sample Date:	12/6/2018	12/6/2018	12/12/2018	12/12/2018	12/12/2018
			Sample Depth (ft bls):	-	-	-	-	-
1,1,1-Trichloroethane	100000	ug/kg		1.3 U	1.2 U	1.3 U	1.3 U	1.2 U
1,1-Dichloroethane	26000	ug/kg		1.3 U	1.2 U	1.3 U	1.3 U	1.2 U
1,1-Dichloroethene	100000	ug/kg		1.3 U	1.2 U	1.3 U	1.3 U	1.2 U
1,2,4-Trimethylbenzene	52000	ug/kg		1.3 U	1.2 U	0.17 J-	0.15 J	1.2 U
1,2-Dichlorobenzene	100000	ug/kg		1.3 U	1.2 U	1.3 UJ	1.3 U	1.2 U
1,2-Dichloroethane	3100	ug/kg		1.3 U	1.2 U	1.3 U	1.3 U	1.2 U
1,3,5-Trimethylbenzene	52000	ug/kg		1.3 U	1.2 U	1.3 UJ	1.3 U	1.2 U
1,3-Dichlorobenzene	49000	ug/kg		1.3 U	1.2 U	1.3 UJ	1.3 U	1.2 U
1,4-Dichlorobenzene	13000	ug/kg		1.3 U	1.2 U	1.3 UJ	1.3 U	1.2 U
1,4-Dioxane	13000	ug/kg		25 U	23 U	25 U	26 U	24 U
2-Butanone (MEK)	100000	ug/kg		1.9 J	5.7 J	6.6	8.3	17
Acetone	100000	ug/kg		59	48	34	53	78
Benzene	4800	ug/kg		1.3 U	0.72 J	1.3 U	1.3 U	1.2 U
Carbon tetrachloride	2400	ug/kg		1.3 U	1.2 U	1.3 UJ	1.3 U	1.2 U
Chlorobenzene	100000	ug/kg		1.3 U	1.2 U	1.3 UJ	1.3 U	1.2 U
Chloroform	49000	ug/kg		1.3 U	1.2 U	0.70 J	1.3 U	1.2 U
cis-1,2-Dichloroethene	100000	ug/kg		1.3 U	1.2 U	1.3 UT	1.3 UT	1.2 U
Ethylbenzene	41000	ug/kg		1.3 U	0.44 J	1.3 UJ	1.3 U	0.27 J
m+p-Xylene	--	ug/kg		NA	NA	NA	NA	NA
Methylene chloride	100000	ug/kg		0.32 J	0.55 J	0.60 J	1.8	3.9
MTBE	100000	ug/kg		1.3 U	1.2 U	1.3 UT	1.3 UT	1.2 U
n-Butylbenzene	100000	ug/kg		1.3 U	1.2 U	1.3 UJ	1.3 U	7.6
n-Propylbenzene	100000	ug/kg		1.3 U	1.2 U	1.3 UJ	1.3 U	18
o-Xylene	--	ug/kg		NA	NA	NA	NA	NA
sec-Butylbenzene	100000	ug/kg		1.3 U	0.27 J	1.3 UJ	0.15 J	14
tert-Butylbenzene	100000	ug/kg		1.3 U	1.2 U	1.3 UJ	1.3 U	7.3
Tetrachloroethene	19000	ug/kg		1.3 U	1.2 U	1.3 U	1.3 U	1.2 U
Toluene	100000	ug/kg		0.79 J	7.3	1.3 UJ	0.83 J	1.2 U
trans-1,2-Dichloroethene	100000	ug/kg		1.3 U	1.2 U	1.3 U	1.3 U	1.2 U
Trichloroethene	21000	ug/kg		1.3 U	1.2 U	1.3 U	1.3 U	1.2 U
Vinyl chloride	900	ug/kg		1.3 U	1.2 U	1.3 U	1.3 U	1.2 U
Xylenes (total)	100000	ug/kg		1 J	0.89 J	2.5 UJ	2.6 U	0.45 J
VOC Total TICs	10000	ug/kg		35.2	0	0	13	**10650**

Table 6. Summary of Volatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-J5-K5-W	PDC-PX-H12-H13-5B	PDC-PX-H12-H13-2E	PDC-PX-H12-H13-1N
			Sample Date:	12/12/2018	12/14/2018	12/14/2018	12/14/2018
			Sample Depth (ft bls):	-	-	-	-
1,1,1-Trichloroethane	100000	ug/kg		1.0 U	3.9 U	0.87 U	0.95 U
1,1-Dichloroethane	26000	ug/kg		1.0 U	3.9 U	0.87 U	0.95 U
1,1-Dichloroethene	100000	ug/kg		1.0 U	3.9 U	0.87 U	0.95 U
1,2,4-Trimethylbenzene	52000	ug/kg		1.0 U	3.9 U	0.87 U	0.95 U
1,2-Dichlorobenzene	100000	ug/kg		1.0 U	3.9 U	0.87 U	0.95 U
1,2-Dichloroethane	3100	ug/kg		1.0 U	3.9 U	0.87 U	0.95 U
1,3,5-Trimethylbenzene	52000	ug/kg		1.0 U	0.73 J	0.87 U	0.95 U
1,3-Dichlorobenzene	49000	ug/kg		1.0 U	3.9 U	0.87 U	0.95 U
1,4-Dichlorobenzene	13000	ug/kg		1.0 U	3.9 U	0.87 U	0.95 U
1,4-Dioxane	13000	ug/kg		20 U	79 U	17 U	19 U
2-Butanone (MEK)	100000	ug/kg		5.9	12 J	8.6	3.0 J
Acetone	100000	ug/kg		31	68	41	14
Benzene	4800	ug/kg		1.0 U	3.9 U	0.87 U	0.33 J
Carbon tetrachloride	2400	ug/kg		1.0 U	3.9 U	0.87 U	0.95 U
Chlorobenzene	100000	ug/kg		1.0 U	3.9 U	0.87 U	0.95 U
Chloroform	49000	ug/kg		1.0 U	3.5 J	0.87 U	1.3
cis-1,2-Dichloroethene	100000	ug/kg		1.0 UT	3.9 U	0.87 U	0.95 U
Ethylbenzene	41000	ug/kg		1.0 U	1.1 J	0.87 U	0.95 U
m+p-Xylene	--	ug/kg		NA	NA	NA	NA
Methylene chloride	100000	ug/kg		1.2	1.2 J	0.39 J	0.49 J
MTBE	100000	ug/kg		1.0 UT	3.9 U	0.87 U	0.95 U
n-Butylbenzene	100000	ug/kg		1.0 U	3.9 U	0.87 U	0.95 U
n-Propylbenzene	100000	ug/kg		1.0 U	3.9 U	0.87 U	0.95 U
o-Xylene	--	ug/kg		NA	NA	NA	NA
sec-Butylbenzene	100000	ug/kg		1.0 U	3.9 U	0.87 U	0.95 U
tert-Butylbenzene	100000	ug/kg		1.0 U	3.9 UT	0.87 UT	0.95 UT
Tetrachloroethene	19000	ug/kg		1.0 U	3.9 U	0.87 U	0.95 U
Toluene	100000	ug/kg		1.0 U	3.9 U	0.87 U	1.3
trans-1,2-Dichloroethene	100000	ug/kg		1.0 U	3.9 U	0.87 U	0.95 U
Trichloroethene	21000	ug/kg		1.0 U	3.9 U	0.87 U	0.95 U
Vinyl chloride	900	ug/kg		1.0 U	3.9 U	0.87 U	0.95 U
Xylenes (total)	100000	ug/kg		2.0 U	7.9 U	0.37 J	1.9 U
VOC Total TICs	10000	ug/kg		30.5	44	51.9	6670

Table 6. Summary of Volatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-H12-H13-3S	PDC-PX-J5-K5-E	PDC-PX-J5-K5-S	PDC-RI-L11 DUP	PDC-RI-L5
			Sample Date:	12/14/2018	12/14/2018	12/14/2018	12/19/2018	12/19/2018
			Sample Depth (ft bls):	-	-	-	6.5 - 6.5	2 - 4
1,1,1-Trichloroethane	100000	ug/kg		1.7 U	0.92 U	0.57 U	3.1 UT	1.0 UT
1,1-Dichloroethane	26000	ug/kg		1.7 U	0.92 U	0.57 U	3.1 U	1.0 U
1,1-Dichloroethene	100000	ug/kg		1.7 U	0.92 U	0.57 U	3.1 U	1.0 U
1,2,4-Trimethylbenzene	52000	ug/kg		1.7 U	0.92 U	0.57 U	3.1 U	0.10 J
1,2-Dichlorobenzene	100000	ug/kg		1.7 U	0.92 U	0.57 U	3.1 U	1.0 U
1,2-Dichloroethane	3100	ug/kg		1.7 U	0.92 U	0.57 U	3.1 U	1.0 U
1,3,5-Trimethylbenzene	52000	ug/kg		1.7 U	0.92 U	0.57 U	3.1 U	1.0 U
1,3-Dichlorobenzene	49000	ug/kg		1.7 U	0.92 U	0.57 U	3.1 U	1.0 U
1,4-Dichlorobenzene	13000	ug/kg		1.7 U	0.92 U	0.57 U	3.1 U	1.0 U
1,4-Dioxane	13000	ug/kg		35 U	18 U	11 U	61 U	21 U
2-Butanone (MEK)	100000	ug/kg		21	13	1.9 J	15 U	2.3 BJ
Acetone	100000	ug/kg		130	13	18	15 U	21
Benzene	4800	ug/kg		0.99 J	0.92 U	0.57 U	3.1 U	1.0 U
Carbon tetrachloride	2400	ug/kg		1.7 U	0.92 U	0.57 U	3.1 UT	1.0 UT
Chlorobenzene	100000	ug/kg		1.7 U	0.92 U	0.57 U	3.1 U	1.0 U
Chloroform	49000	ug/kg		1.7 U	0.89 J	0.20 J	3.1 U	1.0 U
cis-1,2-Dichloroethene	100000	ug/kg		1.7 U	0.92 U	0.57 U	3.1 U	1.0 U
Ethylbenzene	41000	ug/kg		0.36 J	0.92 U	0.57 U	3.1 U	1.0 U
m+p-Xylene	--	ug/kg		NA	NA	NA	NA	NA
Methylene chloride	100000	ug/kg		1.1 BJ	0.41 J	0.30 J	5	1.6
MTBE	100000	ug/kg		1.7 U	0.92 U	0.57 U	3.1 U	1.0 U
n-Butylbenzene	100000	ug/kg		1.2 J	0.92 U	0.41 J	3.1 U	0.20 J
n-Propylbenzene	100000	ug/kg		1.3 J	0.26 J	0.25 J	3.1 U	1.0 U
o-Xylene	--	ug/kg		NA	NA	NA	NA	NA
sec-Butylbenzene	100000	ug/kg		2	0.32 J	0.51 J	3.1 U	0.22 J
tert-Butylbenzene	100000	ug/kg		0.56 J	0.92 UT	0.20 JT	3.1 U	1.0 U
Tetrachloroethene	19000	ug/kg		1.7 U	0.92 U	0.57 U	3.1 U	1.0 U
Toluene	100000	ug/kg		7.5	0.92 U	0.48 J	3.1 U	1.0 U
trans-1,2-Dichloroethene	100000	ug/kg		1.7 U	0.92 U	0.57 U	3.1 U	1.0 U
Trichloroethene	21000	ug/kg		1.7 U	0.92 U	0.57 U	3.1 U	1.0 U
Vinyl chloride	900	ug/kg		1.7 U	0.92 U	0.57 U	3.1 U	1.0 U
Xylenes (total)	100000	ug/kg		1.5 J	1.8 U	1.1 U	6.1 U	2.1 U
VOC Total TICs	10000	ug/kg		0	36.4	370	0	230.9

Table 6. Summary of Volatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-RI-L6	PDC-RI-L9	PDC-RI-M10	PDC-RI-M6	PDC-RI-M4	PDC-PX-H12-H13-W
			Sample Date:	12/19/2018	12/19/2018	12/19/2018	12/19/2018	12/19/2018	1/17/2019
			Sample Depth (ft bls):	2 - 5	2 - 4.5	3 - 4	2 - 4	4 - 6	-
1,1,1-Trichloroethane	100000	ug/kg		0.95 UT	0.99 U	110 U	110 U	1.3 U	0.98 U
1,1-Dichloroethane	26000	ug/kg		0.95 U	0.99 U	110 U	110 U	1.3 U	0.98 U
1,1-Dichloroethene	100000	ug/kg		0.95 U	0.99 U	110 U	110 U	1.3 U	0.98 U
1,2,4-Trimethylbenzene	52000	ug/kg		0.95 U	0.99 U	13000	110 U	1.3 U	0.98 U
1,2-Dichlorobenzene	100000	ug/kg		0.95 U	0.99 U	110 U	110 U	1.3 U	0.98 U
1,2-Dichloroethane	3100	ug/kg		0.95 U	0.99 U	110 U	110 U	1.3 U	0.98 U
1,3,5-Trimethylbenzene	52000	ug/kg		0.95 U	0.99 U	320	110 U	1.3 U	0.98 U
1,3-Dichlorobenzene	49000	ug/kg		0.95 U	0.99 U	110 U	110 U	1.3 U	0.98 U
1,4-Dichlorobenzene	13000	ug/kg		0.95 U	0.99 U	110 U	110 U	1.3 U	0.98 U
1,4-Dioxane	13000	ug/kg		19 U	20 U	5500 U	5700 U	26 U	20 U
2-Butanone (MEK)	100000	ug/kg		3.5 BJ	1.7 J	550 U	570 U	2.4 BJ	5.5
Acetone	100000	ug/kg		12	11	550 U	570 U	10	40
Benzene	4800	ug/kg		0.95 U	0.99 U	110 U	110 U	0.63 J	0.98 U
Carbon tetrachloride	2400	ug/kg		0.95 UT	0.99 U	110 U	110 U	1.3 U	0.98 U
Chlorobenzene	100000	ug/kg		0.95 U	0.99 U	110 U	110 U	1.3 U	0.98 U
Chloroform	49000	ug/kg		0.95 U	0.99 U	110 U	110 U	1.3 U	0.98 U
cis-1,2-Dichloroethene	100000	ug/kg		0.95 U	0.99 U	110 U	110 U	1.3 U	0.98 U
Ethylbenzene	41000	ug/kg		0.95 U	0.99 U	300	110 U	0.35 J	0.98 U
m+p-Xylene	--	ug/kg		NA	NA	NA	NA	NA	NA
Methylene chloride	100000	ug/kg		2	2.6	110 U	110 U	3.8	1.2
MTBE	100000	ug/kg		0.95 U	0.99 U	110 U	110 U	1.3 U	0.98 U
n-Butylbenzene	100000	ug/kg		0.95 U	0.99 U	2900	1000	1.3 U	0.98 U
n-Propylbenzene	100000	ug/kg		0.95 U	0.99 U	1400	110 U	1.3 U	0.98 U
o-Xylene	--	ug/kg		NA	NA	NA	NA	NA	NA
sec-Butylbenzene	100000	ug/kg		0.95 U	0.99 U	1800	1000	0.32 J	0.98 U
tert-Butylbenzene	100000	ug/kg		0.95 U	0.99 U	220	150	1.3 U	0.98 U
Tetrachloroethene	19000	ug/kg		0.95 U	0.99 U	110 U	110 U	1.3 U	0.98 U
Toluene	100000	ug/kg		0.95 U	0.99 U	120	110 U	4.6	0.98 U
trans-1,2-Dichloroethene	100000	ug/kg		0.95 U	0.99 U	110 U	110 U	1.3 U	0.98 U
Trichloroethene	21000	ug/kg		0.95 U	0.99 U	110 U	110 U	1.3 U	0.98 U
Vinyl chloride	900	ug/kg		0.95 U	0.99 U	110 U	110 U	1.3 U	0.98 U
Xylenes (total)	100000	ug/kg		1.9 U	2.0 U	670	230 U	0.64 J	2.0 U
VOC Total TICs	10000	ug/kg		513	120.3	**150500**	**102000**	157	6.5

Table 6. Summary of Volatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-RI-P7 DUP	PDC-RI-K8	PDC-RI-K9	PDC-RI-K10	PDC-RI-P7	PDC-RI-P9	PDC-RI-Q10
			Sample Date:	2/5/2019	2/5/2019	2/5/2019	2/5/2019	2/5/2019	2/5/2019	2/5/2019
			Sample Depth (ft bls):	5 - 5	3 - 5.5	2 - 4	2 - 5	5 - 5	4 - 4	4 - 4
1,1,1-Trichloroethane	100000	ug/kg		2.9 U	1.0 U	1.2 U	0.76 U	2.9 U	2.5 U	1.9 U
1,1-Dichloroethane	26000	ug/kg		2.9 U	1.0 U	1.2 U	0.76 U	2.9 U	2.5 U	1.9 U
1,1-Dichloroethene	100000	ug/kg		2.9 U	1.0 U	1.2 U	0.76 U	2.9 U	2.5 U	1.9 U
1,2,4-Trimethylbenzene	52000	ug/kg		2.9 U	0.18 J	51	0.76 U	15	0.82 J	0.42 J
1,2-Dichlorobenzene	100000	ug/kg		2.9 U	1.0 U	1.2 U	0.76 U	2.9 U	2.5 U	1.9 U
1,2-Dichloroethane	3100	ug/kg		2.9 U	1.0 U	1.2 U	0.76 U	2.9 U	2.5 U	1.9 U
1,3,5-Trimethylbenzene	52000	ug/kg		2.9 U	1.0 U	2.3	0.76 U	5.9	0.62 J	0.23 J
1,3-Dichlorobenzene	49000	ug/kg		2.9 U	1.0 U	1.2 U	0.76 U	2.9 U	2.5 U	1.9 U
1,4-Dichlorobenzene	13000	ug/kg		2.9 U	1.0 U	1.2 U	0.76 U	2.9 U	2.5 U	1.9 U
1,4-Dioxane	13000	ug/kg		58 U	21 U	24 U	15 U	57 U	50 U	39 U
2-Butanone (MEK)	100000	ug/kg		23	7.3	5.4 J	12	14 U	23	6.5 J
Acetone	100000	ug/kg		210 B	67	39	53	51	150	74
Benzene	4800	ug/kg		2.9 U	1.0 U	1.2 U	0.76 U	2.0 J	2.3 J	10
Carbon tetrachloride	2400	ug/kg		2.9 U	1.0 U	1.2 U	0.76 U	2.9 U	2.5 U	1.9 U
Chlorobenzene	100000	ug/kg		2.9 U	1.0 U	1.2 U	0.76 U	2.9 U	2.5 U	1.9 U
Chloroform	49000	ug/kg		2.9 U	1.0 U	1.2 U	0.76 U	2.9 U	2.5 U	1.9 U
cis-1,2-Dichloroethene	100000	ug/kg		2.9 U	1.0 U	1.2 U	0.76 U	2.9 U	2.5 U	1.9 U
Ethylbenzene	41000	ug/kg		2.9 U	0.24 J	1.2 U	0.76 U	4.8	8.5	1.9 U
m+p-Xylene	--	ug/kg		NA	NA	NA	NA	NA	NA	NA
Methylene chloride	100000	ug/kg		4.9	0.22 J	1.3	0.47 J	2.9 U	2.6	1.8 J
MTBE	100000	ug/kg		2.9 U	1.0 U	1.2 U	0.76 U	2.9 U	2.5 U	1.9 U
n-Butylbenzene	100000	ug/kg		3.9	1	7.1	0.76 U	1.5 J	9.1	1.9 U
n-Propylbenzene	100000	ug/kg		6.5	0.87 J	5.8	0.76 U	4	16	1.9 U
o-Xylene	--	ug/kg		NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	100000	ug/kg		8.3	2.9	5.1	0.76 U	2.7 J	12	1.9 U
tert-Butylbenzene	100000	ug/kg		4	0.60 J	2.3	0.76 U	0.68 J	5.1	1.9 U
Tetrachloroethene	19000	ug/kg		2.9 U	1.0 U	1.2 U	0.76 U	2.9 U	2.5 U	1.9 U
Toluene	100000	ug/kg		2.9 U	3.1	1.2 U	0.76 U	2.9 U	2.6	1.9 U
trans-1,2-Dichloroethene	100000	ug/kg		2.9 U	1.0 U	1.2 U	0.76 U	2.9 U	2.5 U	1.9 U
Trichloroethene	21000	ug/kg		2.9 U	1.0 U	1.2 U	0.76 U	2.9 U	2.5 U	1.9 U
Vinyl chloride	900	ug/kg		2.9 U	1.0 U	1.2 U	0.76 U	2.9 U	2.5 U	1.9 U
Xylenes (total)	100000	ug/kg		2.2 J	0.92 J	3.8	1.5 U	16	14	3.9 U
VOC Total TICs	10000	ug/kg		598	663	1299	34.3	442	3055	0

Table 6. Summary of Volatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-RI-R12	PDC-RI-R13	PDC-RI-R14	PDC-RI-Q15	PDC-RI-P15	PDC-RI-TP12-1
			Sample Date:	2/5/2019	2/5/2019	2/5/2019	2/5/2019	2/5/2019	5/1/2019
			Sample Depth (ft bls):	3 - 3	2 - 2	3 - 3	5 - 5	4 - 4	0 - 3
1,1,1-Trichloroethane	100000	ug/kg		2.2 U	2.2 U	2.3 U	1.8 U	1.5 U	0.87 U
1,1-Dichloroethane	26000	ug/kg		2.2 U	2.2 U	2.3 U	1.8 U	1.5 U	0.87 U
1,1-Dichloroethene	100000	ug/kg		2.2 U	2.2 U	2.3 U	1.8 U	1.5 U	0.87 U
1,2,4-Trimethylbenzene	52000	ug/kg		0.58 J	0.23 J	2.3 U	0.42 J	1.5 U	0.87 U
1,2-Dichlorobenzene	100000	ug/kg		2.2 U	2.2 U	2.3 U	1.8 U	1.5 U	0.87 U
1,2-Dichloroethane	3100	ug/kg		2.2 U	2.2 U	2.3 U	1.8 U	1.5 U	0.87 U
1,3,5-Trimethylbenzene	52000	ug/kg		0.26 J	2.2 U	2.3 U	1.8 U	1.5 U	0.87 U
1,3-Dichlorobenzene	49000	ug/kg		2.2 U	2.2 U	2.3 U	1.8 U	1.5 U	0.87 U
1,4-Dichlorobenzene	13000	ug/kg		2.2 U	2.2 U	2.3 U	1.8 U	1.5 U	0.87 U
1,4-Dioxane	13000	ug/kg		43 U	44 U	47 U	35 U	31 U	17 U
2-Butanone (MEK)	100000	ug/kg		14	32	35	2.7 J	13	4.4 U
Acetone	100000	ug/kg		81	140	160	39	79	24
Benzene	4800	ug/kg		2.2 U	2.2 U	2.3 U	1.8 U	1.5 U	0.87 U
Carbon tetrachloride	2400	ug/kg		2.2 U	2.2 U	2.3 U	1.8 U	1.5 U	0.87 U
Chlorobenzene	100000	ug/kg		2.2 U	2.2 U	2.3 U	1.8 U	1.5 U	0.87 U
Chloroform	49000	ug/kg		2.2 U	2.2 U	2.3 U	1.8 U	1.5 U	0.87 U
cis-1,2-Dichloroethene	100000	ug/kg		2.2 U	2.2 U	2.3 U	1.8 U	1.5 U	0.87 U
Ethylbenzene	41000	ug/kg		2.2 U	2.2 U	2.3 U	1.8 U	1.5 U	0.87 U
m+p-Xylene	--	ug/kg		NA	NA	NA	NA	NA	NA
Methylene chloride	100000	ug/kg		3.3 B	2.8	3.4	0.71 J	2.4	0.91
MTBE	100000	ug/kg		2.2 U	1.5 J	0.89 J	1.8 U	1.5 U	0.87 U
n-Butylbenzene	100000	ug/kg		2.6	2.2 U	2.3 U	1.8 U	1.5 U	0.87 U
n-Propylbenzene	100000	ug/kg		4.7	2.2 U	2.3 U	1.8 U	1.5 U	0.87 U
o-Xylene	--	ug/kg		NA	NA	NA	NA	NA	NA
sec-Butylbenzene	100000	ug/kg		5.3	2.2 U	2.3 U	1.8 U	0.39 J	0.87 U
tert-Butylbenzene	100000	ug/kg		2.6	2.2 U	2.3 U	1.8 U	0.39 J	0.87 U
Tetrachloroethene	19000	ug/kg		2.2 U	2.2 U	2.3 U	1.8 U	1.5 U	0.87 U
Toluene	100000	ug/kg		2.2 U	2.2 U	1.5 J	1.3 J	1.5 U	0.87 U
trans-1,2-Dichloroethene	100000	ug/kg		2.2 U	2.2 U	2.3 U	1.8 U	1.5 U	0.87 U
Trichloroethene	21000	ug/kg		2.2 U	2.2 U	2.3 U	1.8 U	1.5 U	0.87 U
Vinyl chloride	900	ug/kg		2.2 U	2.2 U	2.3 U	1.8 U	1.5 U	0.87 U
Xylenes (total)	100000	ug/kg		2.1 J	4.4 U	4.7 U	0.46 J	3.1 U	1.7 U
VOC Total TICs	10000	ug/kg		592	0	0	11	0	0

Table 6. Summary of Volatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-RI-TP12-1	PDC-RI-TP12-1 South	PDC-RI-TP12-3S	PDC-RI-TP12-3S	PDC-RI-TP12-4-PW
			Sample Date:	5/1/2019	5/1/2019	5/3/2019	5/3/2019	5/3/2019
			Sample Depth (ft bls):	3 - 6	3 - 6	4.5 - 45	3 - 4.5	3 - 3
1,1,1-Trichloroethane	100000	ug/kg		0.95 U	0.98 U	100 U	0.93 U	1.1 U
1,1-Dichloroethane	26000	ug/kg		0.95 U	0.98 U	100 U	0.93 U	1.1 U
1,1-Dichloroethene	100000	ug/kg		0.95 U	0.98 U	100 U	0.93 U	1.1 U
1,2,4-Trimethylbenzene	52000	ug/kg		0.95 U	0.98 U	730	0.31 J	1.1 U
1,2-Dichlorobenzene	100000	ug/kg		0.95 U	0.98 U	100 U	0.93 U	1.1 U
1,2-Dichloroethane	3100	ug/kg		0.95 U	0.98 U	100 U	0.93 U	1.1 U
1,3,5-Trimethylbenzene	52000	ug/kg		0.95 U	0.98 U	190	0.93 U	1.1 U
1,3-Dichlorobenzene	49000	ug/kg		0.95 U	0.98 U	100 U	0.93 U	1.1 U
1,4-Dichlorobenzene	13000	ug/kg		0.95 U	0.98 U	100 U	0.93 U	1.1 U
1,4-Dioxane	13000	ug/kg		19 U	20 U	5200 U	19 U	22 U
2-Butanone (MEK)	100000	ug/kg		4.8 U	29	520 U	17	3.8 J
Acetone	100000	ug/kg		58	140	520 U	94	26
Benzene	4800	ug/kg		0.95 U	0.27 J	100 U	0.93 U	1.1 U
Carbon tetrachloride	2400	ug/kg		0.95 U	0.98 U	100 U	0.93 U	1.1 U
Chlorobenzene	100000	ug/kg		0.95 U	0.98 U	100 U	0.93 U	1.1 U
Chloroform	49000	ug/kg		0.95 U	0.98 U	100 U	0.93 U	1.1 U
cis-1,2-Dichloroethene	100000	ug/kg		0.95 U	0.98 U	100 U	0.93 U	1.1 U
Ethylbenzene	41000	ug/kg		0.95 U	0.98 U	100 U	0.93 U	1.1 U
m+p-Xylene	--	ug/kg		NA	NA	NA	NA	NA
Methylene chloride	100000	ug/kg		0.95 U	0.21 J	100 U	0.93 U	1.1 U
MTBE	100000	ug/kg		0.95 U	0.98 U	100 U	0.93 UT	1.1 U
n-Butylbenzene	100000	ug/kg		0.95 U	0.98 U	380	0.47 J	1.1 U
n-Propylbenzene	100000	ug/kg		0.95 U	0.98 U	55 J	0.29 J	1.1 U
o-Xylene	--	ug/kg		NA	NA	NA	NA	NA
sec-Butylbenzene	100000	ug/kg		0.95 U	0.98 U	140	1.2	1.1 U
tert-Butylbenzene	100000	ug/kg		0.95 U	0.98 U	100 U	0.46 J	1.1 U
Tetrachloroethene	19000	ug/kg		0.95 U	0.98 U	100 U	0.93 U	1.1 U
Toluene	100000	ug/kg		0.61 J	0.98 U	100 U	0.93 U	1.1 U
trans-1,2-Dichloroethene	100000	ug/kg		0.95 U	0.98 U	100 U	0.93 U	1.1 U
Trichloroethene	21000	ug/kg		0.95 U	0.98 U	100 U	0.93 U	1.1 U
Vinyl chloride	900	ug/kg		0.95 U	0.98 U	100 U	0.93 U	1.1 U
Xylenes (total)	100000	ug/kg		1.9 U	2.0 U	97 J	1.9 U	2.2 U
VOC Total TICs	10000	ug/kg		0	30.3	**45600**	797	7.7

Table 6. Summary of Volatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-RI-TP12-5PNE	PDC-RI-TP12-5PNE	PDC-RI-TP12-6PNW	PDC-RI-TP12-2CS
			Sample Date:	5/3/2019	5/3/2019	5/3/2019	5/3/2019
			Sample Depth (ft bls):	5 - 5	3 - 5	4 - 4	3 - 5
1,1,1-Trichloroethane	100000	ug/kg		4.1 U	93 U	0.90 U	1.1 U
1,1-Dichloroethane	26000	ug/kg		4.1 U	93 U	0.90 U	1.1 U
1,1-Dichloroethene	100000	ug/kg		4.1 U	93 U	0.90 U	1.1 U
1,2,4-Trimethylbenzene	52000	ug/kg		39	120	0.90 U	0.20 J
1,2-Dichlorobenzene	100000	ug/kg		4.1 U	93 U	0.90 U	1.1 U
1,2-Dichloroethane	3100	ug/kg		4.1 U	93 U	0.90 U	1.1 U
1,3,5-Trimethylbenzene	52000	ug/kg		12	93 U	0.90 U	1.1 U
1,3-Dichlorobenzene	49000	ug/kg		4.1 U	93 U	0.90 U	1.1 U
1,4-Dichlorobenzene	13000	ug/kg		4.1 U	93 U	0.90 U	1.1 U
1,4-Dioxane	13000	ug/kg		83 UT	4700 U	18 U	22 U
2-Butanone (MEK)	100000	ug/kg		21 U	470 U	4.5 U	7.5
Acetone	100000	ug/kg		310	470 U	30 T	87 T
Benzene	4800	ug/kg		18	93 U	0.90 U	1.1 U
Carbon tetrachloride	2400	ug/kg		4.1 U	93 U	0.90 U	1.1 U
Chlorobenzene	100000	ug/kg		4.1 U	93 U	0.90 U	1.1 U
Chloroform	49000	ug/kg		4.1 U	93 U	0.90 U	1.1 U
cis-1,2-Dichloroethene	100000	ug/kg		4.1 U	93 U	0.90 U	1.1 U
Ethylbenzene	41000	ug/kg		75	29 J	0.90 U	1.1 U
m+p-Xylene	--	ug/kg		NA	NA	NA	NA
Methylene chloride	100000	ug/kg		4.1 U	93 U	0.18 J	1.1 U
MTBE	100000	ug/kg		4.1 U	93 U	0.90 UT	1.1 UT
n-Butylbenzene	100000	ug/kg		4.1 U	93 U	0.90 U	1.6
n-Propylbenzene	100000	ug/kg		4.1 U	93 U	0.90 U	0.47 J
o-Xylene	--	ug/kg		NA	NA	NA	NA
sec-Butylbenzene	100000	ug/kg		4.1 U	93 U	0.18 J	14
tert-Butylbenzene	100000	ug/kg		4.1 U	93 U	0.90 U	0.88 J
Tetrachloroethene	19000	ug/kg		4.1 U	93 U	0.90 U	1.1 U
Toluene	100000	ug/kg		37	93 U	0.90 U	1.1 U
trans-1,2-Dichloroethene	100000	ug/kg		4.1 U	93 U	0.90 U	1.1 U
Trichloroethene	21000	ug/kg		4.1 U	93 U	0.90 U	1.1 U
Vinyl chloride	900	ug/kg		4.1 U	93 U	0.90 U	1.1 U
Xylenes (total)	100000	ug/kg		230	190 U	1.8 U	0.35 J
VOC Total TICs	10000	ug/kg		1234	**31550**	2047	4420

Table 6. Summary of Volatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-RI-TP12-2CS	PDC-OX-O2-B	PDC-PX-P2-B	PDC-PX-P3-B	PDC-PX-O3-B	PDC-PX-O2-N
			Sample Date:	5/3/2019	6/27/2019	6/27/2019	6/27/2019	6/27/2019	7/1/2019
			Sample Depth (ft bls):	0 - 3	-	-	-	-	-
1,1,1-Trichloroethane	100000	ug/kg		0.83 U	3.6 U	4.2 U	3.5 U	0.92 U	1.0 U
1,1-Dichloroethane	26000	ug/kg		0.83 U	3.6 U	4.2 U	3.5 U	0.92 U	1.0 U
1,1-Dichloroethene	100000	ug/kg		0.83 U	3.6 U	4.2 U	3.5 U	0.92 U	1.0 U
1,2,4-Trimethylbenzene	52000	ug/kg		0.83 U	3.6 U	4.2 U	3.5 U	0.92 U	1.0 U
1,2-Dichlorobenzene	100000	ug/kg		0.83 U	3.6 U	4.2 U	3.5 U	0.92 U	1.0 U
1,2-Dichloroethane	3100	ug/kg		0.83 U	3.6 U	4.2 U	3.5 U	0.92 U	1.0 U
1,3,5-Trimethylbenzene	52000	ug/kg		0.83 U	3.6 U	4.2 U	3.5 U	0.92 U	1.0 U
1,3-Dichlorobenzene	49000	ug/kg		0.83 U	3.6 U	4.2 U	3.5 U	0.92 U	1.0 U
1,4-Dichlorobenzene	13000	ug/kg		0.83 U	3.6 U	4.2 U	3.5 U	0.92 U	1.0 U
1,4-Dioxane	13000	ug/kg		17 U	72 U	84 U	69 U	18 U	20 U
2-Butanone (MEK)	100000	ug/kg		4.1 U	25	12 J	20	13	5.0 U
Acetone	100000	ug/kg		31	140	110	93	60	27
Benzene	4800	ug/kg		0.83 U	1.1 J	4.2 U	3.5 U	0.92 U	1.0 U
Carbon tetrachloride	2400	ug/kg		0.83 U	3.6 U	4.2 U	3.5 U	0.92 U	1.0 U
Chlorobenzene	100000	ug/kg		0.83 U	3.6 U	4.2 U	3.5 U	0.92 U	1.0 U
Chloroform	49000	ug/kg		0.83 U	3.6 U	4.2 U	3.5 U	0.92 U	1.0 U
cis-1,2-Dichloroethene	100000	ug/kg		0.83 U	3.6 U	4.2 U	3.5 U	0.92 U	1.0 U
Ethylbenzene	41000	ug/kg		0.83 U	3.6 U	4.2 U	3.5 U	0.92 U	1.0 U
m+p-Xylene	--	ug/kg		NA	NA	NA	NA	NA	NA
Methylene chloride	100000	ug/kg		0.83 U	3.6 U	4.2 U	3.5 U	0.92 U	7.9
MTBE	100000	ug/kg		0.83 U	3.6 U	4.2 U	3.5 U	0.92 U	1.0 U
n-Butylbenzene	100000	ug/kg		0.83 U	4.7	4.2 U	3.5 U	0.92 U	1.0 U
n-Propylbenzene	100000	ug/kg		0.83 U	3.8	1.4 J	0.66 J	0.31 J	1.0 U
o-Xylene	--	ug/kg		NA	NA	NA	NA	NA	NA
sec-Butylbenzene	100000	ug/kg		0.83 U	8.2	2.0 J	3.5 U	0.92 U	1.0 U
tert-Butylbenzene	100000	ug/kg		0.83 U	3.6 U	4.2 U	3.5 U	0.92 U	1.0 U
Tetrachloroethene	19000	ug/kg		0.83 U	3.6 U	4.2 U	3.5 U	0.92 U	1.0 U
Toluene	100000	ug/kg		0.83 U	7.5	4.2 U	3.5 U	0.92 U	1.0 U
trans-1,2-Dichloroethene	100000	ug/kg		0.83 U	3.6 U	4.2 U	3.5 U	0.92 U	1.0 U
Trichloroethene	21000	ug/kg		0.83 U	3.6 U	4.2 U	3.5 U	0.92 U	1.0 U
Vinyl chloride	900	ug/kg		0.83 U	3.6 U	4.2 U	3.5 U	0.92 U	1.0 U
Xylenes (total)	100000	ug/kg		1.7 U	1.1 J	1.1 J	6.9 U	1.8 U	0.43 J
VOC Total TICs	10000	ug/kg		12	1091	1845	314	1094	432

Table 6. Summary of Volatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-P2-N	PDC-PX-O4-B DUP	PDC-PX-O4-B	PDC-PX-P4-B	PDC-PX-P5-B	PDC-PX-O5-B
			Sample Date:	7/1/2019	7/3/2019	7/3/2019	7/3/2019	7/10/2019	7/10/2019
			Sample Depth (ft bls):	-	-	-	-	-	-
1,1,1-Trichloroethane	100000	ug/kg		1.0 U	3.7 UT	3.3 U	4.1 UT	2.9 U	3.3 U
1,1-Dichloroethane	26000	ug/kg		1.0 U	3.7 U	3.3 U	4.1 U	2.9 U	3.3 U
1,1-Dichloroethene	100000	ug/kg		1.0 U	3.7 U	3.3 U	4.1 U	2.9 U	3.3 U
1,2,4-Trimethylbenzene	52000	ug/kg		0.39 J	3.7 U	0.93 J	1.6 J	1.2 J	1.1 J
1,2-Dichlorobenzene	100000	ug/kg		1.0 U	3.7 U	3.3 U	4.1 U	2.9 U	3.3 U
1,2-Dichloroethane	3100	ug/kg		1.0 U	3.7 U	3.3 U	4.1 U	2.9 U	3.3 U
1,3,5-Trimethylbenzene	52000	ug/kg		1.0 U	3.7 U	3.3 U	4.1 U	1.2 J	1.4 J
1,3-Dichlorobenzene	49000	ug/kg		1.0 U	3.7 U	3.3 U	4.1 U	2.9 U	3.3 U
1,4-Dichlorobenzene	13000	ug/kg		1.0 U	3.7 U	3.3 U	4.1 U	2.9 U	3.3 U
1,4-Dioxane	13000	ug/kg		21 U	74 U	66 U	83 U	57 UT	66 U
2-Butanone (MEK)	100000	ug/kg		15	19 UT	17 U	21 UT	22	10 J
Acetone	100000	ug/kg		33	150	97	140	420	580
Benzene	4800	ug/kg		1.0 U	3.7 U	1.1 J	1.3 J	0.84 J	3.3 U
Carbon tetrachloride	2400	ug/kg		1.0 U	3.7 UT	3.3 U	4.1 UT	2.9 U	3.3 U
Chlorobenzene	100000	ug/kg		1.0 U	3.7 U	3.3 U	4.1 U	2.9 U	3.3 U
Chloroform	49000	ug/kg		1.0 U	3.7 U	3.3 U	4.1 U	2.9 U	3.3 U
cis-1,2-Dichloroethene	100000	ug/kg		1.0 U	3.7 U	3.3 U	4.1 U	2.9 U	3.3 U
Ethylbenzene	41000	ug/kg		0.58 J	1.3 J	1.5 J	4.1 U	0.82 J	1.3 J
m+p-Xylene	--	ug/kg		NA	NA	NA	NA	NA	NA
Methylene chloride	100000	ug/kg		0.51 J	3.7 U	3.3 U	4.1 U	2.9 U	3.3 U
MTBE	100000	ug/kg		1.0 U	3.7 U	3.3 U	4.1 U	2.9 U	3.3 U
n-Butylbenzene	100000	ug/kg		1.0 U	3.7 U	3.3 U	4.1 U	2.9 U	3.3 U
n-Propylbenzene	100000	ug/kg		1.0 U	3.7 U	0.91 J	2.5 J	1.2 J	1.3 J
o-Xylene	--	ug/kg		NA	NA	NA	NA	NA	NA
sec-Butylbenzene	100000	ug/kg		1.0 U	3.7 U	3.3 U	0.96 J	0.26 J	0.46 J
tert-Butylbenzene	100000	ug/kg		1.0 U	3.7 U	3.3 U	4.1 U	2.9 U	3.3 U
Tetrachloroethene	19000	ug/kg		1.0 U	3.7 U	3.3 U	4.1 U	2.9 U	3.3 U
Toluene	100000	ug/kg		1.0 U	3.7 U	3.3 U	4.1 U	2.9 U	2.9 J
trans-1,2-Dichloroethene	100000	ug/kg		1.0 U	3.7 U	3.3 U	4.1 U	2.9 U	3.3 U
Trichloroethene	21000	ug/kg		1.0 U	3.7 U	3.3 U	4.1 U	2.9 U	3.3 U
Vinyl chloride	900	ug/kg		1.0 U	3.7 U	3.3 U	4.1 U	2.9 U	3.3 U
Xylenes (total)	100000	ug/kg		3.7	9.6	11	8.9	5.5 J	4.4 J
VOC Total TICs	10000	ug/kg		199.1	23	26	31	100	104

Table 6. Summary of Volatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-07-B DUP	PDC-PX-P6-B1	PDC-PX-06-B	PDC-PX-07-B	PDC-PX-P7-B	PDC-PX-08-B
			Sample Date:	7/17/2019	7/17/2019	7/17/2019	7/17/2019	7/17/2019	7/17/2019
			Sample Depth (ft bls):	-	-	-	-	-	-
1,1,1-Trichloroethane	100000	ug/kg		2.5 U	2.1 U	2.0 U	1.8 U	2.1 U	4.2 U
1,1-Dichloroethane	26000	ug/kg		2.5 U	2.1 U	2.0 U	1.8 U	2.1 U	4.2 U
1,1-Dichloroethene	100000	ug/kg		2.5 U	2.1 U	2.0 U	1.8 U	2.1 U	4.2 U
1,2,4-Trimethylbenzene	52000	ug/kg		2.5 U	2.1 U	1.5 J	1.8 U	8.7	26
1,2-Dichlorobenzene	100000	ug/kg		2.5 U	2.1 U	2.0 U	1.8 U	2.1 U	4.2 U
1,2-Dichloroethane	3100	ug/kg		2.5 U	2.1 U	2.0 U	1.8 U	2.1 U	4.2 U
1,3,5-Trimethylbenzene	52000	ug/kg		2.5 U	2.1 U	0.74 J	1.8 U	3	4.9
1,3-Dichlorobenzene	49000	ug/kg		2.5 U	2.1 U	2.0 U	1.8 U	2.1 U	4.2 U
1,4-Dichlorobenzene	13000	ug/kg		2.5 U	2.1 U	2.0 U	1.8 U	2.1 U	4.2 U
1,4-Dioxane	13000	ug/kg		49 U	43 U	40 U	35 U	43 U	84 U
2-Butanone (MEK)	100000	ug/kg		12 U	11 U	9.9 U	7.7 J	11 U	21 U
Acetone	100000	ug/kg		180	170	310	140	210	230
Benzene	4800	ug/kg		2.5 U	3	2.0 U	1.8 U	2.1	8.2
Carbon tetrachloride	2400	ug/kg		2.5 U	2.1 U	2.0 U	1.8 U	2.1 U	4.2 U
Chlorobenzene	100000	ug/kg		2.5 U	2.1 U	2.0 U	1.8 U	2.1 U	4.2 U
Chloroform	49000	ug/kg		2.5 U	2.1 U	2.0 U	1.8 U	2.1 U	4.2 U
cis-1,2-Dichloroethene	100000	ug/kg		2.5 U	2.1 U	2.0 U	1.8 U	2.1 U	4.2 U
Ethylbenzene	41000	ug/kg		2.5 U	1.7 J	0.51 J	1.8 U	1.8 J	9.4
m+p-Xylene	--	ug/kg		NA	NA	NA	NA	NA	NA
Methylene chloride	100000	ug/kg		1.1 J	2.1 U	2.0 U	1.8 U	2.1 U	4.2 U
MTBE	100000	ug/kg		2.5 U	2.1 U	2.0 U	1.8 U	2.1 U	4.2 U
n-Butylbenzene	100000	ug/kg		2.5 U	2.1 U	2.0 U	1.8 U	2.1 U	6.1
n-Propylbenzene	100000	ug/kg		2.5 U	2.1 U	2.0 U	1.8 U	1.2 J	20
o-Xylene	--	ug/kg		NA	NA	NA	NA	NA	NA
sec-Butylbenzene	100000	ug/kg		2.5 U	2.1 U	2.1	1.8 U	2.1 U	9.8
tert-Butylbenzene	100000	ug/kg		2.5 U	2.1 U	1.4 J	1.8 U	2.1 U	3.2 J
Tetrachloroethene	19000	ug/kg		2.5 U	2.1 U	2.0 U	1.8 U	2.1 U	4.2 U
Toluene	100000	ug/kg		2.5 U	1.3 J	2.0 U	1.8 U	8	3.1 J
trans-1,2-Dichloroethene	100000	ug/kg		2.5 U	2.1 U	2.0 U	1.8 U	2.1 U	4.2 U
Trichloroethene	21000	ug/kg		2.5 U	2.1 U	2.0 U	1.8 U	2.1 U	4.2 U
Vinyl chloride	900	ug/kg		2.5 U	2.1 U	2.0 U	1.8 U	2.1 U	4.2 U
Xylenes (total)	100000	ug/kg		0.51 J	1.6 J	2.4 J	1.0 J	13	51
VOC Total TICs	10000	ug/kg		661	78	1030	2990	93	856

Table 6. Summary of Volatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-09-B	PDC-PX-010-B	PDC-PX-P9-B	PDC-PX-P10-B	PDC-PX-DUP	DUP	PDC-PX-M3-B
			Sample Date:	7/31/2019	8/7/2019	8/16/2019	8/16/2019	8/16/2019		8/27/2019
			Sample Depth (ft bls):	-	-	-	-	-		-
1,1,1-Trichloroethane	100000	ug/kg		2.7 U	2.4 U	1.9 U	1.8 U	1.8 U		0.68 U
1,1-Dichloroethane	26000	ug/kg		2.7 U	2.4 U	1.9 U	1.8 U	1.8 U		0.68 U
1,1-Dichloroethene	100000	ug/kg		2.7 U	2.4 U	1.9 U	1.8 U	1.8 U		0.68 U
1,2,4-Trimethylbenzene	52000	ug/kg		0.97 J	6.3	2.8	0.52 J	2.3		0.68 U
1,2-Dichlorobenzene	100000	ug/kg		2.7 U	2.4 U	1.9 U	1.8 U	1.8 U		0.68 U
1,2-Dichloroethane	3100	ug/kg		2.7 U	2.4 U	1.9 U	1.8 U	1.8 U		0.68 U
1,3,5-Trimethylbenzene	52000	ug/kg		0.82 J	2.1 J	0.93 J	1.8 U	1.2 J		0.68 U
1,3-Dichlorobenzene	49000	ug/kg		2.7 U	2.4 U	1.9 U	1.8 U	1.8 U		0.68 U
1,4-Dichlorobenzene	13000	ug/kg		2.7 U	2.4 U	1.9 U	1.8 U	1.8 U		0.68 U
1,4-Dioxane	13000	ug/kg		53 U	49 U	38 U	36 U	36 U		14 U
2-Butanone (MEK)	100000	ug/kg		13 U	12 U	7.2 J	6.1 J	17		3.4 U
Acetone	100000	ug/kg		210	140	350	130	300		20
Benzene	4800	ug/kg		5.7	38	17	1.8 U	2.8		0.68 U
Carbon tetrachloride	2400	ug/kg		2.7 U	2.4 U	1.9 U	1.8 U	1.8 U		0.68 U
Chlorobenzene	100000	ug/kg		2.7 U	2.4 U	1.9 U	1.8 U	1.8 U		0.68 U
Chloroform	49000	ug/kg		2.7 U	2.4 U	1.9 U	1.8 U	1.8 U		0.68 U
cis-1,2-Dichloroethene	100000	ug/kg		2.7 U	2.4 U	1.9 U	1.8 U	1.8 U		0.68 U
Ethylbenzene	41000	ug/kg		2.7 U	1.3 J	1.0 J	1.8 U	1.8 U		0.68 U
m+p-Xylene	--	ug/kg		NA	NA	NA	NA	NA		NA
Methylene chloride	100000	ug/kg		2.7 U	2.4 U	1.9 U	1.5 J	1.8 U		0.62 J
MTBE	100000	ug/kg		2.7 U	2.4 U	1.9 U	1.8 U	1.8 U		0.68 U
n-Butylbenzene	100000	ug/kg		2.7 U	2.4 U	1.9 U	1.8 U	1.8 U		0.68 U
n-Propylbenzene	100000	ug/kg		0.96 J	0.98 J	0.62 J	0.34 J	1.8 U		0.68 U
o-Xylene	--	ug/kg		NA	NA	NA	NA	NA		NA
sec-Butylbenzene	100000	ug/kg		0.97 J	0.40 J	1.9 U	0.63 J	0.30 J		0.13 J
tert-Butylbenzene	100000	ug/kg		2.7 U	2.4 U	1.9 U	1.8 U	1.8 U		0.68 U
Tetrachloroethene	19000	ug/kg		2.7 U	2.4 U	1.9 U	1.8 U	1.8 U		0.68 U
Toluene	100000	ug/kg		1.9 J	2.5	2	1.8 U	1.8 U		0.22 J
trans-1,2-Dichloroethene	100000	ug/kg		2.7 U	2.4 U	1.9 U	1.8 U	1.8 U		0.68 U
Trichloroethene	21000	ug/kg		2.7 U	2.4 U	1.9 U	1.8 U	1.8 U		0.68 U
Vinyl chloride	900	ug/kg		2.7 U	2.4 U	1.9 U	1.8 U	1.8 U		0.68 U
Xylenes (total)	100000	ug/kg		2.9 J	6.7	5.1	1.4 J	2.8 J		0.34 J
VOC Total TICs	10000	ug/kg		55	276	40	61.2	84.9		11

Table 6. Summary of Volatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-M4-W	PDC-PX-L5-N	PDC-PX-L5-W	PDC-PX-L6-W	PDC-PX-L6-S	PDC-PX-M5-B
			Sample Date:	8/27/2019	8/27/2019	8/27/2019	8/27/2019	8/27/2019	8/30/2019
			Sample Depth (ft bls):	-	-	-	-	-	-
1,1,1-Trichloroethane	100000	ug/kg		1.0 U	1.1 U	0.80 U	1.1 U	0.86 U	0.97 U
1,1-Dichloroethane	26000	ug/kg		1.0 U	1.1 U	0.80 U	1.1 U	0.86 U	0.97 U
1,1-Dichloroethene	100000	ug/kg		1.0 U	1.1 U	0.80 U	1.1 U	0.86 U	0.97 U
1,2,4-Trimethylbenzene	52000	ug/kg		0.34 J	1.1 U	0.80 U	1.1 U	0.86 U	3.7
1,2-Dichlorobenzene	100000	ug/kg		1.0 U	1.1 U	0.80 U	1.1 U	0.86 U	0.97 U
1,2-Dichloroethane	3100	ug/kg		1.0 U	1.1 U	0.80 U	1.1 U	0.86 U	0.97 U
1,3,5-Trimethylbenzene	52000	ug/kg		1.0 U	1.1 U	0.80 U	1.1 U	0.86 U	0.97 U
1,3-Dichlorobenzene	49000	ug/kg		1.0 U	1.1 U	0.80 U	1.1 U	0.86 U	0.97 U
1,4-Dichlorobenzene	13000	ug/kg		1.0 U	1.1 U	0.80 U	1.1 U	0.86 U	0.97 U
1,4-Dioxane	13000	ug/kg		21 U	22 UT	16 U	22 U	17 U	19 U
2-Butanone (MEK)	100000	ug/kg		12	5.5 U	2.4 J	5.5 U	4.3 U	4.9 U
Acetone	100000	ug/kg		110	95	180	100	270	32
Benzene	4800	ug/kg		1.0 U	1.1 U	0.80 U	1.1 U	0.86 U	0.97 U
Carbon tetrachloride	2400	ug/kg		1.0 U	1.1 U	0.80 U	1.1 U	0.86 U	0.97 U
Chlorobenzene	100000	ug/kg		1.0 U	1.1 U	0.80 U	1.1 U	0.86 U	0.97 U
Chloroform	49000	ug/kg		1.0 U	1.1 U	0.80 U	1.1 U	0.86 U	0.97 U
cis-1,2-Dichloroethene	100000	ug/kg		1.0 U	1.1 U	0.80 U	1.1 U	0.86 U	0.97 U
Ethylbenzene	41000	ug/kg		1.0 U	1.1 U	0.80 U	1.1 U	0.86 U	0.97 U
m+p-Xylene	--	ug/kg		NA	NA	NA	NA	NA	NA
Methylene chloride	100000	ug/kg		0.81 J	1.6	0.80 U	1.1 U	0.86 U	0.97 U
MTBE	100000	ug/kg		1.0 U	1.1 U	0.80 U	1.1 U	0.86 U	0.97 U
n-Butylbenzene	100000	ug/kg		1.0 U	1.1 U	0.80 U	1.1 U	0.86 U	13
n-Propylbenzene	100000	ug/kg		1.0 U	1.1 U	0.80 U	0.24 J	0.86 U	4.4
o-Xylene	--	ug/kg		NA	NA	NA	NA	NA	NA
sec-Butylbenzene	100000	ug/kg		4.6	1.1 U	0.80 U	0.56 J	0.25 J	29
tert-Butylbenzene	100000	ug/kg		2.3	1.1 U	0.80 U	1.1 U	0.86 U	4.1
Tetrachloroethene	19000	ug/kg		1.0 U	1.1 U	0.80 U	1.1 U	0.86 U	0.97 U
Toluene	100000	ug/kg		0.40 J	0.50 J	0.80 U	1.1 U	0.22 J	0.97 U
trans-1,2-Dichloroethene	100000	ug/kg		1.0 U	1.1 U	0.80 U	1.1 U	0.86 U	0.97 U
Trichloroethene	21000	ug/kg		1.0 U	1.1 U	0.80 U	1.1 U	0.86 U	0.97 U
Vinyl chloride	900	ug/kg		1.0 U	1.1 U	0.80 U	1.1 U	0.86 U	0.97 U
Xylenes (total)	100000	ug/kg		0.33 J	0.41 J	1.6 U	0.42 J	1.7 U	0.32 J
VOC Total TICs	10000	ug/kg		6890	11	277.3	333	56.3	5770

Table 6. Summary of Volatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-M7-W	PDC-PX-M8-B	PDC-PX-L8-N	PDC-PX-DUP	PDC-PX-L8-B	PDC-PX-K8-W
			Sample Date:	8/30/2019	8/30/2019	8/30/2019	9/4/2019	9/4/2019	9/4/2019
			Sample Depth (ft bls):	-	-	-	-	-	-
1,1,1-Trichloroethane	100000	ug/kg		0.98 U	1.0 U	0.96 U	0.95 U	0.9 U	0.92 U
1,1-Dichloroethane	26000	ug/kg		0.98 U	1.0 U	0.96 U	0.95 U	0.9 U	0.92 U
1,1-Dichloroethene	100000	ug/kg		0.98 U	1.0 U	0.96 U	0.95 U	0.9 U	0.92 U
1,2,4-Trimethylbenzene	52000	ug/kg		0.98 U	1.0 U	0.96 U	0.26 J	3	0.48 J
1,2-Dichlorobenzene	100000	ug/kg		0.98 U	1.0 U	0.96 U	0.95 U	0.9 U	0.92 U
1,2-Dichloroethane	3100	ug/kg		0.98 U	1.0 U	0.96 U	0.95 U	0.9 U	0.92 U
1,3,5-Trimethylbenzene	52000	ug/kg		0.98 U	1.0 U	0.96 U	0.95 U	0.35 J	0.92 U
1,3-Dichlorobenzene	49000	ug/kg		0.98 U	1.0 U	0.96 U	0.95 U	0.9 U	0.92 U
1,4-Dichlorobenzene	13000	ug/kg		0.98 U	1.0 U	0.96 U	0.95 U	0.9 U	0.92 U
1,4-Dioxane	13000	ug/kg		20 U	21 U	19 U	19 U	18 U	18 U
2-Butanone (MEK)	100000	ug/kg		4.9 U	5.1 U	4.8 U	3.7 J	24	5.7
Acetone	100000	ug/kg		14	150	140	110	230	79
Benzene	4800	ug/kg		0.98 U	1.0 U	0.96 U	0.95 U	0.9 U	0.92 U
Carbon tetrachloride	2400	ug/kg		0.98 U	1.0 U	0.96 U	0.95 U	0.9 U	0.92 U
Chlorobenzene	100000	ug/kg		0.98 U	1.0 U	0.96 U	0.95 U	0.9 U	0.92 U
Chloroform	49000	ug/kg		0.98 U	1.0 U	0.96 U	0.95 U	0.9 U	0.92 U
cis-1,2-Dichloroethene	100000	ug/kg		0.98 U	1.0 U	0.96 U	0.95 U	0.9 U	0.92 U
Ethylbenzene	41000	ug/kg		0.98 U	1.0 U	0.96 U	0.25 J	0.3 J	0.57 J
m+p-Xylene	--	ug/kg		NA	NA	NA	3.1	1.4	3.5
Methylene chloride	100000	ug/kg		0.98 U	1.0 U	0.96 U	0.99	1.1	1.3
MTBE	100000	ug/kg		0.98 U	1.0 U	0.96 U	0.95 U	0.9 U	0.92 U
n-Butylbenzene	100000	ug/kg		0.98 U	1.0 U	2.4	0.95 U	1.5	7.1
n-Propylbenzene	100000	ug/kg		0.98 U	1.0 U	1.8	0.95 U	0.34 J	0.92 U
o-Xylene	--	ug/kg		NA	NA	NA	1.4	0.9	1.6
sec-Butylbenzene	100000	ug/kg		0.13 J	0.26 J	7	5.8	1.3	40
tert-Butylbenzene	100000	ug/kg		0.98 U	0.31 J	0.62 J	1.4	0.51 J	4.4
Tetrachloroethene	19000	ug/kg		0.98 U	1.0 U	0.96 U	0.95 U	0.9 U	0.92 U
Toluene	100000	ug/kg		0.98 U	0.90 J	0.89 J	0.43 J	0.9 U	0.62 J
trans-1,2-Dichloroethene	100000	ug/kg		0.98 U	1.0 U	0.96 U	0.95 U	0.9 U	0.92 U
Trichloroethene	21000	ug/kg		0.98 U	1.0 U	0.96 U	0.95 U	0.9 U	0.92 U
Vinyl chloride	900	ug/kg		0.98 U	1.0 U	0.96 U	0.95 U	0.9 U	0.92 U
Xylenes (total)	100000	ug/kg		2.0 U	0.82 J	0.98 J	4.5	2.3	5.2
VOC Total TICs	10000	ug/kg		89.4	244.9	773	4290	947	7640

Table 6. Summary of Volatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-L10-B	PDC-PX-K9-S	PDC-PX-K9-W	PDC-PX-M11-N	PDC-PX-K8-N2	PDC-PX-M11-B
			Sample Date:	9/9/2019	9/9/2019	9/9/2019	9/12/2019	9/12/2019	9/12/2019
			Sample Depth (ft bls):	-	-	-	-	-	-
1,1,1-Trichloroethane	100000	ug/kg		2.1 U	0.87 U	0.9 U	300 U	1.1 U	1.8 U
1,1-Dichloroethane	26000	ug/kg		2.1 U	0.87 U	0.9 U	300 U	1.1 U	1.8 U
1,1-Dichloroethene	100000	ug/kg		2.1 U	0.87 U	0.9 U	300 U	1.1 U	1.8 U
1,2,4-Trimethylbenzene	52000	ug/kg		2.6	0.87 U	0.57 J	150 J	2.2	2.6
1,2-Dichlorobenzene	100000	ug/kg		2.1 U	0.87 U	0.9 U	300 U	1.1 U	1.8 U
1,2-Dichloroethane	3100	ug/kg		2.1 U	0.87 U	0.9 U	300 U	1.1 U	1.8 U
1,3,5-Trimethylbenzene	52000	ug/kg		0.39 J	0.87 U	0.15 J	300 U	0.18 J	0.75 J
1,3-Dichlorobenzene	49000	ug/kg		2.1 U	0.87 U	0.9 U	300 U	1.1 U	1.8 U
1,4-Dichlorobenzene	13000	ug/kg		2.1 U	0.87 U	0.9 U	300 U	1.1 U	1.8 U
1,4-Dioxane	13000	ug/kg		41 U	17 U	18 U	15000 U	22 U	36 U
2-Butanone (MEK)	100000	ug/kg		14	15	13	1500 U	15	9 U
Acetone	100000	ug/kg		160	87	110	1500 U	210	56
Benzene	4800	ug/kg		4.4	0.87 U	0.9 U	3800	1.1 U	6.8
Carbon tetrachloride	2400	ug/kg		2.1 U	0.87 U	0.9 U	300 U	1.1 U	1.8 U
Chlorobenzene	100000	ug/kg		2.1 U	0.87 U	0.9 U	300 U	1.1 U	1.8 U
Chloroform	49000	ug/kg		2.1 U	0.87 U	0.9 U	300 U	1.1 U	1.8 U
cis-1,2-Dichloroethene	100000	ug/kg		2.1 U	0.87 U	0.9 U	300 U	1.1 U	1.8 U
Ethylbenzene	41000	ug/kg		0.94 J	0.27 J	0.9 U	360	1 J	1.8
m+p-Xylene	--	ug/kg		4.5	1.2	1.2	720	5.9	5.8
Methylene chloride	100000	ug/kg		1.6 J	0.71 J	0.92	300 U	1.3	2.6
MTBE	100000	ug/kg		2.1 U	0.87 U	0.9 U	300 U	1.1 U	1.8 U
n-Butylbenzene	100000	ug/kg		2.1 U	0.87 U	0.9 U	300 U	2	1.8 U
n-Propylbenzene	100000	ug/kg		1.3 J	0.87 U	0.26 J	160 J	0.93 J	2
o-Xylene	--	ug/kg		3.3	0.56 J	0.49 J	220 J	2.6	2.3
sec-Butylbenzene	100000	ug/kg		2.1 U	0.87 U	0.5 J	300 U	2.3	0.31 J
tert-Butylbenzene	100000	ug/kg		2.1 U	0.87 U	0.9 U	300 U	0.47 J	1.8 U
Tetrachloroethene	19000	ug/kg		2.1 U	0.87 U	0.9 U	300 U	1.1 U	1.8 U
Toluene	100000	ug/kg		2.3	0.87 U	0.25 J	340	0.89 J	6.2
trans-1,2-Dichloroethene	100000	ug/kg		2.1 U	0.87 U	0.9 U	300 U	1.1 U	1.8 U
Trichloroethene	21000	ug/kg		2.1 U	0.87 U	0.9 U	300 U	1.1 U	1.8 U
Vinyl chloride	900	ug/kg		2.1 U	0.87 U	0.9 U	300 U	1.1 U	1.8 U
Xylenes (total)	100000	ug/kg		7.8	1.8	1.7 J	940	8.5	8.1
VOC Total TICs	10000	ug/kg		29	0	458	1700	1165	144.2

Table 6. Summary of Volatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-P3-B2	PDC-PX-N2-B	PDC-PX-N2-N	PDC-PX-M2-B	PDC-PX-P4-B2	PDC-PX-P5-B2
			Sample Date:	9/15/2019	9/16/2019	9/16/2019	9/16/2019	9/18/2019	9/18/2019
			Sample Depth (ft bls):	-	-	-	-	-	-
1,1,1-Trichloroethane	100000	ug/kg		0.99 U	1.1 U	1.1 U	1.2 U	5.1 U	1.3 U
1,1-Dichloroethane	26000	ug/kg		0.99 U	1.1 U	1.1 U	1.2 U	5.1 U	1.3 U
1,1-Dichloroethene	100000	ug/kg		0.99 U	1.1 U	1.1 U	1.2 U	5.1 U	1.3 U
1,2,4-Trimethylbenzene	52000	ug/kg		1.9	2.2	4.1	2.4	5.1 U	1.3 U
1,2-Dichlorobenzene	100000	ug/kg		0.99 U	1.1 U	1.1 U	1.2 U	5.1 U	1.3 U
1,2-Dichloroethane	3100	ug/kg		0.99 U	1.1 U	1.1 U	1.2 U	5.1 U	1.3 U
1,3,5-Trimethylbenzene	52000	ug/kg		0.99 U	0.49 J	1.2	0.57 J	5.1 U	1.3 U
1,3-Dichlorobenzene	49000	ug/kg		0.99 U	1.1 U	1.1 U	1.2 U	5.1 U	1.3 U
1,4-Dichlorobenzene	13000	ug/kg		0.99 U	1.1 U	1.1 U	1.2 U	5.1 U	1.3 U
1,4-Dioxane	13000	ug/kg		20 U	23 U	10 U	23 U	100 U	25 U
2-Butanone (MEK)	100000	ug/kg		5 U	5.6 U	5.4 U	5.8 U	96	9.8
Acetone	100000	ug/kg		73	110	42	120	810	57
Benzene	4800	ug/kg		0.99 U	1.1 U	0.32 J	1.2 U	1.4 J	1.3 U
Carbon tetrachloride	2400	ug/kg		0.99 U	1.1 U	1.1 U	1.2 U	5.1 U	1.3 U
Chlorobenzene	100000	ug/kg		0.99 U	1.1 U	1.1 U	1.2 U	5.1 U	1.3 U
Chloroform	49000	ug/kg		0.99 U	1.1 U	1.1 U	1.2 U	5.1 U	1.3 U
cis-1,2-Dichloroethene	100000	ug/kg		0.99 U	1.1 U	1.1 U	1.2 U	5.1 U	1.3 U
Ethylbenzene	41000	ug/kg		0.64 J	1.4	1.6	1 J	1.1 J	0.64 J
m+p-Xylene	--	ug/kg		2.7	7.6	7.5	5.7	7.1	3
Methylene chloride	100000	ug/kg		0.99 U	1.9	2.8	2	5.1 U	2.7
MTBE	100000	ug/kg		0.99 U	1.1 U	0.15 J	1.2 U	5.1 U	1.3 U
n-Butylbenzene	100000	ug/kg		0.99 U	1.1 U	3.6	1.2 U	5.1 U	1.3 U
n-Propylbenzene	100000	ug/kg		0.73 J	0.4 J	1.7	0.42 J	5.1 U	1.3 U
o-Xylene	--	ug/kg		1.1	2.6	2.5	2.1	2.2 J	1.1 J
sec-Butylbenzene	100000	ug/kg		0.99 U	1.1 U	33	1.2 U	1.2 J	1.3 U
tert-Butylbenzene	100000	ug/kg		0.99 U	1.1 U	7.6	1.2 U	5.1 U	1.3 U
Tetrachloroethene	19000	ug/kg		0.99 U	1.1 U	1.1 U	1.2 U	5.1 U	1.3 U
Toluene	100000	ug/kg		0.99 U	1.1	1.6	0.77 J	1.6 J	0.92 J
trans-1,2-Dichloroethene	100000	ug/kg		0.99 U	1.1 U	1.1 U	1.2 U	5.1 U	1.3 U
Trichloroethene	21000	ug/kg		0.99 U	1.1 U	1.1 U	1.2 U	5.1 U	1.3 U
Vinyl chloride	900	ug/kg		0.99 U	1.1 U	1.1 U	1.2 U	5.1 U	1.3 U
Xylenes (total)	100000	ug/kg		3.8	10	10	7.8	9.3 J	4.1
VOC Total TICs	10000	ug/kg		**15410**	8.8	1696	0	327	17

Table 6. Summary of Volatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-P6-B2	PDC-PX-L12-B	PDC-PX-M12-B	PDC-PX-L11-B	PDC-PX-P7-B2	PDC-PX-P8-B
			Sample Date:	9/20/2019	9/20/2019	9/20/2019	9/20/2019	9/23/2019	9/23/2019
			Sample Depth (ft bls):	-	-	-	-	-	-
1,1,1-Trichloroethane	100000	ug/kg		1.8 U	0.93 U	1 U	1.2 U	1.3 U	3.3 U
1,1-Dichloroethane	26000	ug/kg		1.8 U	0.93 U	1 U	1.2 U	1.3 U	3.3 U
1,1-Dichloroethene	100000	ug/kg		1.8 U	0.93 U	1 U	1.2 U	1.3 U	3.3 U
1,2,4-Trimethylbenzene	52000	ug/kg		1.8 U	0.93 U	0.28 J	0.38 J	0.39 J	26
1,2-Dichlorobenzene	100000	ug/kg		1.8 U	0.93 U	1 U	1.2 U	1.3 U	3.3 U
1,2-Dichloroethane	3100	ug/kg		1.8 U	0.93 U	1 U	1.2 U	1.3 U	3.3 U
1,3,5-Trimethylbenzene	52000	ug/kg		1.8 U	0.93 U	1 U	1.2 U	1.3 U	6
1,3-Dichlorobenzene	49000	ug/kg		1.8 U	0.93 U	1 U	1.2 U	1.3 U	3.3 U
1,4-Dichlorobenzene	13000	ug/kg		1.8 U	0.93 U	1 U	1.2 U	1.3 U	3.3 U
1,4-Dioxane	13000	ug/kg		36 U	19 U	20 U	24 U	27 U	65 U
2-Butanone (MEK)	100000	ug/kg		15	4.7 U	8	8.3	6.6 U	16 U
Acetone	100000	ug/kg		180	49	42	33	25	48 T
Benzene	4800	ug/kg		1.8 U	0.93 U	0.58 J	0.32 J	2.8	2 J
Carbon tetrachloride	2400	ug/kg		1.8 U	0.93 U	1 U	1.2 U	1.3 U	3.3 U
Chlorobenzene	100000	ug/kg		1.8 U	0.93 U	1 U	1.2 U	1.3 U	3.3 U
Chloroform	49000	ug/kg		1.8 U	0.93 U	1 U	1.2 U	1.3 U	3.3 U
cis-1,2-Dichloroethene	100000	ug/kg		1.8 U	0.93 U	1 U	1.2 U	1.3 U	3.3 U
Ethylbenzene	41000	ug/kg		0.67 J	0.93 U	0.69 J	0.58 J	1 J	4.6
m+p-Xylene	--	ug/kg		3.1	0.93 U	3.4	2.7	2.3	9.7
Methylene chloride	100000	ug/kg		0.94 J	0.45 J	2.7	2.8	1.3 U	3.3 U
MTBE	100000	ug/kg		1.8 U	0.93 U	1 U	1.2 U	1.3 U	3.3 U
n-Butylbenzene	100000	ug/kg		1.8 U	0.93 U	1 U	1.2 U	0.72 J	1.7 J
n-Propylbenzene	100000	ug/kg		1.8 U	0.18 J	1.9	1 J	1.3	6.6
o-Xylene	--	ug/kg		1.3 J	0.93 U	1.3	1.3	2.4	4.6
sec-Butylbenzene	100000	ug/kg		1.8 U	0.4 J	0.92 J	0.74 J	2.4	3.2 J
tert-Butylbenzene	100000	ug/kg		1.8 U	0.84 J	1 U	1.2 U	0.62 J	3.3 U
Tetrachloroethene	19000	ug/kg		1.8 U	0.93 U	1 U	1.2 U	1.3 U	3.3 U
Toluene	100000	ug/kg		0.77 J	0.23 J	0.71 J	0.8 J	0.46 J	4.3
trans-1,2-Dichloroethene	100000	ug/kg		1.8 U	0.93 U	1 U	1.2 U	1.3 U	3.3 U
Trichloroethene	21000	ug/kg		1.8 U	0.93 U	1 U	1.2 U	1.3 U	3.3 U
Vinyl chloride	900	ug/kg		1.8 U	0.93 U	1 U	1.2 U	1.3 U	3.3 U
Xylenes (total)	100000	ug/kg		4.4	1.9 U	4.7	4	4.6	14
VOC Total TICs	10000	ug/kg		25	199.8	65.5	788	123.2	141

Table 6. Summary of Volatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-Q9-B	PDC-PX-P5-B3	PDC-PX-P8-B3	PDC-PX-Q10-B3	PDC-PX-P2-N2
			Sample Date:	9/24/2019	9/26/2019	9/27/2019	9/28/2019	9/30/2019
			Sample Depth (ft bls):	-	-	-	-	-
1,1,1-Trichloroethane	100000	ug/kg		2.6 U	0.86 U	3.1 U	1.7 U	1 U
1,1-Dichloroethane	26000	ug/kg		2.6 U	0.86 U	3.1 U	1.7 U	1 U
1,1-Dichloroethene	100000	ug/kg		2.6 U	0.86 U	3.1 U	1.7 U	1 U
1,2,4-Trimethylbenzene	52000	ug/kg		1.7 J	0.86 U	12	0.95 J	1 U
1,2-Dichlorobenzene	100000	ug/kg		2.6 U	0.86 U	3.1 U	1.7 U	1 U
1,2-Dichloroethane	3100	ug/kg		2.6 U	1.5	3.1 U	1.7 U	1 U
1,3,5-Trimethylbenzene	52000	ug/kg		0.39 J	0.86 U	0.4 J	0.29 J	1 U
1,3-Dichlorobenzene	49000	ug/kg		2.6 U	0.86 U	3.1 U	1.7 U	1 U
1,4-Dichlorobenzene	13000	ug/kg		2.6 U	0.86 U	3.1 U	1.7 U	1 U
1,4-Dioxane	13000	ug/kg		53 U	17 U	61 U	35 U	20 U
2-Butanone (MEK)	100000	ug/kg		35	4.3 U	15 U	7.9 J	10
Acetone	100000	ug/kg		110	34	59 T	29	57
Benzene	4800	ug/kg		2.6 U	0.86 U	1.2 J	1.7 U	1 U
Carbon tetrachloride	2400	ug/kg		2.6 U	0.86 U	3.1 U	1.7 U	1 U
Chlorobenzene	100000	ug/kg		2.6 U	0.86 U	3.1 U	1.7 U	1 U
Chloroform	49000	ug/kg		2.6 U	0.86 U	3.1 U	1.7 U	1 U
cis-1,2-Dichloroethene	100000	ug/kg		2.6 U	0.86 U	3.1 U	1.7 U	1 U
Ethylbenzene	41000	ug/kg		1.2 J	0.86 U	4.5	1.7 U	1 U
m+p-Xylene	--	ug/kg		6.7	0.86 U	8.7	0.94 J	0.73 J
Methylene chloride	100000	ug/kg		4.1	0.86 U	5	2.1	2
MTBE	100000	ug/kg		2.6 U	0.86 U	3.1 U	1.7 U	0.18 J
n-Butylbenzene	100000	ug/kg		1.7 J	0.86 U	10	1.7 U	1 U
n-Propylbenzene	100000	ug/kg		2.6	0.86 U	5.4	1.7 U	1 U
o-Xylene	--	ug/kg		1.5 J	0.86 U	3.8	0.73 J	0.24 J
sec-Butylbenzene	100000	ug/kg		6.9	0.86 U	15	1.7 U	1 U
tert-Butylbenzene	100000	ug/kg		4.6	0.86 U	3.3	0.71 J	1 U
Tetrachloroethene	19000	ug/kg		2.6 U	0.86 U	3.1 U	1.7 U	1 U
Toluene	100000	ug/kg		1.1 J	0.86 U	1.6 J	0.49 J	1 U
trans-1,2-Dichloroethene	100000	ug/kg		2.6 U	0.86 U	3.1 U	1.7 U	1 U
Trichloroethene	21000	ug/kg		2.6 U	0.86 U	3.1 U	1.7 U	1 U
Vinyl chloride	900	ug/kg		2.6 U	0.86 U	3.1 U	1.7 U	1 U
Xylenes (total)	100000	ug/kg		8.2	1.7 U	12	1.7 J	0.97 J
VOC Total TICs	10000	ug/kg		1469	252	1126	205.9	0

Table 6. Summary of Volatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-P2-B3	PDC-PX-M3-B2	PDC-PX-N3-B	PDC-PX-N4-B	PDC-PX-N5-B	PDC-PX-N6-B
			Sample Date:	9/30/2019	10/1/2019	10/1/2019	10/2/2019	10/2/2019	10/3/2019
			Sample Depth (ft bls):	-	-	-	-	-	-
1,1,1-Trichloroethane	100000	ug/kg		0.98 U	0.98 U	0.7 U	1.1 U	0.99 U	1 U
1,1-Dichloroethane	26000	ug/kg		0.98 U	0.98 U	0.7 U	1.1 U	0.99 U	1 U
1,1-Dichloroethene	100000	ug/kg		0.98 U	0.98 U	0.7 U	1.1 U	0.99 U	1 U
1,2,4-Trimethylbenzene	52000	ug/kg		0.98 U	0.98 U	0.18 J	1.1 U	0.32 J	0.26 J
1,2-Dichlorobenzene	100000	ug/kg		0.98 U	0.98 U	0.7 U	1.1 U	0.99 U	1 U
1,2-Dichloroethane	3100	ug/kg		0.98 U	0.98 U	0.7 U	1.1 U	0.99 U	1 U
1,3,5-Trimethylbenzene	52000	ug/kg		0.98 U	0.98 U	0.7 U	1.1 U	0.99 U	1 U
1,3-Dichlorobenzene	49000	ug/kg		0.98 U	0.98 U	0.7 U	1.1 U	0.99 U	1 U
1,4-Dichlorobenzene	13000	ug/kg		0.98 U	0.98 U	0.7 U	1.1 U	0.99 U	1 U
1,4-Dioxane	13000	ug/kg		20 U	20 U	14 U	21 U	20 U	20 U
2-Butanone (MEK)	100000	ug/kg		4.4 J	38	11	4 J	10	5.5
Acetone	100000	ug/kg		15	140	45	22	57	48
Benzene	4800	ug/kg		0.98 U	0.98 U	0.7 U	1.1 U	0.99 U	1 U
Carbon tetrachloride	2400	ug/kg		0.98 U	0.98 U	0.7 U	1.1 U	0.99 U	1 U
Chlorobenzene	100000	ug/kg		0.98 U	0.98 U	0.7 U	1.1 U	0.99 U	1 U
Chloroform	49000	ug/kg		0.98 U	0.98 U	0.7 U	1.1 U	0.99 U	1 U
cis-1,2-Dichloroethene	100000	ug/kg		0.98 U	0.98 U	0.7 U	1.1 U	0.99 U	1 U
Ethylbenzene	41000	ug/kg		0.41 J	0.98 U	0.54 J	1.1 U	0.25 J	1 U
m+p-Xylene	--	ug/kg		2	1	2.6	0.66 J	1.3	1.2
Methylene chloride	100000	ug/kg		2.6 B	1.4	1.8 B	1.8 B	1.9 B	2.2 B
MTBE	100000	ug/kg		0.98 U	0.98 U	0.7 U	1.1 U	0.99 U	1 U
n-Butylbenzene	100000	ug/kg		0.98 U	0.98 U	0.7 U	1.1 U	0.99 U	1 U
n-Propylbenzene	100000	ug/kg		0.98 U	0.98 U	0.7 U	1.1 U	0.99 U	1 U
o-Xylene	--	ug/kg		0.79 J	0.49 J	1.1	0.25 J	0.63 J	0.47 J
sec-Butylbenzene	100000	ug/kg		0.98 U	0.65 J	0.076 J	1.1 U	0.99 U	1 U
tert-Butylbenzene	100000	ug/kg		0.98 U	0.7 J	0.35 J	1.1 U	0.99 U	1 U
Tetrachloroethene	19000	ug/kg		0.98 U	0.98 U	0.7 U	1.1 U	0.99 U	1 U
Toluene	100000	ug/kg		0.85 J	0.29 J	0.95	0.26 J	0.4 J	0.48 J
trans-1,2-Dichloroethene	100000	ug/kg		0.98 U	0.98 U	0.7 U	1.1 U	0.99 U	1 U
Trichloroethene	21000	ug/kg		0.98 U	0.98 U	0.7 U	1.1 U	0.99 U	1 U
Vinyl chloride	900	ug/kg		0.98 U	0.98 U	0.7 U	1.1 U	0.99 U	1 U
Xylenes (total)	100000	ug/kg		2.8	1.5 J	3.7	0.91 J	2	1.7 J
VOC Total TICs	10000	ug/kg		364	40.7	0	9.4	0	13.3

Table 6. Summary of Volatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-N7-B	PDC-PX-N8-B	PDC-PX-N9-B	PDC-PX-N10-B	PDC-PX-N11-B	PDC-PX-K12-W
			Sample Date:	10/3/2019	10/3/2019	10/3/2019	10/4/2019	10/5/2019	10/7/2019
			Sample Depth (ft bls):	-	-	-	-	-	-
1,1,1-Trichloroethane	100000	ug/kg		1 U	0.88 U	0.98 U	0.92 U	1 U	0.65 U
1,1-Dichloroethane	26000	ug/kg		1 U	0.88 U	0.98 U	0.92 U	1 U	0.65 U
1,1-Dichloroethene	100000	ug/kg		1 U	0.88 U	0.98 U	0.92 U	1 U	0.65 U
1,2,4-Trimethylbenzene	52000	ug/kg		0.33 J	0.33 J	0.98 U	0.92 U	1 U	3.1
1,2-Dichlorobenzene	100000	ug/kg		1 U	0.88 U	0.98 U	0.92 U	1 U	0.65 U
1,2-Dichloroethane	3100	ug/kg		1 U	0.88 U	0.98 U	0.92 U	1 U	0.65 U
1,3,5-Trimethylbenzene	52000	ug/kg		1 U	0.11 J	0.98 U	0.92 U	1 U	0.19 J
1,3-Dichlorobenzene	49000	ug/kg		1 U	0.88 U	0.98 U	0.92 U	1 U	0.65 U
1,4-Dichlorobenzene	13000	ug/kg		1 U	0.88 U	0.98 U	0.92 U	1 U	0.65 U
1,4-Dioxane	13000	ug/kg		20 U	18 U	20 U	18 U	20 U	13 U
2-Butanone (MEK)	100000	ug/kg		26	18	15	5.8	17	5.8
Acetone	100000	ug/kg		110	75	71	74	79	20
Benzene	4800	ug/kg		1 U	0.88 U	0.98 U	0.92 U	1 U	0.65 U
Carbon tetrachloride	2400	ug/kg		1 U	0.88 U	0.98 U	0.92 U	1 U	0.65 U
Chlorobenzene	100000	ug/kg		1 U	0.88 U	0.98 U	0.92 U	1 U	0.65 U
Chloroform	49000	ug/kg		1 U	0.88 U	0.98 U	0.92 U	1 U	0.65 U
cis-1,2-Dichloroethene	100000	ug/kg		1 U	0.88 U	0.98 U	0.92 U	1 U	0.65 U
Ethylbenzene	41000	ug/kg		0.73 J	0.31 J	0.98 U	0.21 J	0.72 J	0.2 J
m+p-Xylene	--	ug/kg		3.6	1.8	0.58 J	1.2	3.5	0.74
Methylene chloride	100000	ug/kg		2.8	2.3 B	3.8	0.72 J	1.7	0.65 U
MTBE	100000	ug/kg		1 U	0.88 U	0.98 U	0.92 U	1 U	0.65 U
n-Butylbenzene	100000	ug/kg		1 U	0.88 U	0.98 U	0.33 J	1 U	2.4
n-Propylbenzene	100000	ug/kg		1 U	0.88 U	0.98 U	0.2 J	1 U	0.58 J
o-Xylene	--	ug/kg		1.6	0.88	0.32 J	0.5 J	1.7	1.5
sec-Butylbenzene	100000	ug/kg		0.13 J	0.88 U	0.98 U	0.24 J	1 U	1.7
tert-Butylbenzene	100000	ug/kg		0.48 J	0.88 U	0.98 U	0.41 J	1 U	0.52 J
Tetrachloroethene	19000	ug/kg		1 U	0.88 U	0.98 U	0.92 U	1 U	0.65 U
Toluene	100000	ug/kg		0.93 J	0.35 J	0.98 U	0.26 J	0.89 J	0.22 J
trans-1,2-Dichloroethene	100000	ug/kg		1 U	0.88 U	0.98 U	0.92 U	1 U	0.65 U
Trichloroethene	21000	ug/kg		1 U	0.88 U	0.98 U	0.92 U	1 U	0.65 U
Vinyl chloride	900	ug/kg		1 U	0.88 U	0.98 U	0.92 U	1 U	0.65 U
Xylenes (total)	100000	ug/kg		5.3	2.7	0.9 J	1.7 J	5.2	2.3
VOC Total TICs	10000	ug/kg		30.3	31.2	0	302.8	0	675

Table 6. Summary of Volatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-015-B	PDC-PX-015-S	PDC-PX-Q9-B3	PDC-PX-Q11-B	PDC-PX-R11-B
			Sample Date:	10/8/2019	10/8/2019	10/14/2019	10/14/2019	10/14/2019
			Sample Depth (ft bls):	-	-	-	-	-
1,1,1-Trichloroethane	100000	ug/kg		0.81 U	0.81 U	1.1 U	0.97 U	1.1 U
1,1-Dichloroethane	26000	ug/kg		0.81 U	0.81 U	1.1 U	0.97 U	1.1 U
1,1-Dichloroethene	100000	ug/kg		0.81 U	0.81 U	1.1 U	0.97 U	1.1 U
1,2,4-Trimethylbenzene	52000	ug/kg		0.81 U	0.81 U	0.29 J	0.27 J	1.1 U
1,2-Dichlorobenzene	100000	ug/kg		0.81 U	0.81 U	1.1 U	0.97 U	1.1 U
1,2-Dichloroethane	3100	ug/kg		0.81 U	0.81 U	1.1 U	0.97 U	1.1 U
1,3,5-Trimethylbenzene	52000	ug/kg		0.81 U	0.81 U	1.1 U	0.97 U	1.1 U
1,3-Dichlorobenzene	49000	ug/kg		0.81 U	0.81 U	1.1 U	0.97 U	1.1 U
1,4-Dichlorobenzene	13000	ug/kg		0.81 U	0.81 U	1.1 U	0.97 U	1.1 U
1,4-Dioxane	13000	ug/kg		16 U	16 U	22 U	19 U	22 U
2-Butanone (MEK)	100000	ug/kg		8.1	20	36	36	5.5 U
Acetone	100000	ug/kg		38	90	150	190	8.7
Benzene	4800	ug/kg		0.22 J	0.81 U	1.1 U	0.97 U	1.1 U
Carbon tetrachloride	2400	ug/kg		0.81 U	0.81 U	1.1 U	0.97 U	1.1 U
Chlorobenzene	100000	ug/kg		0.81 U	0.81 U	1.1 U	0.97 U	1.1 U
Chloroform	49000	ug/kg		0.81 U	0.81 U	1.1 U	0.97 U	1.1 U
cis-1,2-Dichloroethene	100000	ug/kg		0.81 U	0.81 U	1.1 U	0.97 U	1.1 U
Ethylbenzene	41000	ug/kg		0.22 J	0.27 J	0.24 J	0.21 J	0.46 J
m+p-Xylene	--	ug/kg		0.85	1.4	1.5	1.2	1.7
Methylene chloride	100000	ug/kg		1.6	1.1	1.1	0.85 J	2.3
MTBE	100000	ug/kg		0.81 U	0.81 U	1.1 U	0.97 U	1.1 U
n-Butylbenzene	100000	ug/kg		0.81 U	0.81 U	1.1 U	0.97 U	1.1 U
n-Propylbenzene	100000	ug/kg		0.2 J	0.81 U	1.1 U	0.97 U	1.1 U
o-Xylene	--	ug/kg		0.33 J	0.6 J	0.76 J	0.61 J	0.93 J
sec-Butylbenzene	100000	ug/kg		0.19 J	0.81 U	0.34 J	0.97 U	0.42 J
tert-Butylbenzene	100000	ug/kg		0.81 U	0.81 U	1.1 U	0.97 U	1.1 U
Tetrachloroethene	19000	ug/kg		0.81 U	0.81 U	1.1 U	0.97 U	1.1 U
Toluene	100000	ug/kg		0.58 J	0.37 J	0.37 J	0.37 J	0.82 J
trans-1,2-Dichloroethene	100000	ug/kg		0.81 U	0.81 U	1.1 U	0.97 U	1.1 U
Trichloroethene	21000	ug/kg		0.81 U	0.81 U	1.1 U	0.97 U	1.1 U
Vinyl chloride	900	ug/kg		0.81 U	0.81 U	1.1 U	0.97 U	1.1 U
Xylenes (total)	100000	ug/kg		1.2 J	2	2.3	1.8 J	2.7
VOC Total TICs	10000	ug/kg		83.6	129.1	22.5	116.5	50.7

Table 6. Summary of Volatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-S12-B DUP	PDC-PX-R12-B	PDC-PX-R13-B	PDC-PX-S12-B	PDC-PX-S13-E
			Sample Date:	10/15/2019	10/15/2019	10/15/2019	10/15/2019	10/15/2019
			Sample Depth (ft bls):	-	-	-	-	-
1,1,1-Trichloroethane	100000	ug/kg		1.1 U	0.87 U	2.5 U	1.3 U	1.1 U
1,1-Dichloroethane	26000	ug/kg		1.1 U	0.87 U	2.5 U	1.3 U	1.1 U
1,1-Dichloroethene	100000	ug/kg		1.1 U	0.87 U	2.5 U	1.3 U	1.1 U
1,2,4-Trimethylbenzene	52000	ug/kg		1.3	0.27 J	4.8	1.3 U	1.1 U
1,2-Dichlorobenzene	100000	ug/kg		1.1 U	0.87 U	2.5 U	1.3 U	1.1 U
1,2-Dichloroethane	3100	ug/kg		1.1 U	0.87 U	2.5 U	1.3 U	1.1 U
1,3,5-Trimethylbenzene	52000	ug/kg		1.1 U	0.87 U	1.6 J	1.3 U	1.1 U
1,3-Dichlorobenzene	49000	ug/kg		1.1 U	0.87 U	2.5 U	1.3 U	1.1 U
1,4-Dichlorobenzene	13000	ug/kg		1.1 U	0.87 U	2.5 U	1.3 U	1.1 U
1,4-Dioxane	13000	ug/kg		22 U	17 U	49 U	25 U	21 U
2-Butanone (MEK)	100000	ug/kg		42	10	55	35	30
Acetone	100000	ug/kg		210	26	310	210	150
Benzene	4800	ug/kg		1.1 U	0.87 U	6.2	1.3 U	1.1 U
Carbon tetrachloride	2400	ug/kg		1.1 U	0.87 U	2.5 U	1.3 U	1.1 U
Chlorobenzene	100000	ug/kg		1.1 U	0.87 U	2.5 U	1.3 U	1.1 U
Chloroform	49000	ug/kg		1.1 U	0.87 U	2.5 U	1.3 U	1.1 U
cis-1,2-Dichloroethene	100000	ug/kg		1.1 U	0.87 U	2.5 U	1.3 U	1.1 U
Ethylbenzene	41000	ug/kg		0.64 J	0.34 J	0.96 J	1.3 U	1.1 U
m+p-Xylene	--	ug/kg		2.9	1.9	3.9	0.56 J	0.53 J
Methylene chloride	100000	ug/kg		2.1	1.8	1.6 J	1.3	0.54 J
MTBE	100000	ug/kg		1.1 U	0.87 U	1.1 J	1.3 U	1.1 U
n-Butylbenzene	100000	ug/kg		2	0.87 U	2.5 U	1.3 U	1.1 U
n-Propylbenzene	100000	ug/kg		1.1 U	0.87 U	0.88 J	1.3 U	1.1 U
o-Xylene	--	ug/kg		1.3	0.63 J	4.4	0.28 J	0.25 J
sec-Butylbenzene	100000	ug/kg		7.7	0.24 J	2.5 U	0.6 J	1.1 U
tert-Butylbenzene	100000	ug/kg		1.5	0.71 JT	2.5 UT	1.3 U	0.44 J
Tetrachloroethene	19000	ug/kg		1.1 U	0.87 U	2.5 U	1.3 U	1.1 U
Toluene	100000	ug/kg		1.5	1.4	10	1.3 U	0.49 J
trans-1,2-Dichloroethene	100000	ug/kg		1.1 U	0.87 U	2.5 U	1.3 U	1.1 U
Trichloroethene	21000	ug/kg		1.1 U	0.87 U	2.5 U	1.3 U	1.1 U
Vinyl chloride	900	ug/kg		1.1 U	0.87 U	2.5 U	1.3 U	1.1 U
Xylenes (total)	100000	ug/kg		4.2	2.5	8.2	0.84 J	0.78 J
VOC Total TICs	10000	ug/kg		2100	238.9	1358	801	0

Table 6. Summary of Volatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-R13-S	PDC-PX-R13-E	PDC-PX-Q12-B	PDC-DUP DUP	PDC-PX-Q13-B
			Sample Date:	10/16/2019	10/16/2019	10/16/2019	10/16/2019	10/17/2019
			Sample Depth (ft bls):	-	-	-	-	-
1,1,1-Trichloroethane	100000	ug/kg		1 U	1 U	1.9 U	2 U	1.1 U
1,1-Dichloroethane	26000	ug/kg		1 U	1 U	1.9 U	2 U	1.1 U
1,1-Dichloroethene	100000	ug/kg		1 U	1 U	1.9 U	2 U	1.1 U
1,2,4-Trimethylbenzene	52000	ug/kg		1 U	0.35 J	4.8	2.3	0.29 J
1,2-Dichlorobenzene	100000	ug/kg		1 U	1 U	1.9 U	2 U	1.1 U
1,2-Dichloroethane	3100	ug/kg		1 U	1 U	1.9 U	2 U	1.1 U
1,3,5-Trimethylbenzene	52000	ug/kg		1 U	1 U	0.52 J	0.33 J	1.1 U
1,3-Dichlorobenzene	49000	ug/kg		1 U	1 U	1.9 U	2 U	1.1 U
1,4-Dichlorobenzene	13000	ug/kg		1 U	1 U	1.9 U	2 U	1.1 U
1,4-Dioxane	13000	ug/kg		20 U	21 U	39 U	39 U	21 U
2-Butanone (MEK)	100000	ug/kg		21	49	26	25	18
Acetone	100000	ug/kg		160	140	90	67	81
Benzene	4800	ug/kg		1 U	1 U	1.8 J	3.7	1.1 U
Carbon tetrachloride	2400	ug/kg		1 U	1 U	1.9 U	2 U	1.1 U
Chlorobenzene	100000	ug/kg		1 U	1 U	1.9 U	2 U	1.1 U
Chloroform	49000	ug/kg		1 U	1 U	1.9 U	2 U	1.1 U
cis-1,2-Dichloroethene	100000	ug/kg		1 U	1 U	1.9 U	2 U	1.1 U
Ethylbenzene	41000	ug/kg		0.26 J	0.38 J	1.7 J	2.5	1.1 U
m+p-Xylene	--	ug/kg		1.3	2.4	4.2	5.3	0.9 J
Methylene chloride	100000	ug/kg		1	1.6	1.4 J	1.8 J	1.5
MTBE	100000	ug/kg		1 U	1 U	1.9 U	2 U	1.1 U
n-Butylbenzene	100000	ug/kg		1 U	1 U	1.9 U	2 U	1.1 U
n-Propylbenzene	100000	ug/kg		1 U	1 U	0.37 J	2 U	0.2 J
o-Xylene	--	ug/kg		0.58 J	1.1	2.7	3.4	0.47 J
sec-Butylbenzene	100000	ug/kg		1 U	1.3	1.9 U	2 U	1.5
tert-Butylbenzene	100000	ug/kg		1 U	0.66 J	1.9 U	2 U	0.73 J
Tetrachloroethene	19000	ug/kg		1 U	1 U	1.9 U	2 U	1.1 U
Toluene	100000	ug/kg		1 U	0.63 J	0.95 J	2.8	0.54 J
trans-1,2-Dichloroethene	100000	ug/kg		1 U	1 U	1.9 U	2 U	1.1 U
Trichloroethene	21000	ug/kg		1 U	1 U	1.9 U	2 U	1.1 U
Vinyl chloride	900	ug/kg		1 U	1 U	1.9 U	2 U	1.1 U
Xylenes (total)	100000	ug/kg		1.9 J	3.5	6.9	8.7	1.4 J
VOC Total TICs	10000	ug/kg		224.5	190.3	9.7	0	90.3

Table 6. Summary of Volatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-P11-B	PDC-PX-P12-B	PDC-PX-P13-B	PDC-DUP	DUP	PDC-PX-K13-B	PDC-PX-K13-N
			Sample Date:	10/18/2019	10/18/2019	10/18/2019	10/19/2019		10/19/2019	10/19/2019
			Sample Depth (ft bls):	-	-	-	-		-	-
1,1,1-Trichloroethane	100000	ug/kg		0.85 U	1 U	0.91 U	2.5 U		1.6 U	0.93 U
1,1-Dichloroethane	26000	ug/kg		0.85 U	1 U	0.91 U	2.5 U		1.6 U	0.93 U
1,1-Dichloroethene	100000	ug/kg		0.85 U	1 U	0.91 U	2.5 U		1.6 U	0.93 U
1,2,4-Trimethylbenzene	52000	ug/kg		2.3	0.28 J	0.91 U	1.3 J		0.75 J	0.93 U
1,2-Dichlorobenzene	100000	ug/kg		0.85 U	1 U	0.91 U	2.5 U		1.6 U	0.93 U
1,2-Dichloroethane	3100	ug/kg		0.85 U	1 U	0.91 U	2.5 U		1.6 U	0.93 U
1,3,5-Trimethylbenzene	52000	ug/kg		0.85 U	1 U	0.91 U	0.91 J		0.56 J	0.93 U
1,3-Dichlorobenzene	49000	ug/kg		0.85 U	1 U	0.91 U	2.5 U		1.6 U	0.93 U
1,4-Dichlorobenzene	13000	ug/kg		0.85 U	1 U	0.91 U	2.5 U		1.6 U	0.93 U
1,4-Dioxane	13000	ug/kg		17 U	21 U	18 U	50 U		31 U	19 U
2-Butanone (MEK)	100000	ug/kg		2.8 J	16	7.2	7.7 J		160	16
Acetone	100000	ug/kg		11	44	35	52		370	48
Benzene	4800	ug/kg		0.85 U	1 U	0.49 J	2.5 U		1.6 U	0.93 U
Carbon tetrachloride	2400	ug/kg		0.85 U	1 U	0.91 U	2.5 U		1.6 U	0.93 U
Chlorobenzene	100000	ug/kg		0.85 U	1 U	0.91 U	2.5 U		1.6 U	0.93 U
Chloroform	49000	ug/kg		0.85 U	1 U	0.91 U	2.5 U		1.6 U	0.93 U
cis-1,2-Dichloroethene	100000	ug/kg		0.85 U	1 U	0.91 U	2.5 U		1.6 U	0.93 U
Ethylbenzene	41000	ug/kg		0.36 J	0.43 J	0.44 J	2.5 U		1.6 U	0.2 J
m+p-Xylene	--	ug/kg		1.5	2.4	1.6	1.2 J		0.97 J	1.2
Methylene chloride	100000	ug/kg		1.8	2	1.3	4.5		1.6 U	1.2
MTBE	100000	ug/kg		0.36 J	1 U	0.91 U	2.5 U		1.6 U	0.93 U
n-Butylbenzene	100000	ug/kg		0.64 J	1 U	0.91 U	2.5 U		1.6 U	0.93 U
n-Propylbenzene	100000	ug/kg		0.31 J	0.33 J	0.39 J	2.5 U		1.6 U	0.93 U
o-Xylene	--	ug/kg		0.97	1	0.8 J	0.82 J		0.52 J	0.53 J
sec-Butylbenzene	100000	ug/kg		2.3	2.9	4.3	2.5 U		0.15 J	0.93 U
tert-Butylbenzene	100000	ug/kg		0.92	1.2	0.92	2.5 U		1.6 U	0.93 U
Tetrachloroethene	19000	ug/kg		0.85 U	1 U	0.91 U	2.5 U		1.6 U	0.93 U
Toluene	100000	ug/kg		0.54 J	1.6	0.61 J	1.1 J		0.98 J	0.49 J
trans-1,2-Dichloroethene	100000	ug/kg		0.85 U	1 U	0.91 U	2.5 U		1.6 U	0.93 U
Trichloroethene	21000	ug/kg		0.85 U	1 U	0.91 U	2.5 U		1.6 U	0.93 U
Vinyl chloride	900	ug/kg		0.85 U	1 U	0.91 U	2.5 U		1.6 U	0.93 U
Xylenes (total)	100000	ug/kg		2.5	3.4	2.4	2 J		1.5 J	1.7 J
VOC Total TICs	10000	ug/kg		999	559	436	71		36	158.3

Table 6. Summary of Volatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-J13-B	PDC-PX-J14-W	PDC-PX-J14-S	PDC-PX-J13-N	PDC-PX-K13-S	PDC-PX-L14-B
			Sample Date:	10/19/2019	10/19/2019	10/19/2019	10/19/2019	10/21/2019	10/22/2019
			Sample Depth (ft bls):	-	-	-	-	-	-
1,1,1-Trichloroethane	100000	ug/kg		1.2 U	0.85 U	1 U	0.89 U	1.1 U	1.4 U
1,1-Dichloroethane	26000	ug/kg		1.2 U	0.85 U	1 U	0.89 U	1.1 U	1.4 U
1,1-Dichloroethene	100000	ug/kg		1.2 U	0.85 U	1 U	0.89 U	1.1 U	1.4 U
1,2,4-Trimethylbenzene	52000	ug/kg		1.2 U	0.85 U	1 U	0.36 J	1.4	1.2 J
1,2-Dichlorobenzene	100000	ug/kg		1.2 U	0.85 U	1 U	0.89 U	1.1 U	1.4 U
1,2-Dichloroethane	3100	ug/kg		1.2 U	0.85 U	1 U	0.89 U	1.1 U	1.4 U
1,3,5-Trimethylbenzene	52000	ug/kg		1.2 U	0.85 U	1 U	0.89 U	1.1 U	0.38 J
1,3-Dichlorobenzene	49000	ug/kg		1.2 U	0.85 U	1 U	0.89 U	1.1 U	1.4 U
1,4-Dichlorobenzene	13000	ug/kg		1.2 U	0.85 U	1 U	0.89 U	1.1 U	1.4 U
1,4-Dioxane	13000	ug/kg		24 U	17 U	20 U	18 U	22 U	28 U
2-Butanone (MEK)	100000	ug/kg		5.9 U	13	26	9.9	72	5.1 J
Acetone	100000	ug/kg		22	57	87	33	190	34
Benzene	4800	ug/kg		1.2 U	0.85 U	1 U	0.45 J	1.3	1.4 U
Carbon tetrachloride	2400	ug/kg		1.2 U	0.85 U	1 U	0.89 U	1.1 U	1.4 U
Chlorobenzene	100000	ug/kg		1.2 U	0.85 U	1 U	0.89 U	1.1 U	1.4 U
Chloroform	49000	ug/kg		1.2 U	0.85 U	1 U	0.89 U	1.1 U	1.4 U
cis-1,2-Dichloroethene	100000	ug/kg		1.2 U	0.85 U	1 U	0.89 U	1.1 U	1.4 U
Ethylbenzene	41000	ug/kg		0.25 J	0.2 J	1 U	0.56 J	1.3	2.9
m+p-Xylene	--	ug/kg		1.2	0.89	0.51 J	2.6	0.91 J	3.1
Methylene chloride	100000	ug/kg		1.6	1.4	1.5	2	0.68 J	1.1 BJ
MTBE	100000	ug/kg		1.2 U	0.85 U	1 U	0.89 U	1.1 U	1.4 U
n-Butylbenzene	100000	ug/kg		0.5 J	0.85 U	1 U	0.89 U	30	0.46 J
n-Propylbenzene	100000	ug/kg		0.33 J	0.85 U	1	0.89 U	13	0.84 J
o-Xylene	--	ug/kg		0.82 J	0.42 J	0.4 J	1	9.6	1.8
sec-Butylbenzene	100000	ug/kg		0.61 J	0.85 U	0.13 J	0.89 U	31	0.78 J
tert-Butylbenzene	100000	ug/kg		1.2 U	0.85 U	1 U	0.89 U	3.8	0.8 J
Tetrachloroethene	19000	ug/kg		1.2 U	0.85 U	1 U	0.89 U	1.1 U	1.4 U
Toluene	100000	ug/kg		0.71 J	0.7 J	0.28 J	3.5	0.89 J	1.7
trans-1,2-Dichloroethene	100000	ug/kg		1.2 U	0.85 U	1 U	0.89 U	1.1 U	1.4 U
Trichloroethene	21000	ug/kg		1.2 U	0.85 U	1 U	0.89 U	1.1 U	1.4 U
Vinyl chloride	900	ug/kg		1.2 U	0.85 U	1 U	0.89 U	1.1 U	1.4 U
Xylenes (total)	100000	ug/kg		2 J	1.3 J	0.91 J	3.6	10	4.9
VOC Total TICs	10000	ug/kg		44.7	198	12.7	6.5	7170	108.9

Table 6. Summary of Volatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-M1-B	PDC-PX-M1-W1	PDC-PX-M2-W	PDC-PX-N1-E	PDC-PX-L13-B	PDC-PX-Q14-B2
			Sample Date:	10/23/2019	10/23/2019	10/23/2019	10/23/2019	10/24/2019	10/25/2019
			Sample Depth (ft bls):	-	-	-	-	-	-
1,1,1-Trichloroethane	100000	ug/kg		110 U	0.91 U	0.8 U	0.98 U	1.1 U	1 U
1,1-Dichloroethane	26000	ug/kg		110 U	0.91 U	0.8 U	0.98 U	1.1 U	1 U
1,1-Dichloroethene	100000	ug/kg		110 U	0.91 U	0.8 U	0.98 U	1.1 U	1 U
1,2,4-Trimethylbenzene	52000	ug/kg		110 U	0.91 U	0.8 U	0.98 U	1.1 U	1 U
1,2-Dichlorobenzene	100000	ug/kg		110 U	0.91 U	0.8 U	0.98 U	1.1 U	1 U
1,2-Dichloroethane	3100	ug/kg		110 U	0.91 U	0.8 U	0.98 U	1.1 U	1 U
1,3,5-Trimethylbenzene	52000	ug/kg		110 U	0.91 U	0.8 U	0.98 U	1.1 U	1 U
1,3-Dichlorobenzene	49000	ug/kg		110 U	0.91 U	0.8 U	0.98 U	1.1 U	1 U
1,4-Dichlorobenzene	13000	ug/kg		110 U	0.91 U	0.8 U	0.98 U	1.1 U	1 U
1,4-Dioxane	13000	ug/kg		5400 U	18 U	16 U	20 U	21 U	20 U
2-Butanone (MEK)	100000	ug/kg		540 U	4.5 U	4.2	2.8 J	19	81
Acetone	100000	ug/kg		540 U	5.4 U	13	11	49	190
Benzene	4800	ug/kg		110 U	0.91 U	0.8 U	0.98 U	1.1 U	1 U
Carbon tetrachloride	2400	ug/kg		110 U	0.91 U	0.8 U	0.98 U	1.1 U	1 U
Chlorobenzene	100000	ug/kg		110 U	0.91 U	0.8 U	0.98 U	1.1 U	1 U
Chloroform	49000	ug/kg		110 U	0.91 U	0.8 U	0.98 U	1.1 U	1 U
cis-1,2-Dichloroethene	100000	ug/kg		110 U	0.91 U	0.8 U	0.98 U	1.1 U	1 U
Ethylbenzene	41000	ug/kg		110 U	0.91 U	0.8 U	0.21 J	1.1 U	1 U
m+p-Xylene	--	ug/kg		110 U	0.91 U	0.8 U	0.44 J	1.6	0.6 J
Methylene chloride	100000	ug/kg		110 U	0.7 J	0.8 U	1.9	1.9	1.1
MTBE	100000	ug/kg		110 U	0.91 U	0.8 U	0.98 U	1.1 U	1 U
n-Butylbenzene	100000	ug/kg		260	0.91 U	0.93	0.98 U	1.1 U	1.3
n-Propylbenzene	100000	ug/kg		270	0.91 U	0.25 J	0.27 J	1.1 U	1
o-Xylene	--	ug/kg		110 U	0.91 U	0.8 U	0.98 U	0.72 J	0.3 J
sec-Butylbenzene	100000	ug/kg		1000	0.34 J	1.3	0.2 J	0.16 J	0.94 J
tert-Butylbenzene	100000	ug/kg		120	0.91 U	0.56 J	0.98 U	1.1 U	0.61 J
Tetrachloroethene	19000	ug/kg		110 U	0.91 U	0.8 U	0.98 U	1.1 U	1 U
Toluene	100000	ug/kg		110 U	0.91 U	0.8 U	0.98 U	0.75 J	0.26 J
trans-1,2-Dichloroethene	100000	ug/kg		110 U	0.91 U	0.8 U	0.98 U	1.1 U	1 U
Trichloroethene	21000	ug/kg		110 U	0.91 U	0.8 U	0.98 U	1.1 U	1 U
Vinyl chloride	900	ug/kg		110 U	0.91 U	0.8 U	0.98 U	1.1 U	1 U
Xylenes (total)	100000	ug/kg		210 U	1.8 U	1.6 U	0.44 J	2.3	0.91 J
VOC Total TICs	10000	ug/kg		**69600**	5.2	1162	81.2	24.9	390

Table 6. Summary of Volatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-Q14-E	PDC-PX-Q14-S	PDC-PX-M14-B	PDC-PX-P14-B	PDC-PX-P14-S
			Sample Date:	10/25/2019	10/25/2019	10/25/2019	10/25/2019	10/25/2019
			Sample Depth (ft bls):	-	-	-	-	-
1,1,1-Trichloroethane	100000	ug/kg		0.91 U	0.88 U	2.1 U	1.1 U	1.6 U
1,1-Dichloroethane	26000	ug/kg		0.91 U	0.88 U	2.1 U	1.1 U	1.6 U
1,1-Dichloroethene	100000	ug/kg		0.91 U	0.88 U	2.1 U	1.1 U	1.6 U
1,2,4-Trimethylbenzene	52000	ug/kg		0.91 U	0.88 U	3.7	1.1 U	1.6 U
1,2-Dichlorobenzene	100000	ug/kg		0.91 U	0.88 U	2.1 U	1.1 U	1.6 U
1,2-Dichloroethane	3100	ug/kg		0.91 U	0.88 U	2.1 U	1.1 U	1.6 U
1,3,5-Trimethylbenzene	52000	ug/kg		0.91 U	0.88 U	2.3	1.1 U	1.6 U
1,3-Dichlorobenzene	49000	ug/kg		0.91 U	0.88 U	2.1 U	1.1 U	1.6 U
1,4-Dichlorobenzene	13000	ug/kg		0.91 U	0.88 U	2.1 U	1.1 U	1.6 U
1,4-Dioxane	13000	ug/kg		18 U	18 U	41 U	23 U	33 U
2-Butanone (MEK)	100000	ug/kg		42	10	23	3.7 J	21
Acetone	100000	ug/kg		110	58	100	36	57
Benzene	4800	ug/kg		0.91 U	0.88 U	41	1.1 U	1.6 U
Carbon tetrachloride	2400	ug/kg		0.91 U	0.88 U	2.1 U	1.1 U	1.6 U
Chlorobenzene	100000	ug/kg		0.91 U	0.88 U	2.1 U	1.1 U	1.6 U
Chloroform	49000	ug/kg		0.91 U	0.88 U	2.1 U	1.1 U	1.6 U
cis-1,2-Dichloroethene	100000	ug/kg		0.91 U	0.88 U	2.1 U	1.1 U	1.6 U
Ethylbenzene	41000	ug/kg		0.91 U	0.88 U	1.1 J	0.42 J	0.52 J
m+p-Xylene	--	ug/kg		0.47 J	0.62 J	5.6	1.6	2.4
Methylene chloride	100000	ug/kg		0.65 J	1.1	2.2	2.3	1.3 J
MTBE	100000	ug/kg		0.91 U	0.88 U	2.1 U	0.15 J	1.6 U
n-Butylbenzene	100000	ug/kg		0.43 J	0.88 U	1.5 J	0.9 J	1.6 U
n-Propylbenzene	100000	ug/kg		0.7 J	0.88 U	9.5	0.5 J	0.52 J
o-Xylene	--	ug/kg		0.2 J	0.31 J	7.6	0.8 J	1.1 J
sec-Butylbenzene	100000	ug/kg		0.69 J	0.88 U	7.2	3.6	1.1 J
tert-Butylbenzene	100000	ug/kg		0.72 J	0.88 U	1.9 J	0.88 J	1.3 J
Tetrachloroethene	19000	ug/kg		0.91 U	0.88 U	2.1 U	1.1 U	1.6 U
Toluene	100000	ug/kg		0.32 J	0.88 U	2.9	0.76 J	1.2 J
trans-1,2-Dichloroethene	100000	ug/kg		0.91 U	0.88 U	2.1 U	1.1 U	1.6 U
Trichloroethene	21000	ug/kg		0.91 U	0.88 U	2.1 U	1.1 U	1.6 U
Vinyl chloride	900	ug/kg		0.91 U	0.88 U	2.1 U	1.1 U	1.6 U
Xylenes (total)	100000	ug/kg		0.67 J	0.93 J	13	2.4	3.6
VOC Total TICs	10000	ug/kg		1327	1216	1002	278	2526

Table 6. Summary of Volatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-M13-B	PDC-PX-K14-W	PDC-PX-K14-B	PDC-PX-K15-B	PDC-PX-K15-W
			Sample Date:	10/28/2019	10/29/2019	10/29/2019	10/30/2019	10/30/2019
			Sample Depth (ft bls):	-	-	-	-	-
1,1,1-Trichloroethane	100000	ug/kg		1.7 U	1.1 U	1.1 U	2.3 U	1.3 U
1,1-Dichloroethane	26000	ug/kg		1.7 U	1.1 U	1.1 U	2.3 U	1.3 U
1,1-Dichloroethene	100000	ug/kg		1.7 U	1.1 U	1.1 U	2.3 U	1.3 U
1,2,4-Trimethylbenzene	52000	ug/kg		0.87 J	0.41 J	0.42 J	3.3	4.7
1,2-Dichlorobenzene	100000	ug/kg		1.7 U	1.1 U	1.1 U	2.3 U	1.3 U
1,2-Dichloroethane	3100	ug/kg		1.7 U	1.1 U	1.1 U	2.3 U	1.3 U
1,3,5-Trimethylbenzene	52000	ug/kg		0.52 J	1.1 U	0.13 J	0.55 J	0.6 J
1,3-Dichlorobenzene	49000	ug/kg		1.7 U	1.1 U	1.1 U	2.3 U	1.3 U
1,4-Dichlorobenzene	13000	ug/kg		1.7 U	1.1 U	1.1 U	2.3 U	1.3 U
1,4-Dioxane	13000	ug/kg		34 U	21 U	22 U	45 U	27 U
2-Butanone (MEK)	100000	ug/kg		59	64	18	99	87
Acetone	100000	ug/kg		160	250	54	220	210
Benzene	4800	ug/kg		8	1.1 U	1.1 U	2.3 U	0.65 J
Carbon tetrachloride	2400	ug/kg		1.7 U	1.1 U	1.1 U	2.3 U	1.3 U
Chlorobenzene	100000	ug/kg		1.7 U	1.1 U	1.1 U	2.3 U	1.3 U
Chloroform	49000	ug/kg		1.7 U	1.1 U	1.1 U	2.3 U	1.3 U
cis-1,2-Dichloroethene	100000	ug/kg		1.7 U	1.1 U	1.1 U	2.3 U	1.3 U
Ethylbenzene	41000	ug/kg		0.74 J	1.1 U	0.47 J	1.2 J	0.7 J
m+p-Xylene	--	ug/kg		2.1	0.34 J	2.3	7.5	1 J
Methylene chloride	100000	ug/kg		1.3 J	0.78 J	2.4	1.2 J	1.3 U
MTBE	100000	ug/kg		1.7 U	1.1 U	1.1 U	2.3 U	1.3 U
n-Butylbenzene	100000	ug/kg		1 J	1.3	1.1 U	2.3 U	1.3 U
n-Propylbenzene	100000	ug/kg		2.3	1.4	1.1 U	0.77 J	0.6 J
o-Xylene	--	ug/kg		1 J	0.64 J	1.1	4.6	0.99 J
sec-Butylbenzene	100000	ug/kg		1.7	1.9	0.34 J	2.3 U	1.5
tert-Butylbenzene	100000	ug/kg		0.94 J	0.33 J	1.1 U	2.3 U	1.3 U
Tetrachloroethene	19000	ug/kg		1.7 U	1.1 U	1.1 U	2.3 U	1.3 U
Toluene	100000	ug/kg		1.3 J	0.4 J	1.3	1.2 J	0.95 J
trans-1,2-Dichloroethene	100000	ug/kg		1.7 U	1.1 U	1.1 U	2.3 U	1.3 U
Trichloroethene	21000	ug/kg		1.7 U	1.1 U	1.1 U	2.3 U	1.3 U
Vinyl chloride	900	ug/kg		1.7 U	1.1 U	1.1 U	2.3 U	1.3 U
Xylenes (total)	100000	ug/kg		3.1 J	0.98 J	3.5	12	2 J
VOC Total TICs	10000	ug/kg		687	1230	164.2	400	719

Table 6. Summary of Volatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-K16-B	PDC-PX-K16-S	PDC-PX-L16-S	PDC-PX-L16-B	PDC-PX-K1-B	PDC-PX-K1-N
			Sample Date:	10/31/2019	10/31/2019	10/31/2019	10/31/2019	11/2/2019	11/2/2019
			Sample Depth (ft bls):	-	-	-	-	-	-
1,1,1-Trichloroethane	100000	ug/kg		2.7 U	1.1 U	0.73 U	4.1 U	1.1 UT	0.87 UT
1,1-Dichloroethane	26000	ug/kg		2.7 U	1.1 U	0.73 U	4.1 U	1.1 U	0.87 UT
1,1-Dichloroethene	100000	ug/kg		2.7 U	1.1 U	0.73 U	4.1 U	1.1 U	0.87 UT
1,2,4-Trimethylbenzene	52000	ug/kg		0.73 J	1.1 U	0.73 U	4.1 U	1.1 U	0.87 UT
1,2-Dichlorobenzene	100000	ug/kg		2.7 U	1.1 U	0.73 U	4.1 U	1.1 U	0.87 UT
1,2-Dichloroethane	3100	ug/kg		2.7 U	1.1 U	0.73 U	4.1 U	1.1 U	0.87 UT
1,3,5-Trimethylbenzene	52000	ug/kg		2.7 U	1.1 U	0.73 U	4.1 U	1.1 U	0.87 UT
1,3-Dichlorobenzene	49000	ug/kg		2.7 U	1.1 U	0.73 U	4.1 U	1.1 U	0.87 UT
1,4-Dichlorobenzene	13000	ug/kg		2.7 U	1.1 U	0.73 U	4.1 U	1.1 U	0.87 UT
1,4-Dioxane	13000	ug/kg		55 U	22 U	15 U	83 U	22 U	17 UT
2-Butanone (MEK)	100000	ug/kg		29	77	44	180	84	17 T
Acetone	100000	ug/kg		81	140	88	370	200	50 T
Benzene	4800	ug/kg		1.2 J	1.1 U	0.73 U	11	1.1 U	0.87 UT
Carbon tetrachloride	2400	ug/kg		2.7 U	1.1 U	0.73 U	4.1 U	1.1 U	0.87 UT
Chlorobenzene	100000	ug/kg		2.7 U	1.1 U	0.73 U	4.1 U	1.1 U	0.87 UT
Chloroform	49000	ug/kg		2.7 U	1.1 U	0.73 U	4.1 U	1.1 U	0.87 UT
cis-1,2-Dichloroethene	100000	ug/kg		2.7 U	1.1 U	0.73 U	4.1 U	1.1 U	0.87 UT
Ethylbenzene	41000	ug/kg		8.9	1.1 U	0.73 U	2 J	1.1 U	0.87 UT
m+p-Xylene	--	ug/kg		13	0.62 J	0.38 J	1.2 J	0.39 J	1.4 T
Methylene chloride	100000	ug/kg		2.7 U	0.66 J	0.46 J	4.1 U	1.1 U	2.5 T
MTBE	100000	ug/kg		2.7 U	1.1 U	0.73 U	4.1 U	1.1 U	0.87 UT
n-Butylbenzene	100000	ug/kg		2.7 U	1.1 U	0.27 J	4.1 U	1.1 U	0.87 UT
n-Propylbenzene	100000	ug/kg		2.7 U	1.1 U	0.53 J	4.1 U	1.1 U	0.87 UT
o-Xylene	--	ug/kg		18	0.36 J	0.2 J	1.1 J	1.1 U	0.53 JT
sec-Butylbenzene	100000	ug/kg		2.7 U	1.1 U	0.59 J	4.1 U	1.1 U	0.87 UT
tert-Butylbenzene	100000	ug/kg		2.7 U	1.1 U	0.46 J	4.1 U	1.1 U	0.87 UT
Tetrachloroethene	19000	ug/kg		2.7 U	1.1 U	0.73 U	4.1 U	1.1 U	0.87 UT
Toluene	100000	ug/kg		3.2	0.34 J	0.37 J	2.4 J	0.97 J	0.77 JT
trans-1,2-Dichloroethene	100000	ug/kg		2.7 U	1.1 U	0.73 U	4.1 U	1.1 U	0.87 UT
Trichloroethene	21000	ug/kg		2.7 U	1.1 U	0.73 U	4.1 U	1.1 U	0.87 UT
Vinyl chloride	900	ug/kg		2.7 U	1.1 U	0.73 U	4.1 U	1.1 U	0.87 UT
Xylenes (total)	100000	ug/kg		31	0.98 J	0.58 J	2.3 J	0.39 J	1.9 T
VOC Total TICs	10000	ug/kg		60	6.8	166.1	38	0	0

Table 6. Summary of Volatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-K1-E	PDC-PX-K1-S	PDC-PX-K1-W	PDC-PX-O11-B	PDC-PX-O12-B	PDC-PX-L15-B
			Sample Date:	11/2/2019	11/2/2019	11/2/2019	11/2/2019	11/2/2019	11/4/2019
			Sample Depth (ft bls):	-	-	-	-	-	-
1,1,1-Trichloroethane	100000	ug/kg		1.1 UT	1 UT	1 UT	0.96 UT	0.87 U	2.3 UT
1,1-Dichloroethane	26000	ug/kg		1.1 U	1 U	1 U	0.96 U	0.87 U	2.3 U
1,1-Dichloroethene	100000	ug/kg		1.1 U	1 U	1 U	0.96 U	0.87 U	2.3 U
1,2,4-Trimethylbenzene	52000	ug/kg		1.1 U	1 U	1 U	2.1	0.87 U	0.99 J
1,2-Dichlorobenzene	100000	ug/kg		1.1 U	1 U	1 U	0.96 U	0.87 U	2.3 U
1,2-Dichloroethane	3100	ug/kg		1.1 U	1 U	1 U	0.96 U	0.87 U	2.3 U
1,3,5-Trimethylbenzene	52000	ug/kg		1.1 U	1 U	1 U	0.37 J	0.87 U	2.3 U
1,3-Dichlorobenzene	49000	ug/kg		1.1 U	1 U	1 U	0.96 U	0.87 U	2.3 U
1,4-Dichlorobenzene	13000	ug/kg		1.1 U	1 U	1 U	0.96 U	0.87 U	2.3 U
1,4-Dioxane	13000	ug/kg		21 U	20 U	20 U	19 U	17 U	46 U
2-Butanone (MEK)	100000	ug/kg		67	48	22	78	4.3 U	75
Acetone	100000	ug/kg		160	140	67	160	180 T	210
Benzene	4800	ug/kg		1.1 U	1 U	1 U	6	4.5	2.3 U
Carbon tetrachloride	2400	ug/kg		1.1 U	1 U	1 U	0.96 U	0.87 U	2.3 U
Chlorobenzene	100000	ug/kg		1.1 U	1 U	1 U	0.96 U	0.87 U	2.3 U
Chloroform	49000	ug/kg		1.1 U	1 U	1 U	0.96 U	0.87 U	2.3 U
cis-1,2-Dichloroethene	100000	ug/kg		1.1 U	1 U	1 U	0.96 U	0.87 U	2.3 U
Ethylbenzene	41000	ug/kg		1.1 U	1 U	1 U	0.71 J	1.9	0.5 J
m+p-Xylene	--	ug/kg		0.35 J	0.4 J	1.5	1.9	2	1.3 J
Methylene chloride	100000	ug/kg		1.3	0.83 J	1.7	0.66 J	1.3	2.3 U
MTBE	100000	ug/kg		1.1 U	1 U	1 U	0.96 U	0.87 U	2.3 U
n-Butylbenzene	100000	ug/kg		1.1 U	1 U	1 U	3	25	1.7 J
n-Propylbenzene	100000	ug/kg		1.1 U	1 U	1 U	2	10	8.1
o-Xylene	--	ug/kg		0.22 J	0.22 J	0.55 J	1.1	0.74 J	1 J
sec-Butylbenzene	100000	ug/kg		1.1 U	1 U	1 U	4.6	120	5.5
tert-Butylbenzene	100000	ug/kg		1.1 U	1 U	1 U	1.1	18	0.81 J
Tetrachloroethene	19000	ug/kg		1.1 U	1 U	1 U	0.96 U	0.87 U	2.3 U
Toluene	100000	ug/kg		0.36 J	0.39 J	0.61 J	1.5	0.6 J	0.75 J
trans-1,2-Dichloroethene	100000	ug/kg		1.1 U	1 U	1 U	0.96 U	0.87 U	2.3 U
Trichloroethene	21000	ug/kg		1.1 U	1 U	1 U	0.96 U	0.87 U	2.3 U
Vinyl chloride	900	ug/kg		1.1 U	1 U	1 U	0.96 U	0.87 U	2.3 U
Xylenes (total)	100000	ug/kg		0.56 J	0.63 J	2	2.9	2.8	2.4 J
VOC Total TICs	10000	ug/kg		0	0	0	1200	**14670**	521

Table 6. Summary of Volatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-M15-S	PDC-PX-M15-B	PDC-PX-O13-B	PDC-PX-N15-B	PDC-PX-O14-B
			Sample Date:	11/4/2019	11/4/2019	11/4/2019	11/5/2019	11/5/2019
			Sample Depth (ft bls):	-	-	-	-	-
1,1,1-Trichloroethane	100000	ug/kg		0.96 UT	2.3 UT	2.2 U	2.5 U	1.1 U
1,1-Dichloroethane	26000	ug/kg		0.96 U	2.3 U	2.2 U	2.5 U	1.1 U
1,1-Dichloroethene	100000	ug/kg		0.96 U	2.3 U	2.2 U	2.5 U	1.1 U
1,2,4-Trimethylbenzene	52000	ug/kg		0.62 J	2.3 U	9.4	29	39
1,2-Dichlorobenzene	100000	ug/kg		0.96 U	2.3 U	2.2 U	2.5 U	1.1 U
1,2-Dichloroethane	3100	ug/kg		0.96 U	2.3 U	2.2 U	2.5 U	1.1 U
1,3,5-Trimethylbenzene	52000	ug/kg		0.13 J	2.3 U	2.5	3.3	0.43 J
1,3-Dichlorobenzene	49000	ug/kg		0.96 U	2.3 U	2.2 U	2.5 U	1.1 U
1,4-Dichlorobenzene	13000	ug/kg		0.96 U	2.3 U	2.2 U	2.5 U	1.1 U
1,4-Dioxane	13000	ug/kg		19 U	46 U	44 U	50 U	21 U
2-Butanone (MEK)	100000	ug/kg		57	32	52	39	100
Acetone	100000	ug/kg		150	130	140	120	210
Benzene	4800	ug/kg		0.29 J	2.3 U	110	53	0.86 J
Carbon tetrachloride	2400	ug/kg		0.96 U	2.3 U	2.2 U	2.5 U	1.1 U
Chlorobenzene	100000	ug/kg		0.96 U	2.3 U	2.2 U	2.5 U	1.1 U
Chloroform	49000	ug/kg		0.96 U	2.3 U	2.2 U	2.5 U	1.1 U
cis-1,2-Dichloroethene	100000	ug/kg		0.96 U	2.3 U	2.2 U	2.5 U	1.1 U
Ethylbenzene	41000	ug/kg		0.29 J	2.3 U	7.5	13	1.5
m+p-Xylene	--	ug/kg		0.72 J	1.2 J	11	16	1 J
Methylene chloride	100000	ug/kg		0.96 U	2.3 U	2.2 U	2.5 U	1.1 U
MTBE	100000	ug/kg		0.96 U	2.3 U	2.2 U	2.5 U	1.1 U
n-Butylbenzene	100000	ug/kg		2.3	2.3 U	2.2 U	0.77 J	16
n-Propylbenzene	100000	ug/kg		3	2.3 U	0.96 J	13	10
o-Xylene	--	ug/kg		0.54 J	0.77 J	7.3	4.7	0.78 J
sec-Butylbenzene	100000	ug/kg		3	2.3 U	2.2 U	2.7	20
tert-Butylbenzene	100000	ug/kg		0.96 U	2.3 U	2.2 U	0.79 J	1.8
Tetrachloroethene	19000	ug/kg		0.96 U	2.3 U	2.2 U	2.5 U	1.1 U
Toluene	100000	ug/kg		0.99	1.5 J	7.1	1.8 J	0.44 J
trans-1,2-Dichloroethene	100000	ug/kg		0.96 U	2.3 U	2.2 U	2.5 U	1.1 U
Trichloroethene	21000	ug/kg		0.96 U	2.3 U	2.2 U	2.5 U	1.1 U
Vinyl chloride	900	ug/kg		0.96 U	2.3 U	2.2 U	2.5 U	1.1 U
Xylenes (total)	100000	ug/kg		1.3 J	2 J	18	21	1.8 J
VOC Total TICs	10000	ug/kg		852	0	0	313	1860

Table 6. Summary of Volatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-N12-B	PDC-PX-N13-B	PDC-PX-N14-B	PDC-PX-N1-B1	PDC-PX-N1-B2	PDC-PX-M9-B
			Sample Date:	11/6/2019	11/7/2019	11/7/2019	11/7/2019	11/7/2019	11/8/2019
			Sample Depth (ft bls):	-	-	-	-	-	-
1,1,1-Trichloroethane	100000	ug/kg		1 U	1.2 U	2.2 U	1.1 U	0.96 U	1 U
1,1-Dichloroethane	26000	ug/kg		1 U	1.2 U	2.2 U	1.1 U	0.96 U	1 U
1,1-Dichloroethene	100000	ug/kg		1 U	1.2 U	2.2 U	1.1 U	0.96 U	1 U
1,2,4-Trimethylbenzene	52000	ug/kg		1 U	160	23	1.1 U	0.96 U	1 U
1,2-Dichlorobenzene	100000	ug/kg		1 U	1.2 U	2.2 U	1.1 U	0.96 U	1 U
1,2-Dichloroethane	3100	ug/kg		1 U	1.2 U	2.2 U	1.1 U	0.96 U	1 U
1,3,5-Trimethylbenzene	52000	ug/kg		1 U	63	6.4	1.1 U	0.96 U	1 U
1,3-Dichlorobenzene	49000	ug/kg		1 U	1.2 U	2.2 U	1.1 U	0.96 U	1 U
1,4-Dichlorobenzene	13000	ug/kg		1 U	1.2 U	2.2 U	1.1 U	0.96 U	1 U
1,4-Dioxane	13000	ug/kg		21 U	25 U	44 U	22 U	19 U	20 U
2-Butanone (MEK)	100000	ug/kg		55	65	46	67	63	30
Acetone	100000	ug/kg		180	210	120	190	170	100
Benzene	4800	ug/kg		1 U	310	56	1.1 U	0.96 U	1 U
Carbon tetrachloride	2400	ug/kg		1 U	1.2 U	2.2 U	1.1 U	0.96 U	1 U
Chlorobenzene	100000	ug/kg		1 U	1.2 U	2.2 U	1.1 U	0.96 U	1 U
Chloroform	49000	ug/kg		1 U	1.2 U	2.2 U	1.1 U	0.96 U	1 U
cis-1,2-Dichloroethene	100000	ug/kg		1 U	1.2 U	2.2 U	1.1 U	0.96 U	1 U
Ethylbenzene	41000	ug/kg		1 U	170	43	1.1 U	0.96 U	0.21 J
m+p-Xylene	--	ug/kg		0.39 J	120	94	0.6 J	0.5 J	1.1
Methylene chloride	100000	ug/kg		1 U	1.7	2.1 J	1.7	1.7	2.4
MTBE	100000	ug/kg		1 U	1.2 U	2.2 U	1.1 U	0.96 U	1 U
n-Butylbenzene	100000	ug/kg		1 U	17	2.2 U	1.1 U	0.96 U	1 U
n-Propylbenzene	100000	ug/kg		1 U	68	3.4	1.1 U	0.96 U	1 U
o-Xylene	--	ug/kg		1 U	12	6.9	0.29 J	0.96 U	0.54 J
sec-Butylbenzene	100000	ug/kg		1 U	28	2.2 U	1.1 U	0.96 U	1 U
tert-Butylbenzene	100000	ug/kg		1 U	2.7	2.2 U	1.1 U	0.96 U	1 U
Tetrachloroethene	19000	ug/kg		1 U	1.2 U	2.2 U	1.1 U	0.96 U	1 U
Toluene	100000	ug/kg		1 U	13	6.9	0.41 J	0.39 J	0.61 J
trans-1,2-Dichloroethene	100000	ug/kg		1 U	1.2 U	2.2 U	1.1 U	0.96 U	1 U
Trichloroethene	21000	ug/kg		1 U	1.2 U	2.2 U	1.1 U	0.96 U	1 U
Vinyl chloride	900	ug/kg		1 U	1.2 U	2.2 U	1.1 U	0.96 U	1 U
Xylenes (total)	100000	ug/kg		0.39 J	130	100	0.89 J	0.5 J	1.7 J
VOC Total TICs	10000	ug/kg		13	4350	99	0	20.6	18.4

Table 6. Summary of Volatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-015-E2	PDC-PX-M1-N	PDC-PX-015-E3	PDC-PX-M7-B	PDC-PX-N1-N2
			Sample Date:	11/8/2019	11/8/2019	11/8/2019	11/11/2019	11/12/2019
			Sample Depth (ft bls):	-	-	-	-	-
1,1,1-Trichloroethane	100000	ug/kg		1 U	1 U	0.96 U	1.1 UT	0.98 U
1,1-Dichloroethane	26000	ug/kg		1 U	1 U	0.96 U	1.1 U	0.98 U
1,1-Dichloroethene	100000	ug/kg		1 U	1 U	0.96 U	1.1 U	0.98 U
1,2,4-Trimethylbenzene	52000	ug/kg		0.98 J	1 U	0.96 U	1.1 U	0.98 U
1,2-Dichlorobenzene	100000	ug/kg		1 U	1 U	0.96 U	1.1 U	0.98 U
1,2-Dichloroethane	3100	ug/kg		1 U	1 U	0.96 U	1.1 UT	0.98 UT
1,3,5-Trimethylbenzene	52000	ug/kg		0.42 J	1 U	0.96 U	1.1 U	0.98 U
1,3-Dichlorobenzene	49000	ug/kg		1 U	1 U	0.96 U	1.1 U	0.98 U
1,4-Dichlorobenzene	13000	ug/kg		1 U	1 U	0.96 U	1.1 U	0.98 U
1,4-Dioxane	13000	ug/kg		20 U	20 U	19 U	21 U	20 U
2-Butanone (MEK)	100000	ug/kg		27	86	78	4.4 J	33
Acetone	100000	ug/kg		120	220	250	24	110
Benzene	4800	ug/kg		1 U	1 U	0.96 U	1.1 U	0.98 U
Carbon tetrachloride	2400	ug/kg		1 U	1 U	0.96 U	1.1 U	0.98 U
Chlorobenzene	100000	ug/kg		1 U	1 U	0.96 U	1.1 U	0.98 U
Chloroform	49000	ug/kg		1 U	1 U	0.96 U	1.1 U	0.98 U
cis-1,2-Dichloroethene	100000	ug/kg		1 U	1 U	0.96 U	1.1 U	0.98 U
Ethylbenzene	41000	ug/kg		0.33 J	1.1	0.96 U	1.1 U	0.98 U
m+p-Xylene	--	ug/kg		1.1	1.4	0.7 J	0.27 J	0.6 J
Methylene chloride	100000	ug/kg		1.5	2.8	2.8	1.1 U	1.5
MTBE	100000	ug/kg		1 U	1 U	0.96 U	1.1 U	0.98 U
n-Butylbenzene	100000	ug/kg		1 U	1 U	0.96 U	1.1 U	0.98 U
n-Propylbenzene	100000	ug/kg		1 U	1 U	0.96 U	1.1 U	0.98 U
o-Xylene	--	ug/kg		0.68 J	1.2	0.41 J	1.1 U	0.29 J
sec-Butylbenzene	100000	ug/kg		1 U	16	0.8 J	1.1 U	0.98 U
tert-Butylbenzene	100000	ug/kg		1 U	24	0.96 U	1.1 U	0.98 U
Tetrachloroethene	19000	ug/kg		0.18 J	1 U	0.96 U	1.1 U	0.98 U
Toluene	100000	ug/kg		0.7 J	1.1	0.98	1.1 U	0.3 J
trans-1,2-Dichloroethene	100000	ug/kg		1 U	1 U	0.96 U	1.1 U	0.98 U
Trichloroethene	21000	ug/kg		0.16 J	1 U	0.96 U	1.1 U	0.98 U
Vinyl chloride	900	ug/kg		1 U	1 U	0.96 U	1.1 U	0.98 U
Xylenes (total)	100000	ug/kg		1.8 J	2.6	1.1 J	0.27 J	0.89 J
VOC Total TICs	10000	ug/kg		0	**10360**	340	0	26.1

Table 7. Summary of Semivolatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-RI-TP1	PDC-RI-TP2	PDC-RI-TP3	PDC-RI-TP4	PDC-RI-TP5	PDC-RI-TP6	PDC-RI-TP7
			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):	3 - 3	3 - 3	2 - 2	2.5 - 2.5	6 - 6	5 - 5	5 - 5
1,4-Dioxane	13000	ug/kg		NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	100000	ug/kg		420 U	390 U	700 U	430 U	400 U	390 U	500 U
3&4-Methylphenol	100000	ug/kg		420 U	390 U	700 U	430 U	400 U	390 U	500 U
Acenaphthene	100000	ug/kg		420 U	390 U	170 J	44 J	120 J	390 U	500 U
Acenaphthylene	100000	ug/kg		420 U	390 U	76 J	33 J	13 J	390 U	500 U
Anthracene	100000	ug/kg		26 J	80 J	580 J	140 J	110 J	44 J	500 U
Benzo[a]anthracene	1000	ug/kg		100	160	**1700**	610	290	110	51
Benzo[a]pyrene	1000	ug/kg		76	120	**1200**	430	220	81	48 J
Benzo[b]fluoranthene	1000	ug/kg		68	150	**1200**	440	260	81	67
Benzo[g,h,i]perylene	100000	ug/kg		44 J	67 J	590 J	230 J	130 J	49 J	34 J
Benzo[k]fluoranthene	3900	ug/kg		26 J	63	560	200	77	51	32 J
Chrysene	3900	ug/kg		110 J	150 J	1700	700	310 J	110 J	51 J
Dibenzo[a,h]anthracene	330	ug/kg		42 U	23 J	190	65	36 J	39 U	50 U
Dibenzofuran	59000	ug/kg		420 U	17 J	88 J	15 J	140 J	12 J	500 U
Fluoranthene	100000	ug/kg		130 J	330 J	2600	1100	500	160 J	90 J
Fluorene	100000	ug/kg		14 J	29 J	300 J	45 J	210 J	21 J	500 U
Hexachlorobenzene	1200	ug/kg		42 U	39 U	70 U	43 U	40 U	39 U	50 U
Indeno[1,2,3-cd]pyrene	500	ug/kg		39 J	67	**570**	220	120	48	34 J
Naphthalene	100000	ug/kg		420 U	12 J	75 J	15 J	33 J	10 J	21 J
Pentachlorophenol	6700	ug/kg		340 U	310 U	560 U	350 U	320 U	320 U	400 U
Phenanthrene	100000	ug/kg		150 J	260 J	3100	570	590	140 J	41 J
Phenols (Total)	--	ug/kg		420 U	390 U	700 U	430 U	400 U	390 U	500 U
Pyrene	100000	ug/kg		220 J	350 J	3500	1600	650	230 J	87 J
SVOC Total TICs	100000	ug/kg		3710	4100	64800	6100	3620	5030	7890

Table 7. Summary of Semivolatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-RI-TP8	PDC-RI-TP9	PDC-RI-TP10	PDC-RI-TP11	PDC-RI-TP12	PDC-RI-TP13
			Sample Date:	11/15/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018
			Sample Depth (ft bls):	6 - 6	6 - 6	6 - 6	3 - 3	3 - 3	3 - 3
1,4-Dioxane	13000	ug/kg		NA	NA	NA	NA	NA	NA
2-Methylphenol	100000	ug/kg		370 U	380 U	390 U	400 U	410 U	400 U
3&4-Methylphenol	100000	ug/kg		370 U	380 U	390 U	400 UJ	410 U	400 U
Acenaphthene	100000	ug/kg		370 U	380 U	33 J	400 UJ	410 U	190 J
Acenaphthylene	100000	ug/kg		21 J	380 U	390 U	400 UJ	410 U	18 J
Anthracene	100000	ug/kg		370 U	380 U	54 J	400 UJ	410 U	230 J
Benzo[a]anthracene	1000	ug/kg		140 J	31 J	100	40 UJ	60	430
Benzo[a]pyrene	1000	ug/kg		160 J	26 J	94	40 UJ	51	440
Benzo[b]fluoranthene	1000	ug/kg		220 J	36 J	130	40 UJ	69	480
Benzo[g,h,i]perylene	100000	ug/kg		95 J	17 J	56 J	400 UJ	33 J	260 J
Benzo[k]fluoranthene	3900	ug/kg		120 J	14 J	55	40 UJ	27 J	350
Chrysene	3900	ug/kg		140 J	34 J	110 J	400 UJ	66 J	460
Dibenzo[a,h]anthracene	330	ug/kg		32 J	38 U	20 J	40 UJ	41 U	85
Dibenzofuran	59000	ug/kg		370 U	380 U	33 J	400 UJ	410 U	200 J
Fluoranthene	100000	ug/kg		150 J	63 J	240 J	400 UJ	110 J	910
Fluorene	100000	ug/kg		11 J	380 U	43 J	400 UJ	19 J	320 J
Hexachlorobenzene	1200	ug/kg		37 U	38 U	39 U	40 UJ	41 U	40 U
Indeno[1,2,3-cd]pyrene	500	ug/kg		110	18 J	64	40 UJ	37 J	290
Naphthalene	100000	ug/kg		370 U	380 U	36 J	58 J-	21 J	540
Pentachlorophenol	6700	ug/kg		300 U	310 U	310 U	320 U	330 U	320 U
Phenanthrene	100000	ug/kg		42 J	38 J	190 J	400 UJ	79 J	920
Phenols (Total)	--	ug/kg		370 U	380 U	390 U	400 U	410 U	400 U
Pyrene	100000	ug/kg		150 J	60 J	220 J	400 UJ	110 J	860
SVOC Total TICs	100000	ug/kg		8500	3800	9280	1300	14790	3150

Table 7. Summary of Semivolatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-RI-TP14	PDC-RI-TP-8 DUP	PDC-RI-TP11-1-AP	PDC-RI-TP11-1-BP	PDC-RI-TP11-2-AP
			Sample Date:	11/15/2018	11/15/2018	12/6/2018	12/6/2018	12/6/2018
			Sample Depth (ft bls):	3 - 3	6 - 6	3 - 3	4.5 - 4.5	5 - 5
1,4-Dioxane	13000	ug/kg		NA	NA	NA	NA	NA
2-Methylphenol	100000	ug/kg		410 U	370 U	390 U	1200 U	400 U
3&4-Methylphenol	100000	ug/kg		410 U	370 U	390 U	1200 U	400 U
Acenaphthene	100000	ug/kg		410 U	370 U	390 U	1200 U	400 U
Acenaphthylene	100000	ug/kg		410 U	370 U	390 U	1200 U	400 U
Anthracene	100000	ug/kg		410 U	370 U	390 U	1200 U	400 U
Benzo[a]anthracene	1000	ug/kg		90	50 J	18 J	120 U	14 J
Benzo[a]pyrene	1000	ug/kg		85	49 J	39 U	120 U	40 U
Benzo[b]fluoranthene	1000	ug/kg		110	60 J	39 U	120 U	40 U
Benzo[g,h,i]perylene	100000	ug/kg		59 J	34 J	390 U	1200 U	400 U
Benzo[k]fluoranthene	3900	ug/kg		71	27 J	39 UT	120 UT	40 UT
Chrysene	3900	ug/kg		88 J	60 J	390 U	1200 U	400 U
Dibenzo[a,h]anthracene	330	ug/kg		19 J	37 U	39 U	120 U	40 U
Dibenzofuran	59000	ug/kg		410 U	370 U	390 U	1200 U	400 U
Fluoranthene	100000	ug/kg		180 J	75 J	390 U	1200 U	22 J
Fluorene	100000	ug/kg		16 J	9.7 J	13 J	1200 U	400 U
Hexachlorobenzene	1200	ug/kg		41 U	37 U	39 U	120 U	40 U
Indeno[1,2,3-cd]pyrene	500	ug/kg		65	38	39 U	120 U	40 U
Naphthalene	100000	ug/kg		12 J	370 U	390 U	1200 U	400 U
Pentachlorophenol	6700	ug/kg		330 U	300 U	310 U	960 U	320 U
Phenanthrene	100000	ug/kg		100 J	49 J	16 J	1200 U	400 U
Phenols (Total)	--	ug/kg		410 U	370 U	390 U	1200 U	400 U
Pyrene	100000	ug/kg		170 J	90 J	22 J	1200 U	31 J
SVOC Total TICs	100000	ug/kg		0	5440	7840	**316000**	12430

Table 7. Summary of Semivolatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-RI-TP11-3	PDC-RI-TP11-3Peat	PDC-PX-TP3-1	PDC-PX-TP3-2	PDC-PX-TP3-3
			Sample Date:	12/6/2018	12/6/2018	12/6/2018	12/6/2018	12/6/2018
			Sample Depth (ft bls):	4 - 6	6.5 - 6.5	-	-	-
1,4-Dioxane	13000	ug/kg		NA	NA	NA	NA	NA
2-Methylphenol	100000	ug/kg		400 U	1000 U	1100 U	400 U	400 U
3&4-Methylphenol	100000	ug/kg		400 U	32 J	1100 U	400 U	400 U
Acenaphthene	100000	ug/kg		400 U	1000 U	1100 U	64 J	400 U
Acenaphthylene	100000	ug/kg		400 U	1000 U	1100 U	19 J	400 U
Anthracene	100000	ug/kg		400 U	1000 U	1100 U	240 J	400 U
Benzo[a]anthracene	1000	ug/kg		40 U	100 U	110 U	940	27 J
Benzo[a]pyrene	1000	ug/kg		40 U	100 U	110 U	740	40 U
Benzo[b]fluoranthene	1000	ug/kg		40 U	100 U	110 U	620	28 J
Benzo[g,h,i]perylene	100000	ug/kg		400 U	1000 U	1100 U	390 J	12 J
Benzo[k]fluoranthene	3900	ug/kg		40 UT	100 U	110 U	250 T	13 JT
Chrysene	3900	ug/kg		400 U	1000 U	1100 U	1100	27 J
Dibenzo[a,h]anthracene	330	ug/kg		40 U	100 U	110 U	130	40 U
Dibenzofuran	59000	ug/kg		400 U	1000 U	1100 U	400 U	400 U
Fluoranthene	100000	ug/kg		400 U	1000 U	1100 U	1000	32 J
Fluorene	100000	ug/kg		400 U	1000 U	1100 U	73 J	400 U
Hexachlorobenzene	1200	ug/kg		40 U	100 U	110 U	40 U	40 U
Indeno[1,2,3-cd]pyrene	500	ug/kg		40 U	100 U	110 U	340	40 U
Naphthalene	100000	ug/kg		400 U	24 J	1100 U	400 U	400 U
Pentachlorophenol	6700	ug/kg		330 U	840 U	850 U	320 U	320 U
Phenanthrene	100000	ug/kg		400 U	1000 U	48 J	1400	28 J
Phenols (Total)	--	ug/kg		400 U	60 J	1100 U	400 U	400 U
Pyrene	100000	ug/kg		400 U	1000 U	1100 U	2000	48 J
SVOC Total TICs	100000	ug/kg		2200	**160000**	93100	17870	6670

Table 7. Summary of Semivolatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-TP3-4	PDC-PX-TP3-5	PDC-PX-J5-K5-B	PDC-PX-J5-K5-B DUP	PDC-PX-J5-K5-N
			Sample Date:	12/6/2018	12/6/2018	12/12/2018	12/12/2018	12/12/2018
			Sample Depth (ft bls):	-	-	-	-	-
1,4-Dioxane	13000	ug/kg		NA	NA	NA	NA	NA
2-Methylphenol	100000	ug/kg		500 U	410 U	530 UJ	480 U	370 U
3&4-Methylphenol	100000	ug/kg		64 J	410 U	530 UJ	480 U	370 U
Acenaphthene	100000	ug/kg		500 U	410 U	530 UJ	480 U	360 J
Acenaphthylene	100000	ug/kg		500 U	410 U	530 UJ	480 U	370 U
Anthracene	100000	ug/kg		52 J	410 U	530 UJ	480 U	370 U
Benzo[a]anthracene	1000	ug/kg		150	66	26 J-	25 J	29 J
Benzo[a]pyrene	1000	ug/kg		110	56	17 J-	19 J	21 J
Benzo[b]fluoranthene	1000	ug/kg		180	85	25 J-	30 J	35 J
Benzo[g,h,i]perylene	100000	ug/kg		83 J	37 J	530 UJ	480 U	370 U
Benzo[k]fluoranthene	3900	ug/kg		45 JT	41 UT	14 J-	48 U	37 U
Chrysene	3900	ug/kg		220 J	59 J	14 J-	18 J	36 J
Dibenzo[a,h]anthracene	330	ug/kg		50 U	41 U	53 UJ	48 U	37 U
Dibenzofuran	59000	ug/kg		26 J	410 U	530 UJ	480 U	370 U
Fluoranthene	100000	ug/kg		260 J	99 J	20 J-	23 J	94 J
Fluorene	100000	ug/kg		35 J	410 U	530 UJ	480 U	500
Hexachlorobenzene	1200	ug/kg		50 U	41 U	53 UJ	48 U	37 U
Indeno[1,2,3-cd]pyrene	500	ug/kg		76	37 J	53 UJ	48 U	16 J
Naphthalene	100000	ug/kg		27 J	410 U	530 UJ	480 U	370 U
Pentachlorophenol	6700	ug/kg		400 U	330 U	430 UJ	380 U	300 U
Phenanthrene	100000	ug/kg		280 J	73 J	530 UJ	14 J	370 U
Phenols (Total)	--	ug/kg		500 U	410 U	530 UJ	480 U	370 U
Pyrene	100000	ug/kg		350 J	120 J	43 J-	45 J	250 J
SVOC Total TICs	100000	ug/kg		31530	510	5390	2800	62030

Table 7. Summary of Semivolatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-J5-K5-W	PDC-PX-H12-H13-5B	PDC-PX-H12-H13-2E	PDC-PX-H12-H13-1N
			Sample Date:	12/12/2018	12/14/2018	12/14/2018	12/14/2018
			Sample Depth (ft bls):	-	-	-	-
1,4-Dioxane	13000	ug/kg		NA	NA	NA	NA
2-Methylphenol	100000	ug/kg		380 U	1100 U	420 U	410 U
3&4-Methylphenol	100000	ug/kg		380 U	57 J	24 J	410 U
Acenaphthene	100000	ug/kg		380 U	1100 U	35 J	78 J
Acenaphthylene	100000	ug/kg		380 U	1100 U	32 J	63 J
Anthracene	100000	ug/kg		380 U	82 J	190 J	490
Benzo[a]anthracene	1000	ug/kg		21 J	110 U	240	1000
Benzo[a]pyrene	1000	ug/kg		13 J	110	210	870
Benzo[b]fluoranthene	1000	ug/kg		21 J	190	330	**1100**
Benzo[g,h,i]perylene	100000	ug/kg		380 U	120 J	110 J	500
Benzo[k]fluoranthene	3900	ug/kg		38 U	65 J	110	420
Chrysene	3900	ug/kg		14 J	160 J	270 J	1000
Dibenzo[a,h]anthracene	330	ug/kg		38 U	110 U	29 J	150
Dibenzofuran	59000	ug/kg		380 U	1100 U	110 J	56 J
Fluoranthene	100000	ug/kg		21 J	290 J	610	2300
Fluorene	100000	ug/kg		380 U	140 J	110 J	150 J
Hexachlorobenzene	1200	ug/kg		38 U	110 U	42 U	41 U
Indeno[1,2,3-cd]pyrene	500	ug/kg		38 U	130	110	**590**
Naphthalene	100000	ug/kg		380 U	520 J	100 J	13 J
Pentachlorophenol	6700	ug/kg		310 U	860 U	340 UT	330 U
Phenanthrene	100000	ug/kg		380 U	320 J	500	1600
Phenols (Total)	--	ug/kg		380 U	1100 U	420 U	410 U
Pyrene	100000	ug/kg		26 J	330 J	510	2300
SVOC Total TICs	100000	ug/kg		1020	89800	22680	11900

Table 7. Summary of Semivolatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-H12-H13-3S	PDC-PX-J5-K5-E	PDC-PX-J5-K5-S	PDC-SP-J5-K5-1	PDC-RI-L11 DUP
			Sample Date:	12/14/2018	12/14/2018	12/14/2018	12/14/2018	12/19/2018
			Sample Depth (ft bls):	-	-	-	-	6.5 - 6.5
1,4-Dioxane	13000	ug/kg		NA	NA	NA	NA	NA
2-Methylphenol	100000	ug/kg		540 U	340 U	380 U	370 U	1100 U
3&4-Methylphenol	100000	ug/kg		540 U	340 U	380 U	370 U	1100 U
Acenaphthene	100000	ug/kg		340 J	27 J	39 J	100 J	1100 U
Acenaphthylene	100000	ug/kg		190 J	15 J	380 U	60 J	1100 U
Anthracene	100000	ug/kg		300 J	340 U	380 U	60 J	1100 U
Benzo[a]anthracene	1000	ug/kg		400	34 U	38 U	77	110 U
Benzo[a]pyrene	1000	ug/kg		300	15 J	38 U	80	110 U
Benzo[b]fluoranthene	1000	ug/kg		530	21 J	38 U	110	110 U
Benzo[g,h,i]perylene	100000	ug/kg		220 J	340 U	380 U	75 J	1100 U
Benzo[k]fluoranthene	3900	ug/kg		150	34 U	38 U	34 J	110 U
Chrysene	3900	ug/kg		580	20 J	380 U	84 J	1100 U
Dibenzo[a,h]anthracene	330	ug/kg		58	34 U	38 U	18 J	110 U
Dibenzofuran	59000	ug/kg		370 J	37 J	12 J	140 J	1100 U
Fluoranthene	100000	ug/kg		1200	32 J	13 J	160 J	35 J
Fluorene	100000	ug/kg		760	76 J	380 U	250 J	1100 U
Hexachlorobenzene	1200	ug/kg		54 U	34 U	38 U	37 U	110 U
Indeno[1,2,3-cd]pyrene	500	ug/kg		250	15 J	38 U	77	110 U
Naphthalene	100000	ug/kg		65 J	340 U	11 J	50 J	170 J
Pentachlorophenol	6700	ug/kg		430 U	270 U	310 U	300 U	910 U
Phenanthrene	100000	ug/kg		3400	240 J	26 J	700	41 J
Phenols (Total)	--	ug/kg		540 U	340 U	380 U	370 U	1100 U
Pyrene	100000	ug/kg		1400	45 J	380 U	210 J	1100 U
SVOC Total TICs	100000	ug/kg		49810	14120	5990	39690	**242300**

Table 7. Summary of Semivolatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-RI-L5	PDC-RI-L6	PDC-RI-L9	PDC-RI-M10	PDC-RI-M6	PDC-RI-M4	PDC-PX-H12-H13-W
			Sample Date:	12/19/2018	12/19/2018	12/19/2018	12/19/2018	12/19/2018	12/19/2018	1/17/2019
			Sample Depth (ft bls):	2 - 4	2 - 5	2 - 4.5	3 - 4	2 - 4	4 - 6	-
1,4-Dioxane	13000	ug/kg		NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	100000	ug/kg		400 U	390 U	380 U	370 U	390 U	480 U	380 U
3&4-Methylphenol	100000	ug/kg		400 U	390 U	380 U	370 U	390 U	480 U	380 U
Acenaphthene	100000	ug/kg		400 U	390 U	380 U	370 U	540	530	85 JT
Acenaphthylene	100000	ug/kg		400 U	390 U	380 U	33 J	390 U	480 U	13 J
Anthracene	100000	ug/kg		400 U	31 J	380 U	370 U	400	480 U	230 J
Benzo[a]anthracene	1000	ug/kg		40 U	84	38 U	26 J	27 J	48 U	820
Benzo[a]pyrene	1000	ug/kg		40 UT	83	38 U	14 J	39 U	48 U	800
Benzo[b]fluoranthene	1000	ug/kg		40 U	120	38 U	20 J	39 U	56	940
Benzo[g,h,i]perylene	100000	ug/kg		400 U	48 J	380 U	17 J	390 U	30 J	560
Benzo[k]fluoranthene	3900	ug/kg		40 U	46	38 U	7.7 J	39 U	48 U	410
Chrysene	3900	ug/kg		400 U	100 J	380 U	19 J	66 J	180 J	810
Dibenzo[a,h]anthracene	330	ug/kg		40 U	39 U	38 U	37 U	39 U	48 U	140
Dibenzofuran	59000	ug/kg		400 U	22 J	380 U	370 U	320 J	280 J	120 J
Fluoranthene	100000	ug/kg		400 U	140 J	380 U	47 J	98 J	480 U	1600
Fluorene	100000	ug/kg		400 U	390 U	380 U	370 U	390 U	510	100 J
Hexachlorobenzene	1200	ug/kg		40 U	39 U	38 U	37 U	39 U	48 U	38 U
Indeno[1,2,3-cd]pyrene	500	ug/kg		40 U	60	38 U	16 J	39 U	48 U	**560**
Naphthalene	100000	ug/kg		400 U	26 J	380 U	370 U	390 U	480 U	130 J
Pentachlorophenol	6700	ug/kg		330 UT	310 U	310 U	290 U	320 U	390 U	300 U
Phenanthrene	100000	ug/kg		400 U	93 J	19 J	32 J	120 J	480 U	530
Phenols (Total)	--	ug/kg		400 U	390 U	380 U	370 U	390 U	480 U	380 U
Pyrene	100000	ug/kg		400 U	150 J	380 U	68 J	270 J	530	1600
SVOC Total TICs	100000	ug/kg		7311	12820	15370	85560	71300	69000	3710

Table 7. Summary of Semivolatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-RI-P7 DUP	PDC-RI-K8	PDC-RI-K9	PDC-RI-K10	PDC-RI-P7	PDC-RI-P9	PDC-RI-Q10
			Sample Date:	2/5/2019	2/5/2019	2/5/2019	2/5/2019	2/5/2019	2/5/2019	2/5/2019
			Sample Depth (ft bls):	5 - 5	3 - 5.5	2 - 4	2 - 5	5 - 5	4 - 4	4 - 4
1,4-Dioxane	13000	ug/kg		NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	100000	ug/kg		750 U	390 U	380 U	380 U	810 U	730 U	630 U
3&4-Methylphenol	100000	ug/kg		750 U	390 U	380 U	380 U	810 U	730 U	28 J
Acenaphthene	100000	ug/kg		750 U	390 U	380 U	380 U	810 U	620 J	66 J
Acenaphthylene	100000	ug/kg		750 U	390 U	380 U	380 U	810 U	190 J	630 U
Anthracene	100000	ug/kg		750 U	390 U	30 J	380 U	810 U	50 J	44 J
Benzo[a]anthracene	1000	ug/kg		36 J	39 U	73	33 J	81 U	73 U	77
Benzo[a]pyrene	1000	ug/kg		75 U	39 U	69	22 J	81 U	73 U	65
Benzo[b]fluoranthene	1000	ug/kg		75 U	39 U	100	38 U	81 U	73 U	99
Benzo[g,h,i]perylene	100000	ug/kg		750 U	390 U	38 J	380 U	810 U	730 U	44 J
Benzo[k]fluoranthene	3900	ug/kg		75 U	39 U	38 U	38 U	81 U	73 U	28 J
Chrysene	3900	ug/kg		750 U	390 U	110 J	22 J	37 J	730 U	75 J
Dibenzo[a,h]anthracene	330	ug/kg		75 U	39 U	38 U	38 U	81 U	73 U	63 U
Dibenzofuran	59000	ug/kg		750 U	390 U	380 U	380 U	810 U	670 J	21 J
Fluoranthene	100000	ug/kg		31 J	390 U	210 J	40 J	810 U	730 U	170 J
Fluorene	100000	ug/kg		750 U	25 J	85 J	380 U	810 U	310 J	630 U
Hexachlorobenzene	1200	ug/kg		75 U	39 U	38 U	38 U	81 U	73 U	63 U
Indeno[1,2,3-cd]pyrene	500	ug/kg		75 U	39 U	25 J	38 U	81 U	73 U	63 U
Naphthalene	100000	ug/kg		44 J	390 U	380 U	380 U	260 J	730 U	110 J
Pentachlorophenol	6700	ug/kg		600 UT	310 U	310 U	310 U	650 U	590 U	510 U
Phenanthrene	100000	ug/kg		750 U	390 U	190 J	42 J	810 U	800	100 J
Phenols (Total)	--	ug/kg		750 U	390 U	380 U	380 U	810 U	730 U	630 U
Pyrene	100000	ug/kg		750 U	390 U	180 J	36 J	810 U	730 U	130 J
SVOC Total TICs	100000	ug/kg		33300	2080	50100	4260	**114400**	**117600**	18510

Table 7. Summary of Semivolatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-RI-R12	PDC-RI-R13	PDC-RI-R14	PDC-RI-Q15	PDC-RI-P15	PDC-RI-TP12-1
			Sample Date:	2/5/2019	2/5/2019	2/5/2019	2/5/2019	2/5/2019	5/1/2019
			Sample Depth (ft bls):	3 - 3	2 - 2	3 - 3	5 - 5	4 - 4	0 - 3
1,4-Dioxane	13000	ug/kg		NA	NA	NA	NA	NA	NA
2-Methylphenol	100000	ug/kg		640 U	680 U	690 U	590 U	560 U	370 U
3&4-Methylphenol	100000	ug/kg		640 U	680 U	690 U	590 U	560 U	370 U
Acenaphthene	100000	ug/kg		210 J	680 U	690 U	590 U	560 U	370 U
Acenaphthylene	100000	ug/kg		640 U	680 U	690 U	590 U	560 U	370 U
Anthracene	100000	ug/kg		640 U	680 U	690 U	590 U	560 U	370 U
Benzo[a]anthracene	1000	ug/kg		64 U	68 U	69 U	59 U	56 U	19 J
Benzo[a]pyrene	1000	ug/kg		64 U	68 U	69 U	59 U	56 U	17 J
Benzo[b]fluoranthene	1000	ug/kg		64 U	68 U	69 U	59 U	56 U	24 J
Benzo[g,h,i]perylene	100000	ug/kg		640 U	680 U	690 U	590 U	560 U	13 J
Benzo[k]fluoranthene	3900	ug/kg		64 U	68 U	69 U	59 U	56 U	11 J
Chrysene	3900	ug/kg		640 U	680 U	690 U	590 U	560 U	13 J
Dibenzo[a,h]anthracene	330	ug/kg		64 U	68 U	69 U	59 U	56 U	37 U
Dibenzofuran	59000	ug/kg		77 J	680 U	690 U	590 U	560 U	370 U
Fluoranthene	100000	ug/kg		150 J	680 U	690 U	590 U	560 U	18 J
Fluorene	100000	ug/kg		640 U	680 U	690 U	590 U	560 U	370 U
Hexachlorobenzene	1200	ug/kg		64 U	68 U	69 U	59 U	56 U	37 U
Indeno[1,2,3-cd]pyrene	500	ug/kg		64 U	68 U	69 U	59 U	56 U	15 J
Naphthalene	100000	ug/kg		640 U	680 U	690 U	590 U	560 U	10 J
Pentachlorophenol	6700	ug/kg		520 U	540 U	550 U	480 UT	450 UT	300 U
Phenanthrene	100000	ug/kg		640 U	680 U	690 U	590 U	560 U	17 J
Phenols (Total)	--	ug/kg		640 U	680 U	690 U	590 U	560 U	370 U
Pyrene	100000	ug/kg		68 J	680 U	690 U	590 U	560 U	23 J
SVOC Total TICs	100000	ug/kg		55700	90600	**121900**	8800	26560	3530

Table 7. Summary of Semivolatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-RI-TP12-1	PDC-RI-TP12-1 South	PDC-RI-TP12-3S	PDC-RI-TP12-3S	PDC-RI-TP12-4-PW
			Sample Date:	5/1/2019	5/1/2019	5/3/2019	5/3/2019	5/3/2019
			Sample Depth (ft bls):	3 - 6	3 - 6	4.5 - 45	3 - 4.5	3 - 3
1,4-Dioxane	13000	ug/kg		NA	NA	NA	NA	NA
2-Methylphenol	100000	ug/kg		390 U	390 U	400 U	410 U	430 U
3&4-Methylphenol	100000	ug/kg		390 U	390 U	400 U	410 U	430 U
Acenaphthene	100000	ug/kg		390 U	390 U	100 J	410 U	430 U
Acenaphthylene	100000	ug/kg		390 U	390 U	28 J	410 U	430 U
Anthracene	100000	ug/kg		390 U	390 U	54 J	410 U	430 U
Benzo[a]anthracene	1000	ug/kg		21 J	39 U	47	41 U	43 U
Benzo[a]pyrene	1000	ug/kg		39 U	39 U	28 J	41 U	43 U
Benzo[b]fluoranthene	1000	ug/kg		11 J	39 U	46	41 U	43 U
Benzo[g,h,i]perylene	100000	ug/kg		390 U	390 U	24 J	410 U	430 U
Benzo[k]fluoranthene	3900	ug/kg		39 U	39 U	21 J	41 U	43 U
Chrysene	3900	ug/kg		13 J	390 U	37 JT	410 UT	430 UT
Dibenzo[a,h]anthracene	330	ug/kg		39 U	39 U	40 U	41 U	43 U
Dibenzofuran	59000	ug/kg		390 U	390 U	130 J	410 U	430 U
Fluoranthene	100000	ug/kg		27 J	390 U	89 J	410 U	430 U
Fluorene	100000	ug/kg		390 U	390 U	170 J	410 U	430 U
Hexachlorobenzene	1200	ug/kg		39 U	39 U	40 U	41 U	43 U
Indeno[1,2,3-cd]pyrene	500	ug/kg		39 U	39 U	29 J	41 U	43 U
Naphthalene	100000	ug/kg		390 U	390 U	54 J	410 U	430 U
Pentachlorophenol	6700	ug/kg		310 U	310 U	320 U	330 U	340 U
Phenanthrene	100000	ug/kg		15 J	390 U	190 J	410 U	430 U
Phenols (Total)	--	ug/kg		390 U	390 U	400 U	410 U	430 U
Pyrene	100000	ug/kg		34 J	390 U	95 J	410 U	26 J
SVOC Total TICs	100000	ug/kg		12850	4200	20410	800	1200

Table 7. Summary of Semivolatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-RI-TP12-5PNE	PDC-RI-TP12-5PNE	PDC-RI-TP12-6PNW	PDC-RI-TP12-2CS
			Sample Date:	5/3/2019	5/3/2019	5/3/2019	5/3/2019
			Sample Depth (ft bls):	5 - 5	3 - 5	4 - 4	3 - 5
1,4-Dioxane	13000	ug/kg		NA	NA	NA	NA
2-Methylphenol	100000	ug/kg		1000 U	1900 U	380 U	400 U
3&4-Methylphenol	100000	ug/kg		1000 U	1900 U	380 U	400 U
Acenaphthene	100000	ug/kg		1000 U	14000	380 U	57 J
Acenaphthylene	100000	ug/kg		1000 U	290 J	380 U	33 J
Anthracene	100000	ug/kg		1000 U	6000	12 J	76 J
Benzo[a]anthracene	1000	ug/kg		100 U	**3100**	32 J	69
Benzo[a]pyrene	1000	ug/kg		100 U	900	22 J	68
Benzo[b]fluoranthene	1000	ug/kg		100 UT	**1600**	39	100
Benzo[g,h,i]perylene	100000	ug/kg		1000 U	190 J	19 J	54 J
Benzo[k]fluoranthene	3900	ug/kg		100 U	660	13 J	32 J
Chrysene	3900	ug/kg		1000 U	2600 T	46 JT	70 JT
Dibenzo[a,h]anthracene	330	ug/kg		100 U	190 U	38 U	40 U
Dibenzofuran	59000	ug/kg		1000 U	12000	380 U	59 J
Fluoranthene	100000	ug/kg		34 J	16000	67 J	140 J
Fluorene	100000	ug/kg		23 J	13000	34 J	110 J
Hexachlorobenzene	1200	ug/kg		100 U	190 U	38 U	40 U
Indeno[1,2,3-cd]pyrene	500	ug/kg		100 U	300	17 J	57
Naphthalene	100000	ug/kg		740 J	14000	13 J	47 J
Pentachlorophenol	6700	ug/kg		830 U	1600 U	310 U	320 U
Phenanthrene	100000	ug/kg		60 J	32000	36 J	170 J
Phenols (Total)	--	ug/kg		1000 U	1900 U	380 U	400 U
Pyrene	100000	ug/kg		1000 U	10000	73 J	140 J
SVOC Total TICs	100000	ug/kg		**192200**	59800	26840	27910

Table 7. Summary of Semivolatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-RI-TP12-2CS	PDC-OX-O2-B	PDC-PX-P2-B	PDC-PX-P3-B	PDC-PX-O3-B	PDC-PX-O2-N
			Sample Date:	5/3/2019	6/27/2019	6/27/2019	6/27/2019	6/27/2019	7/1/2019
			Sample Depth (ft bls):	0 - 3	-	-	-	-	-
1,4-Dioxane	13000	ug/kg		NA	NA	NA	NA	NA	NA
2-Methylphenol	100000	ug/kg		370 U	940 U	1100 U	1100 U	390 U	400 U
3&4-Methylphenol	100000	ug/kg		370 U	940 U	1100 U	1100 U	390 U	400 U
Acenaphthene	100000	ug/kg		370 U	940 U	1100 U	82 J	390 U	400 U
Acenaphthylene	100000	ug/kg		370 U	35 J	1100 U	1100 U	390 U	400 U
Anthracene	100000	ug/kg		9.0 J	940 U	1100 U	1100 U	390 U	400 U
Benzo[a]anthracene	1000	ug/kg		45	330	61 J	90 J	41	40 U
Benzo[a]pyrene	1000	ug/kg		44	270	110 U	59 J	28 J	40 U
Benzo[b]fluoranthene	1000	ug/kg		61	370	64 J	77 J	37 J	40 U
Benzo[g,h,i]perylene	100000	ug/kg		43 J	180 J	1100 U	1100 U	25 J	400 U
Benzo[k]fluoranthene	3900	ug/kg		24 J	160	110 U	37 J	13 J	40 U
Chrysene	3900	ug/kg		56 JT	340 J	56 J	91 J	62 J	400 UT
Dibenzo[a,h]anthracene	330	ug/kg		37 U	94 U	110 U	110 U	39 U	40 U
Dibenzofuran	59000	ug/kg		17 J	940 U	1100 U	1100 U	390 U	400 U
Fluoranthene	100000	ug/kg		71 J	580 J	120 J	150 J	65 J	400 U
Fluorene	100000	ug/kg		20 J	940 U	1100 U	36 J	390 U	400 U
Hexachlorobenzene	1200	ug/kg		37 U	94 U	110 U	110 U	39 U	40 U
Indeno[1,2,3-cd]pyrene	500	ug/kg		35 J	210	110 U	49 J	29 J	40 U
Naphthalene	100000	ug/kg		34 J	940 U	1100 U	35 J	390 U	400 U
Pentachlorophenol	6700	ug/kg		300 U	760 U	920 U	880 U	320 U	320 U
Phenanthrene	100000	ug/kg		59 J	230 J	98 J	59 J	390 U	400 U
Phenols (Total)	--	ug/kg		370 U	940 U	1100 U	1100 U	390 U	400 U
Pyrene	100000	ug/kg		75 J	660 J	130 J	150 J	110 J	42 JT
SVOC Total TICs	100000	ug/kg		98320	23680	28200	70100	20280	5350

Table 7. Summary of Semivolatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-P2-N	PDC-PX-O4-B DUP	PDC-PX-O4-B	PDC-PX-P4-B	PDC-PX-P5-B	PDC-PX-O5-B
			Sample Date:	7/1/2019	7/3/2019	7/3/2019	7/3/2019	7/10/2019	7/10/2019
			Sample Depth (ft bls):	-	-	-	-	-	-
1,4-Dioxane	13000	ug/kg		NA	NA	NA	NA	NA	NA
2-Methylphenol	100000	ug/kg		420 U	960 U	900 U	1100 U	790 U	970 U
3&4-Methylphenol	100000	ug/kg		420 U	960 U	65 J	1100 U	71 J	970 U
Acenaphthene	100000	ug/kg		420 U	960 U	900 U	1100 U	790 U	970 U
Acenaphthylene	100000	ug/kg		420 U	960 U	900 U	1100 U	790 U	970 U
Anthracene	100000	ug/kg		420 U	960 U	900 U	1100 U	790 U	970 U
Benzo[a]anthracene	1000	ug/kg		30 J	96 U	90 U	110 U	79 U	97 U
Benzo[a]pyrene	1000	ug/kg		22 J	96 U	90 U	110 U	79 U	97 U
Benzo[b]fluoranthene	1000	ug/kg		34 J	96 U	90 U	110 U	79 U	97 U
Benzo[g,h,i]perylene	100000	ug/kg		20 J	960 U	900 U	1100 U	790 U	970 U
Benzo[k]fluoranthene	3900	ug/kg		11 J	96 U	90 U	110 U	79 U	97 U
Chrysene	3900	ug/kg		31 JT	960 U	900 U	1100 U	790 U	970 U
Dibenzo[a,h]anthracene	330	ug/kg		42 U	96 U	90 U	110 U	79 U	97 U
Dibenzofuran	59000	ug/kg		420 U	960 U	900 U	1100 U	790 U	970 U
Fluoranthene	100000	ug/kg		52 J	960 U	900 U	1100 U	790 U	970 U
Fluorene	100000	ug/kg		420 U	960 U	900 U	1100 U	790 U	970 U
Hexachlorobenzene	1200	ug/kg		42 U	96 U	90 U	110 U	79 U	97 U
Indeno[1,2,3-cd]pyrene	500	ug/kg		42 U	96 U	90 U	110 U	79 U	97 U
Naphthalene	100000	ug/kg		420 U	960 U	900 U	1100 U	64 J	76 J
Pentachlorophenol	6700	ug/kg		340 U	770 U	720 U	870 U	640 U	780 U
Phenanthrene	100000	ug/kg		35 J	960 U	900 U	1100 U	790 U	970 U
Phenols (Total)	--	ug/kg		420 U	960 U	900 U	1100 U	790 U	970 U
Pyrene	100000	ug/kg		60 JT	960 U	31 J	1100 U	790 U	970 U
SVOC Total TICs	100000	ug/kg		3850	95800	86900	93200	51200	**162800**

Table 7. Summary of Semivolatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-07-B DUP	PDC-PX-P6-B1	PDC-PX-06-B	PDC-PX-07-B	PDC-PX-P7-B	PDC-PX-08-B
			Sample Date:	7/17/2019	7/17/2019	7/17/2019	7/17/2019	7/17/2019	7/17/2019
			Sample Depth (ft bls):	-	-	-	-	-	-
1,4-Dioxane	13000	ug/kg		NA	NA	NA	NA	NA	NA
2-Methylphenol	100000	ug/kg		670 U	710 U	650 U	510 U	660 U	1100 U
3&4-Methylphenol	100000	ug/kg		670 U	710 U	100 J	510 U	660 U	1100 U
Acenaphthene	100000	ug/kg		670 U	710 U	650 U	510 U	660 U	1100 U
Acenaphthylene	100000	ug/kg		670 U	710 U	650 U	510 U	660 U	1100 U
Anthracene	100000	ug/kg		83 J	710 U	650 U	510 U	660 U	1100 U
Benzo[a]anthracene	1000	ug/kg		67 U	71 U	65 U	51 U	66 U	110 U
Benzo[a]pyrene	1000	ug/kg		67 U	71 U	65 U	51 U	66 U	110 U
Benzo[b]fluoranthene	1000	ug/kg		67 U	71 U	65 U	51 U	21 J	110 U
Benzo[g,h,i]perylene	100000	ug/kg		670 U	710 U	650 U	510 U	660 U	1100 U
Benzo[k]fluoranthene	3900	ug/kg		67 U	71 U	65 U	51 U	66 U	110 U
Chrysene	3900	ug/kg		670 U	710 U	650 U	54 J	660 U	1100 U
Dibenzo[a,h]anthracene	330	ug/kg		67 U	71 U	65 U	51 U	66 U	110 U
Dibenzofuran	59000	ug/kg		670 U	710 U	650 U	510 U	660 U	1100 U
Fluoranthene	100000	ug/kg		670 U	710 U	650 U	32 J	35 J	1100 U
Fluorene	100000	ug/kg		670 U	710 U	650 U	510 U	660 U	1100 U
Hexachlorobenzene	1200	ug/kg		67 U	71 U	65 U	51 U	66 U	110 U
Indeno[1,2,3-cd]pyrene	500	ug/kg		67 U	71 U	65 U	51 U	66 U	110 U
Naphthalene	100000	ug/kg		670 U	710 U	650 U	510 U	660 U	68 J
Pentachlorophenol	6700	ug/kg		540 U	570 U	520 U	410 U	530 U	920 U
Phenanthrene	100000	ug/kg		670 U	710 U	650 U	510 U	660 U	1100 U
Phenols (Total)	--	ug/kg		670 U	710 U	650 U	510 U	660 U	1100 U
Pyrene	100000	ug/kg		95 J	710 U	650 U	110 J	42 J	1100 U
SVOC Total TICs	100000	ug/kg		38300	20160	35500	52600	11750	39100

Table 7. Summary of Semivolatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-09-B	PDC-PX-010-B	PDC-PX-P10-B DUP	PDC-PX-P9-B	PDC-PX-P10-B	PDC-PX-M3-B
			Sample Date:	7/31/2019	8/7/2019	8/13/2019	8/13/2019	8/13/2019	8/27/2019
			Sample Depth (ft bls):	-	-	-	-	-	-
1,4-Dioxane	13000	ug/kg		NA	NA	NA	NA	NA	NA
2-Methylphenol	100000	ug/kg		750 U	750 U	510 U	590 U	490 U	420 U
3&4-Methylphenol	100000	ug/kg		35 J	750 U	510 U	590 U	490 U	420 U
Acenaphthene	100000	ug/kg		750 U	750 U	510 U	84 J	490 U	420 U
Acenaphthylene	100000	ug/kg		750 U	750 U	510 U	16 J	490 U	420 U
Anthracene	100000	ug/kg		750 U	750 U	510 U	590 U	490 U	420 U
Benzo[a]anthracene	1000	ug/kg		75 U	75 U	23 J	59 U	25 J	42 U
Benzo[a]pyrene	1000	ug/kg		75 U	75 U	51 U	59 U	49 U	65
Benzo[b]fluoranthene	1000	ug/kg		75 U	75 U	51 U	59 U	49 U	25 J
Benzo[g,h,i]perylene	100000	ug/kg		750 U	750 U	510 U	590 U	490 U	530
Benzo[k]fluoranthene	3900	ug/kg		75 U	75 U	51 U	59 U	49 U	23 J
Chrysene	3900	ug/kg		750 U	750 U	16 J	590 U	21 J	420 U
Dibenzo[a,h]anthracene	330	ug/kg		75 U	75 U	51 U	59 U	49 U	**450**
Dibenzofuran	59000	ug/kg		750 U	750 U	510 U	38 J	490 U	27 J
Fluoranthene	100000	ug/kg		750 U	750 U	39 J	590 U	62 J	420 U
Fluorene	100000	ug/kg		750 U	750 U	12 J	30 J	490 U	37 J
Hexachlorobenzene	1200	ug/kg		75 U	75 U	51 U	59 U	49 U	42 U
Indeno[1,2,3-cd]pyrene	500	ug/kg		75 U	75 U	51 U	59 U	49 U	420
Naphthalene	100000	ug/kg		45 J	750 U	72 J	120 J	100 J	420 U
Pentachlorophenol	6700	ug/kg		610 U	610 U	410 U	480 U	400 U	330 U
Phenanthrene	100000	ug/kg		750 U	750 U	18 J	590 U	22 J	77 J
Phenols (Total)	--	ug/kg		750 U	750 U	510 U	590 U	490 U	420 U
Pyrene	100000	ug/kg		750 U	750 U	30 J	590 U	47 J	27 J
SVOC Total TICs	100000	ug/kg		**153800**	37300	8730	**107400**	14600	9680

Table 7. Summary of Semivolatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-M4-W	PDC-PX-L5-N	PDC-PX-L5-W	PDC-PX-L6-W	PDC-PX-L6-S	PDC-PX-M5-B
			Sample Date:	8/27/2019	8/27/2019	8/27/2019	8/27/2019	8/27/2019	8/30/2019
			Sample Depth (ft bls):	-	-	-	-	-	-
1,4-Dioxane	13000	ug/kg		NA	NA	NA	NA	NA	NA
2-Methylphenol	100000	ug/kg		370 U	400 U	370 U	390 U	400 U	400 U
3&4-Methylphenol	100000	ug/kg		370 U	400 U	370 U	390 U	400 U	400 U
Acenaphthene	100000	ug/kg		250 J	400 U	370 U	110 J	400 U	180 J
Acenaphthylene	100000	ug/kg		150 J	400 U	31 J	390 U	400 U	74 J
Anthracene	100000	ug/kg		370 U	400 U	24 J	390 U	400 U	110 J
Benzo[a]anthracene	1000	ug/kg		37 U	40 U	100	39 U	40 U	22 J
Benzo[a]pyrene	1000	ug/kg		38	40 U	74	39 U	40 U	40 U
Benzo[b]fluoranthene	1000	ug/kg		57	40 U	130	39 U	40 U	16 J
Benzo[g,h,i]perylene	100000	ug/kg		38 J	180 J	73 J	33 J	42 J	400 U
Benzo[k]fluoranthene	3900	ug/kg		37 U	40 U	51	39 U	40 U	40 U
Chrysene	3900	ug/kg		370 U	400 U	130 J	390 U	400 U	21 J
Dibenzo[a,h]anthracene	330	ug/kg		37 U	91	24 J	39 U	40 U	40 U
Dibenzofuran	59000	ug/kg		370 U	400 U	370 U	390 U	400 U	250 J
Fluoranthene	100000	ug/kg		100 J	400 U	170 J	390 U	400 U	38 J
Fluorene	100000	ug/kg		370 U	400 U	370 U	390 U	400 U	74 J
Hexachlorobenzene	1200	ug/kg		37 U	40 U	37 U	39 U	40 U	40 U
Indeno[1,2,3-cd]pyrene	500	ug/kg		25 J	99	67	22 J	40	40 U
Naphthalene	100000	ug/kg		59 J	400 U	26 J	390 U	400 U	400 U
Pentachlorophenol	6700	ug/kg		300 U	320 U	300 U	310 U	320 U	320 U
Phenanthrene	100000	ug/kg		370 U	400 U	88 J	390 U	400 U	850
Phenols (Total)	--	ug/kg		370 U	400 U	370 U	390 U	400 U	400 U
Pyrene	100000	ug/kg		210 J	400 U	180 J	95 J	400 U	55 J
SVOC Total TICs	100000	ug/kg		35200	1320	1300	32700	1770	37000

Table 7. Summary of Semivolatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-M7-W	PDC-PX-M8-B	PDC-PX-L8-N	PDC-PX-DUP	PDC-PX-L8-B	PDC-PX-K8-W
			Sample Date:	8/30/2019	8/30/2019	8/30/2019	9/4/2019	9/4/2019	9/4/2019
			Sample Depth (ft bls):	-	-	-	-	-	-
1,4-Dioxane	13000	ug/kg		NA	NA	NA	NA	NA	NA
2-Methylphenol	100000	ug/kg		420 U	420 U	370 U	350 U	400 U	340 U
3&4-Methylphenol	100000	ug/kg		420 U	420 U	370 U	350 U	400 U	340 U
Acenaphthene	100000	ug/kg		420 U	420 U	39 J	500	400 U	820
Acenaphthylene	100000	ug/kg		420 U	420 U	15 J	350 U	400 U	340 U
Anthracene	100000	ug/kg		29 J	420 U	35 J	350 U	400 U	340 U
Benzo[a]anthracene	1000	ug/kg		42 U	42 U	37 U	35 U	40 U	34 U
Benzo[a]pyrene	1000	ug/kg		42 U	42 U	37 U	35 U	40 U	34 U
Benzo[b]fluoranthene	1000	ug/kg		42 U	42 U	37 U	35 U	40 U	17 J
Benzo[g,h,i]perylene	100000	ug/kg		420 U	420 U	370 U	350 U	400 U	340 U
Benzo[k]fluoranthene	3900	ug/kg		42 U	42 U	37 U	35 U	40 U	34 U
Chrysene	3900	ug/kg		420 U	420 U	370 U	350 U	400 U	340 U
Dibenzo[a,h]anthracene	330	ug/kg		42 U	42 U	37 U	35 U	40 U	34 U
Dibenzofuran	59000	ug/kg		15 J	420 U	40 J	510	400 U	860
Fluoranthene	100000	ug/kg		420 U	420 U	370 U	44 J	400 U	75 J
Fluorene	100000	ug/kg		21 J	420 U	44 J	570	400 U	960
Hexachlorobenzene	1200	ug/kg		42 U	42 U	37 U	35 U	40 U	34 U
Indeno[1,2,3-cd]pyrene	500	ug/kg		42 U	42 U	37 U	35 U	40 U	34 U
Naphthalene	100000	ug/kg		420 U	420 U	13 J	350 U	400 U	340 U
Pentachlorophenol	6700	ug/kg		340 U	330 U	300 U	280 U	320 U	280 U
Phenanthrene	100000	ug/kg		34 J	420 U	370 U	350 U	400 U	340 U
Phenols (Total)	--	ug/kg		420 U	420 U	370 U	350 U	400 U	340 U
Pyrene	100000	ug/kg		420 U	420 U	21 J	89 J	400 U	150 J
SVOC Total TICs	100000	ug/kg		10980	2600	12790	53500	2540	66700

Table 7. Summary of Semivolatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-L10-B	PDC-PX-K9-S	PDC-PX-K9-W	PDC-PX-M11-N	PDC-PX-K8-N2	PDC-PX-M11-B
			Sample Date:	9/9/2019	9/9/2019	9/9/2019	9/12/2019	9/12/2019	9/12/2019
			Sample Depth (ft bls):	-	-	-	-	-	-
1,4-Dioxane	13000	ug/kg		NA	NA	NA	NA	NA	NA
2-Methylphenol	100000	ug/kg		660 U	370 U	380 U	830 U	370 U	540 U
3&4-Methylphenol	100000	ug/kg		660 U	370 U	380 U	830 U	370 U	68 J
Acenaphthene	100000	ug/kg		660 U	31 J	64 J	830 U	370 U	540 U
Acenaphthylene	100000	ug/kg		660 U	4.2 J	71 J	830 U	370 U	540 U
Anthracene	100000	ug/kg		660 U	82 J	45 J	830 U	370 U	540 U
Benzo[a]anthracene	1000	ug/kg		66 U	200	110	83 U	37 U	54 U
Benzo[a]pyrene	1000	ug/kg		66 U	170	120	83 U	19 J	54 U
Benzo[b]fluoranthene	1000	ug/kg		66 U	220	170	83 U	17 J	54 U
Benzo[g,h,i]perylene	100000	ug/kg		660 U	100 J	97 J	830 U	16 J	540 U
Benzo[k]fluoranthene	3900	ug/kg		66 U	87	60	83 U	10 J	54 U
Chrysene	3900	ug/kg		660 U	200 J	160 J	830 U	18 J	540 U
Dibenzo[a,h]anthracene	330	ug/kg		66 U	28 J	25 J	83 U	37 U	54 U
Dibenzofuran	59000	ug/kg		660 U	22 J	77 J	830 U	15 J	540 U
Fluoranthene	100000	ug/kg		660 U	420	200 J	830 U	26 J	540 U
Fluorene	100000	ug/kg		660 U	36 J	100 J	830 U	33 J	540 U
Hexachlorobenzene	1200	ug/kg		66 U	37 U	38 U	83 U	37 U	54 U
Indeno[1,2,3-cd]pyrene	500	ug/kg		66 U	120	98	83 U	37 U	54 U
Naphthalene	100000	ug/kg		660 U	15 J	67 J	830 U	370 U	540 U
Pentachlorophenol	6700	ug/kg		530 U	300 U	300 U	670 U	300 U	440 U
Phenanthrene	100000	ug/kg		19 J	250 J	170 J	830 U	79 J	540 U
Phenols (Total)	--	ug/kg		660 U	370 U	380 U	830 U	370 U	540 U
Pyrene	100000	ug/kg		660 U	460	320 J	830 U	46 J	540 U
SVOC Total TICs	100000	ug/kg		80400	1780	24940	**119800**	0	42500

Table 7. Summary of Semivolatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-P3-B2	PDC-PX-N2-B	PDC-PX-N2-N	PDC-PX-M2-B	PDC-PX-P4-B2	PDC-PX-P5-B2
			Sample Date:	9/15/2019	9/16/2019	9/16/2019	9/16/2019	9/18/2019	9/18/2019
			Sample Depth (ft bls):	-	-	-	-	-	-
1,4-Dioxane	13000	ug/kg		NA	NA	NA	NA	NA	NA
2-Methylphenol	100000	ug/kg		400 U	430 U	360 U	460 U	1200 U	430 U
3&4-Methylphenol	100000	ug/kg		400 U	430 U	360 U	460 U	1200 U	430 U
Acenaphthene	100000	ug/kg		400 U	430 U	350 J	460 U	1200 U	430 U
Acenaphthylene	100000	ug/kg		400 U	430 U	81 J	460 U	1200 U	430 U
Anthracene	100000	ug/kg		600	430 U	270 J	460 U	1200 U	430 U
Benzo[a]anthracene	1000	ug/kg		83	43 U	65	46 U	52 J	26 J
Benzo[a]pyrene	1000	ug/kg		34 J	43 U	16 J	46 U	120 U	17 JT
Benzo[b]fluoranthene	1000	ug/kg		47	43 U	31 J	46 U	40 J	26 J
Benzo[g,h,i]perylene	100000	ug/kg		400 U	430 U	360 U	460 U	1200 U	430 U
Benzo[k]fluoranthene	3900	ug/kg		15 J	43 U	17 J	46 U	26 J	9.3 J
Chrysene	3900	ug/kg		220 J	430 U	73 J	460 U	27 J	16 J
Dibenzo[a,h]anthracene	330	ug/kg		40 U	43 U	36 U	46 U	120 U	43 U
Dibenzofuran	59000	ug/kg		400 U	430 U	270 J	460 U	1200 U	430 U
Fluoranthene	100000	ug/kg		290 J	430 U	450	460 U	63 J	430 U
Fluorene	100000	ug/kg		400 U	430 U	360 U	460 U	30 J	430 U
Hexachlorobenzene	1200	ug/kg		40 U	43 U	36 U	46 U	120 U	43 U
Indeno[1,2,3-cd]pyrene	500	ug/kg		19 J	43 U	36 U	46 U	120 U	43 U
Naphthalene	100000	ug/kg		400 U	430 U	360 U	460 U	250 J	23 J
Pentachlorophenol	6700	ug/kg		320 U	350 U	290 U	370 U	960 U	350 U
Phenanthrene	100000	ug/kg		400 U	430 U	390	460 U	40 J	430 U
Phenols (Total)	--	ug/kg		400 U	430 U	360 U	460 U	1200 U	430 U
Pyrene	100000	ug/kg		410	430 U	350 J	460 U	59 J	34 J
SVOC Total TICs	100000	ug/kg		49700	1200	51500	1100	**122000**	9300

Table 7. Summary of Semivolatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-P6-B2	PDC-PX-L12-B	PDC-PX-M12-B	PDC-PX-L11-B	PDC-PX-P7-B2	PDC-PX-P8-B
			Sample Date:	9/20/2019	9/20/2019	9/20/2019	9/20/2019	9/23/2019	9/23/2019
			Sample Depth (ft bls):	-	-	-	-	-	-
1,4-Dioxane	13000	ug/kg		NA	NA	NA	NA	NA	NA
2-Methylphenol	100000	ug/kg		590 U	400 U	390 U	450 U	540 U	920 U
3&4-Methylphenol	100000	ug/kg		590 U	400 U	390 U	450 U	540 U	920 U
Acenaphthene	100000	ug/kg		590 U	400 U	390 U	450 U	72 J	920 U
Acenaphthylene	100000	ug/kg		590 U	400 U	390 U	450 U	540 U	920 U
Anthracene	100000	ug/kg		590 U	400 U	390 U	14 J	540 U	920 U
Benzo[a]anthracene	1000	ug/kg		59 U	40 U	39 U	45 U	22 J	92 U
Benzo[a]pyrene	1000	ug/kg		59 U	40 U	39 U	45 U	54 U	92 U
Benzo[b]fluoranthene	1000	ug/kg		59 U	40 U	39 U	45 U	19 J	92 U
Benzo[g,h,i]perylene	100000	ug/kg		590 U	400 U	390 U	450 U	540 U	920 U
Benzo[k]fluoranthene	3900	ug/kg		59 U	40 U	39 U	45 U	54 U	92 U
Chrysene	3900	ug/kg		590 U	400 U	390 U	450 U	20 J	920 U
Dibenzo[a,h]anthracene	330	ug/kg		59 U	40 U	39 U	45 U	54 U	92 U
Dibenzofuran	59000	ug/kg		590 U	400 U	390 U	20 J	40 J	920 U
Fluoranthene	100000	ug/kg		590 U	400 U	390 U	450 U	37 J	920 U
Fluorene	100000	ug/kg		590 U	400 U	390 U	450 U	40 J	920 U
Hexachlorobenzene	1200	ug/kg		59 U	40 U	39 U	45 U	54 U	92 U
Indeno[1,2,3-cd]pyrene	500	ug/kg		59 U	40 U	39 U	45 U	54 U	92 U
Naphthalene	100000	ug/kg		590 U	400 U	390 U	38 J	180 J	200 J
Pentachlorophenol	6700	ug/kg		480 U	320 U	320 U	370 U	430 U	740 U
Phenanthrene	100000	ug/kg		590 U	400 U	390 U	450 U	52 J	920 U
Phenols (Total)	--	ug/kg		590 U	400 U	390 U	450 U	540 U	920 U
Pyrene	100000	ug/kg		590 U	400 U	390 U	450 U	36 J	920 U
SVOC Total TICs	100000	ug/kg		5390	940	950	1300	39700	**141300**

Table 7. Summary of Semivolatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-Q9-B	PDC-PX-P5-B3	PDC-PX-P8-B3	PDC-PX-Q10-B3	PDC-PX-P2-N2	PDC-PX-P2-B3
			Sample Date:	9/24/2019	9/26/2019	9/27/2019	9/28/2019	9/30/2019	9/30/2019
			Sample Depth (ft bls):	-	-	-	-	-	-
1,4-Dioxane	13000	ug/kg		NA	NA	NA	NA	NA	NA
2-Methylphenol	100000	ug/kg		670 U	400 U	900 U	560 U	410 U	380 U
3&4-Methylphenol	100000	ug/kg		670 U	400 U	27 J	560 U	410 U	380 U
Acenaphthene	100000	ug/kg		51 J	400 U	460 J	130 J	410 U	380 U
Acenaphthylene	100000	ug/kg		670 U	400 U	900 U	24 J	410 U	380 U
Anthracene	100000	ug/kg		670 U	400 U	900 U	47 J	62 J	380 U
Benzo[a]anthracene	1000	ug/kg		67 U	40 U	52 J	56 U	340	38 U
Benzo[a]pyrene	1000	ug/kg		67 U	40 U	90 U	56 U	300	38 U
Benzo[b]fluoranthene	1000	ug/kg		67 U	40 U	52 J	56 U	530	38 U
Benzo[g,h,i]perylene	100000	ug/kg		670 U	400 U	900 U	560 U	150 J	380 U
Benzo[k]fluoranthene	3900	ug/kg		67 U	40 U	22 J	56 U	190	38 U
Chrysene	3900	ug/kg		670 U	400 U	74 JT	560 U	390 J	380 U
Dibenzo[a,h]anthracene	330	ug/kg		67 U	40 U	90 U	56 U	44	38 U
Dibenzofuran	59000	ug/kg		670 U	400 U	320 J	71 J	410 U	380 U
Fluoranthene	100000	ug/kg		670 U	400 U	76 J	66 J	660	380 U
Fluorene	100000	ug/kg		670 U	400 U	260 J	55 J	15 J	380 U
Hexachlorobenzene	1200	ug/kg		67 U	40 U	90 U	56 U	41 U	38 U
Indeno[1,2,3-cd]pyrene	500	ug/kg		67 U	40 U	90 U	56 U	180	38 U
Naphthalene	100000	ug/kg		130 J	400 U	790 J	42 J	410 U	380 U
Pentachlorophenol	6700	ug/kg		540 U	320 U	730 U	450 U	330 U	310 U
Phenanthrene	100000	ug/kg		17 J	400 U	190 J	160 J	270 J	380 U
Phenols (Total)	--	ug/kg		68 J	400 U	900 U	560 U	410 U	380 U
Pyrene	100000	ug/kg		670 U	20 J	66 J	41 J	620	380 U
SVOC Total TICs	100000	ug/kg		79600	390	**100300**	37600	36240	1680

Table 7. Summary of Semivolatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-M3-B2	PDC-PX-N3-B	PDC-PX-N4-B	PDC-PX-N5-B	PDC-PX-N6-B	PDC-PX-N7-B
			Sample Date:	10/1/2019	10/1/2019	10/2/2019	10/2/2019	10/3/2019	10/3/2019
			Sample Depth (ft bls):	-	-	-	-	-	-
1,4-Dioxane	13000	ug/kg		NA	NA	NA	NA	NA	NA
2-Methylphenol	100000	ug/kg		510 U	420 U	440 U	400 U	430 U	420 U
3&4-Methylphenol	100000	ug/kg		510 U	420 U	440 U	400 U	430 U	420 U
Acenaphthene	100000	ug/kg		66 J	420 U	440 U	400 U	430 U	420 U
Acenaphthylene	100000	ug/kg		37 J	420 U	440 U	400 U	430 U	420 U
Anthracene	100000	ug/kg		33 J	420 U	440 U	400 U	430 U	420 U
Benzo[a]anthracene	1000	ug/kg		51 U	42 U	44 U	40 U	43 U	42 U
Benzo[a]pyrene	1000	ug/kg		51 U	42 U	44 U	40 U	43 U	42 U
Benzo[b]fluoranthene	1000	ug/kg		51 U	42 U	44 U	40 U	43 U	42 U
Benzo[g,h,i]perylene	100000	ug/kg		510 U	420 U	440 U	400 U	430 U	420 U
Benzo[k]fluoranthene	3900	ug/kg		51 U	42 U	44 U	40 U	43 U	42 U
Chrysene	3900	ug/kg		510 U	420 U	440 U	400 U	430 U	420 U
Dibenzo[a,h]anthracene	330	ug/kg		51 U	42 U	44 U	40 U	43 U	42 U
Dibenzofuran	59000	ug/kg		74 J	420 U	440 U	400 U	430 U	420 U
Fluoranthene	100000	ug/kg		510 U	420 U	440 U	400 U	430 U	420 U
Fluorene	100000	ug/kg		47 J	420 U	440 U	400 U	430 U	420 U
Hexachlorobenzene	1200	ug/kg		51 U	42 U	44 U	40 U	43 U	42 U
Indeno[1,2,3-cd]pyrene	500	ug/kg		51 U	42 U	44 U	40 U	43 U	42 U
Naphthalene	100000	ug/kg		86 J	420 U	440 U	400 U	430 U	420 U
Pentachlorophenol	6700	ug/kg		410 U	340 U	360 U	320 U	340 U	340 U
Phenanthrene	100000	ug/kg		82 J	420 U	440 U	400 U	430 U	420 U
Phenols (Total)	--	ug/kg		510 U	420 U	440 U	400 U	430 U	420 U
Pyrene	100000	ug/kg		510 U	420 U	440 U	400 U	430 U	420 U
SVOC Total TICs	100000	ug/kg		5510	1400	2350	990	1050	890

Table 7. Summary of Semivolatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-N8-B	PDC-PX-N9-B	PDC-PX-N10-B	PDC-PX-N11-B	PDC-PX-K12-W	PDC-PX-015-B
			Sample Date:	10/3/2019	10/3/2019	10/4/2019	10/5/2019	10/7/2019	10/8/2019
			Sample Depth (ft bls):	-	-	-	-	-	-
1,4-Dioxane	13000	ug/kg		NA	NA	NA	NA	NA	NA
2-Methylphenol	100000	ug/kg		410 U	410 U	390 U	410 U	400 U	400 U
3&4-Methylphenol	100000	ug/kg		410 U	410 U	390 U	410 U	400 U	400 U
Acenaphthene	100000	ug/kg		410 U	410 U	390 U	410 U	230 J	300 J
Acenaphthylene	100000	ug/kg		410 U	410 U	390 U	410 U	78 J	400 U
Anthracene	100000	ug/kg		410 U	410 U	390 U	410 U	99 J	400 U
Benzo[a]anthracene	1000	ug/kg		41 U	17 J	39 U	41 U	37 J	14 J
Benzo[a]pyrene	1000	ug/kg		41 U	41 U	39 U	41 U	18 J	40 U
Benzo[b]fluoranthene	1000	ug/kg		41 U	12 J	39 U	41 U	33 J	40 U
Benzo[g,h,i]perylene	100000	ug/kg		410 U	130 J	390 U	410 U	400 U	400 U
Benzo[k]fluoranthene	3900	ug/kg		41 U	14 J	39 U	41 U	14 J	40 U
Chrysene	3900	ug/kg		410 U	17 JT	390 UT	410 U	44 J	400 UT
Dibenzo[a,h]anthracene	330	ug/kg		41 U	86	39 U	41 U	40 U	40 U
Dibenzofuran	59000	ug/kg		410 U	410 U	390 U	410 U	180 J	33 J
Fluoranthene	100000	ug/kg		410 U	410 U	390 U	410 U	100 J	58 J
Fluorene	100000	ug/kg		410 U	410 U	390 U	410 U	340 J	77 J
Hexachlorobenzene	1200	ug/kg		41 U	41 U	39 U	41 U	40 U	40 U
Indeno[1,2,3-cd]pyrene	500	ug/kg		41 U	69	39 U	41 U	19 J	40 U
Naphthalene	100000	ug/kg		410 U	410 U	390 U	410 U	170 J	18 J
Pentachlorophenol	6700	ug/kg		330 U	330 U	320 U	330 U	320 U	330 U
Phenanthrene	100000	ug/kg		410 U	410 U	390 U	410 U	790	34 J
Phenols (Total)	--	ug/kg		410 U	410 U	390 U	410 U	400 U	400 U
Pyrene	100000	ug/kg		410 U	410 U	390 U	410 U	150 J	27 J
SVOC Total TICs	100000	ug/kg		810	650	0	420	60500	470

Table 7. Summary of Semivolatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-015-S	PDC-PX-Q9-B3	PDC-PX-Q11-B	PDC-PX-R11-B	PDC-PX-S12-B DUP
			Sample Date:	10/8/2019	10/14/2019	10/14/2019	10/14/2019	10/15/2019
			Sample Depth (ft bls):	-	-	-	-	-
1,4-Dioxane	13000	ug/kg		NA	NA	NA	NA	NA
2-Methylphenol	100000	ug/kg		370 U	410 U	390 U	430 U	470 U
3&4-Methylphenol	100000	ug/kg		370 U	410 U	390 U	430 U	470 U
Acenaphthene	100000	ug/kg		370 U	410 U	390 U	430 U	190 J
Acenaphthylene	100000	ug/kg		370 U	410 U	390 U	430 U	150 J
Anthracene	100000	ug/kg		22 J	410 U	390 U	430 U	130 J
Benzo[a]anthracene	1000	ug/kg		32 J	41 U	39 U	43 U	60
Benzo[a]pyrene	1000	ug/kg		13 J	41 U	39 U	43 U	47
Benzo[b]fluoranthene	1000	ug/kg		21 J	41 U	39 U	43 U	80
Benzo[g,h,i]perylene	100000	ug/kg		370 U	410 U	390 U	430 U	61 J
Benzo[k]fluoranthene	3900	ug/kg		37 U	41 U	39 U	43 U	47 U
Chrysene	3900	ug/kg		29 JT	410 U	390 U	430 U	150 J
Dibenzo[a,h]anthracene	330	ug/kg		37 U	41 U	39 U	43 U	47 U
Dibenzofuran	59000	ug/kg		370 U	410 U	390 U	430 U	160 J
Fluoranthene	100000	ug/kg		91 J	410 U	390 U	430 U	220 J
Fluorene	100000	ug/kg		370 U	410 U	390 U	430 U	59 J
Hexachlorobenzene	1200	ug/kg		37 U	41 U	39 U	43 U	47 U
Indeno[1,2,3-cd]pyrene	500	ug/kg		37 U	41 U	39 U	43 U	43 J
Naphthalene	100000	ug/kg		370 U	410 U	26 J	430 U	220 J
Pentachlorophenol	6700	ug/kg		290 U	330 U	320 U	340 U	380 UT
Phenanthrene	100000	ug/kg		91 J	410 U	390 U	430 U	230 J
Phenols (Total)	--	ug/kg		370 U	410 U	390 U	430 U	470 U
Pyrene	100000	ug/kg		74 J	410 U	390 U	430 U	330 J
SVOC Total TICs	100000	ug/kg		380	1100	890	1200	56920

Table 7. Summary of Semivolatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-R12-B	PDC-PX-R13-B	PDC-PX-S12-B	PDC-PX-S13-E	PDC-PX-R13-S	PDC-PX-R13-E
			Sample Date:	10/15/2019	10/15/2019	10/15/2019	10/15/2019	10/16/2019	10/16/2019
			Sample Depth (ft bls):	-	-	-	-	-	-
1,4-Dioxane	13000	ug/kg		NA	NA	NA	NA	NA	NA
2-Methylphenol	100000	ug/kg		400 U	650 U	460 U	410 U	360 U	410 U
3&4-Methylphenol	100000	ug/kg		400 U	650 U	460 U	410 U	360 U	410 U
Acenaphthene	100000	ug/kg		400 U	48 J	460 U	410 U	360 U	410 U
Acenaphthylene	100000	ug/kg		400 U	49 J	370 J	410 U	360 U	410 U
Anthracene	100000	ug/kg		400 U	650 U	150 J	410 U	360 U	410 U
Benzo[a]anthracene	1000	ug/kg		40 U	110	100	41 U	36 U	41 U
Benzo[a]pyrene	1000	ug/kg		40 U	73	70	41 U	36 U	41 U
Benzo[b]fluoranthene	1000	ug/kg		40 U	140	130	41 U	36 U	41 U
Benzo[g,h,i]perylene	100000	ug/kg		400 U	61 J	94 J	410 U	360 U	410 U
Benzo[k]fluoranthene	3900	ug/kg		40 U	56 J	35 J	41 U	36 U	41 U
Chrysene	3900	ug/kg		400 U	130 J	200 J	410 U	360 U	410 U
Dibenzo[a,h]anthracene	330	ug/kg		40 U	65 U	46 U	41 U	36 U	41 U
Dibenzofuran	59000	ug/kg		400 U	34 J	100 J	410 U	360 U	410 U
Fluoranthene	100000	ug/kg		400 U	200 J	270 J	410 U	360 U	410 U
Fluorene	100000	ug/kg		17 J	69 J	140 J	410 U	360 U	410 U
Hexachlorobenzene	1200	ug/kg		40 U	65 U	46 U	41 U	36 U	41 U
Indeno[1,2,3-cd]pyrene	500	ug/kg		40 U	63 J	88	41 U	36 U	41 U
Naphthalene	100000	ug/kg		400 U	79 J	230 J	410 U	360 U	410 U
Pentachlorophenol	6700	ug/kg		320 U	520 U	370 UT	330 UT	290 U	330 U
Phenanthrene	100000	ug/kg		21 J	170 J	340 J	410 U	360 U	410 U
Phenols (Total)	--	ug/kg		400 U	650 U	460 U	410 U	360 U	410 U
Pyrene	100000	ug/kg		400 U	240 J	510	410 U	360 U	410 U
SVOC Total TICs	100000	ug/kg		330	46100	**137120**	17200	1100	0

Table 7. Summary of Semivolatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-Q12-B	PDC-DUP DUP	PDC-PX-Q13-B	PDC-PX-P11-B	PDC-PX-P12-B	PDC-PX-P13-B
			Sample Date:	10/16/2019	10/16/2019	10/17/2019	10/18/2019	10/18/2019	10/18/2019
			Sample Depth (ft bls):	-	-	-	-	-	-
1,4-Dioxane	13000	ug/kg		NA	NA	NA	NA	NA	NA
2-Methylphenol	100000	ug/kg		630 U	620 U	430 U	0.039 U	420 U	400 U
3&4-Methylphenol	100000	ug/kg		630 U	620 U	430 U	0.039 U	420 U	400 U
Acenaphthene	100000	ug/kg		630 U	620 U	52 J	0.039 U	420 U	400 U
Acenaphthylene	100000	ug/kg		630 U	620 U	18 J	0.039 U	420 U	400 U
Anthracene	100000	ug/kg		630 U	620 U	430 U	0.039 U	420 U	400 U
Benzo[a]anthracene	1000	ug/kg		63 U	62 U	43 U	0.0039 U	42 U	40 U
Benzo[a]pyrene	1000	ug/kg		63 U	62 U	43 U	0.0039 U	42 U	40 U
Benzo[b]fluoranthene	1000	ug/kg		63 U	62 U	43 U	0.0039 U	42 U	40 U
Benzo[g,h,i]perylene	100000	ug/kg		630 U	620 U	430 U	0.039 U	420 U	400 U
Benzo[k]fluoranthene	3900	ug/kg		63 U	62 U	43 U	0.0039 U	42 U	40 U
Chrysene	3900	ug/kg		630 U	620 U	430 U	0.039 U	420 U	400 U
Dibenzo[a,h]anthracene	330	ug/kg		63 U	62 U	43 U	0.0039 U	42 U	40 U
Dibenzofuran	59000	ug/kg		630 U	620 U	430 U	0.039 U	420 U	400 U
Fluoranthene	100000	ug/kg		630 U	620 U	14 J	0.039 U	420 U	400 U
Fluorene	100000	ug/kg		630 U	620 U	430 U	0.039 U	420 U	400 U
Hexachlorobenzene	1200	ug/kg		63 U	62 U	43 U	0.0039 U	42 U	40 U
Indeno[1,2,3-cd]pyrene	500	ug/kg		63 U	62 U	43 U	0.0039 U	42 U	40 U
Naphthalene	100000	ug/kg		630 U	620 U	41 J	0.039 U	420 U	400 U
Pentachlorophenol	6700	ug/kg		510 U	500 U	340 U	0.0082 J	340 U	320 U
Phenanthrene	100000	ug/kg		630 U	620 U	430 U	0.039 U	420 U	17 J
Phenols (Total)	--	ug/kg		630 U	620 U	430 U	0.039 U	420 U	400 U
Pyrene	100000	ug/kg		630 U	620 U	430 U	0.039 U	420 U	400 U
SVOC Total TICs	100000	ug/kg		4030	9650	510	0	560	460

Table 7. Summary of Semivolatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-DUP DUP	PDC-PX-K13-B	PDC-PX-K13-N	PDC-PX-J13-B	PDC-PX-J14-W	PDC-PX-J14-S
			Sample Date:	10/19/2019	10/19/2019	10/19/2019	10/19/2019	10/19/2019	10/19/2019
			Sample Depth (ft bls):	-	-	-	-	-	-
1,4-Dioxane	13000	ug/kg		NA	NA	NA	NA	NA	NA
2-Methylphenol	100000	ug/kg		700 U	660 U	360 U	450 U	380 U	390 U
3&4-Methylphenol	100000	ug/kg		700 U	29 J	360 U	450 U	380 U	390 U
Acenaphthene	100000	ug/kg		700 U	660 U	360 U	450 U	380 U	390 U
Acenaphthylene	100000	ug/kg		700 U	660 U	360 U	450 U	14 J	390 U
Anthracene	100000	ug/kg		700 U	660 U	20 J	450 U	29 J	390 U
Benzo[a]anthracene	1000	ug/kg		70 U	66 U	13 J	45 U	29 J	24 J
Benzo[a]pyrene	1000	ug/kg		70 U	66 U	36 U	45 U	15 J	39 U
Benzo[b]fluoranthene	1000	ug/kg		70 U	66 U	36 U	45 U	28 J	15 J
Benzo[g,h,i]perylene	100000	ug/kg		700 U	660 U	360 U	450 U	380 U	390 U
Benzo[k]fluoranthene	3900	ug/kg		70 U	66 U	36 U	45 U	13 J	39 U
Chrysene	3900	ug/kg		700 U	660 U	8.7 J	450 U	39 J	20 J
Dibenzo[a,h]anthracene	330	ug/kg		70 U	66 U	36 U	45 U	38 U	39 U
Dibenzofuran	59000	ug/kg		700 U	31 J	18 J	21 J	34 J	390 U
Fluoranthene	100000	ug/kg		700 U	660 U	27 J	18 J	110 J	62 J
Fluorene	100000	ug/kg		700 U	50 J	16 J	450 U	68 J	390 U
Hexachlorobenzene	1200	ug/kg		70 U	66 U	36 U	45 U	38 U	39 U
Indeno[1,2,3-cd]pyrene	500	ug/kg		70 U	66 U	36 U	45 U	17 J	39 U
Naphthalene	100000	ug/kg		120 J	110 J	16 J	29 J	47 J	390 U
Pentachlorophenol	6700	ug/kg		570 U	530 U	290 U	370 U	300 U	310 U
Phenanthrene	100000	ug/kg		700 U	110 J	38 J	91 J	150 J	62 J
Phenols (Total)	--	ug/kg		700 U	660 U	360 U	450 U	380 U	390 U
Pyrene	100000	ug/kg		700 U	660 U	31 J	450 U	100 J	44 J
SVOC Total TICs	100000	ug/kg		68800	63900	5610	4170	7740	2990

Table 7. Summary of Semivolatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-J13-N	PDC-PX-K13-S	PDC-PX-L14-B	PDC-PX-M1-B	PDC-PX-M1-W1	PDC-PX-M2-W
			Sample Date:	10/19/2019	10/21/2019	10/22/2019	10/23/2019	10/23/2019	10/23/2019
			Sample Depth (ft bls):	-	-	-	-	-	-
1,4-Dioxane	13000	ug/kg		NA	NA	NA	NA	NA	NA
2-Methylphenol	100000	ug/kg		390 U	360 U	710 U	360 U	370 U	370 U
3&4-Methylphenol	100000	ug/kg		390 U	360 U	710 U	360 U	370 U	370 U
Acenaphthene	100000	ug/kg		390 U	410	710 U	170 J	58 J	180 J
Acenaphthylene	100000	ug/kg		390 U	160 J	710 U	120 J	31 J	120 J
Anthracene	100000	ug/kg		390 U	200 J	710 U	140 J	45 J	160 J
Benzo[a]anthracene	1000	ug/kg		39 U	94	71 U	36 U	110	250
Benzo[a]pyrene	1000	ug/kg		39 U	65	71 U	36 U	92	210
Benzo[b]fluoranthene	1000	ug/kg		39 U	120	71 U	36 U	130	330
Benzo[g,h,i]perylene	100000	ug/kg		390 U	62 J	710 U	360 U	71 J	190 J
Benzo[k]fluoranthene	3900	ug/kg		39 U	46	71 U	36 U	61	140
Chrysene	3900	ug/kg		390 U	170 J	710 U	360 U	110 J	400
Dibenzo[a,h]anthracene	330	ug/kg		39 U	36 U	71 U	36 U	37 U	29 J
Dibenzofuran	59000	ug/kg		390 U	440	710 U	360 U	81 J	370 U
Fluoranthene	100000	ug/kg		13 J	290 J	710 U	25 J	200 J	720
Fluorene	100000	ug/kg		390 U	870	710 U	360 U	34 J	370 U
Hexachlorobenzene	1200	ug/kg		39 U	36 U	71 U	36 U	37 U	37 U
Indeno[1,2,3-cd]pyrene	500	ug/kg		39 U	61	71 U	36 U	78	190
Naphthalene	100000	ug/kg		390 U	340 J	63 J	360 U	73 J	48 J
Pentachlorophenol	6700	ug/kg		310 U	290 U	570 U	290 U	300 U	290 U
Phenanthrene	100000	ug/kg		390 U	2100	710 U	360 U	73 J	390
Phenols (Total)	--	ug/kg		390 U	360 U	710 U	360 U	370 U	370 U
Pyrene	100000	ug/kg		390 U	330 J	710 U	81 J	190 J	720
SVOC Total TICs	100000	ug/kg		2590	68000	56600	34100	4050	27100

Table 7. Summary of Semivolatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-N1-E	PDC-PX-L13-B	PDC-PX-Q14-B2	PDC-PX-Q14-E	PDC-PX-Q14-S	PDC-PX-M14-B
			Sample Date:	10/23/2019	10/24/2019	10/25/2019	10/25/2019	10/25/2019	10/25/2019
			Sample Depth (ft bls):	-	-	-	-	-	-
1,4-Dioxane	13000	ug/kg		NA	NA	NA	NA	NA	NA
2-Methylphenol	100000	ug/kg		390 U	410 U	400 U	370 U	390 U	670 U
3&4-Methylphenol	100000	ug/kg		390 U	410 U	400 U	370 U	390 U	670 U
Acenaphthene	100000	ug/kg		390 U	410 U	400 U	370 U	390 U	670 U
Acenaphthylene	100000	ug/kg		390 U	410 U	400 U	370 U	390 U	670 U
Anthracene	100000	ug/kg		390 U	410 U	400 U	370 U	21 J	670 U
Benzo[a]anthracene	1000	ug/kg		39 U	41 U	40 U	37 U	39 U	67 U
Benzo[a]pyrene	1000	ug/kg		39 U	41 U	40 U	37 U	39 U	67 U
Benzo[b]fluoranthene	1000	ug/kg		39 U	41 U	40 U	37 U	39 U	67 U
Benzo[g,h,i]perylene	100000	ug/kg		390 U	410 U	39 J	28 J	390 U	20 J
Benzo[k]fluoranthene	3900	ug/kg		39 U	41 U	40 U	37 U	39 U	67 U
Chrysene	3900	ug/kg		390 U	410 U	400 U	370 U	390 U	670 U
Dibenzo[a,h]anthracene	330	ug/kg		39 U	41 U	40 U	29 J	39 U	67 U
Dibenzofuran	59000	ug/kg		390 U	410 U	400 U	370 U	390 U	670 U
Fluoranthene	100000	ug/kg		390 U	14 J	400 U	370 U	390 U	670 U
Fluorene	100000	ug/kg		390 U	410 U	400 U	370 U	390 U	670 U
Hexachlorobenzene	1200	ug/kg		39 U	41 U	40 U	37 U	39 U	67 U
Indeno[1,2,3-cd]pyrene	500	ug/kg		39 U	41 U	47	34 J	39 U	27 J
Naphthalene	100000	ug/kg		47 J	16 J	400 U	370 U	390 U	110 J
Pentachlorophenol	6700	ug/kg		310 U	330 U	320 U	300 U	320 U	540 U
Phenanthrene	100000	ug/kg		390 U	410 U	400 U	370 U	390 U	670 U
Phenols (Total)	--	ug/kg		390 U	410 U	400 U	370 U	390 U	670 U
Pyrene	100000	ug/kg		390 U	24 J	400 U	370 U	390 U	670 U
SVOC Total TICs	100000	ug/kg		2780	2430	680	710	2640	25400

Table 7. Summary of Semivolatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-P14-B	PDC-PX-P14-S	PDC-PX-M13-B	PDC-PX-K14-W	PDC-PX-K14-B	PDC-PX-K15-B
			Sample Date:	10/25/2019	10/25/2019	10/28/2019	10/29/2019	10/29/2019	10/30/2019
			Sample Depth (ft bls):	-	-	-	-	-	-
1,4-Dioxane	13000	ug/kg		NA	NA	NA	NA	NA	NA
2-Methylphenol	100000	ug/kg		430 U	380 U	610 U	370 U	420 U	660 U
3&4-Methylphenol	100000	ug/kg		430 U	380 U	610 U	370 U	420 U	660 U
Acenaphthene	100000	ug/kg		430 U	380 U	610 U	55 J	420 U	660 U
Acenaphthylene	100000	ug/kg		430 U	380 U	610 U	18 J	420 U	660 U
Anthracene	100000	ug/kg		430 U	380 U	610 U	66 J	420 U	660 U
Benzo[a]anthracene	1000	ug/kg		43 U	38 U	61 U	26 J	24 J	66 U
Benzo[a]pyrene	1000	ug/kg		43 U	13 J	140	16 J	12 J	66 U
Benzo[b]fluoranthene	1000	ug/kg		43 U	38 U	81	32 J	26 J	66 U
Benzo[g,h,i]perylene	100000	ug/kg		430 U	380 U	750	18 J	420 U	660 U
Benzo[k]fluoranthene	3900	ug/kg		43 U	38 U	110	12 J	42 U	66 U
Chrysene	3900	ug/kg		430 U	17 J	610 U	39 J	20 J	660 U
Dibenzo[a,h]anthracene	330	ug/kg		43 U	38 U	**840**	37 U	42 U	66 U
Dibenzofuran	59000	ug/kg		430 U	380 U	610 U	100 J	420 U	660 U
Fluoranthene	100000	ug/kg		430 U	21 J	610 U	74 J	32 J	660 U
Fluorene	100000	ug/kg		430 U	380 U	610 U	210 J	420 U	660 U
Hexachlorobenzene	1200	ug/kg		43 U	38 U	61 U	37 U	42 U	66 U
Indeno[1,2,3-cd]pyrene	500	ug/kg		43 U	38 U	**1000**	15 J	42 U	66 U
Naphthalene	100000	ug/kg		430 U	380 U	610 U	140 J	29 J	110 J
Pentachlorophenol	6700	ug/kg		340 U	300 U	490 U	300 U	340 U	540 U
Phenanthrene	100000	ug/kg		430 U	380 U	610 U	530	39 J	660 U
Phenols (Total)	--	ug/kg		430 U	380 U	610 U	370 U	420 U	660 U
Pyrene	100000	ug/kg		430 U	380 U	610 U	120 J	30 J	660 U
SVOC Total TICs	100000	ug/kg		750	2130	1960	79740	2020	22630

Table 7. Summary of Semivolatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-K15-W	PDC-PX-K16-B	PDC-PX-K16-S	PDC-PX-L16-S	PDC-PX-L16-B	PDC-PX-K1-B
			Sample Date:	10/30/2019	10/31/2019	10/31/2019	10/31/2019	10/31/2019	11/2/2019
			Sample Depth (ft bls):	-	-	-	-	-	-
1,4-Dioxane	13000	ug/kg		NA	NA	NA	NA	NA	NA
2-Methylphenol	100000	ug/kg		390 U	830 U	390 U	410 U	1000 U	430 U
3&4-Methylphenol	100000	ug/kg		390 U	63 J	390 U	410 U	1000 U	430 U
Acenaphthene	100000	ug/kg		33 J	830 U	390 U	59 J	1000 U	430 U
Acenaphthylene	100000	ug/kg		30 J	830 U	390 U	17 J	1000 U	430 U
Anthracene	100000	ug/kg		340 J	830 U	390 U	410 U	1000 U	430 U
Benzo[a]anthracene	1000	ug/kg		680	83 U	39 U	42	100 U	43 U
Benzo[a]pyrene	1000	ug/kg		490	83 U	13 J	39 J	100 U	43 U
Benzo[b]fluoranthene	1000	ug/kg		640	83 U	13 J	52	100 U	43 U
Benzo[g,h,i]perylene	100000	ug/kg		300 J	830 U	390 U	43 J	1000 U	430 U
Benzo[k]fluoranthene	3900	ug/kg		270	83 U	39 U	24 J	100 U	43 U
Chrysene	3900	ug/kg		670	830 U	18 J	42 J	1000 U	430 U
Dibenzo[a,h]anthracene	330	ug/kg		55	83 U	39 U	41 U	100 U	43 U
Dibenzofuran	59000	ug/kg		39 J	830 U	390 U	410 U	1000 U	430 U
Fluoranthene	100000	ug/kg		1600	830 U	31 J	96 J	1000 U	430 U
Fluorene	100000	ug/kg		95 J	830 U	390 U	410 U	1000 U	430 U
Hexachlorobenzene	1200	ug/kg		39 U	83 U	39 U	41 U	100 U	43 U
Indeno[1,2,3-cd]pyrene	500	ug/kg		320	83 U	39 U	38 J	100 U	43 U
Naphthalene	100000	ug/kg		48 J	150 J	390 U	17 J	1000 U	430 U
Pentachlorophenol	6700	ug/kg		310 U	670 U	310 U	330 U	820 U	350 U
Phenanthrene	100000	ug/kg		1000	830 U	390 U	15 J	1000 U	430 U
Phenols (Total)	--	ug/kg		390 U	660 J	390 U	410 U	1000 U	430 U
Pyrene	100000	ug/kg		1300	830 U	26 J	71 J	1000 U	430 U
SVOC Total TICs	100000	ug/kg		31250	67500	3180	17960	**117500**	1500

Table 7. Summary of Semivolatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-K1-N	PDC-PX-K1-E	PDC-PX-K1-S	PDC-PX-K1-W	PDC-PX-O11-B	PDC-PX-O12-B
			Sample Date:	11/2/2019	11/2/2019	11/2/2019	11/2/2019	11/2/2019	11/2/2019
			Sample Depth (ft bls):	-	-	-	-	-	-
1,4-Dioxane	13000	ug/kg		NA	NA	NA	NA	NA	NA
2-Methylphenol	100000	ug/kg		400 U	400 U	390 U	380 U	400 U	400 U
3&4-Methylphenol	100000	ug/kg		400 U	400 U	390 U	380 U	400 U	400 U
Acenaphthene	100000	ug/kg		400 U	400 U	390 U	380 U	400 U	180 J
Acenaphthylene	100000	ug/kg		400 U	400 U	390 U	380 U	400 U	120 J
Anthracene	100000	ug/kg		400 U	400 U	390 U	380 U	23 J	210 J
Benzo[a]anthracene	1000	ug/kg		40 U	40 U	39 U	38 U	16 J	17 J
Benzo[a]pyrene	1000	ug/kg		40 U	40 U	39 U	38 U	40 U	40 U
Benzo[b]fluoranthene	1000	ug/kg		40 U	40 U	39 U	38 U	11 J	12 J
Benzo[g,h,i]perylene	100000	ug/kg		400 U	400 U	390 U	380 U	400 U	400 U
Benzo[k]fluoranthene	3900	ug/kg		40 U	40 U	39 U	38 U	40 U	40 U
Chrysene	3900	ug/kg		400 U	400 U	390 U	380 U	16 J	19 J
Dibenzo[a,h]anthracene	330	ug/kg		40 U	40 U	39 U	38 U	40 U	40 U
Dibenzofuran	59000	ug/kg		400 U	400 U	390 U	380 U	18 J	400 U
Fluoranthene	100000	ug/kg		400 U	400 U	390 U	380 U	30 J	44 J
Fluorene	100000	ug/kg		400 U	400 U	390 U	380 U	400 U	400 U
Hexachlorobenzene	1200	ug/kg		40 U	40 U	39 U	38 U	40 U	40 U
Indeno[1,2,3-cd]pyrene	500	ug/kg		40 U	40 U	39 U	38 U	40 U	40 U
Naphthalene	100000	ug/kg		400 U	400 U	390 U	380 U	400 U	400 U
Pentachlorophenol	6700	ug/kg		320 U	320 U	320 U	300 U	330 U	320 U
Phenanthrene	100000	ug/kg		400 U	400 U	390 U	380 U	95 J	110 J
Phenols (Total)	--	ug/kg		400 U	400 U	390 U	380 U	400 U	400 U
Pyrene	100000	ug/kg		400 U	400 U	390 U	380 U	41 J	110 J
SVOC Total TICs	100000	ug/kg		1300	1660	2410	5590	15080	36700

Table 7. Summary of Semivolatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-L15-B	PDC-PX-M15-S	PDC-PX-M15-B	PDC-PX-O13-B	PDC-PX-N15-B	PDC-PX-O14-B
			Sample Date:	11/4/2019	11/4/2019	11/4/2019	11/4/2019	11/5/2019	11/5/2019
			Sample Depth (ft bls):	-	-	-	-	-	-
1,4-Dioxane	13000	ug/kg		NA	NA	NA	NA	250 UT	120 UT
2-Methylphenol	100000	ug/kg		750 U	360 U	610 U	710 U	810 U	380 U
3&4-Methylphenol	100000	ug/kg		750 U	360 U	610 U	710 U	810 U	380 U
Acenaphthene	100000	ug/kg		750 U	360 U	610 U	710 U	810 U	220 J
Acenaphthylene	100000	ug/kg		750 U	23 J	610 U	710 U	810 U	76 J
Anthracene	100000	ug/kg		750 U	33 J	610 U	710 U	810 U	83 J
Benzo[a]anthracene	1000	ug/kg		75 U	89	61 U	71 U	81 U	16 J
Benzo[a]pyrene	1000	ug/kg		75 U	79	61 U	71 U	81 U	38 U
Benzo[b]fluoranthene	1000	ug/kg		75 U	160	61 U	71 U	81 U	38 U
Benzo[g,h,i]perylene	100000	ug/kg		750 U	79 J	610 U	710 U	810 U	380 U
Benzo[k]fluoranthene	3900	ug/kg		75 U	71	61 U	71 U	81 U	38 U
Chrysene	3900	ug/kg		750 U	140 J	610 U	710 U	810 U	9.8 J
Dibenzo[a,h]anthracene	330	ug/kg		75 U	36 U	61 U	71 U	81 U	38 U
Dibenzofuran	59000	ug/kg		750 U	360 U	610 U	710 U	810 U	250 J
Fluoranthene	100000	ug/kg		750 U	210 J	610 U	710 U	810 U	42 J
Fluorene	100000	ug/kg		750 U	360 U	610 U	710 U	810 U	410
Hexachlorobenzene	1200	ug/kg		75 U	36 U	61 U	71 U	81 U	38 U
Indeno[1,2,3-cd]pyrene	500	ug/kg		75 U	80	61 U	71 U	81 U	38 U
Naphthalene	100000	ug/kg		750 U	360 U	610 U	710 U	330 J	430
Pentachlorophenol	6700	ug/kg		610 U	290 U	490 U	570 U	660 U	310 U
Phenanthrene	100000	ug/kg		750 U	70 J	610 U	710 U	810 U	780
Phenols (Total)	--	ug/kg		750 U	360 U	610 U	710 U	810 U	380 U
Pyrene	100000	ug/kg		750 U	180 J	610 U	710 U	810 U	53 J
SVOC Total TICs	100000	ug/kg		33540	9200	29270	35700	24590	42400

Table 7. Summary of Semivolatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-N12-B	PDC-PX-N13-B	PDC-PX-N14-B	PDC-PX-N1-B1	PDC-PX-N1-B2	PDC-PX-M9-B
			Sample Date:	11/6/2019	11/7/2019	11/7/2019	11/7/2019	11/7/2019	11/8/2019
			Sample Depth (ft bls):	-	-	-	-	-	-
1,4-Dioxane	13000	ug/kg		NA	NA	NA	NA	NA	120 U
2-Methylphenol	100000	ug/kg		380 U	650 U	660 U	430 U	420 U	380 U
3&4-Methylphenol	100000	ug/kg		380 U	650 U	660 U	430 U	420 U	380 U
Acenaphthene	100000	ug/kg		380 U	280 J	660 U	430 U	420 U	380 U
Acenaphthylene	100000	ug/kg		380 U	78 J	660 U	430 U	420 U	6.9 J
Anthracene	100000	ug/kg		380 U	49 J	660 U	430 U	32 J	17 J
Benzo[a]anthracene	1000	ug/kg		38 U	120	66 U	43 U	42 U	16 J
Benzo[a]pyrene	1000	ug/kg		38 U	97	66 U	43 U	42 U	38 U
Benzo[b]fluoranthene	1000	ug/kg		38 U	170	66 U	43 U	42 U	11 J
Benzo[g,h,i]perylene	100000	ug/kg		380 U	74 J	660 U	430 U	420 U	380 U
Benzo[k]fluoranthene	3900	ug/kg		38 U	59 J	66 U	43 U	42 U	38 U
Chrysene	3900	ug/kg		380 U	150 J	660 U	430 U	420 U	9.1 J
Dibenzo[a,h]anthracene	330	ug/kg		38 U	65 U	66 U	43 U	42 U	38 U
Dibenzofuran	59000	ug/kg		380 U	360 J	660 U	430 U	420 U	9.7 J
Fluoranthene	100000	ug/kg		380 U	280 J	660 U	430 U	420 U	21 J
Fluorene	100000	ug/kg		380 U	460 J	660 U	430 U	420 U	17 J
Hexachlorobenzene	1200	ug/kg		38 U	65 U	66 U	43 U	42 U	38 U
Indeno[1,2,3-cd]pyrene	500	ug/kg		38 U	95	66 U	43 U	42 U	38 U
Naphthalene	100000	ug/kg		380 U	10000	180 J	430 U	28 J	72 J
Pentachlorophenol	6700	ug/kg		310 U	530 U	530 U	350 U	340 U	310 U
Phenanthrene	100000	ug/kg		380 U	440 J	19 J	430 U	420 U	34 J
Phenols (Total)	--	ug/kg		380 U	650 U	660 U	430 U	420 U	380 U
Pyrene	100000	ug/kg		380 U	220 J	660 U	430 U	420 U	23 J
SVOC Total TICs	100000	ug/kg		0	**145800**	67300	1180	700	2260

Table 7. Summary of Semivolatile Organic Compounds in End-Point Confirmation and Documentation Soil Samples
7 Washington Avenue, Island Park, New York

Parameter	NYSDEC Part 375 Restricted Residential SCO	Units	**Sample Designation:**	PDC-PX-015-E2	PDC-PX-M1-N	PDC-PX-015-E3	PDC-PX-M7-B	PDC-PX-N1-N2
			Sample Date:	11/8/2019	11/8/2019	11/8/2019	11/11/2019	11/12/2019
			Sample Depth (ft bls):	-	-	-	-	-
1,4-Dioxane	13000	ug/kg		110 U	110 U	110 U	NA	NA
2-Methylphenol	100000	ug/kg		370 U	380 U	380 U	390 U	390 U
3&4-Methylphenol	100000	ug/kg		370 U	380 U	380 U	390 U	390 U
Acenaphthene	100000	ug/kg		43 J	860	380 U	390 U	390 U
Acenaphthylene	100000	ug/kg		21 J	590	8.7 J	390 U	390 U
Anthracene	100000	ug/kg		53 J	220 J	380 U	390 U	390 U
Benzo[a]anthracene	1000	ug/kg		140	32 J	38 U	39 U	39 U
Benzo[a]pyrene	1000	ug/kg		140	23 J	38 U	39 U	39 U
Benzo[b]fluoranthene	1000	ug/kg		210	41	14 J	39 U	39 U
Benzo[g,h,i]perylene	100000	ug/kg		90 J	25 J	380 U	390 U	390 U
Benzo[k]fluoranthene	3900	ug/kg		75	11 J	38 U	39 U	39 U
Chrysene	3900	ug/kg		200 J	81 J	380 U	390 U	390 U
Dibenzo[a,h]anthracene	330	ug/kg		28 J	38 U	38 U	39 U	39 U
Dibenzofuran	59000	ug/kg		36 J	290 J	11 J	390 U	390 U
Fluoranthene	100000	ug/kg		360 J	230 J	380 U	390 U	390 U
Fluorene	100000	ug/kg		53 J	500	380 U	390 U	390 U
Hexachlorobenzene	1200	ug/kg		37 U	38 U	38 U	39 U	39 U
Indeno[1,2,3-cd]pyrene	500	ug/kg		91	20 J	38 U	39 U	39 U
Naphthalene	100000	ug/kg		54 J	380 U	380 U	390 U	390 U
Pentachlorophenol	6700	ug/kg		300 U	300 U	310 U	310 U	310 U
Phenanthrene	100000	ug/kg		280 J	1000	7.7 J	390 U	390 U
Phenols (Total)	--	ug/kg		22 J	380 U	380 U	390 U	390 U
Pyrene	100000	ug/kg		340 J	250 J	17 J	390 U	390 U
SVOC Total TICs	100000	ug/kg		49820	**205000**	1650	5200	580

FIGURES

1. Site Location Map
2. Site Layout Map
3. Extents of Site Cover System and Geologic Cross Section
4. Remaining Soil Sample Exceedances
5. Proposed New Building and Monitoring Point Locations
6. Extents of Remedial Excavation Areas

FORMER CIBRO PETROLEUM TERMINAL
(SITE NO. C130153)
WASHINGTON AVE,
ISLAND PARK NY

QUADRANGLE LOCATION

SOURCE:
USGS; 2016, Lawrence, NY
7.5 Minute Topographic Quadrangle

N

DRAWING LIST

SMP-01	SITE LOCATION MAP
SMP-02	SITE LAYOUT MAP
SMP-03	EXTENTS OF SITE COVER SYSTEM AND GEOLOGIC CROSS SECTION
SMP-04	REMAINING SOIL SAMPLE EXCEEDANCES
SMP-05	PROPOSED NEW BUILDING AND MONITORING POINT LOCATIONS
SMP-06	EXTENTS OF REMEDIAL EXCAVATION AREAS

Posillico Engineering Services

1750 New Highway
Farmingdale, New York 11735
(631) 249-1872

REVISIONS/ISSUES

No.	Date	By	Description

KEY MAP (NOT TO SCALE)

LICENSED SURVEYOR/ LICENSED ENGINEER

SIGNATURE: _____ DATE:

CLIENT:
PDC AT HARBOR ISLAND, INC.

TITLE:
SITE LOCATION MAP

PROJECT:
FORMER CIBRO PETROLEUM TERMINAL SITE
WASHINGTON AVE
ISLAND PARK, NY 11558

DATE:
November 14, 2019

SCALE:
AS NOTED

DRAWN BY: M.E.H
CHECKED BY: J.S.

DRAWING NO.:
SMP-01

Posillico Engineering Services

1750 New Highway
Farmingdale, New York 11735
(631) 249-1872

REVISIONS/ISSUES

No.	Date	By	Description

KEY MAP (NOT TO SCALE)

LICENSED SURVEYOR/ LICENSED ENGINEER

SIGNATURE: _____ DATE:

CLIENT:
PDC AT HARBOR ISLAND, INC.

TITLE:
SITE LAYOUT MAP

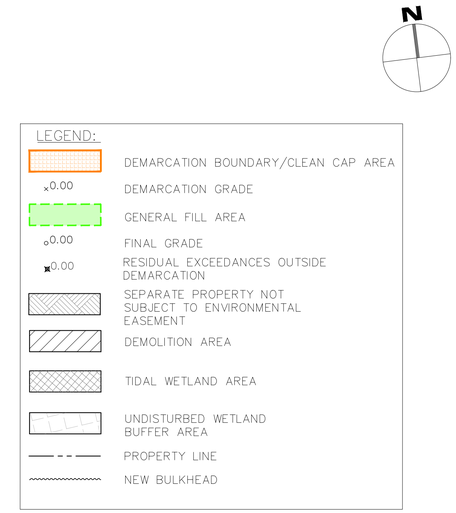
PROJECT:
FORMER CIBRO PETROLEUM TERMINAL SITE
WASHINGTON AVE
ISLAND PARK, NY 11558

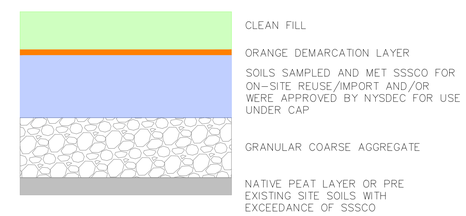
DATE:
November 21, 2019

SCALE:
AS NOTED

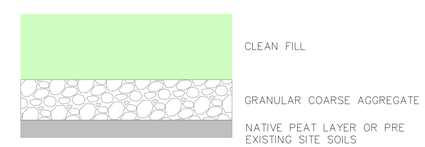
DRAWN BY: M.E.H
CHECKED BY: J.S.

DRAWING NO.:
SMP-02





A TYPICAL CLEAN CAP SECTION
SCALE: N.T.S.



B TYPICAL GENERAL FILL SECTION
SCALE: N.T.S.

Posillico Engineering Services
1750 New Highway
Farmingdale, New York 11735
(631) 249-1872

REVISIONS/ISSUES

No.	Date	By	Description

KEY MAP (NOT TO SCALE)

LICENSED SURVEYOR/ LICENSED ENGINEER

STATE OF NEW YORK · CHARLES J. MCGUCKIN · 069509 · LICENSED PROFESSIONAL ENGINEER

SIGNATURE: _____ DATE:

CLIENT:
PDC AT HARBOR ISLAND, INC.

TITLE:
EXTENTS OF SITE COVER SYSTEM AND GEOLOGIC CROSS SECTION

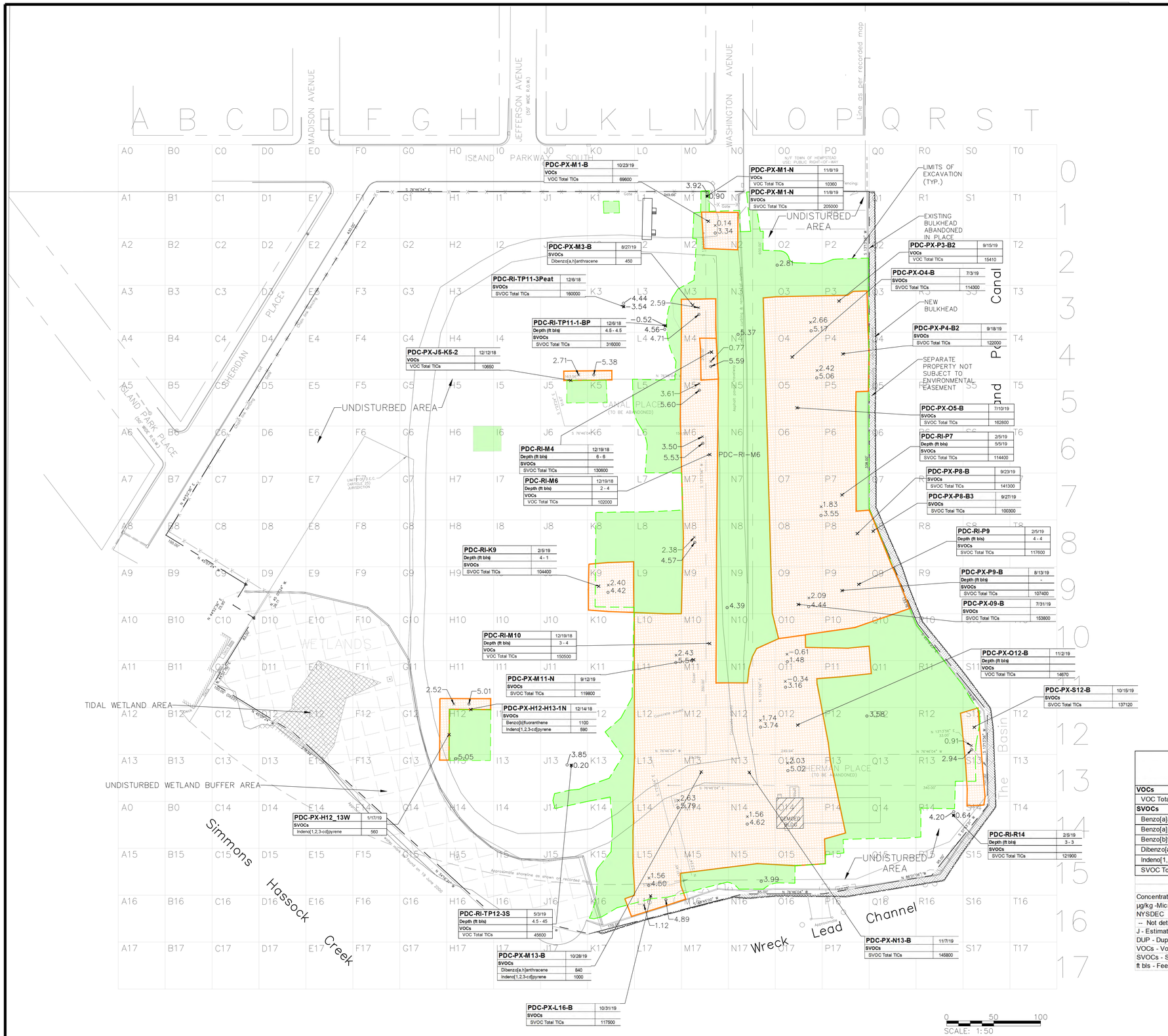
PROJECT:
FORMER CIBRO PETROLEUM TERMINAL SITE
WASHINGTON AVE
ISLAND PARK, NY 11558

DATE:
November 21, 2019

SCALE:
AS NOTED

DRAWN BY: M.E.H
CHECKED BY: J.S.

DRAWING NO.:
SMP-03

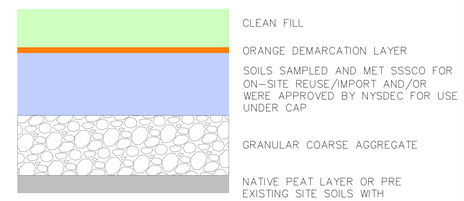


NOTE:
RESIDUAL EXCEEDANCES OUTSIDE DEMARCATION HAVE AT LEAST TWO FEET OF CLEAN SOIL COVER AND EXIST IN UNDISTURBED AREAS.

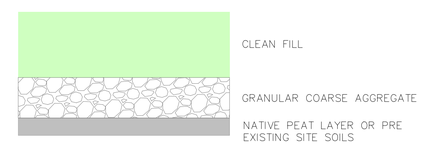
N

LEGEND:

- DEMARCATION BOUNDARY/CLEAN CAP AREA
- ×0.00 DEMARCATION GRADE
- GENERAL FILL AREA
- ○0.00 FINAL GRADE
- SEPARATE PROPERTY NOT SUBJECT TO ENVIRONMENTAL EASEMENT
- DEMOLITION AREA
- TIDAL WETLAND AREA
- UNDISTURBED WETLAND BUFFER AREA
- PROPERTY LINE
- NEW BULKHEAD
- ✖0.00 RESIDUAL EXCEEDANCES OUTSIDE DEMARCATION



A TYPICAL CLEAN CAP SECTION
SCALE: N.T.S.



B TYPICAL GENERAL FILL SECTION
SCALE: N.T.S.

Parameter	NYSDEC Part 375 Restricted Residential Soil Cleanup Objectives
VOCs	
VOC Total TICs	10000
SVOCs	
Benzo[a]anthracene	1000
Benzo[a]pyrene	1000
Benzo[b]fluoranthene	1000
Dibenzo[a,h]anthracene	330
Indeno[1,2,3-cd]pyrene	500
SVOC Total TICs	100000

Concentrations in µg/kg
µg/kg -Micrograms per kilogram
NYSDEC - New York State Department of Environmental Conservation
-- Not detected above NYSDEC Part 375 Commercial Soil Cleanup Objectives
J - Estimated value
DUP - Duplicate Sample
VOCs - Volatile Organic Compounds
SVOCs - Semivolatile Organic Compounds
ft bls - Feet below land surface

Posillico Engineering Services
1750 New Highway
Farmingdale, New York 11735
(631) 249-1872

REVISIONS/ISSUES

No.	Date	By	Description

KEY MAP (NOT TO SCALE)

LICENSED SURVEYOR/ LICENSED ENGINEER

SIGNATURE: _____ DATE:

CLIENT:
PDC AT HARBOR ISLAND, INC.

TITLE:
REMAINING SOIL SAMPLE EXCEEDANCES

PROJECT:
FORMER CIBRO PETROLEUM TERMINAL SITE
WASHINGTON AVE
ISLAND PARK, NY 11558

DATE:
November 21, 2019

SCALE:
AS NOTED

DRAWN BY: M.E.H
CHECKED BY: J.S.

DRAWING NO.:
SMP-04

LEGEND

- SEPARATE PROPERTY NOT SUBJECT TO ENVIRONMENTAL EASEMENT
- TIDAL WETLAND AREA
- UNDISTURBED WETLAND BUFFER AREA
- PROPERTY LINE
- PROPOSED NEW BUILDING
- PROPOSED NEW DRIVEWAY AND PARKING AREAS
- PROPOSED LANDSCAPE AND COMMON AREAS
- PR-SV-6 — LOCATION AND DESIGNATION OF POST-REMEDIATION SOIL VAPOR MONITORING POINT
- PR-MW-4 — LOCATION AND DESIGNATION OF POST-REMEDIATION MONITORING WELL

0 50 100
SCALE: 1:50

Posillico Engineering Services

1750 New Highway
Farmingdale, New York 11735
(631) 249-1872

REVISIONS/ISSUES

No.	Date	By	Description

KEY MAP (NOT TO SCALE)

LICENSED SURVEYOR/ LICENSED ENGINEER

SIGNATURE: _____ DATE:

CLIENT:
PDC AT HARBOR ISLAND, INC.

TITLE:
PROPOSED NEW BUILDING AND MONITORING POINT LOCATIONS

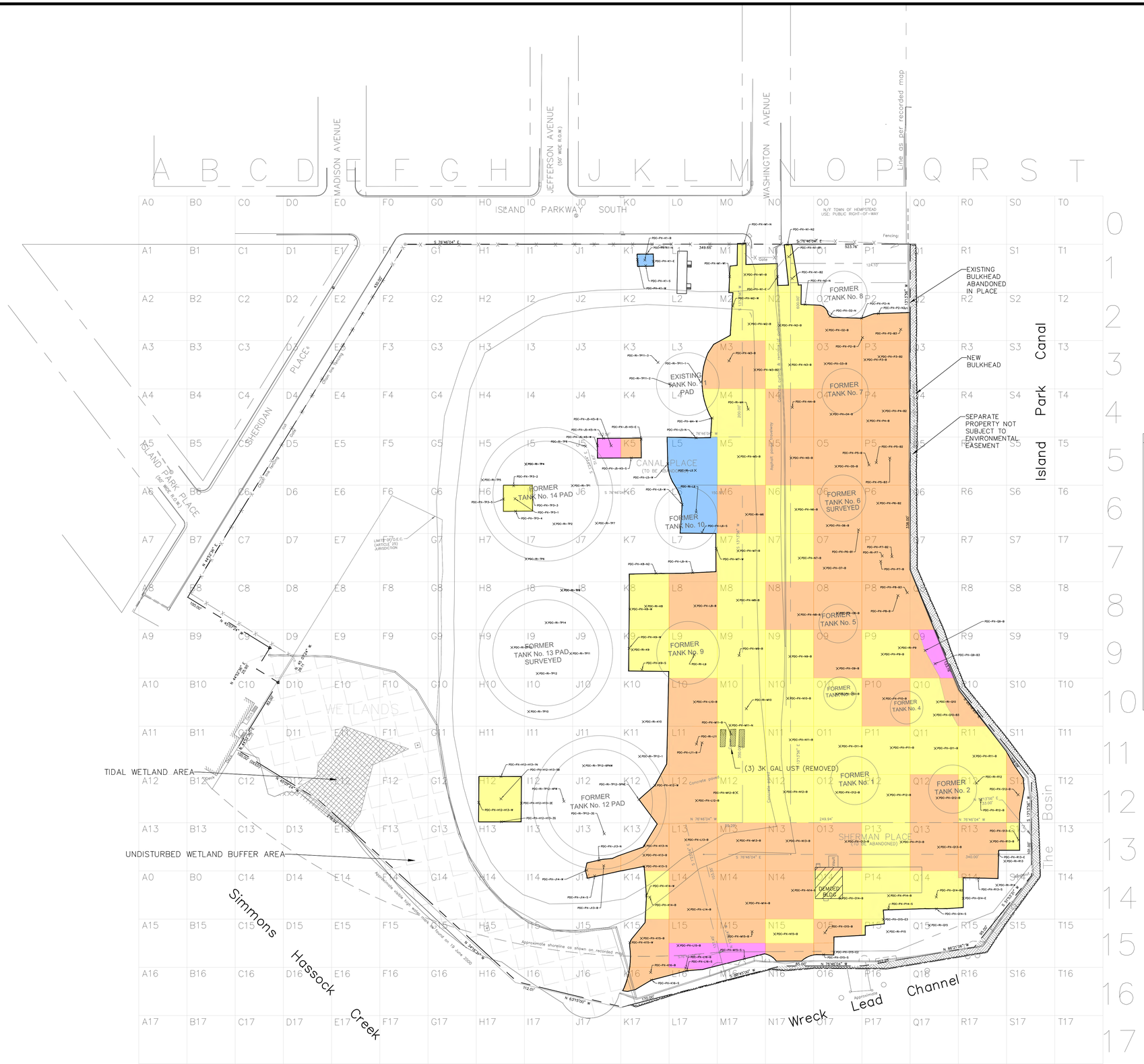
PROJECT:
FORMER CIBRO PETROLEUM TERMINAL SITE
WASHINGTON AVE
ISLAND PARK, NY 11558

DATE:
November 15, 2019

SCALE:
AS NOTED

DRAWN BY: M.E.H
CHECKED BY: J.S.

DRAWING NO.:
SMP-05



LEGEND

- BOTTOM OF EXCAVATION ELEVATION 2' TO 0' (APPROXIMATELY 3' TO 5' BELOW ORIGINAL SITE GRADE)
- BOTTOM OF EXCAVATION ELEVATION 0' TO −2' (APPROXIMATELY 5' TO 7' BELOW ORIGINAL SITE GRADE)
- BOTTOM OF EXCAVATION ELEVATION −2' TO −4' (APPROXIMATELY 7' TO 9' BELOW ORIGINAL SITE GRADE)
- BOTTOM OF EXCAVATION ELEVATION −4' AND BELOW (APPROXIMATELY GREATER THAN 9')
- DEMOLITION AREA
- SEPARATE PROPERTY NOT SUBJECT TO ENVIRONMENTAL EASEMENT
- TIDAL WETLAND AREA
- UNDISTURBED WETLAND BUFFER AREA
- PROPERTY LINE

0 50 100
SCALE: 1:50

Posillico Engineering Services

1750 New Highway
Farmingdale, New York 11735
(631) 249-1872

REVISIONS/ISSUES

No.	Date	By	Description

KEY MAP (NOT TO SCALE)

LICENSED SURVEYOR/ LICENSED ENGINEER

STATE OF NEW YORK · CHARLES J. MCGUCKIN · 069509 · LICENSED PROFESSIONAL ENGINEER

SIGNATURE: _____ DATE:

CLIENT:
PDC AT HARBOR ISLAND, INC.

TITLE:
EXTENTS OF REMEDIAL EXCAVATION AREAS

PROJECT:
FORMER CIBRO PETROLEUM TERMINAL SITE
WASHINGTON AVE
ISLAND PARK, NY 11558

DATE:
November 21, 2019

SCALE:
AS NOTED

DRAWN BY: M.E.H
CHECKED BY: J.S.

DRAWING NO.:
SMP-06

APPENDICES

A. Environmental Easement and Survey/Notice/ Deed Restriction
B. Site Contact List
C. Excavation Work Plan
D. Responsibilities of Owner and Remedial Party
E. Field Sampling Plan
F. Quality Assurance Project Plan
G. Site-Specific Health and Safety Plan
H. Site Management Forms
I. Permits and/or Permit Equivalent

APPENDIX A

Environmental Easement and Survey/Notice/
Deed Restriction

60 2019 00060821

Nassau County
Maureen OConnell
County Clerk
Mineola, NY 11501

Instrument Number: 2019- 00060821
As
D06 - AGREEMENT

Recorded On: July 23, 2019
Parties: BLUE ISLAND DEVELOPMENT LLC
TO NYS
Recorded By: FIRST NATIONWIDE TITLE AGENCY LLC

Billable Pages: 10
Num Of Pages: 11
Comment:

**** Examined and Charged as Follows: ****

D06 - AGREEMENT	95 00	Blocks - Deeds - $300	300.00	Tax Affidavit TP 584	5 00

Recording Charge: 400.00

	Amount	Consideration Amount	RS#/CS#				
Tax-Transfer	0.00	0.00	RE 26860	Basic	0 00	Spec ASST	0 00
HEMPSTEAD				Local NY CITY	0 00	Spec ADDL SONYMA	0 00
				Additional MTA	0 00	Transfer	0 00

Tax Charge: 0.00

Property Description:

Line	Section	Block	Lot	Unit	Town Name
1	43	381	35		HEMPSTEAD
2	43	381	36		HEMPSTEAD
3	43	381	102		HEMPSTEAD
4	43	381	314		HEMPSTEAD
5	43	381	328		HEMPSTEAD

**** THIS PAGE IS PART OF THE INSTRUMENT ****

I hereby certify that the within and foregoing was recorded in the Clerk's Office For: Nassau County, NY

File Information:

Document Number: 2019- 00060821
Receipt Number: 1552909
Recorded Date/Time: July 23, 2019 12:36:04P
Book-Vol/Pg: Bk-D Vl-13828 Pg-439
Cashier / Station: 0 MNC / NCCL-4HP1C42

Record and Return To:

FIRST NATIONWIDE TITLE AGENCY LLC
50 CHARLES LINDBERGH BLVD STE 600
UNIONDALE NY 11553

NASSAU COUNTY STATE OF NEW YORK

Maureen O'Connell

County Clerk Maureen O'Connell

10

SR-5683

County: Nassau Site No: C130153 Brownfield Cleanup Agreement Index : W1-1075-05-09 Nassau
as amended March 1, 2011

Sec: 43
Blk: 381
Lots: 35, 36, 102, 314 & 328

D06
10

ENVIRONMENTAL EASEMENT GRANTED PURSUANT TO ARTICLE 71, TITLE 36 OF THE NEW YORK STATE ENVIRONMENTAL CONSERVATION LAW

THIS INDENTURE made "as of" (a) this 29th day of June, 2018, between Owner(s) Blue Island Development LLC, having an office at 1610 New York Highway, Farmingdale, New York 11735, County of Suffolk, State of New York (the "Grantor"), and The People of the State of New York (the "Grantee"), acting through their Commissioner of the Department of Environmental Conservation (the "Commissioner", or "NYSDEC" or "Department" as the context requires) with its headquarters located at 625 Broadway, Albany, New York 12233,

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to encourage the remediation of abandoned and likely contaminated properties ("sites") that threaten the health and vitality of the communities they burden while at the same time ensuring the protection of public health and the environment; and

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to establish within the Department a statutory environmental remediation program that includes the use of Environmental Easements as an enforceable means of ensuring the performance of operation, maintenance, and/or monitoring requirements and the restriction of future uses of the land, when an environmental remediation project leaves residual contamination at levels that have been determined to be safe for a specific use, but not all uses, or which includes engineered structures that must be maintained or protected against damage to perform properly and be effective, or which requires groundwater use or soil management restrictions; and

WHEREAS, the Legislature of the State of New York has declared that Environmental Easement shall mean an interest in real property, created under and subject to the provisions of Article 71, Title 36 of the New York State Environmental Conservation Law ("ECL") which contains a use restriction and/or a prohibition on the use of land in a manner inconsistent with engineering controls which are intended to ensure the long term effectiveness of a site remedial program or eliminate potential exposure pathways to hazardous waste or petroleum; and

WHEREAS, Grantor, is the owner of real property located at the address of 7 Washington Avenue in the Town of Hempstead, County of Nassau and State of New York, known and designated on the tax map of the County Clerk of Nassau as tax map parcel numbers: Section 43 Block 381 Lots 35, 36, 102, 314 and 328, being the same as that property conveyed to Grantor by deed dated October 31, 2000 and recorded in the Nassau County Clerk's Office in Liber and Page 11274/199. The property subject to this Environmental Easement (the "Controlled Property") comprises approximately 11.560 +/- acres, and is hereinafter more fully described in the Land Title Survey dated April 30, 2018 prepared by Jeffrey S. Bausch, L.L.S., which will be attached to the Site Management Plan. The Controlled Property description is set forth in and attached hereto as Schedule A; and

WHEREAS, the Department accepts this Environmental Easement in order to ensure the protection of public health and the environment and to achieve the requirements for remediation

established for the Controlled Property until such time as this Environmental Easement is extinguished pursuant to ECL Article 71, Title 36; and

NOW THEREFORE, in consideration of the mutual covenants contained herein and the terms and conditions of Brownfield Cleanup Agreement Index Number: W1-1075-05-09 as amended March 1, 2011, Grantor conveys to Grantee a permanent Environmental Easement pursuant to ECL Article 71, Title 36 in, on, over, under, and upon the Controlled Property as more fully described herein ("Environmental Easement").

1. Purposes. Grantor and Grantee acknowledge that the Purposes of this Environmental Easement are: to convey to Grantee real property rights and interests that will run with the land in perpetuity in order to provide an effective and enforceable means of encouraging the reuse and redevelopment of this Controlled Property at a level that has been determined to be safe for a specific use while ensuring the performance of operation, maintenance, and/or monitoring requirements; and to ensure the restriction of future uses of the land that are inconsistent with the above-stated purpose.

2. Institutional and Engineering Controls. The controls and requirements listed in the Department approved Site Management Plan ("SMP") including any and all Department approved amendments to the SMP are incorporated into and made part of this Environmental Easement. These controls and requirements apply to the use of the Controlled Property, run with the land, are binding on the Grantor and the Grantor's successors and assigns, and are enforceable in law or equity against any owner of the Controlled Property, any lessees and any person using the Controlled Property.

A. (1) The Controlled Property may be used for:

Restricted Residential as described in 6 NYCRR Part 375-1.8(g)(2)(ii), Commercial as described in 6 NYCRR Part 375-1.8(g)(2)(iii) and Industrial as described in 6 NYCRR Part 375-1.8(g)(2)(iv)

(2) All Engineering Controls must be operated and maintained as specified in the Site Management Plan (SMP);

(3) All Engineering Controls must be inspected at a frequency and in a manner defined in the SMP;

(4) The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the Nassau County Department of Health to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department;

(5) Groundwater and other environmental or public health monitoring must be performed as defined in the SMP;

(6) Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in the SMP;

(7) All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with the SMP;

(8) Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in the SMP;

(9) Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy shall be performed as defined in the SMP;

(10) Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by this Environmental Easement.

B. The Controlled Property shall not be used for Residential purposes as defined in 6NYCRR 375-1.8(g)(2)(i), and the above-stated engineering controls may not be discontinued without an amendment or extinguishment of this Environmental Easement.

C. The SMP describes obligations that the Grantor assumes on behalf of Grantor, its successors and assigns. The Grantor's assumption of the obligations contained in the SMP which may include sampling, monitoring, and/or operating a treatment system, and providing certified reports to the NYSDEC, is and remains a fundamental element of the Department's determination that the Controlled Property is safe for a specific use, but not all uses. The SMP may be modified in accordance with the Department's statutory and regulatory authority. The Grantor and all successors and assigns, assume the burden of complying with the SMP and obtaining an up-to-date version of the SMP from:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, New York 12233
Phone: (518) 402-9553

D. Grantor must provide all persons who acquire any interest in the Controlled Property a true and complete copy of the SMP that the Department approves for the Controlled Property and all Department-approved amendments to that SMP.

E. Grantor covenants and agrees that until such time as the Environmental Easement is extinguished in accordance with the requirements of ECL Article 71, Title 36 of the ECL, the property deed and all subsequent instruments of conveyance relating to the Controlled Property shall state in at least fifteen-point bold-faced type:

This property is subject to an Environmental Easement held

by the New York State Department of Environmental Conservation pursuant to Title 36 of Article 71 of the Environmental Conservation Law.

F. Grantor covenants and agrees that this Environmental Easement shall be incorporated in full or by reference in any leases, licenses, or other instruments granting a right to use the Controlled Property.

G. Grantor covenants and agrees that it shall, at such time as NYSDEC may require, submit to NYSDEC a written statement by an expert the NYSDEC may find acceptable certifying under penalty of perjury, in such form and manner as the Department may require, that:

(1) the inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under the direction of the individual set forth at 6 NYCRR Part 375-1.8(h)(3).

(2) the institutional controls and/or engineering controls employed at such site:

(i) are in-place;

(ii) are unchanged from the previous certification, or that any identified changes to the controls employed were approved by the NYSDEC and that all controls are in the Department-approved format; and

(iii) that nothing has occurred that would impair the ability of such control to protect the public health and environment;

(3) the owner will continue to allow access to such real property to evaluate the continued maintenance of such controls;

(4) nothing has occurred that would constitute a violation or failure to comply with any site management plan for such controls;

(5) the report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

(6) to the best of his/her knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and

(7) the information presented is accurate and complete.

3. Right to Enter and Inspect. Grantee, its agents, employees, or other representatives of the State may enter and inspect the Controlled Property in a reasonable manner and at reasonable times to assure compliance with the above-stated restrictions.

4. Reserved Grantor's Rights. Grantor reserves for itself, its assigns, representatives, and successors in interest with respect to the Property, all rights as fee owner of the Property, including:

A. Use of the Controlled Property for all purposes not inconsistent with, or limited by the terms of this Environmental Easement;

B. The right to give, sell, assign, or otherwise transfer part or all of the underlying fee interest to the Controlled Property, subject and subordinate to this Environmental Easement;

5. Enforcement

A. This Environmental Easement is enforceable in law or equity in perpetuity by Grantor, Grantee, or any affected local government, as defined in ECL Section 71-3603, against the owner of the Property, any lessees, and any person using the land. Enforcement shall not be defeated because of any subsequent adverse possession, laches, estoppel, or waiver. It is not a defense in any action to enforce this Environmental Easement that: it is not appurtenant to an interest in real property; it is not of a character that has been recognized traditionally at common law; it imposes a negative burden; it imposes affirmative obligations upon the owner of any interest in the burdened property; the benefit does not touch or concern real property; there is no privity of estate or of contract; or it imposes an unreasonable restraint on alienation.

B. If any person violates this Environmental Easement, the Grantee may revoke the Certificate of Completion with respect to the Controlled Property.

C. Grantee shall notify Grantor of a breach or suspected breach of any of the terms of this Environmental Easement. Such notice shall set forth how Grantor can cure such breach or suspected breach and give Grantor a reasonable amount of time from the date of receipt of notice in which to cure. At the expiration of such period of time to cure, or any extensions granted by Grantee, the Grantee shall notify Grantor of any failure to adequately cure the breach or suspected breach, and Grantee may take any other appropriate action reasonably necessary to remedy any breach of this Environmental Easement, including the commencement of any proceedings in accordance with applicable law.

D. The failure of Grantee to enforce any of the terms contained herein shall not be deemed a waiver of any such term nor bar any enforcement rights.

6. Notice. Whenever notice to the Grantee (other than the annual certification) or approval from the Grantee is required, the Party providing such notice or seeking such approval shall identify the Controlled Property by referencing the following information:

County, NYSDEC Site Number, NYSDEC Brownfield Cleanup Agreement, State Assistance Contract or Order Number, and the County tax map number or the Liber and Page or computerized system identification number.

Parties shall address correspondence to:	Site Number: C130153 Office of General Counsel NYSDEC 625 Broadway Albany New York 12233-5500
With a copy to:	Site Control Section Division of Environmental Remediation NYSDEC 625 Broadway Albany, NY 12233

All notices and correspondence shall be delivered by hand, by registered mail or by Certified mail and return receipt requested. The Parties may provide for other means of receiving and communicating notices and responses to requests for approval.

7. Recordation. Grantor shall record this instrument, within thirty (30) days of execution of this instrument by the Commissioner or her/his authorized representative in the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

8. Amendment. Any amendment to this Environmental Easement may only be executed by the Commissioner of the New York State Department of Environmental Conservation or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

9. Extinguishment. This Environmental Easement may be extinguished only by a release by the Commissioner of the New York State Department of Environmental Conservation, or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

10. Joint Obligation. If there are two or more parties identified as Grantor herein, the obligations imposed by this instrument upon them shall be joint and several.

11. Consistency with the SMP. To the extent there is any conflict or inconsistency between the terms of this Environmental Easement and the SMP, regarding matters specifically addressed by the SMP, the terms of the SMP will control.

Remainder of Page Intentionally Left Blank

IN WITNESS WHEREOF, Grantor has caused this instrument to be signed in its name.

Blue Island Development LLC:

By: _____

Print Name: Michael J. Posillico

Title: Managing Member Date: 6/13/18

Grantor's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF Suffolk)

On the 13 day of June, in the year 2018, before me, the undersigned, personally appeared Michael J. Posillico, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

_____
Notary Public - State of New York

AUDRA SCHMITT
Notary Public, State of New York
No. 01SC6323475
Qualified in Suffolk County
Commission Expires April 20, 2019

THIS ENVIRONMENTAL EASEMENT IS HEREBY ACCEPTED BY THE PEOPLE OF THE STATE OF NEW YORK, Acting by and Through the Department of Environmental Conservation as Designee of the Commissioner,

By: _____
Michael J. Ryan, Director
Division of Environmental Remediation

Grantee's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF ALBANY)

On the 29th day of June, in the year 2018, before me, the undersigned, personally appeared Michael J. Ryan, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/ executed the same in his/her/ capacity as Designee of the Commissioner of the State of New York Department of Environmental Conservation, and that by his/her/ signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

_____
Notary Public - State of New York

David J. Chiusano
Notary Public, State of New York
No. 01CH5032146
Qualified in Schenectady County
Commission Expires August 22, 2018

SCHEDULE "A" PROPERTY DESCRIPTION

All that certain plot, piece and parcel of land, situate, lying and being near the City of Long Beach, and the Incorporated Village of Island Park, in the Town of Hempstead, County of Nassau and State of New York, more particularly bounded and described as follows:

BEGINNING at a concrete monument set at the intersection of the easterly side of Sheridan Place with the southerly side of Island Parkway South;

THENCE from said point of beginning running easterly along the southerly side of Island Parkway South,
South 76 degrees 46 minutes 04 seconds East, a distance of 523.76 feet to the westerly side of Island Park Canal as agreed upon in a boundary line agreement between the Town of Hempstead and Cibro South Shore Terminal Corp. as shown in Liber 9068 Page 354;

THENCE running southerly along said line bounding the westerly side of Island Park Canal and The Basin, and running westerly along said line bounding the northerly side of Wreck Lead Channel and Simmons Hassock Creek the following eleven (11) courses and distances;

(1) South 13 degrees 13 minutes 56 seconds West, a distance of 338.00 feet;
(2) South 09 degrees 29 minutes 15 seconds East, a distance of 133.16 feet;
(3) South 25 degrees 18 minutes 23 seconds East, a distance of 119.09 feet;
(4) South 13 degrees 13 minutes 56 seconds West, a distance of 101.00 feet;
(5) South 51 degrees 53 minutes 31 seconds West, a distance of 95.00 feet;
(6) North 86 degrees 21 minutes 06 seconds West, a distance of 117.25 feet;
(7) North 76 degrees 46 minutes 04 seconds West, a distance of 85.00 feet;
(8) South 88 degrees 45 minutes 00 seconds West, a distance of 170.00 feet;
(9) North 63 degrees 15 minutes 00 seconds West, a distance of 112.01 feet;
(10) North 34 degrees 16 minutes 31 seconds West, a distance of 278.94 feet;
(11) North 45 degrees 07 minutes 24 seconds West, a distance of 100.00 feet to the easterly side of lot 50 as shown on Land & Tax Map, County of Nassau, Island Park, New York and/or lands now or formerly of Louis Cramer;

THENCE running northerly along the easterly side of said lot,
North 44 degrees 52 minutes 36 seconds East, a distance of 82.00 feet;

THENCE North 45 degrees 07 minutes 24 seconds West, a distance of 26.11 feet;

THENCE North 44 degrees 52 minutes 36 seconds East, a distance of 25.95 feet to the southerly side of lot 1A, Block 215 as shown on the file map of Island Park, Long Beach, sheet #19, Map No. 605, Filed May 21, 1926;

THENCE running westerly along the southerly side of said lot,
North 45 degrees 07 minutes 24 seconds West, a distance of 100.00 feet to the easterly side of Sheridan Place;

THENCE running northerly along the easterly side of Sheridan Place,
North 44 degrees 52 minutes 36 seconds East, a distance of 430.00 feet to the concrete monument or said POINT OR PLACE OF BEGINNING.

Containing an area of approximately 503,393.04 square feet or 11.56 acres more or less.

Record & Return:

First Nationwide Title Agency, LLC
50 Charles Lindbergh Blvd., Suite 680
Uniondale, NY 11553

DEED DESCRIPTION
ENVIRONMENTAL EASEMENT AREA

Nassau County Land and Tax Map
Section 43 Block 381 Lots 35, 36, 102, 314, & 328
Including the abandoned roadways for p/o Washington Avenue,
Canal Place, Sherman Place, and the 10 foot access strip of land.

All that certain plot, piece and parcel of land, situate, lying and being near the City of Long Beach, and the Incorporated Village of Island Park, in the Town of Hempstead, County of Nassau and State of New York, more particularly bounded and described as follows:

BEGINNING at a concrete monument set at the intersection of the easterly side of Sheridan Place with the southerly side of Island Parkway South, also being known as the POINT OR PLACE OF BEGINNING;

RUNNING THENCE from said point of beginning,
South 76 degrees 46 minutes 04 seconds East along the southerly side of Island Parkway South, a distance of 523.76 feet to the westerly side of Island Park Canal as agreed upon in a boundary line agreement between the Town of Hempstead and Cibro South Shore Terminal Corp. as shown in Liber 9068 Page 354;

THENCE southlery along the aforementioned line on the westerly side of Island Park Canal, the Basin, and westerly along the northerly side of Wreck Lead Channel and Simmons Creek, the following eleven (11) courses and distances;

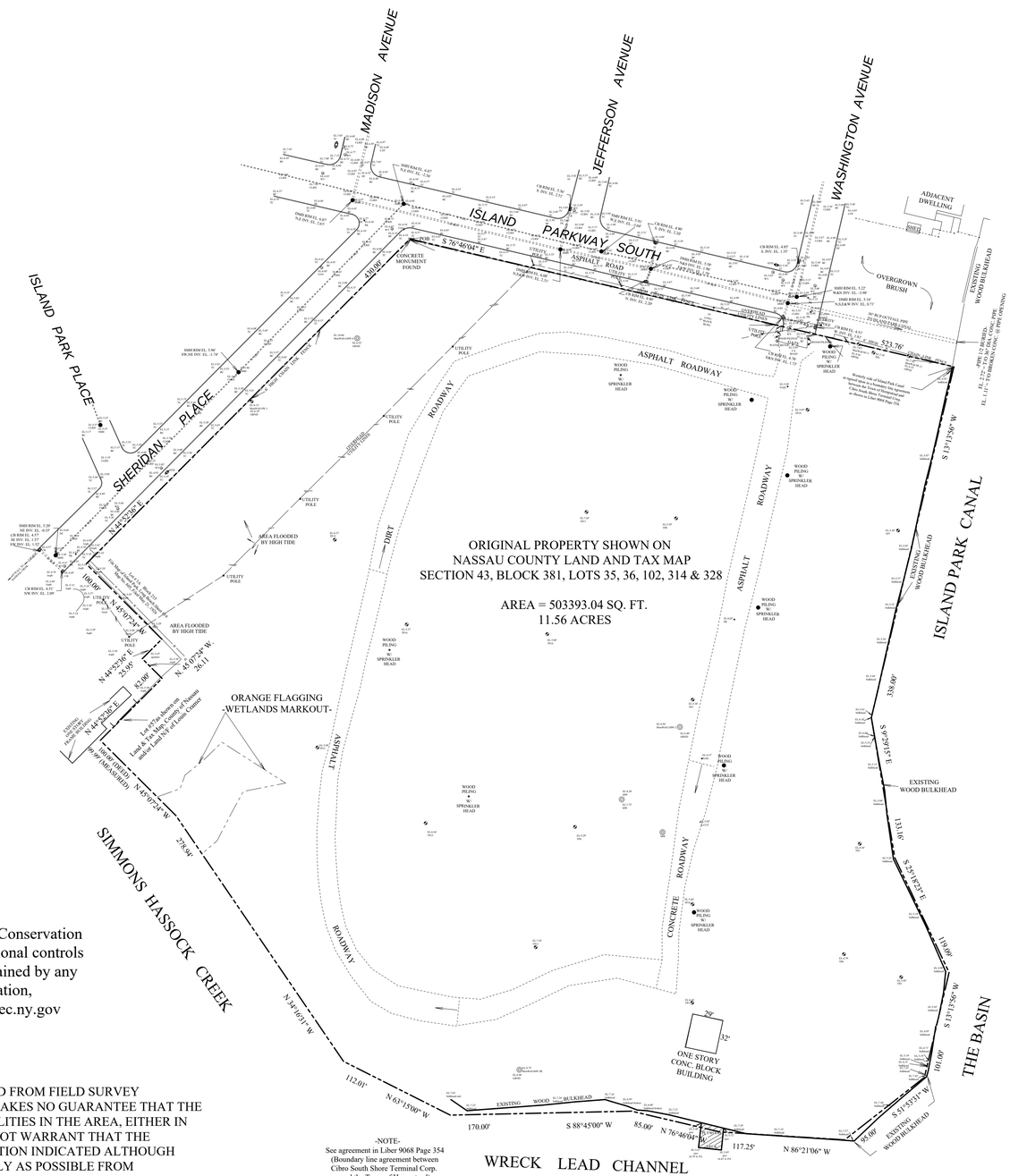
(1) South 13 degrees 13 minutes 56 seconds West, a distance of 338.00 feet;
(2) South 09 degrees 29 minutes 15 seconds East, a distance of 133.16 feet;
(3) South 25 degrees 18 minutes 23 seconds East, a distance of 119.09 feet;
(4) South 13 degrees 13 minutes 56 seconds West, a distance of 101.00 feet;
(5) South 51 degrees 53 minutes 31 seconds West, a distance of 95.00 feet;
(6) North 86 degrees 21 minutes 06 seconds West, a distance of 117.25 feet;
(7) North 76 degrees 46 minutes 04 seconds West, a distance of 85.00 feet;
(8) South 88 degrees 45 minutes 00 seconds West, a distance of 170.00 feet;
(9) North 63 degrees 15 minutes 00 seconds West, a distance of 112.01 feet;
(10) North 34 degrees 16 minutes 31 seconds West, a distance of 278.94 feet;
(11) North 45 degrees 07 minutes 24 seconds West, a distance of 100.00 feet to the easterly side of Lot 50 as shown on Land and Tax Map, County of Nassau, Island Park, New York and/or lands now or formerly of Louis Cramer;

THENCE running northerly along the easterly side of said lot,
North 44 degrees 52 minutes 36 seconds East, a distance of 82.00 feet;
North 45 degrees 07 minutes 24 seconds West, a distance of 26.11 feet;
North 44 degrees 52 minutes 36 seconds East, a distance of 25.95 feet to the southerly side of lot 1A, Block 215 as shown on the file map of Island Park, Long Beach, Sheet #19, Map No. 605, Filed May 21, 1926;

THENCE running westerly along the southerly side of said lot,
North 45 degrees 07 minutes 24 seconds West, a distance of 100.00 feet to the easterly side of Sheridan Place;

THENCE running northerly along the easterly side of Sheridan Place,
North 44 degrees 52 minutes 36 seconds East, a distance of 430.00 feet to the concrete monument or said POINT OR PLACE OF BEGINNING.

AREA = 503393.04 SQ. FT.
11.56 ACRES



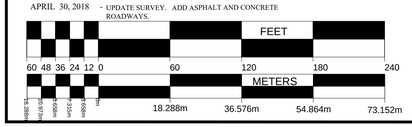
-NOTE-
See agreement in Liber 9068 Page 354
(Boundary line agreement between
Cibro South Shore Terminal Corp.
and the Town of Hempstead)

This property is subject to an environmental easement held by the New York State Department of Environmental Conservation pursuant to Title 36 of Article 71 of the New York Environmental Conservation Law. The engineering and institutional controls for this Easement are set forth in more detail in the Site Management Plan (SMP). A copy of the SMP must be obtained by any party with an interest in the property. The SMP can be obtained from NYS Department of Environmental Conservation, Division of Environmental Remediation, Site Control Section, 625 Broadway, Albany, NY 12233 or at derweb@dec.ny.gov

NOTE: ALL ELEVATIONS ARE BASED ON MEAN SEA LEVEL AT SANDY HOOK, NEW JERSEY (EL. 0.0) AND NASSAU COUNTY DATUM BENCHMARK 26H01 F16 ELEV. 5.767' & BENCHMARK 25H02 F105 ELEV. 12.102'.

REVISIONS

MARCH 1, 2002 - ADDITION OF ROAD ABANDONMENTS SHOWN AS DASHED LINES.
JANUARY 20, 2006 -UPDATE SURVEY
MARCH 8, 2006 - STREET UTILITY AS BUILT STREET ELEVATION SURVEY USING NASSAU COUNTY DATUM.
JUNE 17, 2006 - LABEL ROAD LINES OF SHERMAN PLACE, CANAL PLACE, WASHINGTON AVENUE AND 10' WIDE EASEMENT FROM THE SOUTHERLY SIDE OF SHERMAN PLACE TO THE NORTHERLY SIDE OF WRECK LEAD CHANNEL.
JUNE 25, 2007 - ADDITION OF TEST PIT LOCATIONS
MARCH 14, 2008 - REVISE BEARING ALONG THE WESTERLY SIDE OF A 10' WIDE STRIP OF LAND PURPORTED FOR THE USE OF INGRESS AND EGRESS BETWEEN THE SOUTHERLY SIDE OF SHERMAN PLACE AND THE NORTHERLY SIDE OF WRECK LEAD CHANNEL.
MARCH 25, 2013 - UPDATE SURVEY. RE-LOCATE EASTERLY BULKHEAD ASBUILT NEW WOOD PIER WITH PLYWOOD DECK.
APRIL 30, 2018 - UPDATE SURVEY. ADD ASPHALT AND CONCRETE ROADWAYS.



THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.

UNAUTHORIZED ALTERATION OR ADDITION TO THIS SURVEY IS A VIOLATION OF SECTION 7209 OF THE NEW YORK STATE EDUCATION LAW. COPIES OF THIS SURVEY MAP NOT BEARING THE LAND SURVEYOR'S INKED SEAL OR EMBOSSED SEAL SHALL NOT BE CONSIDERED TO BE A VALID TRUE COPY. GUARANTEES INDICATED HEREON SHALL RUN ONLY TO THE PERSON FOR WHOM THE SURVEY IS PREPARED AND ON HIS BEHALF TO THE TITLE COMPANY, GOVERNMENT AGENCY, AND THE LENDING INSTITUTION. GUARANTEES ARE NOT TRANSFERABLE TO ADDITIONAL INSTITUTIONS OR SUBSEQUENT OWNERS.

EASEMENTS AND/OR SUBSURFACE STRUCTURES RECORDED OR UNRECORDED ARE NOT GUARANTEED UNLESS PHYSICALLY EVIDENT ON THE PREMISES AT THE TIME OF THE SURVEY

THE OFFSETS OR DIMENSIONS SHOWN HEREON, FROM THE PROPERTY LINES TO THE STRUCTURES, ARE FOR A SPECIFIC PURPOSE AND USE; THEREFORE THEY ARE NOT INTENDED TO MONUMENT THE PROPERTY LINES OR TO GUIDE THE ERECTION OF FENCES, ADDITIONAL STRUCTURES, OR ANY OTHER IMPROVEMENT

LEGEND

POB Point of Beginning
Utility Pole
Monitoring Wells
Wood Piling
Pk or Nail set/found
Found Stone
Found Stake and Stone
Found Axle
Record Stone Not Found
Boundary Line
Fence Line
Overhead Wires
Wood Bulkhead
Solid Manhole
Edge of Road
Test Pit
Hydrant

ORIGINAL PROPERTY SHOWN ON
NASSAU COUNTY LAND AND TAX MAP
SECTION 43, BLOCK 381, LOTS 35, 36, 102, 314 & 328
INCLUDING THE ABANDONED ROADS; P/O WASHINGTON AVENUE
CANAL PLACE, SHERMAN PLACE, A 10 FOOT WIDE STRIP OF LAND

Guarantee to: Blue Island Development, LLC

SURVEY BY:
JEFFREY S. BAUSCH, P.L.S.,P.C.
289 DONALD BLVD., HOLBROOK N.Y. 11741 (631) 585-8427

Posillico Civil

1750 New Highway
Farmingdale, New York 11735
(631) 249-1872

Revisions/Issues

No	Date	By	Description

Key Map (Not to Scale)

Licensed Surveyor

STATE OF NEW YORK · JEFFREY S. BAUSCH · 050017 · LICENSED LAND SURVEYOR

Signature: Date:

Title
PROPERTY SURVEY

Project #7 Washington Avenue
Island Park New York
HARBOR ISLE
Former CIBRO Terminal Site
#C130153

Date April 30, 2018
Scale AS NOTED
Drawn by JB
Checked by DA
Drawing No. S-01

APPENDIX B

Site Contact List

Emergency Contact List
Former Cibro Petroleum Terminal Site
7 Washington Avenue, Island Park, New York
Site Management Plan
November 2019

Type	Name	Telephone #
HazMat Emergency Response	Second Battalion Fire District – Island Park	911 or (516) 432-0738
Emergency on Navigable Waters	United States Coast Guard – Sector New York	(718) 354-4353
Police Department	Nassau County Police Dept. – 4th Precinct	911 or (516) 673-6400
Hospital	South Nassau Communities Hospital	(516) 632-3000
Ambulance		911
National Response Center (Release or Spill)		(800) 424-8802
Site Owner	Posillico Development Company at Harbor Island, Inc.	(631) 249-1872
Remedial Party	Posillico Development Company at Harbor Island, Inc.	(631) 249-1872
Site Manager	James Smyth, P.E. Posillico Development Company at Harbor Island, Inc	(631) 390-5737
Remedial Engineer	Charles McGuckin, P.E. Roux Environmental	(631) 232-2600 (work)
NYSDEC Project Manager	Nick Acampora	(631) 444-0322
NYSDEC Regional HW Engineer	Water Parish	(631) 444-0240
NYSDEC Site Control	Kelly Lewandowsky	(518) 402-9569
NYSDOH Project Manager	Wendy Kuehner, P.E.	(518) 402-7860

APPENDIX C

Excavation Work Plan

APPENDIX C

Excavation Work Plan (EWP)

C-1. Notification

At least 15 days prior to the start of any activity that is anticipated to encounter remaining contamination, the site owner or their representative will notify the NYSDEC. Such excavations will include excavating below the clean fill cap, within the tidal wetland area or within the peat layer in areas of remaining contamination, as shown on Figure 6 of this Site Management Plan (SMP). These excavations will also be subject to the requirements of this EWP. Excavations within any additional clean fill imported to the Site or into the existing Site soils beyond the extent of the clean fill cap will not be subject to the requirements of the EWP. Drilling of borings, pilings or caissons that will generate soil cuttings or otherwise cause soils from below the clean fill cap to be unearthed or relocated above the demarcation layer will required notification to the NYSDEC and implementation of the EWP. Driving of pilings, ground rods or other building or utility elements that will not result in soils being unearthed or otherwise moved from below the demarcation layer to areas above the demarcation layer are not subject to the requirements of this EWP but will require notification to NYSDEC.

As part of the remedial efforts, the site was returned to its original grade of approximately +5.5 feet relative to NAVD 88. Additional clean fill was also imported to be used above the clean fill cap and across the Site for future development purposes. The importation of additional clean fill is proposed to continue until the Site grade is increased to between +7 and +16 feet above NAVD 88 in accordance with the development plan for the Site. All additional clean fill materials will be imported in accordance with requirements of Section C-10.0 below. Excavations within the additional clean fill imported to the Site or into the existing Site soils beyond the extent of the clean fill cap will not be subject to the requirements of the EWP.

Table 1 includes contact information for the above notification. The information on this table will be updated as necessary to provide accurate contact information. A full listing of site-related contact information is provided in Appendix B.

Table 1: Notifications*	
NYSDEC Project Manager – Nick Acampora	(631) 444-0322 nick.acampora@dec.ny.gov
NYSDEC Regional Hazardous Waste Engineer – Walter Parish	(631) 444-0240 walter.parish@dec.ny.gov
NYSDEC Site Control Section – Kelly Lewandowski	(518) 402-9569 kelly.lewandowski@dec.ny.gov
NYSDOH Project Manager – Wendy Kuehner	(518) 402-7860 wendy.kuehner@health.ny.gov

* Note: Notifications are subject to change and will be updated as necessary.

This notification will include:

1. A detailed description of the work to be performed, including the location and areal extent of excavation, plans/drawings for site re-grading, intrusive elements or utilities to be installed below the soil cover, estimated volumes of contaminated soil to be excavated and any work that may impact an engineering control;

2. A summary of environmental conditions anticipated to be encountered in the work areas, including the nature and concentration levels of contaminants of concern, potential presence of grossly contaminated media, and plans for any pre-construction sampling;
3. A schedule for the work, detailing the start and completion of all intrusive work;
4. A summary of the applicable components of this EWP;
5. A statement that the work will be performed in compliance with this EWP and 29 CFR 1910.120;
6. A copy of the contractor's health and safety plan (HASP), in electronic format, if it differs from the HASP provided in Appendix G of this SMP;
7. Identification of disposal facilities for potential waste streams; and
8. Identification of sources of any anticipated backfill, along with all required chemical testing results.

C-2. Soil Screening Methods

Visual, olfactory and instrument-based (e.g., photoionization detector) soil screening will be performed by a qualified environmental professional or person under their supervision during all excavations into known or potentially contaminated material (remaining contamination). This will include excavations below the clean fill cap as shown on Figure 6 of this SMP or within the tidal wetland area. Soil screening will be performed when invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work, after issuance of the COC.

Soils will be segregated based on previous environmental data and screening results into material that requires off-site disposal, material that can be reused on-site beneath the clean cap, and the material that can be used onsite without restriction. All materials excavated from the Site will require chemical testing in accordance with NYSDEC DER-10 prior to offsite reuse or disposal.

Further discussion of off-site disposal of materials and on-site reuse is provided in Sections 6 and 7 of this Appendix.

C-3. Soil Staging Methods

Soil stockpiles will be lined with 10 mil polyethylene sheeting and continuously encircled with a berm and/or silt fence. Hay bales, or equal, will be used as needed near catch basins, surface waters and other discharge points.

Stockpiles will be kept covered at all times when not being actively piled or loaded out with appropriately anchored tarps. At a minimum 6 mil polyethylene sheeting will be used for covering soil stockpiles. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced.

Stockpiles 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 the NYSDEC.

C-4. Materials Excavation and Load-Out

A qualified environmental professional or person under their supervision will oversee all invasive work that is anticipated to penetrate the demarcation layer and the excavation and load-out of all potentially-impacted excavated material.

The owner of the property and/or the remedial party and its contractors are responsible for safe execution of all invasive and other work performed under this Plan.

The presence of utilities and easements on the site will be investigated by the qualified environmental professional. It will be determined whether a risk or impediment to the planned work under this SMP is posed by utilities or easements on the site.

As appropriate, loaded vehicles leaving the site will be lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and NYSDOT requirements (and all other applicable transportation requirements).

A truck wash will be operated on-site or exiting vehicles cleaned and inspected prior to departing the Site, as appropriate. The qualified environmental professional or person under their supervision will be responsible for ensuring that all outbound trucks are clean and free of any impacted materials on the tires or exterior of the truck before leaving the site until the activities performed under this section are complete. Truck wash waters will be collected and disposed of off-site or otherwise managed onsite as approved by NYSDEC.

Locations where vehicles enter or exit the site shall be inspected daily for evidence of off-site soil tracking.

The qualified environmental professional or person under their supervision will be responsible for ensuring that all egress points for truck and equipment transport from the site are clean of dirt and other materials derived from the Site during intrusive excavation activities. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site-derived materials.

C-5. Materials Transport Off-Site

All transport of waste 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.

Material transported by trucks exiting the site will be secured with tight-fitting covers. If loads contain wet material capable of producing free liquid, truck liners will be used.

Truck transport routes will be designed to reduce or eliminate potential contacts with the community and will be developed prior to any construction activities that require off-site disposal. All trucks loaded with Site materials will exit the vicinity of the Site using only these approved truck routes. This is the most appropriate route and takes 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; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport.[(g) community input

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

Queuing of trucks will be performed on-site in order to minimize off-site disturbance. Off-site queuing will be prohibited without approval from NYSDEC and any required local authorities and/or impacted parties.

C-6. Materials Disposal Off-Site

All material excavated and removed from the site will be treated as contaminated and regulated material and will be transported and disposed in accordance with all local, State (including 6NYCRR Part 360) and Federal regulations. If disposal of material from this site is proposed for unregulated off-site disposal (i.e. clean soil removed for development purposes), a formal request with an associated plan will be made to the NYSDEC. Unregulated off-site management of materials from this site will not occur without formal NYSDEC approval.

Off-site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal facility if appropriate, i.e., hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, C/D recycling facility, etc. Actual disposal quantities and associated documentation will be reported to the NYSDEC in the Periodic Review Report. This documentation will include: waste profiles, test results, facility acceptance letters, manifests, bills of lading and facility receipts.

Non-hazardous historic fill and contaminated soils taken off-site will be handled, at minimum, as a Municipal Solid Waste per 6NYCRR Part 360-1.2. Material that does not meet Unrestricted Soil Cleanup Objectives (SCOs) is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility).

C-7. Materials Reuse On-Site

The qualified environmental professional or person under their supervision will ensure that procedures defined for materials reuse in this SMP are followed and that unacceptable material does not remain on-site. Contaminated on-site material, including historic fill and contaminated soil, that is acceptable for reuse on-site will be placed below the demarcation layer or impervious surface, and will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines.

The criteria for reuse of onsite soils is as follows:

- Any grossly-impacted soils excavated from the Site shall be properly stockpiled, characterized, and transported off-site for disposal at a facility permitted to receive such material, as discussed in Section 6. Soils excavated from below the clean fill cap must also be analyzed for asbestos content;
- Non-grossly impacted soils excavated from below the clean fill cap may be reused beneath the clean fill cap without testing;
- Soils from below the clean fill cap that are not replaced beneath the clean fill cap will be properly stockpiled, characterized, and transported off-site for disposal at a facility permitted to receive such material;
- Excavated clean fill cap materials or other clean fill materials imported to the Site subsequent to the approval of this SMP may be reused on-site without restriction;
- Existing Site soils (i.e., soils present on-site prior to approval of this SMP) excavated from beyond the extent of the clean fill cap, that do not exhibit evidence of impacts, may be reused on-site without restriction; and
- Any potentially- impacted soils excavated from areas beyond the extent of the clean fill cap shall be stockpiled, sampled, and disposed off-site, as discussed in Section 6 or reused beneath the clean fill cap with the approval of NYSDEC.

Any demolition material proposed for reuse on-site will be sampled for asbestos and the results will be reported to the NYSDEC for acceptance. Concrete crushing or processing on-site will not be performed

without prior NYSDEC approval. Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the site will not be reused on-site.

C-8. Fluids Management

All liquids to be removed from the site, including but not limited to, excavation dewatering, decontamination waters and groundwater monitoring well purge and development waters, will be handled, transported and disposed in accordance with applicable local, State, and Federal regulations. Dewatering, purge and development fluids will not be recharged back to the land surface or subsurface of the site, and will be managed off-site, unless prior approval is obtained from NYSDEC.

Discharge of water generated during large-scale construction activities to surface waters (i.e. a local pond, stream or river) will be performed under a SPDES permit or other Site-specific approval by NYSDEC.

C-9. Cover System Restoration

After the completion of soil removal and any other invasive activities the cover system will be restored in a manner that complies with the Remedial Work Plan (RWP) for the Site dated August 2012. The existing cover system is comprised of a minimum of 24-inch clean soil. The demarcation layer, consisting of orange geotextile fabric or equal, will be replaced to provide a visual reference to the top of the remaining contamination zone, the zone that requires adherence to special conditions for disturbance of remaining contaminated soils defined in this SMP. If the type of cover system changes from that which exists prior to the excavation (i.e., a soil cover is replaced by asphalt), this will constitute a modification of the cover element of the remedy and the upper surface of the remaining contamination. A figure showing the modified surface will be included in the subsequent Periodic Review Report and in an updated SMP.

C-10. Backfill from Off-Site Sources

All materials proposed for import onto the site will be approved by the qualified environmental professional and will be in compliance with provisions in this SMP prior to receipt at the site. A Request to Import/Reuse Fill or Soil form, which can be found at http://www.dec.ny.gov/regulations/67386.html, will be prepared and submitted to the NYSDEC project manager allowing a minimum of 5 business days for review.

Material from industrial sites, spill sites, or other environmental remediation sites or potentially contaminated sites will not be imported to the site.

All imported soils will meet the backfill and cover soil quality standards established in 6NYCRR 375-6.7(d). All soils imported to the Site shall be sampled at the frequency required by the RWP or as otherwise approved by NYSDEC or shall meet the requirements of the exempted “material other than soil” detailed in Section 5.4 of NYSDEC DER-10. All soils imported to the Site shall not contain any analytical constituent at concentrations exceeding the Restricted, Restricted-Residential or Protection of Groundwater Use SCOs as detailed in 6 NYCRR Part 375(d). Soils that meet ‘exempt’ fill requirements under 6 NYCRR Part 360, 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.

No existing soil or fill material imported to the Site shall be exported from the Site without the approval of the NYSDEC. Prior to removal of any soil or fill material from the Site, a detailed notification request shall be prepared and submitted to the NYSDEC project manager, allowing a minimum of five business days for review.

Trucks entering the site with imported soils will be securely covered with tight fitting covers. Imported soils will be stockpiled separately from excavated materials and covered to prevent dust releases.

C-11. Stormwater Pollution Prevention

Silt barriers, hay bales, or other appropriate checks will be installed and inspected once a week and after every storm event for stormwater pollution prevention (SPP) purposes. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by the NYSDEC. All necessary repairs shall be made immediately.

Accumulated sediments will be removed as required to keep the SPP check functional. All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials. Manufacturer's recommendations will be followed for replacing silt fencing or other SPP materials damaged due to weathering.

Erosion and sediment control measures identified in the SMP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters.

Silt fencing, hay bales, or other appropriate SPP controls will be installed around the entire perimeter of the construction area, as appropriate.

C-12. Excavation Contingency Plan

If underground tanks or other previously unidentified contaminant sources are found during post-remedial subsurface excavations or development related construction, excavation activities will be suspended until sufficient equipment is mobilized to address the condition.

Sampling will be performed on product, sediment and surrounding soils, etc. as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for a full list of analytes (TAL metals; TCL volatiles and semi-volatiles, TCL pesticides/herbicides and PCBs), unless the site history and previous sampling results provide a sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC for approval prior to sampling.

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. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline. These findings will be also included in the Periodic Review Report.

C-13. Community Air Monitoring Plan

Air monitoring will be performed at the Site perimeter or perimeter of the ground-intrusive work area as provided in the NYSDOH Generic Community Air Monitoring Plan (CAMP) as provided in NYSDEC DER-10. At a minimum, the CAMP will consist of background upwind monitoring data and one downwind monitoring station. The location(s) of air monitoring stations based on generally prevailing wind conditions at the Site provide for representative downwind monitoring readings. These locations will be adjusted on a daily or more frequent basis based on actual wind directions.

Exceedances of action levels listed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers.

C-14. Odor Control Plan

This odor control plan is capable of controlling emissions of nuisance odors off-site. Specific odor control methods to be used on an as-needed basis will include the use of odor suppressants and controlled excavation procedures, as discussed below. If nuisance odors are identified at the Site boundary, or if odor complaints are received, 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 any other complaints about the project. Implementation of all odor controls, including the halt of work, is the responsibility of the remedial party's Remediation Engineer or qualified environmental professional, and any measures that are implemented will be discussed in the Periodic Review Report.

All necessary means will be employed to prevent on- and off-site nuisances. At a minimum, these measures will include: (a) limiting the area of open excavations and size of soil stockpiles; (b) shrouding open excavations with tarps and other covers; and (c) using foams to cover exposed odorous soils or odor suppressant misting to actively mitigate odors and vapors. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: (d) direct load-out of soils to trucks for off-site disposal; (e) use of chemical odorants in spray or misting systems; and, (f) use of staff to monitor odors in surrounding neighborhoods.

If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to on-site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering the excavation and handling areas in a temporary containment structure equipped with appropriate air venting/filtering systems.

C-15. Dust Control Plan

A dust suppression plan that addresses dust management during invasive on-site work will include, at a minimum, the items listed below:

- Dust suppression will be achieved through the use of a dedicated on-site water truck or similar equipment for road wetting. The equipment will have a water cannon or other water distribution system capable of spraying water directly onto off-road areas including excavations and stockpiles.
- Soils excavated from below the demarcation layer may potentially contain trace amounts of asbestos. Asbestos includes several types of naturally occurring, fibrous minerals historically used in building materials. As portions of the capped area of the Site were initially graded with processed concrete demolition debris, the potential exists for trace quantities of asbestos to be present. The dust control plan will include best management practices (e.g., misting of soils excavated from below the demarcation area) to mitigate the risk of asbestos fibers becoming airborne.
- Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, unvegetated soils vulnerable to dust production.
- Gravel will be used on roadways to provide a clean and dust-free road surface.
- On-site roads will be limited in total area to minimize the area required for water truck sprinkling.

C-16. Other Nuisances

A plan for rodent control will be developed and utilized by the contractor prior to and during site clearing and site grubbing, and during all remedial work.

A plan will be developed and utilized by the contractor for all remedial work to ensure compliance with local noise control ordinances.

APPENDIX D

Responsibilities of Owner and Remedial Party

APPENDIX D

Responsibilities of Owner and Remedial Party

Responsibilities

The responsibilities for implementing the Site Management Plan ("SMP") for the Former Cibro Petroleum Terminal Site (the "Site"), number C130153, are divided between the Site owner(s) and a Remedial Party, as defined below. The owner(s) is/are currently listed as Blue Island Development, LLC, (the "Owner") with offices located at 1750 New Highway, Farmingdale, New York.

Solely for the purposes of this document and based upon the facts related to a particular site and the remedial program being carried out, the term Remedial Party ("RP") refers to any of the following: certificate of completion holder, volunteer, applicant, responsible party, and, in the event the New York State Department of Environmental Conservation ("NYSDEC") is carrying out remediation or site management, the NYSDEC and/or an agent acting on its behalf. The RP is Posillico Development Company at Harbor Island, Inc. with offices located at 1750 New Highway, Farmingdale, New York.

Nothing on this page shall supersede the provisions of an Environmental Easement, Consent Order, Consent Decree, agreement, or other legally binding document that affects rights and obligations relating to the site.

Site Owner's Responsibilities

1. The owner shall follow the provisions of the SMP as they relate to future construction and excavation at the site.
2. In accordance with a periodic time frame determined by the NYSDEC, the owner shall periodically certify, in writing, that all Institutional Controls set forth in an Environmental Easement remain in place and continue to be complied with. The owner shall provide a written certification to the RP, upon the RP's request, in order to allow the RP to include the certification in the site's Periodic Review Report (PRR) certification to the NYSDEC.
3. In the event the site is delisted, the owner remains bound by the Environmental Easement and shall submit, upon request by the NYSDEC, a written certification that the Environmental Easement is still in place and has been complied with.
4. The owner shall grant access to the site to the RP and the NYSDEC and its agents for the purposes of performing activities required under the SMP and assuring compliance with the SMP.
5. The owner is responsible for assuring the security of the remedial components located on its property to the best of its ability. In the event that damage to the remedial components or vandalism is evident, the owner shall notify the site's RP and the NYSDEC in accordance with the timeframes indicated in Section 1.3 of this SMP - Notifications.
6. In the event some action or inaction by the owner adversely impacts the site, the owner must notify the site's RP and the NYSDEC in accordance with the time frame indicated in Section 1.3 of this SMP - Notifications and (ii) coordinate the performance of necessary corrective actions with the RP.
7. The owner must notify the RP and the NYSDEC of any change in ownership of the site property (identifying the tax map numbers in any correspondence) and provide contact information for the new owner of the Site properties. 6 NYCRR Part contains notification requirements applicable to any construction or activity changes and changes in ownership. Among the notification requirements is the following: Sixty days prior written notification must be made to the NYSDEC. Notification is to be submitted to the NYSDEC Division of Environmental Remediation's Site Control Section. Notification requirements for a change in use are detailed in Section 2.4 of the SMP. A 60-Day Advance Notification Form and Instructions are found at http://www.dec.ny.gov/chemical/76250.html.

8. The owner will maintain the Site fences, landscaping and access points on behalf of the RP. The RP remains ultimately responsible for maintaining the engineering controls.
9. The RWP and SMP provide for vapor mitigation systems to be installed in connection with the redevelopment of the Site. Until such time as the NYSDEC deems the vapor mitigation system unnecessary, the owner shall operate the system(s) installed within any new buildings, pay for the utilities for the system's operation, and report any maintenance issues to the RP and the NYSDEC.
10. In accordance with the tenant notification law, within 15 days of receipt, the owner must supply a copy of any vapor intrusion data, that is produced with respect to structures and that exceeds NYSDOH or OSHA guidelines on the site, whether produced by the NYSDEC, RP, or owner, to the tenants on the property. The owner must otherwise comply with the tenant and occupant notification provisions of Environmental Conservation Law Article 27, Title 24.

Remedial Party Responsibilities

1. The RP must follow the SMP provisions regarding any construction and/or excavation it undertakes at the site.
2. The RP shall report to the NYSDEC all activities required for remediation, operation, maintenance, monitoring, and reporting. Such reporting includes, but is not limited to, periodic review reports and certifications, electronic data deliverables, corrective action work plans and reports, and updated SMPs.
3. Before accessing the site property to undertake a specific activity, the RP shall provide the owner advance notification that shall include an explanation of the work expected to be completed. The RP shall provide to (i) the owner, upon the owner's request, (ii) the NYSDEC, and (iii) other entities, if required by the SMP, a copy of any data generated during the site visit and/or any final report produced.
4. If the NYSDEC determines that an update of the SMP is necessary, the RP shall update the SMP and obtain final approval from the NYSDEC. Within 5 business days after NYSDEC approval, the RP shall submit a copy of the approved SMP to the owner(s).
5. The RP shall notify the NYSDEC and the owner of any changes in RP ownership and/or control and of any changes in the party/entity responsible for the operation, maintenance, and monitoring of and reporting with respect to any remedial system (Engineering Controls). The RP shall provide contact information for the new party/entity. Such activity constitutes a Change of Use pursuant to 375-1.11(d) and requires 60-days prior notice to the NYSDEC. A 60-Day Advance Notification Form and Instructions are found at http://www.dec.ny.gov/chemical/76250.html.
6. The RP shall notify the NYSDEC of any damage to or modification of the systems as required under Section 1.3 - Notifications.
7. The RP is responsible for the proper maintenance of any installed vapor intrusion mitigation systems associated with the site, as required in Section 5.0 of the SMP.
8. Prior to a change in use that impacts the remedial system or requirements and/or responsibilities for implementing the SMP, the RP shall submit to the NYSDEC for approval an amended SMP.
9. Any change in use, change in ownership, change in site classification (*e.g.*, delisting), reduction or expansion of remediation, and other significant changes related to the site may result in a change in responsibilities and, therefore, necessitate an update to the SMP and/or updated legal documents. The RP shall contact the Department to discuss the need to update such documents.

Change in RP ownership and/or control and/or site ownership does not affect the RP's obligations with respect to the site unless a legally binding document executed by the NYSDEC releases the RP of its obligations.

Future site owners and RPs and their successors and assigns are required to carry out the activities set forth above.

APPENDIX E

Field Sampling Plan

Field Sampling Plan

Former Cibro Petroleum Terminal Site
Island Park, New York

November 25, 2019

Prepared for:

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2. Chain of Custody Form

1. Introduction

This Field Sampling Plan (FSP) has been developed to describe in detail the field sampling methods to be used during post-remediation groundwater and soil vapor monitoring at the Former Cibro Petroleum Terminal Site, 7 Washington Avenue, Island Park, New York (Site).

The FSP was prepared in accordance with directives provided in the DER-10 Technical Guidance for Site Investigation and Remediation (May 2010) issued by the New York State Department of Environmental Conservation (NYSDEC), as well as 6 NYCRR Part 375 and provides guidelines and procedures to be followed by field personnel during performance of the post-remediation groundwater and soil vapor monitoring. Information contained in this FSP relates to sampling objectives, sampling locations, sampling frequencies, sample designations, sampling equipment, sample handling, sample analysis, and decontamination.

2. Sampling Objectives

This FSP was developed based on a detailed review of available information obtained during previous investigations and the remedial action, and is designed to obtain the additional data necessary to achieve the objectives of the post-remediation groundwater and soil vapor monitoring. This FSP describes in detail the sampling and data gathering methods to be used during implementation of the post-remediation groundwater monitoring.

The sampling procedures associated with characterization of groundwater are discussed in detail in Section 4 of this FSP. A discussion of the data quality objectives (DQOs) is provided in the Quality Assurance Project Plan (QAPP) located in Appendix F of the Site Management Plan (SMP).

3. Sample Media, Locations, Analytical Suites, and Frequency

The medium to be sampled during the post-remediation monitoring includes groundwater and soil vapor. A discussion of the sampling schedule is provided below, while the assumed number of field samples to be collected, including quality control (QC) samples, is shown in Table B-1. Specifics regarding the collection of samples at each location and for each task are provided in Section 4 of this FSP.

3.1 Groundwater Sampling

Groundwater samples will be collected from four newly-constructed monitoring wells to be installed following completion of the remediation, filling regrading, and new underground utility installation at the Site. Each monitoring well will be purged and sampled after gauging for potential separate-phase petroleum product using an oil/water interface probe. Each monitoring well will be sampled for the TCL VOCs via USEPA Method 8260 (including 10 tentatively identified compounds [TICs]) and TCL SVOCs via USEPA Method 8270 (including 20 tentatively identified compounds [TICs]). Purging and sampling will be performed consistent with USEPA low-flow sampling requirements. Field parameters will be collected using a water quality meter with a flow-through cell until parameters stabilize before samples are collected.

All groundwater samples will be analyzed at a laboratory with a current NYSDOH ELAP CLP certification for each of the parameters noted above. Samples will be analyzed on a standard turnaround time and will be reported as Category B data deliverables. The laboratory results of the groundwater samples will be compared to the NYSDEC Ambient Water Quality Standards and Guidance Values (AWQSGVs). The laboratory reporting limits will be below the individual AWQSGV for each respective analyte.

3.2 Soil Vapor Sampling

One soil vapor sampling point will be installed within the footprint of each proposed new building at the Site. Soil vapor sampling and methane gas monitoring will be performed after grading, filling and underground utility installation have been completed, but prior to occupancy of the building. The soil vapor monitoring points will be installed to approximately two to three feet above the groundwater table during high tide conditions. Soil vapor samples will be collected using a vacuum canister set to collect each sample over an 8-hour duration. The soil vapor samples will be analyzed for VOCs via USEPA Method TO-15. Additionally, each soil vapor monitoring point will be screened with a landfill gas detector or equivalent monitoring equipment to evaluate the presence and approximate concentrations of methane gas at each new building location.

4. Field Sampling Procedures

This section provides a detailed discussion of the field procedures to be used during sampling of the various media being evaluated as part of the post-remediation monitoring. The proposed monitoring well and soil vapor sampling point locations are provided on Figure 5 of the SMP.

4.1 Monitoring Well Installation

Monitoring wells will be installed at four locations, with the screened zones bridging the water table. Monitoring wells will be installed using the hollow stem auger drilling method and constructed of 2-inch inside-diameter, Schedule 40 polyvinyl chloride (PVC) casing and 0.020-inch slot, machined screen. Well screens will be 10 feet long, and will be installed with three feet above and seven feet below the water table. A sand pack will be placed around the well screen, extending two feet above the top of the screened zone. A bentonite pellet seal will be placed above the sand pack. Once the pellets have been allowed to hydrate, a cement-bentonite grout will be pumped into the remaining annular space from the bottom up using a tremie pipe lowered to just above the bentonite seal. The wells will be completed using locking well plugs, and flush mounted, bolt down, watertight, manhole covers cemented into place.

4.1.1 Groundwater Sampling

Each monitoring well will be developed to remove any fine-grained material in the vicinity of the well screen and to promote hydraulic connection with the aquifer. The wells will be developed using a submersible pump, which will be surged periodically until well yield is consistent and has a turbidity below 50 Nephelometric turbidity units (NTUs).

Groundwater samples will be collected, no sooner than one week following development of the wells. Prior to sampling, depth to water will be measured at each well using an oil/water interface probe. All wells will then be purged and sampled using a peristaltic pump, or an alternative low-flow sampling method, depending on the observed depth to groundwater and logistical issues. Purging and sampling will be performed consistent with USEPA low-flow sampling requirements. Field parameters will be collected using a water quality meter with a flow-through cell until parameters stabilized before samples are collected. All groundwater samples will be placed in the laboratory-supplied containers and shipped to the laboratory under chain of custody procedures.

4.2 Soil Vapor Monitoring Point Installation

Fourteen (14) soil vapor sampling points (PR-SV-1 through PR-SV-14) will be installed at the Site in the location of the 14 proposed new buildings. The specific soil vapor sampling locations will be coordinated with the layout and logistics of the new buildings to provide for access during and after construction and occupation of the buildings. The soil vapor sampling points will be constructed using direct-drive drilling procedures to install a six-inch stainless-steel screen at each soil vapor sampling point to a depth of two to three feet above the groundwater table. Teflon tubing will be run from the top of the screen to the surface. The annulus surrounding the screen will be backfilled with clean sand to a depth of just below the floor slab of the new building and the remaining annular space will be filled with bentonite grout and a bolt-down, flush-mounted manhole installed.

4.2.1 Soil Vapor Sampling

Following soil vapor point installation, the integrity of the sampling point seal will be checked in accordance with NYSDOH guidance. This step will be conducted as a quality assurance/quality control measure to verify that the soil vapor sample will not be compromised by inadvertent introduction of ambient air into the sample. Soil vapor will be purged from the point using an air pump calibrated to approximately 0.2 liters per minute while the sampling point is covered at the surface with a small, helium-enriched enclosure (e.g., inverted bucket filled with helium). The soil vapor discharging from the air pump and the air within the enclosure will be continuously monitored for helium during purging. A Summa canister will be used to collect the soil vapor samples over an 8-hour duration. One outdoor ambient air sample will also be collected concurrent with soil vapor sample collection. The soil vapor and ambient air samples will be analyzed for VOCs using USEPA Method TO-15.

5. Sample Handling and Analysis

To ensure quality data acquisition and collection of representative samples, there are selective procedures to minimize sample degradation or contamination. These include procedures for preservation of the samples as well as sample packaging and shipping procedures.

5.1 Field Sample Handling

A detailed discussion of the number and types of samples to be collected during each task, as well as the analyses to be performed can be found in Section 3 of this FSP. The types of containers, volumes needed, and preservation techniques for the testing parameters are presented in Table 2.

5.2 Sample Custody Documentation

The purpose of documenting sample custody is to confirm that the integrity and handling of the samples is not subject to question. Sample custody will be maintained from the point of sampling through the analysis. Specific procedures regarding sample tracking from the field to the laboratory are described in Roux's SOP for Sample Handling (Attachment 1).

Each individual collecting samples is personally responsible for the care and custody of the samples. All sample labels should be pre-printed or filled out using waterproof ink. The technical staff will review all field activities with the Field Team Leader to determine whether proper custody procedures were followed during the fieldwork and to decide if additional samples are required.

All samples being shipped off-site for analysis must be accompanied by a properly completed chain of custody form. The sample numbers will be listed on the chain of custody form. When transferring the possession of samples, individuals relinquishing and receiving will sign, date, and note the time on the record. This record documents transfer of custody of samples from the sampler to another person, to/from a secure storage area, and to the laboratory.

Samples will be packaged for laboratory pick up and/or shipment with a separate signed custody record enclosed in each sample box or cooler. Shipping containers will be locked and/or secured with strapping tape in at least two locations for shipment to the laboratory.

5.3 Sample Shipment

Laboratory courier services may be used for sample transport on this project. However, in the event that samples are shipped to the laboratory the following procedures will apply. Sample packaging and shipping procedures are based upon USEPA specifications, as well as U.S. Department of Transportation (DOT) regulations. The procedures vary according to potential sample analytes, concentration, and matrix, and are designed to provide optimum protection for the samples and the public. Sample packaging and shipment must be performed using the general outline described below. Additional information regarding sample handling is provided in Roux Associates' SOP for Sample Handling (Attachment 1).

All samples will be shipped within 24 hours of collection (when possible) and will be preserved appropriately from the time of sample collection. A description of the sample packing and shipping procedures is presented below:

1. Prepare cooler(s) for shipment.

- tape drain(s) of cooler shut;
- affix “this side up” arrow labels and “fragile” labels on each cooler; and
- place mailing label with laboratory address on top of cooler(s).

2. Arrange sample containers in groups by sample number or analyte.
3. Ensure all bottle labels are completed correctly. Place clear tape over bottle labels to prevent moisture accumulation from causing the label to peel off.
4. Arrange containers in front of assigned coolers.
5. Place packaging material at the bottom of the cooler to act as a cushion for the sample containers.
6. Arrange containers in the cooler so that they are not in contact with the cooler or other samples.
7. Fill remaining spaces with packaging material.
8. Ensure all containers are firmly packed with packaging material.
9. If ice is required to preserve the samples, ice cubes should be repackaged in double Zip-Lock™ bags, and placed on top of the packaging material.
10. Sign chain of custody form (or obtain signature) and indicate the time and date it was relinquished to Federal Express or other carrier, as appropriate.
11. Separate chain of custody forms. Seal proper copies within a large Zip-Lock™ bag and tape to cooler. Retain copies of all forms.
12. Close lid and latch.
13. Secure each cooler using custody seals.
14. Tape cooler shut on both ends.
15. Relinquish to Federal Express or other courier service as appropriate. Retain airbill receipt for project records. (Note: All samples will be shipped for “NEXT A.M.” delivery).
16. Telephone laboratory contact and provide him/her with the following shipment information:
    - sampler’s name;
    - project name; and
    - number of samples sent according to matrix and concentration.

6. Site Control Procedures

Site control procedures, including decontamination and waste handling and disposal, are discussed below.

6.1 Decontamination

In an attempt to avoid the spread of contamination, all drilling and sampling equipment must be decontaminated at a reasonable frequency in a properly designed and located decontamination area. Detailed procedures for the decontamination of field and sampling equipment are included in Roux's SOPs for the Decontamination of Field Equipment, which is provided in Attachment 1. The location of the decontamination area will be determined prior to the start of field operations. The decontamination area will be constructed to ensure that all wash water generated during decontamination can be collected and containerized for proper disposal.

6.2 Waste Handling and Disposal

All waste materials (drill cuttings, decontamination water, etc.) generated during the post-remediation groundwater monitoring will be consolidated, and stored in appropriate labeled bulk containers (drums, etc.), and temporarily staged at an investigation-derived-waste storage area onsite. The Site Owner or Remedial Party will then coordinate waste characterization and disposal by appropriate means.

TABLES

1. Remedial Investigation Field and Quality Control Sampling Summary
2. Preservation, Holding Times, and Sample Containers
3. Equipment Calibration Requirements and Maintenance Schedule

Table 1. Field and Quality Control Sampling Summary

Sample Medium	Target Analytes	Field Samples	Replicates [1]	Trip Blanks[2]	Field Blanks[3]	Matrix Spikes[1]	Spike Duplicates [1]	Total No. of Samples
Groundwater	TCL VOCs	5	1	2	2	1	1	12
	TCL SVOCs	5	1	0	2	1	1	10
	TAL Metals	10	1	0	2	1	1	15
	Pesticides	5	1	0	2	1	1	10
	PCBs	5	1	0	2	1	1	10
Soil Vapor	VOCs	14	1	0	0	0	0	15
Ambient Air	VOCs	1	0	0	0	0	0	1

Totals are estimated based on scope of work as written, actual sample quantities may vary based on field conditions. QA/QC sample quantities will be adjusted accordingly.

[1] Based on 1 per 20 samples or 1 per Sample Delivery Group (3 days max)

[2] Based on 1 cooler per day

[3] Based on 1 per day

TCL - USEPA Contract Laboratory Program Target Compound List

VOCs - Volatile Organic Compounds

SVOCs - Semivolatile Organic Compounds

PCBs - Polychlorinated Biphenyls

TAL - USEPA Contract Laboratory Program Target Analyte List

Table 2. Preservation, Holding Times and Sample Containers

Analysis	Matrix	Bottle Type	Preservation(a)	Holding Time(b)
Target Compound List (TCL)				
SW-846 8260B	Water	40mL voa vial, teflon lined cap	Hydrochloric Acid	
SW-846 8270C	Water	1 liter amber glass, teflon lined cap		7 days to extract, 40 days to analysis

(a) All soil and groundwater samples to be preserved in ice during collection and transport
(b) Days from date of sample collection.
TAL - Target Analyte List
TCL - USEPA Contract Laboratory Program Target Compound List

Table 3. Equipment Calibration Requirements and Maintenance Schedule
112-21 Northern Boulevard, Corona, Queens, New York

Equipment Type	Calibration Requirements	Maintenance Schedule
Photoionization Detector	Factory Calibration Per Manufacturers Recommendations. Field calibration daily per use.	Recharge or replace battery as needed. Regularly clean lamp window. Visually inspect after each use to ensure equipment is in good working order.
Multi-Gas Meter	Factory Calibration Per Manufacturers Recommendations. Field calibration daily per use.	Recharge or replace battery as needed. Regularly clean lamp window. Visually inspect after each use to ensure equipment is in good working order.
Interface Probe	Factory Calibration Per Manufacturers Recommendations.	Replace batteries as needed. Clean probes as needed. Visually inspect after each use to ensure equipment is in good working order.
Horiba Water-Quality Meter	Factory Calibration Per Manufacturers Recommendations. Field calibration daily per use.	Replace batteries as needed. Clean probes as needed. Visually inspect after each use to ensure equipment is in good working order.
Grundfos Pump	N/A	needed. Decontaminate after each use. Visually inspect after each use to ensure equipment is in good working order.
Bladder Pump	N/A	Maintain gaskets as needed. Clean pump intake as needed. Replace bladder after each use. Decontaminate after each use. Visually inspect after each use to ensure equipment is in good working order.
Peristaltic Pump	N/A	Replace masterflex tubing after each use. Visually inspect after each use to ensure equipment is in good working order.
Safety Equipment	N/A	Visually inspect each day to ensure equipment is in good working order. Replace as needed.

ATTACHMENTS

1. Roux Standard Operating Procedure for Tasks Described in this Field Sampling Plan
2. Chain of Custody Form

ATTACHMENT 1

Roux Standard Operating Procedure for Tasks
Described in this Field Sampling Plan

Date: May 5, 2000

1.0 PURPOSE

The purpose for this standard operating procedure (SOP) is to establish the guidelines for decontamination of all field equipment potentially exposed to contamination during drilling, and soil and water sampling. The objective of decontamination is to ensure that all drilling, and soil-sampling and water-sampling equipment is decontaminated (free of potential contaminants): 1) prior to being brought onsite to avoid the introduction of potential contaminants to the site; 2) between drilling and sampling events/activities onsite to eliminate the potential for cross-contamination between boreholes and/or wells; and 3) prior to the removal of equipment from the site to prevent the transportation of potentially contaminated equipment offsite.

In considering decontamination procedures, state and federal regulatory agency requirements must be considered because of potential variability between state and federal requirements and because of variability in the requirements of individual states. Decontamination procedures must be in compliance with state and/or federal protocols in order that regulatory agency(ies) scrutiny of the procedures and data collected do not result in non acceptance (invalidation) of the work undertaken and data collected.

2.0 PROCEDURE FOR DRILLING EQUIPMENT

The following is a minimum decontamination procedure for drilling equipment. Drilling equipment decontamination procedures, especially any variation from the method itemized below, will be documented on an appropriate field form or in the field notebook.

2.1 The rig and all associated equipment should be properly decontaminated by the contractor before arriving at the test site.

2.2 The augers, drilling casings, rods, samplers, tools, rig, and any piece of equipment that can come in contact (directly or indirectly) with the soil, will be steam cleaned onsite prior to set up for drilling to ensure proper decontamination.

2.3 The same steam cleaning procedures will be followed between boreholes (at a fixed on-site location[s], if appropriate) and before leaving the site at the end of the study.

2.4 All on-site steam cleaning (decontamination) activities will be monitored and documented by a member(s) of the staff of Roux Associates, Inc.

2.5 If drilling activities are conducted in the presence of thick, sticky oils (e.g., PCBs) which coat drilling equipment, then special decontamination procedures may have to be utilized before steam cleaning (e.g., hexane scrub and wash).

2.6 Containment of decontamination fluids may be necessary (e.g., rinseate from steam cleaning) or will be required (e.g., hexane), and disposal must be in accordance with state and/or federal procedures.

3.0 PROCEDURE FOR SOIL-SAMPLING EQUIPMENT

The following is a minimum decontamination procedure for soil-sampling equipment (e.g., split spoons, stainless-steel spatulas). Soil-sampling equipment decontamination procedures, especially any variation from the method itemized below, will be documented on an appropriate field form or in the field notebook.

3.1 Wear disposable gloves while cleaning equipment to avoid cross-contamination and change gloves as needed.

3.2 Steam clean the sampler or rinse with potable water. If soil-sampling activities are conducted in the presence of thick, sticky oils (e.g., PCBs) which coat sampling equipment, then special decontamination procedures may have to be utilized before steam cleaning and washing in detergent solution (e.g., hexane scrub and wash).

3.3 Prepare a non-phosphate, laboratory-grade detergent solution and distilled or potable water in a clean bucket.

3.4 Disassemble the sampler, as necessary and immerse all parts and other sampling equipment in the solution.

3.5 Scrub all equipment in the bucket with a brush to remove any adhering particles.

3.6 Rinse all equipment with copious amounts of potable water followed by distilled or deionized water.

3.7 Place clean equipment on a clean plastic sheet (e.g., polyethylene)

3.8 Reassemble the cleaned sampler, as necessary.

3.9 Transfer the sampler to the driller (or helper) making sure that this individual is also wearing clean gloves, or wrap the equipment with a suitable material (e.g., plastic bag, aluminum foil.

As part of the decontamination procedure for soil-sampling equipment, state and/or federal protocols must be considered. These may require procedures above those specified as minimum for Roux Associates, Inc., such as the use of nitric acid, acetone, etc. Furthermore, the containment and proper disposal of decontamination fluids must be considered with respect to regulatory agency(ies) requirements.

4.0 PROCEDURE FOR WATER-SAMPLING EQUIPMENT

The following is a decontamination procedure for water-sampling equipment (e.g., bailers, pumps). Water-sampling equipment decontamination procedures, especially any variation from the method itemized below, will be documented on an appropriate field form or in the field notebook.

4.1 Decontamination procedures for bailers follow:

a. Wear disposable gloves while cleaning bailer to avoid cross-contamination and change gloves as needed.

b. Prepare a non-phosphate, laboratory-grade detergent solution and potable water in a bucket.

c. Disassemble bailer (if applicable) and discard cord in an appropriate manner, and scrub each part of the bailer with a brush and solution.

d. Rinse with potable water and reassemble bailer.

e. Rinse with copious amounts of distilled or deionized water.

f. Air dry.

g. Wrap equipment with a suitable material (e.g., clean plastic bag, aluminum foil).

h. Rinse bailer at least three times with distilled or deionized water before use.

4.2 Decontamination procedures for pumps follow:

a. Wear disposable gloves while cleaning pump to avoid cross-contamination and change gloves as needed.

b. Prepare a non-phosphate, laboratory-grade detergent solution and potable water in a clean bucket, clean garbage can, or clean 55-gallon drum.

c. Flush the pump and discharge hose (if not disposable) with the detergent solution, and discard disposable tubing and/or cord in an appropriate manner.

d. Flush the pump and discharge hose (if not disposable) with potable water.

e. Place the pump on clear plastic sheeting.

f. Wipe any pump-related equipment (e.g., electrical lines, cables, discharge hose) that entered the well with a clean cloth and detergent solution, and rinse or wipe with a clean cloth and potable water.

g. Air dry.

h. Wrap equipment with a suitable material (e.g., clean plastic bag).

As part of the decontamination procedure for water-sampling equipment, state and/or federal protocols must be considered. These may require procedures above those specified as minimum for Roux Associates, Inc., such as the use of nitric acid, acetone, etc. Furthermore, the containment and proper disposal of decontamination fluids must be considered with respect to regulatory agency(ies) requirements.

Date: May 5, 2000

1.0 PURPOSE

The purpose of this standard operating procedure (SOP) is to establish guidelines for the sampling of ground-water monitoring wells for dissolved constituents. As part of the SOP for the sampling of ground-water monitoring wells, sample collection equipment and devices must be considered, and equipment decontamination and pre-sampling procedures (e.g., measuring water levels, sounding wells, and purging wells) must be implemented. Sampling objectives must be firmly established in the work plan before considering the above.

Valid water-chemistry data are integral to a hydrogeologic investigation that characterizes ground-water quality conditions. Water-quality data are used to evaluate both current and historic aquifer chemistry conditions, as well as to estimate future conditions (e.g., trends, migration pathways). Water-quality data can be used to construct ground-water quality maps to illustrate chemical conditions within the flow system, to generate water-quality plots to depict conditions with time and trends, and to perform statistical analyses to quantify data variability, trends, and cleanup levels.

2.0 EQUIPMENT AND MATERIALS

2.1 In order to sample ground water from monitoring wells, specific equipment and materials are required. The equipment and materials list may include, but not necessarily be limited to, the following:

a. Bailers (Teflon™ or stainless steel).

b. Pumps (centrifugal, peristaltic, bladder, electric submersible, bilge, hand-operated diaphragm, etc.).

c. Gas-displacement device(s).

d. Air-lift device(s).

e. Teflon™ tape, electrical tape.

f. Appropriate discharge hose.

g. Appropriate discharge tubing (e.g., polypropylene, teflon, etc.) if using a peristaltic pump.

h. Appropriate compressed gas if using bladder-type or gas-displacement device.

i. Portable generator and gasoline or alternate power supply if using an electric submersible pump.

j. Non-absorbent cord (e.g., polypropylene, etc.).

k. Plastic sheeting.

l. Tape measure (stainless steel, steel, fiberglass) with 0.01-foot measurement increments and chalk (blue carpenter's).

m. Electronic water-level indicators (e.g., m-scope, etc.) or electric water-level/product level indicators.

n. Non-phosphate, laboratory-grade detergent.

o. Distilled/Deionized water.

p. Potable water.

q. Paper towels, clean rags.

r. Roux Associates' field forms (e.g., daily log, well inspection checklist, sampling, etc.) and field notebook.

s. Well location and site map.

t. Well keys.

u. Stop watch, digital watch with second increments, or watch with a second hand.

v. Water Well Handbook.

w. Calculator.

x. Black pen and water-proof marker.

y. Tools (e.g., pipe wrenches, screwdrivers, hammer, pliers, flashlight, pen knife, etc.).

z. Appropriate health and safety equipment, as specified in the site health and safety plan (HASP).

aa. pH meter(s) and buffers.

bb. Conductivity meter(s) and standards.

cc. Thermometer(s).

dd. Extra batteries (meters, thermometers, flashlight).

ee. Filtration apparatus, filters, pre-filters.

ff. Plasticware (e.g., premeasured buckets, beakers, flasks, funnels).

gg. Disposable gloves.

hh. Water jugs.

ii. Laboratory-supplied sample containers with labels.

jj. Cooler(s).

kk. Ice (wet, blue packs).

ll. Masking, duct, and packing tape.

mm. Chain-of-custody form(s) and custody seal(s).

nn. Site sampling and analysis plan (SAP).

oo. Site health and safety plan (HASP).

pp. Packing material (e.g., bubble wrap)

qq. "Zip-lock" plastic bags.

rr. Overnight (express) mail forms.

3.0 DECONTAMINATION

3.1 Make sure all equipment is decontaminated and cleaned before use (refer to the SOP for Decontamination of Field Equipment for detailed decontamination methods, summaries for bailers and pumps are provided below). Use new, clean materials when decontamination is not appropriate (e.g., non-absorbent cord, disposable gloves). Document, and initial and date the decontamination procedures on the appropriate field form and in the field notebook.

a. Decontaminate a bailer by: 1) wearing disposable gloves, 2) disassembling (if appropriate) and scrubbing in a non-phosphate, laboratory-grade detergent and distilled/deionized water solution, and 3) rinsing first with potable water and then distilled/deionized water.

b. Decontaminate a pump by: 1) wearing disposable gloves, 2) flushing the pump and discharge hose (if not disposable) first with a non-phosphate, laboratory-grade detergent and potable water solution in an appropriate

container (clean bucket, garbage can, or 55-gallon drum) and then with distilled/deionized water or potable water, and 3) wiping pump-related equipment (e.g., electrical lines, cables, discharge hose) first with a clean cloth and detergent solution and then rinsing or wiping with a clean cloth and distilled/deionized water or potable water.

3.2 Note that the decontamination procedures for bailers and pumps are the minimum that must be performed. Check the work plan to determine if chemicals specified by individual state regulatory agencies must also be used for decontamination procedures (e.g., hexane, nitric acid, acetone, isopropanol, etc.).

4.0 CALIBRATION OF FIELD ANALYSIS EQUIPMENT

Calibrate field analysis equipment before use (e.g., thermometers, pH and conductivity meters, etc.). Refer to the specific SOP for field analysis for each respective piece of equipment. Document, and initial and date the calibration procedures on the appropriate field form, in the field notebook, and in the calibration log book.

5.0 PROCEDURE

5.1 Document, and initial and date well identification, pre-sampling information, and problems encountered on the appropriate field form and in the field notebook as needed.

5.2 Inspect the protective casing of the well and the well casing, and note any items of concern such as a missing lock, or bent or damaged casing(s).

5.3 Place plastic sheeting around the well to protect sampling equipment from potential cross contamination.

5.4 Remove the well cap or plug and, if necessary, clean the top of the well off with a clean rag. Place the cap or plug on the plastic sheeting. If the well is not vented, allow several minutes for the water level in the well to equilibrate. If fumes or gases are present, then diagnose these with the proper safety equipment. Never inhale the vapors.

5.5 Measure the depth to water (DTW) from the measuring point (MP) on the well using a steel tape and chalk or an electronic sounding device (m-scope). Refer to the specific SOPs for details regarding the use of a steel tape or a m-scope for measuring water levels. Calculate the water-level elevation. Document, and initial and date the information on the appropriate field form and in the field notebook.

5.6 Measuring the total depth of the well from the MP with a weighted steel tape. Calculate and record the volume of standing water in the well casing on the appropriate field form and in the field notebook.

5.7 Decontaminate the equipment used to measure the water level and sound the well with a non-phosphate, laboratory-grade detergent solution followed by a distilled/deionized water rinse.

5.8 Purge the well prior to sampling (refer to the SOP for Purging a Well). The well should be pumped or bailed to remove the volume of water specified in the work plan. Usually three to five casing volumes are removed if the recharge rate is adequate to accomplish this within a reasonable amount of time.

If the formation cannot produce enough water to sustain purging, then one of two options must be followed. These include: 1) pumping or bailing the well dry, or 2) pumping or bailing the well to "near-dry" conditions (i.e., leaving some water in the well). The option employed must be specified in the work plan and be in accordance with regulatory requirements.

If the well is purged dry, then all the standing water has been removed and upon recovery the well is ready for sampling. However, depending on the rate of recovery and the time needed to complete the sampling round, one of the following procedures may have to be implemented: 1) the well may have to be sampled over a period of more than one day; 2) the well may not yield enough water to collect a complete suite of samples and only select (most important) samples will be collected; or 3) the well may not recover which will preclude sampling. Regardless of the option that must be followed, the sampling procedure must be fully documented. When preparing to conduct a sampling round, review drilling, development and previous sampling information (if available) to identify low-yielding wells in order to purge them first, and potentially allow time for the well to recover for sampling.

5.9 Record the physical appearance of the water (i.e., color, turbidity, odor, etc.) on the appropriate field form and in the field notebook, as it is purged. Note any changes that occur during purging.

5.10 If a bailer is used to collect the sample, then:

a. Flush the decontaminated bailer three times with distilled/deionized water.

b. Tie the non-absorbent cord (polypropylene) to the bailer with a secure knot and then tie the free end of the bailer cord to the protective casing or, if possible, some nearby structure to prevent losing the bailer and cord down the well.

c. Lower the bailer slowly down the well and into the water column to minimize disturbance of the water surface. If a bottom-filling bailer is used, then do not submerge the top of the bailer; however, if a top-filling bailer is used, then submerge the bailer several feet below the water surface.

d. Remove and properly discard one bailer volume from the well to rinse the bailer with well water before sampling. Again, lower the bailer slowly down the well to the appropriate depth depending on the bailer type (as discussed above in 5.11 c). When removing the bailer from the well, do not allow the bailer cord to rest on the ground but coil it on the protective plastic sheeting placed around the well. Certain regulatory agencies require that the first bailer volume collected be utilized for the samples.

5.11 If a pump is used to collect the sample, then use the same pump used to purge the well and, if need be, reduce the discharge rate to facilitate filling sample containers and to avoid problems that can occur while filling sample containers (as listed in Number 5.14, below). Alternately, the purge pump may be removed and a thoroughly decontaminated bailer can be used to collect the sample.

5.12 Remove each appropriate container's cap only when ready to fill each with the water sample, and then replace and secure the cap immediately.

5.13 Fill each appropriate, pre-labeled sample container carefully and cautiously to prevent: 1) agitating or creating turbulence; 2) breaking the container; 3) entry of, or contact with, any other medium; and 4) spilling/splashing the sample and exposing the sampling team to contaminated water. Immediately place the filled sample container in a ice-filled (wet ice or blue pack) cooler for storage. If wet ice is used it is recommended that it be repackaged in zip-lock bags to help keep the cooler dry and the sample labels secure. Check the work plan as to whether wet ice or blue packs are specified for cooling the samples because certain regulatory agencies may specify the use of one and not the other.

5.14 "Top-off" containers for volatile organic compounds (VOCs) and tightly seal with Teflon™-lined septums held in place by open-top screw caps to prevent volatilization. Ensure that there are no bubbles by turning the container upside down and tapping it gently.

5.15 Filter water samples (Procedure 4.6) collected for dissolved metals analysis prior to preservation to remove the suspended sediment from the sample. If water samples are to be collected for total metals analysis, then collect a second set of samples without field filtering.

In the event that the regulatory agency(ies) want unfiltered samples for metals analysis, a second set of filtered samples should also be collected. Because unfiltered samples are indications of total metals (dissolved and suspended) they are not representative of aquifer conditions because ground water does not transport sediment (except in some rare cases). Thus, the results for dissolved metals in ground water should be based on filtered samples even if both filtered and unfiltered sets are presented in a report.

5.16 Add any necessary preservative(s) to the appropriate container(s) prior to, or after (preferred), the collection of the sample, unless the appropriate preservative(s) have already been added by the laboratory before shipment.

5.17 Collect quality control (QC) samples as required in the work plan to monitor sampling and laboratory performance. Refer to the SOP for Collection of Quality Control Samples.

5.18 Conduct field analyses after sample collection is complete by measuring and recording the temperature, conductivity, pH, etc. (as called for in the work plan). Note and record the "final" physical appearance of the water (after purging and sampling) on an appropriate field form and in the field notebook.

5.19 Wipe the well cap with a clean rag, replace the well cap and protective cover (if present). Lock the protective cover.

5.20 Verify that each sample is placed in an individual "zip-lock" bag, wrapped with "bubble wrap," placed in the cooler, and that the cooler has sufficient ice (wet ice or blue packs) to preserve the samples for transportation to the analytical laboratory.

5.21 Decontaminate bailers, hoses, and pumps as discussed in the decontamination SOP. Wrap decontaminated equipment with a suitable material (e.g., clean plastic bag or aluminum foil). Discard cords, rags, gloves, etc. in a manner consistent with site conditions.

5.22 Complete all necessary field forms, field notebook entries, and the chain-of-custody forms. Retain one copy of each chain-of-custody form. Secure the cooler with sufficient packing tape and a custody seal.

5.23 Samples collected from Monday through Friday will be delivered within 24 hours of collection. If Saturday delivery is not available, samples collected on Friday must be delivered by Monday morning. Consult the work plan to determine if any of the analytes require a shorter delivery time.

END OF PROCUDURE

Date: May 5, 2000

1.0 PURPOSE

The purpose of this standard operating procedure (SOP) is to establish guidelines for sample handling which will allow consistent and accurate results. Valid chemistry data are integral to investigations that characterize media-quality conditions. Thus, this SOP is designed to ensure that once samples are collected, they are preserved, packed and delivered in a manner which will maintain sample integrity to as great an extent as possible. The procedures outlined are applicable to most sampling events and any required modifications must be clearly described in the work plan.

2.0 CONSIDERATIONS

Sample containers, sampling equipment decontamination, quality assurance/quality control (QA/QC), sample preservation, and sample handling are all components of this SOP.

2.1 Sample Containers

Prior to collection of a sample, considerations must be given to the type of container that will be used to store and transport the sample. The type and number of containers selected is usually based on factors such as sample matrix, potential contaminants to be encountered, analytical methods requested, and the laboratory's internal quality assurance requirements. In most cases, the overriding considerations will be the analytical methodology, or the state or federal regulatory requirements because these regulations generally encompass the other factors. The sample container selected is usually based on some combination of the following criteria:

a. Reactivity of Container Material with Sample

Choosing the proper composition of sample containers will help to ensure that the chemical and physical integrity of the sample is maintained. For sampling potentially hazardous material, glass is the recommended container type because it is chemically inert to most substances. Plastic containers are not recommended for most hazardous wastes because the potential exists for contaminants to adsorb to the surface of the plastic or for the plasticizer to leach into the sample.

In some instances, however, the sample characteristics or analytes of interest may dictate that plastic containers be used instead of glass. Because some metals species will adhere to the sides of the glass containers in an aqueous matrix, plastic bottles (e.g., nalgene) must be used for samples collected for metals analysis. A separate, plastic

container should accompany glass containers if metals analysis is to be performed along with other analyses. Likewise, other sample characteristics may dictate that glass cannot be used. For example, in the case of a strong alkali waste or hydrofluoric solution, plastic containers may be more suitable because glass containers may be etched by these compounds and create adsorptive sites on the container's surface.

b. Volume of the Container

The volume of sample to be collected will be dictated by the analysis being performed and the sample matrix. The laboratory must supply bottles of sufficient volume to perform the required analysis. In most cases, the methodology dictates the volume of sample material required to complete the analysis. However, individual laboratories may provide larger volume containers for various analytes to ensure sufficient quantities for duplicates or other QC checks.

To facilitate transfer of the sample from the sampler into the container and to minimize spillage and sample disturbance, wide-mouth containers are recommended. Aqueous volatile organic samples must be placed into 40-milliliter (ml) glass vials with polytetrafluoroethylene (PTFE) (e.g., TeflonTM) septums. Non-aqueous volatile organic samples should be collected in the same type of vials or in 4-ounce (oz) wide-mouth jars provided by the laboratory. These jars should have PTFE-lined screw caps.

c. Color of Container

Whenever possible, amber glass containers should be used to prevent photodegradation of the sample, except when samples are being collected for metals analysis. If amber containers are not available, then containers holding samples should be protected from light (i.e., place in cooler with ice immediately after filling).

d. Container Closures

Container closures must screw on and off the containers and form a leak-proof seal. Container caps must not be removed until the container is ready to be filled with the sample, and the container cap must be replaced (securely) immediately after filling it. Closures should be constructed of a material which is inert with respect to the sampled material, such as PTFE (e.g., TeflonTM). Alternately, the closure may be separated from the sample by a closure liner that is inert to the sample material such as PTFE sheeting. If soil or sediment samples are being collected, the threads of the container must be wiped clean with a dedicated paper towel or cloth so the cap can be threaded properly.

e. Decontamination of Sample Containers

Sample containers must be laboratory cleaned by the laboratory performing the analysis. The cleaning procedure is dictated by the specific analysis to be performed on the sample. Sample containers must be carefully examined to ensure that all containers appear clean. Do not mistake the preservative as unwanted residue. The bottles should not be field cleaned. If there is any question regarding the integrity of the bottle, then the laboratory must be contacted immediately and the bottle(s) replaced.

f. Sample Bottle Storage and Transport

No matter where the sample bottles are, whether at the laboratory waiting to be packed for shipment or in the field waiting to be filled with sample, care must be taken to avoid contamination. Sample shuttles or coolers, and sample bottles must be stored and transported in clean environments. Sample bottles and clean sampling equipment must never be stored near solvents, gasoline, or other equipment that is a potential source of cross-contamination. When under chain of custody, sample bottles must be secured in locked vehicles, and custody sealed in shuttles or in the presence of authorized personnel. Information which documents that proper storage and transport procedures have been followed must be included in the field notebook and on appropriate field forms.

2.2 Decontamination of Sampling Equipment

Proper decontamination of all re-usable sampling equipment is critical for all sampling episodes. The SOP for Decontamination of Field Equipment and SOPs for method-specific or instrument-specific tasks must also be referred to for guidance for decontamination of various types of equipment.

2.3 Quality Assurance/Quality Control Samples

QA/QC samples are intended to provide control over the proper collection and tracking of environmental measurements, and subsequent review, interpretation and validation of generated analytical data. The SOPs for Collection of Quality Control Samples, for Evaluation and Validation of Data, and for Field Record Keeping and Quality Assurance/Quality Control must be referred to for detailed guidance regarding these respective procedures. SOPs for method-specific or instrument-specific tasks must also be referred to for guidance for QA/QC procedures.

2.4 Sample Preservation Requirements

Certain analytical methodologies for specific analytes require chemical additives in order to stabilize and maintain sample integrity. Generally, this is accomplished under the following two scenarios:

a. Sample bottles are preserved at the laboratory prior to shipment into the field.

b. Preservatives are added in the field immediately after the samples are collected.

Many laboratories provide pre-preserved bottles as a matter of convenience and to help ensure that samples will be preserved immediately upon collection. A problem associated with this method arises if not enough sample could be collected, resulting in too much preservative in the sample. More commonly encountered problems with this method include the possibility of insufficient preservative provided to achieve the desired pH level or the need for additional preservation due to chemical reactions caused by the addition of sample liquids to pre-preserved bottles. The use of pre-preserved bottles is acceptable; however, field sampling teams must always be prepared to add additional preservatives to samples if the aforementioned situations occur. Furthermore, care must be exercised not to overfill sample bottles containing preservatives to prevent the sample and preservative from spilling and therefore diluting the preservative (i.e., not having enough preservative for the volume of sample).

When samples are preserved after collection, special care must be taken. The transportation and handling of concentrated acids in the field requires additional preparation and adherence to appropriate preservation procedures. All preservation acids used in the field should be trace-metal or higher-grade.

2.5 Sample Handling

After the proper sample bottles have been received under chain-of-custody, properly decontaminated equipment has been used to collect the sample, and appropriate preservatives have been added to maintain sample integrity, the final step for the field personnel is checking the sample bottles prior to proper packing and delivery of the samples to the laboratory.

All samples should be organized and the labels checked for accuracy. The caps should be checked for tightness and any 40-ml volatile organic compound (VOC) bottles must be checked for bubbles. Each sample bottle must be placed in an individual "zip-lock" bag to protect the label, and placed on ice. The bottles must be carefully packed to prevent breakage during transport. When several bottles have been collected for an individual sample, they should not be placed adjacent to each other in the cooler to prevent possible breakage of all bottles for a given sample. If there are any samples which are known or suspected to be highly

contaminated, these should be placed in an individual cooler under separate chain-of-custody to prevent possible cross contamination. Sufficient ice (wet or blue packs) should be placed in the cooler to maintain the temperature at 4 degrees Celsius (°C) until delivery at the laboratory. Consult the work plan to determine if a particular ice is specified as the preservation for transportation (e.g., the United States Environmental Protection Agency does not like the use of blue packs because they claim that the samples will not hold at 4°C). If additional coolers are required, then they should be purchased. The chain-of-custody form should be properly completed, placed in a "zip-lock" bag, and placed in the cooler. One copy must be maintained for the project files. The cooler should be sealed with packing tape and a custody seal. The custody seal number should be noted in the field book. Samples collected from Monday through Friday will be delivered to the laboratory within 24 hours of collection. If Saturday delivery is not available, samples collected on Friday must be delivered by Monday morning. Check the work plan to determine if certain analytes require a shorter delivery time. If overnight mail is utilized, then the shipping bill must be maintained for the files and the laboratory must be called the following day to confirm receipt.

3.0 EQUIPMENT AND MATERIALS

3.1 General equipment and materials may include, but not necessarily be limited to, the following:

a. Sample bottles of proper size and type with labels.

b. Cooler with ice (wet or blue pack).

c. Field notebook, appropriate field form(s), chain-of-custody form(s), custody seals.

d. Black pen and indelible marker.

e. Packing tape, "bubble wrap," and "zip-lock" bags.

f. Overnight (express) mail forms and laboratory address.

g. Health and safety plan (HASP).

h. Work plan/scope of work.

i. Pertinent SOPs for specified tasks and their respective equipment and materials.

3.2 Preservatives for specific samples/analytes as specified by the laboratory. Preservatives must be stored in secure, spillproof glass containers with their content, concentration, and date of preparation and expiration clearly labeled.

3.3 Miscellaneous equipment and materials including, but not necessarily limited to, the following:

a. Graduated pipettes.

b. Pipette bulbs.

c. Litmus paper.

d. Glass stirring rods.

e. Protective goggles.

f. Disposable gloves.

g. Lab apron.

h. First aid kit.

i. Portable eye wash station.

j. Water supply for immediate flushing of spillage, if appropriate.

k. Shovel and container for immediate containerization of spillage-impacted soils, if appropriate.

4.0 PROCEDURE

4.1 Examine all bottles and verify that they are clean and of the proper type, number, and volume for the sampling to be conducted.

4.2 Label bottles carefully and clearly with project name and number, site location, sample identification, date, time, and the sampler's initials using an indelible marker.

4.3 Collect samples in the proper manner (refer to specific sampling SOPs).

4.4 Conduct preservation activities as required after each sample has been collected. Field preservation must be done immediately and must not be done later than 30 minutes after sample collection.

4.5 Conduct QC sampling, as required.

4.6 Seal each container carefully and place in an individual "zip lock" bag.

4.7 Organize and carefully pack all samples in the cooler immediately after collection (e.g., bubble wrap). Insulate samples so that breakage will not occur.

4.8 Complete and place the chain-of-custody form in the cooler after all samples have been collected. Maintain one copy for the project file. If the cooler is to be transferred several times prior to shipment or delivery to the laboratory, it may be easier to tape the chain-of-custody to the exterior of the sealed cooler. When exceptionally hazardous samples are known or suspected to be present, this should be identified on the chain-of-custody as a courtesy to the laboratory personnel.

4.9 Add additional ice as necessary to ensure that it will last until receipt by the laboratory.

4.10 Seal the cooler with packing tape and a custody seal. Record the number of the custody seal in the field notebook and on the field form. If there are any exceptionally hazardous samples, then shipping regulations should be examined to ensure that the sample containers and coolers are in compliance and properly labeled.

4.11 Samples collected from Monday through Friday will be delivered to the laboratory within 24 hours of collection. If Saturday delivery is not available, samples collected on Friday must be delivered by Monday morning. Check the work plan to determine if certain analytes require a shorter delivery time.

4.12 Maintain the shipping bill for the project files if overnight mail is utilized and call the laboratory the following day to confirm receipt.

END OF PROCEDURE

1.0 PURPOSE

The purpose of this Standard Operating Procedure (SOP) is to establish guidance to obtain accurate and consistent samples of soil gas.

2.0 MATERIALS/EQUIPMENT

- Teflon or Nylaflow tubing, one-quarter or one-eighth inch diameter sample tubing.
- Swagelok® ¼-inch nut and ferrule sets for connecting the probe tubing to the sampling manifold, as appropriate for the collection method
- Helium leak check equipment, as dictated by Site-specific data quality objectives (DQOs), including the enclosure, helium cylinder (high purity helium), and helium detector (Dialectric MGD is preferred). The enclosure and helium detector may be provided by the driller.
- Air pump for purging and electric supply for the pump (either battery, generator, or power inverter with adapter for car battery). Must be capable of a flow of 200 milliliters per minute (mL/min) and a vacuum of 20” Hg.
- Canister, tedlar bag or syringe, as appropriate for the collection method.

3.0 DECONTAMINATION

All reusable sampling equipment will be thoroughly cleaned according to the decontamination SOP. Where possible, thoroughly pre-cleaned and wrapped sampling equipment should be used and dedicated to individual sampling locations. Disposable items such as sampling gloves and plastic sheeting will be changed after each use and discarded in an appropriate manner.

4.0. SITE-SPECIFIC CONSIDERATIONS

Prior to attempting soil gas sampling there should be an understanding of subsurface conditions at the Site. Soil gas samples should be collected in the vadose zone and generally, soil gas samples should not be collected at a depth less than above 5 feet below ground surface (bgs), unless sub-slab soil gas samples are needed. It may also not be feasible to collect soil gas from tighter grain soils with little pore volume, such as clays, and these layers should be avoided.

Soil gas sampling should not be performed until 24-hours after a significant rain event (>1/2 inch of rainfall).

5.0 PROCEDURE

5.1 System Set-up

1. Acquire all the necessary hardware and sampling equipment. Be sure to use one-quarter or one-eighth inch diameter Teflon or Nylaflow sample tubing.

2. Assemble or obtain the necessary fittings and vacuum gauge to create a soil gas probe and sampling manifold (vacuum gauge and valving). This manifold must be clean, free of oils, and flushed free of VOCs prior to use. If appropriate, be sure to place the helium leak check enclosure over the probe, and push the sample tubing through the hole in the cap before attaching the sampling manifold.

3. Adjust the purge system evacuation pump sampling rate to achieve the desired flow rate of 200 mL/min. This should be performed at the outlet of the vacuum pump prior to purging, either by using a suitable flow meter, or determining the amount of time required to fill a 1-liter Tedlar bag.

5.2 Shut-In Test

Prior to purging or sampling, a shut-in test should be conducted to check for leaks in the above-ground sampling system.

1. Assemble the above-ground valves, lines and fittings downstream from the top of the probe.

2. Evacuate the system to a minimum measured vacuum of about 100 inches of water using the purge pump.

3. Observe the vacuum gauge for 1-2 minutes. If there is any observable loss of vacuum, adjust the above-ground sampling system until the vacuum is maintained.

5.3 System Leak Checking and Purging

Perform a leak check of the sample manifold system by:

1. Make sure the gas probe valve is off and the sample valves are closed.

2. Open the purge valve and start the purge pump. Verify that the flow is set to 200 mL/min until a vacuum of approximately 15” Hg is achieved.

3. Turn off the purge pump and observe the vacuum gauge for 1-2 minutes. If there is any observable loss of vacuum, the leaks must be fixed prior to sampling.

4. Record the leak check date and time on the field notebook.

5.4 Purge Volume Test (Mobile Laboratory Only)

The purpose of the purge volume test is to ensure that stagnant air is removed from the sampling system and to ensure that samples are representative of subsurface conditions. The test well should be located where soil gas concentrations are anticipated to be elevated, if possible.

Perform a purge test of the test well by:

1. Purge the well one purge volume and collect a sample.

2. Have the mobile laboratory analyze the sample for target compounds. Sample procedures are explained in Section 5.6, below.

3. Purge an additional two purge volumes (for a total of 3 purge volumes), collect a sample and submit to the mobile laboratory for analysis.
    a. One purge volume is equal to the sum of the following volumes:
        - The internal volume of tubing;
        - The void space of the sand pack around the probe tip;
        - The void space of the dry bentonite in the annular space.

4. Repeat for a purge of 10 total purge volumes.

5. The site purge volume will be chosen based on the sample with the highest concentration of target compounds from the purge test. All of other sample locations will utilize this purge volume (either one, three, or ten).

5.5 Helium Leak Check (as dictated by DQOs)

The helium leak check procedure is accomplished by:

1. Start the flow of helium under the leak check enclosure. Position the tube so the helium is directed at the interface of the probe and the ground. Let the helium fill the enclosure for a couple of minutes.

2. Turn the helium leak detector on and make sure that the detector is not reading any helium before proceeding.

3. Verify that the helium concentration inside the leak check enclosure is >10% by placing the probe of the helium detector into the hole where the sample tubing comes out or under the enclosure wall. It is not necessary to verify that the helium concentration is 100% as this is bad for the detector.

4. Purging is carried out by pulling soil gas through the system at a rate of 200 mL/min for a time period sufficient to achieve three purge volumes, equal to the sum of the internal volume of the in-ground annular space, sample line, and sampling manifold system.

    Note: When calculating the purge volume, be sure to take into account the inside diameter and length of the sample tubing, as well as the probe outside diameter and

retract distance for the annular space for temporary probes. If during the purge (or sampling) the vacuum exceeds 7 "Hg, then reduce the pump flow rate. The system vacuum must stay below this level at all times.

5. To start the soil gas probe purge, open the gas probe valve and close the sample valve at the same time, and start timing. Verify that the flow rate is still 200 mL/min.

6. During the last 5 minutes of the purge (or the entire purge time if less than 5 minutes), attach a Tedlar bag to the purge pump exhaust and open the bag's valve.

7. At the end of the purge time, close the purge valve, close the valve to the Tedlar bag, and turn off the pump.

8. Attach the Tedlar bag to the helium detector and open the valve. If a helium reading of greater than or equal to 5% of the helium concentration inside the leak check enclosure is observed, then the probe leak check has failed and corrective action should be taken.

9. Record the purge date, time, purge rate, leak check result, and purge volume on the field sampling log.

10. Immediately move on to the sampling phase. Little to no delay should occur between purging and sampling.

5.6 Sample Collection

'Clean' sampling protocols must be followed when handling and collecting samples. This requires care in the shipping, storage, and use of sampling equipment. Sharpie markers should not be used for labeling or note-taking during sampling.

1. Attach the canister, tedlar bag or syringe to the sample tubing.

2. Before taking the sample, confirm that the sampling system valves are set as follows: the purge valve is confirmed to be closed, gas probe valve is open, and the sample valve is open.

3. After sampling for the appropriate amount of time, close the sample valve and the canister/tedlar bag valve. Remove the sample container from the sampling manifold.

4. Record the sampling date, time, canister identification (ID), flow controller ID, and any other observation pertinent to the sampling event on the field sampling log. The temperature and barometric pressure should be recorded.

5. Fill out all appropriate documentation (sampling forms, sample labels, chain of custody, sample tags, etc.).

6. Disassemble the sampling system.

END OF PROCEDURE

ATTACHMENT 2

Chain of Custody Form

ROUX CHAIN OF CUSTODY

№ 11332 Y

Environmental Consulting & Management

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ANALYSES

PAGE OF

PROJECT NAME

PROJECT NUMBER

PROJECT LOCATION

PROJECT MANAGER

SAMPLER(S)

SAMPLE DESIGNATION / LOCATION	DATE COLLECTED	TIME COLLECTED	SAMPLE MATRIX						TOTAL BOTTLES	NOTES

RELI NQUI SHEBY: (SI GNATURE)	FOR	DATE	TIME	SEAL I NTACT Y OR N	RECEIVED BY: (SI GNATURE)	FOR	DATE	TIME	SEAL I NTACT Y OR N
RELI NQUI SHEBY: (SI GNATURE)	FOR	DATE	TIME	SEAL I NTACT Y OR N	RECEIVED BY: (SI GNATURE)	FOR	DATE	TIME	SEAL I NTACT Y OR N

DELIVERY METHOD

ANALYTICAL LABORATORY

COMMENTS

CHAINOF CDR 12AUG98

APPENDIX F

Quality Assurance Project Plan

Quality Assurance Project Plan

Former Cibro Petroleum Terminal Site
Island Park, New York

November 25, 2019

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Table

1. Field and Laboratory QC Summary

1. Introduction

This Quality Assurance Project Plan (QAPP) has been prepared to describe the measures that will be taken to ensure the data generated during post-remediation groundwater and soil vapor monitoring for implementation of the Site Management Plan (SMP) at the Former Cibro Petroleum Terminal, Island Park, New York (Site) are of sufficient quality to meet project-specific data quality objectives (DQOs). The QAPP was prepared in accordance with the guidance provided in New York State Department of Environmental Conservation (NYSDEC) Technical Guidance DER-10 (Technical Guidance for Site Investigation and Remediation), the Brownfield Cleanup Program Guide, and the United States Environmental Protection Agency's (USEPA's) Guidance for the Data Quality Objectives Process (EPA QA/G-4).

2. Background, Objectives, and Scope

In order to assure the objectives for post-remediation groundwater monitoring have been met, the following scope of work has been developed and includes sampling of groundwater and soil vapor.

2.1 Groundwater

Post-remediation groundwater monitoring samples will be collected from four Site monitoring wells to be installed after the excavation of impacted soil and capping, filling, grading, and underground utility installation have been completed at the Site. The locations and designations of the proposed monitoring wells are shown on Figure 5 of this SMP. The groundwater samples will be collected in accordance with the specific field sampling procedures detailed in Appendix E of this SMP.

After gauging for depth to water and potential separate-phase petroleum product, each well will be sampled for the following analytes:

- Target Compound List (TCL) volatile organic compounds (VOCs) via United States Environmental Protection Agency (USEPA) Method 8260 (including 10 tentatively identified compounds [TICs]; and
- TCL semivolatile organic compounds (SVOCs) via USEPA Method 8270 (including 20 TICs).

Field parameters, including temperature, pH, conductivity, redox potential, dissolved oxygen, and turbidity, will also be measured. The laboratory results of the groundwater samples will be compared to the NYSDEC Ambient Water Quality Standards and Guidance Values (AWQSGVs). The laboratory reporting limits will be below the individual AWQSGV for each respective analyte.

<u>Quality Assurance Officer</u>

The Quality Assurance Officer (QAO) for this project will be identified prior to conducting the post-remediation monitoring. The QAO is responsible for conducting reviews, inspections, and audits to ensure the data collection is conducted in accordance with the QAPP. The QAO's responsibilities range from ensuring effective field equipment decontamination procedures and proper sample collection to the review of all laboratory analytical data for completeness and usefulness. The QAO reports to the Project Manager and makes independent recommendations to the Field Team Leader. The QAO and other team members will be identified in advance of performing the groundwater sampling.

2.2 Soil Vapor Sampling

A soil vapor intrusion evaluation will be performed by collecting one soil vapor sample from within the footprint of each proposed new building to be constructed at the Site and one ambient air sample. The soil vapor samples will be collected from approximately two feet above the groundwater table using a vacuum canister set to collect the sample over 8-hour duration. The soil vapor and ambient air samples will be analyzed for VOCs via Enhanced USEPA Method TO-15 capable of detecting VOC concentrations at or above 0.25 $\mu g/m^3$. Individual, certified sampling canisters will be utilized for the collection of all air samples.

3. Sampling Procedures

Detailed discussions of sample matrices, quantities, QA/QC samples, analytical methods, parameters, quality control procedures and requirements, decontamination, and sample handling procedures are provided in the FSP (Appendix E).

4. Quality Assurance/Quality Control

The primary intended use for the data is to confirm the effectiveness of the remediation efforts implemented at the Site and to determine if active or passive vapor intrusion mitigation systems are required in the proposed new buildings to be constructed at the Site. The primary data quality objective (DQO) of the groundwater and soil vapor sampling program, therefore, is that data be accurate and precise, and hence representative of the actual Site conditions. DQOs can be qualitative and/or quantitative statements that are used in an effort to guide field work during investigation and remedial activities. Meeting the DQOs is anticipated to maximize the likelihood that the data are collected, analyzed, and documented without compromising data integrity. DQOs can be used for the following purposes:

- Define the most appropriate type and quantity of data to collect;
- Determine the most appropriate conditions and locations from which to collect the data; and
- Determine the most appropriate way to present and report the data.

In addition to the qualitative DQOs presented in the Remedial Work Plan (RWP) dated August 2012, there are specific quantitative and qualitative DQOs that relate to the field and laboratory data generated during the monitoring. These DQOs, also referred to as Measurement Performance Criteria, relate to the parameters of precision, accuracy, representativeness, completeness, sensitivity, and comparability. These parameters can provide a quantitative and qualitative indication of data quality. These parameters will be evaluated, as required by the analytical laboratory, in accordance with the specific Analytical Services Protocol (ASP) methods, as well as during the preparation of independent Data Usability Summary Reports (DUSRs) as per the requirements of DER-10. DUSRs will be prepared for each phase of sampling activities completed at the Site. The Measurement Performance Criteria are discussed in detail in the remainder of this section. Compliance with these criteria will be evaluated by the laboratory in accordance with their QAPP and any non-conformities identified shall be addressed in the lab reports. These criteria will also be used in an effort to evaluate sample results during data verification and validation.

4.1 Precision

Precision is defined as a measure of the reproducibility of individual measurements under a given set of conditions. Precision is a measure of the variability of a group of data compared to their average value. Precision is monitored through duplicate (replicate) samples and it is assessed for each sample media.

Precision can be expressed in terms of relative percent difference (RPD) and is dependent upon the sampling technique and implementation of the analytical method. RPD can be calculated using the following equation:

$$RPD = [(C1-C2) / ((C1+C2)/2)] \times 100$$

When: C1 = The larger of the two concentrations.

C2 = The smaller of the two concentrations.

4.2 Accuracy

Accuracy is a measure of the bias in a measurement system, (i.e., the ability to obtain a true value), which may result from sampling and/or analytical error. Accuracy is monitored through the use of field and method blanks, spikes, and standards, and compared to federal and state regulations and guidelines.

Accuracy may be expressed as a percent difference (%D) calculated using the following equation:

$$\%D = (Vt - Vm)/Vt \times 100$$

When: Vt = The true or real value expected.

Vm = The measured or observed value.

The objective for measuring accuracy with laboratory data is in an attempt to demonstrate that the analytical instruments provide consistent measurements within the accuracy criteria. Documentation of accuracy can be provided by the laboratory upon request.

Accuracy is also measured in regards to collection of field data. The objective for measuring accuracy in the field is an attempt to successfully calibrate the associated field equipment to the manufacturer's specifications, and to verify the deviation from calibrated values.

4.3 Sensitivity

Sensitivity is the ability of a laboratory instrument or measurement technique to detect an analyte at certain levels of interest. Method detection limits (MDLs) depend on instrument sensitivity and matrix effects. Monitoring of instrument sensitivity is performed through the analysis of reagent blanks, near detection limit standards, and response factors. Documentation of laboratory instrument sensitivity can be provided by the laboratory upon request.

Sensitivity is expressed in quantitation limits. The limits of quantitation are based on the guidelines presented below:

- The limit of quantitation shall be based upon the variability of the blank response for the complete analytical procedure, or the variability for the signal-to-background response in a processed sample when there is not a detectable blank response. The detection limit will be established as 3.5 times (3.5X) the MDL and is equal to or greater than the lowest calibration standard, adjusted for the amount of sample typically extracted and the final extract volume of the method (i.e., all dilutions and sample weight variables must be included in the calculation).
- Best professional judgment shall be used in an effort to adjust the limit of detection upward in cases where the transient occurrence of high instrument precision (i.e., low variability) results in a calculated limit of detection less than the absolute sensitivity of the analytical instrument. When no significant blank response is detectable, the limit of detection shall be estimated based upon the standard deviation of low-level standard (concentrations at or near the expected instrument detection limit) responses.

Sample matrix cleanup (in laboratory) must occur when chemical interferences may be causing elevated reporting limits or inadequate contaminant identification or quantitation. Sample matrix cleanup must conform to the procedures specified in the applicable NYSDEC ASP method.

4.4 Representativeness

Representativeness is a qualitative parameter, which is dependent upon the proper design of the sampling program and proper laboratory protocol. Representativeness expresses the degree to which data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition. The sampling locations for the post-remediation groundwater and soil vapor monitoring were designed to provide data representative of groundwater conditions in response to remedial efforts. During development of the sampling locations, consideration is given to the existing

analytical data, as well as the current and proposed physical conditions of the Site. Representativeness will be satisfied by verifying that the work plan is followed, proper sampling techniques are used, proper analytical procedures are followed, and holding times of the samples are not exceeded in the laboratory. Representativeness will also be assessed in part by the analysis of field duplicate samples.

4.5 Completeness

Completeness is a quantitative measure of the amount of valid data obtained from a measurement system compared to the amount that was expected to be obtained under normal conditions. Valid data is data that meets the specific DQOs as defined in this QAPP. Following completion of the laboratory analytical testing and data validation (if performed), the percent completeness will be calculated by the following equation:

$$\text{Completeness (percent)} = \frac{\text{(Valid Data Obtained)}}{\text{(Total Data Planned)}} \times 100$$

It is expected that the laboratory will provide data meeting QC acceptance criteria for 90 percent or more for all samples tested using the USEPA approved methods (40 CFR Part 136).

4.6 Comparability

Comparability is a qualitative objective, which expresses the confidence with which one data set can be compared with another. The objective for comparability is an attempt to ensure that results of analyses for the Site can be compared with analyses produced by other laboratories and other projects. The extent to which analytical data will be comparable depends on the similarity of sampling and analytical methods. The comparability criteria for the Site will be achieved by:

- Sampling and analytical procedures consistent with the FSP and the laboratory QAPP;
- Consistent units and reporting methods for results from similar media; and
- Application of appropriate QA/QC procedures in accordance with this QAPP and the laboratory QAPP.

It is expected that the sampling and monitoring will be conducted in accordance with the SOPs, and, therefore, the procedures used in an effort to obtain the analytical data are expected to provide comparable data.

Table 1 lists the field and laboratory QC samples that will be analyzed to assess data accuracy and precision, as well as to determine if equipment sensitivity has been compromised. All analyses (i.e., TCL VOCs and SVOCs) will be performed in accordance with the NYSDEC Analytical Services Protocol (ASP), using USEPA SW-846 and TO-15 methods. The laboratory selected to analyze the field samples shall maintain a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) Contract Laboratory Protocol (CLP) certification for each of the analyses listed in Section 2.

All laboratory data are to be reported in NYSDEC ASP Category B deliverables and will be delivered to NYSDEC in electronic data deliverable (EDD) format as described on NYSDEC's website (http://www.dec.ny.gov/chemical/62440.html). A Data Usability Report will be prepared meeting the requirements in Section 2.2(a)1.ii and Appendix 2B of DER-10 for all data packages generated.

5. Proposed Analytical Laboratories

The proposed analytical laboratory to conduct the chemical analyses of water and air samples will be identified prior to sample collection. All work performed by the analytical laboratory will meet the requirements of this QAPP, the Primary Laboratory QAPP, and any other requirements for performing analyses to meet the required DQOs.

6. Quality Control Checks

Quality control requirements include both field and laboratory check samples and procedures designed in an effort to ensure and document the overall quality of data. Quality control (QC) check samples are controlled samples, introduced into the analytical system at specific points. The results of the QC checks are used during data validation in an effort to evaluate the precision, accuracy, sensitivity and representativeness of the overall sampling and analytical program. The following sections describe the QC checks that will be applied to the data and their definition and purpose.

6.1 Sampling Quality Control

Sampling quality control will be monitored through field QC checks. Field-generated QC checks are samples sent to the laboratory from the field by either the field sampling team (internal) or by a third party (external). These types of samples serve as checks on both the sampling and measurement systems and assist in determining the overall data quality. The number and type of field QC samples submitted varies with the intended data use. The frequencies of field QC samples are specified in Table 1.

6.1.1 Trip Blanks

Trip blanks are used in an effort to determine if any cross-contamination between sample containers occurs from the proximity of sample containers to one another during transport or storage. They generally pertain to VOC aqueous samples only. Trip blanks consist of sample containers filled with analyte-free water that are preserved with hydrochloric acid (HCL) and prepared by the laboratory prior to the sampling event. The trip blanks are then transported to the field along with the containers used for sample collection and are kept with the samples throughout the sampling event. Once sampling is complete, the trip blanks are then packaged for shipment with the other samples and sent for analysis. The trip blank sample containers are not opened before they reach the laboratory to be analyzed. There should be at least one trip blank included in each shipping container that contains samples for VOC analysis.

6.1.2 Field Blanks

Field blanks (also called decontamination rinsate blanks) are defined as samples that are obtained by running analyte-free water through the field-cleaned sampling device (bailer, pump, etc.), and placing it in the appropriate sample containers for analysis. These samples are used in an effort to determine if decontamination procedures are adequate.

Field blanks must be analyzed for the same parameters as the associated samples. Associated samples are defined as up to 20 samples of the same matrix collected by the same procedure. Field blanks will be prepared at a minimum frequency of one per day.

6.1.3 Field Duplicates

Field duplicates (also called replicates or collocates) are individual portions of the same (replicates) or essentially the same (collocated) field sample. Collocates are independent samples collected in close proximity to one another such that they are essentially an equal representation of the parameter(s) of interest at a given point in space and time. Examples of collocated samples include, but are not limited to: two water samples collected at essentially the same time and place from the same source.

Collocated samples, when collected, processed, and analyzed by the same organization, provide inter-laboratory precision information for the entire measurement system including, but not limited to, sample acquisition, homogeneity, handling, shipping, storage, preparation, and analysis. Collocated samples, when collected, processed, and analyzed by different organizations, provide intra-laboratory precision information for the entire measurement system.

Replicate samples are samples from the same sampling point that have been divided into two or more portions at some step in the measurement process after sample collection. An example of a field replicate sample would be a groundwater sample that has been collected, split, and placed into two or more individual sample containers.

Duplicate samples can be used in an effort to estimate the overall precision of a data collection activity. Sampling error can be estimated by the comparison of collocated and replicated results from the same sample. Duplicate samples will be collected at a minimum frequency of one per twenty samples.

6.1.4 Temperature Blanks

Temperature blanks ensure that samples arrive to the laboratory at the correct preservation temperature. A temperature blank will be included in each cooler when it is shipped to the laboratory. The laboratory sample custodian will record the temperature of the blank upon receiving the samples.

6.2 Laboratory Analytical Quality Control

Laboratory QC check samples are generated by laboratory personnel from the same (internal) or different (external) laboratory. These types of samples serve as checks on the laboratory sampling and measurement systems and assist in determining the data quality with regard to laboratory accuracy and precision. The number and type of laboratory QC check samples varies with the intended data use.

Laboratory QC check samples may measure either method and/or instrument performance. Method (preparation) performance check samples collectively measure the entire laboratory analytical data generation process, from sample allocation in the laboratory through the analysis and data reduction. Instrument (analysis) check samples measure the laboratory performance from the point where analysis begins, generally excluding any preparation/extraction effects, through the analysis and data reduction.

Laboratory analytical QC will be monitored through internal laboratory QC checks such as the analysis of blanks, matrix spikes, matrix spike duplicates, surrogate spike, laboratory control samples, and initial and continuing calibration checks. The frequency, acceptance criteria, and corrective action for these laboratory QC checks per analysis will be in accordance with method requirements and the Primary Laboratory QAPP.

6.2.1 Method and Analytical Blanks

Method blanks (also called preparation blanks) are generated within the laboratory during the processing of the field samples. These blanks are processed using the sample reagents and procedures at the same time as the samples being analyzed. Contamination found in the method blank (MB) would indicate that similar contamination found in associated samples may have been introduced in the laboratory, and not actually be present in the samples.

Analytical blanks, such as initial calibration blanks and continuing calibration blanks, are required by inorganic test methods. These blanks are laboratory reagent-grade water and acid solutions to match sample

digestates analyzed at the beginning, intervals during, and the end of an analytical sequence in an effort to assess contamination and instrument drift. The initial calibration blank is analyzed at the beginning of the analytical run following the calibration and initial calibration verification. The continuing calibration blank is analyzed prior to sample analyses, every ten samples thereafter, throughout the analytical run and at the end of the analytical sequence, or as stipulated in each analytical method.

6.2.2 Matrix Spikes and Matrix Spike Duplicates

Additional sample volumes for Matrix Spike (MS) and Matrix Spike Duplicate (MSD) QC samples will be collected in the field at a minimum frequency of one per twenty samples. MS and MSD samples will be listed on the COC for the analytical laboratory.

The MS samples are prepared by placing a known quantity of analytes into a field sample. The MS is then processed in a manner identical to the other samples. Percent recovery of each of the spiked compounds or analytes reflects the ability of the laboratory and method to accurately determine the quantity of the analyte in that particular sample (i.e., is a measure of accuracy in the specific sample matrix). Note that it does not reflect the ability to determine the analyte in other, even similar samples. If a quantity of the spiked analyte exists in the sample prior to addition of the spike, this quantity is subtracted from the matrix spike result in an effort to determine the quantity of the spike that has been "recovered."

The MSD samples prepared as QC checks on the precision of organic analyses are identical to MS samples. A second aliquot of the same field sample used for the MS is fortified with the same quantity of the spiking compounds and is processed in an identical manner. The results for the MS/MSD pair provide a measure of the precision of the determinations by assuring the availability of positive results for comparison.

6.2.3 Laboratory Duplicates

For inorganic analyses, a duplicate sample is prepared and analyzed by the laboratory in an effort to provide a measure of precision by comparing the RPD between the primary sample result and the duplicate sample result. Laboratory duplicates will be analyzed at the frequency of one set per 20 samples (minimum five percent frequency).

6.2.4 Surrogates Spikes

Surrogates are similar to matrix spikes and generally apply only to organic parameters. Surrogate compounds are added to the samples before extraction. The recovery of these surrogates aids the analysts in determining matrix effects on recovery of compounds in each sample and is a measure of accuracy. Surrogate spikes generally do not affect the routine sample results because the surrogate compounds are isotopically labeled.

6.2.5 Internal Standards

Internal standards are similar to analysis spikes and generally apply only to organic parameters and inorganic analyses by inductively coupled plasma. Internal standards are added to all samples (after preparation/extraction) and are used in an effort to determine the amount of variance in a measurement system due to transport, spectral, and other effects. Since the internal standard is a known quantity of analyte(s) generally not found in the environment, the results of the other analytes may be corrected for measurement system effects based upon the percent recovery of the internal standard.

6.2.6 Laboratory Control Samples

Laboratory control samples fall into two basic categories: samples run through the entire sample allocation, preparation, and analysis method (method or matrix controls) and samples run through only the analysis method (analysis or instrument controls). In either case, control samples are samples of known or certified concentration that are introduced at either the pre-preparation or post-preparation step of the method and carried from that point on through the rest of the method as a routine sample. Control samples are used in an effort to define either method (preparation plus instrument) or instrument accuracy. Examples of laboratory control samples are standard reference materials (SRMs), performance evaluation (PE) samples, laboratory control samples (LCS), and method control samples (MCS).

6.2.7 Analytical Batch

An analytical batch is a group of field and associated QC samples that are prepared (and preferably analyzed) within the same time period using the exact same method, techniques, materials, reagents, labware, etc. Generally, a laboratory analytical batch is defined as 20 or fewer field samples of the same matrix prepared and processed within the same time period. All associated quality control samples should be also prepared and analyzed within the same time period, and in addition to, the 20 or fewer field samples.

6.2.8 Standards and Reagents Preparation and Calibration Checks

Calibration standards are prepared in the laboratory by dissolving or mixing a known amount of nominally pure analyte in the appropriate matrix using volumetric containers. Calibration standards must be prepared from a standard source that is traceable to a certified primary reference material (National Bureau of Standards or other certifying agency). All calibration standards must be prepared so that the types and concentration of the reagents used in the standard preparation are equivalent to the types and concentration of the reagents used in preparing the samples to be analyzed. Calibration curves are then generated in an effort to quantify the field sample results by comparison of the field sample response against the calibration standard response.

Initial calibration and continuing calibration verification checks will be performed in an effort to determine that the instrument is capable of producing acceptable qualitative and quantitative data for the particular method being analyzed. Initial calibration is performed in an effort to demonstrate acceptable performance at the beginning of the analytical run and to verify the linearity of the instrument response within a specific concentration range. The continuing calibration is performed in an effort to ensure that the initial calibration is still valid for the instrument.

7. Document Records and Data Management

This section describes how project information will be managed, organized, and maintained in order to be used efficiently by project personnel. Procedures in this section outline data management from the point of generation to ultimate storage.

7.1 Field Data Records

Measurements and other information collected during various field activities will be recorded in the field logbook or on the appropriate field forms. The types of information that will be recorded may include, but are not limited to, the following:

- Sampling notes for all media;
- VOC field screening readings;
- Air monitoring readings;
- Groundwater quality field screening measurements;
- Field equipment calibration logs; and
- Monitoring well installation and boring logs.

All measurement data recorded in field logbooks or field forms will be reviewed by the Project Manager, or his/her designee, for completeness and clarity. Any discrepancies noted shall be resolved by the QAO and/or Project Manager. All calculation equations shall also be verified by the QAO and/or Project Manager and individual calculations shall be verified at a minimum frequency of ten percent (10%) by the QAO. Data package deliverables are not required for field data records.

7.2 Laboratory Data Package Deliverables

The laboratory will report analytical data results in the New York Analytical Services Protocol (ASP) Category B deliverable format for all samples collected as part of the post-remediation monitoring program. All other samples analyzed for the Site, including, but not limited to, samples collected for waste characterization, will be reported in New York ASP Category A deliverable format or format acceptable to the potential disposal facilities and/or State where they may be located.

The information provided in the two types of deliverables is summarized below.

Category A Data Deliverable as described in the most current New York ASP includes:

- a Sample Delivery Group Narrative;
- contract Lab Sample Information sheets;
- NYSDEC Data Package Summary Forms;
- CoC forms; and
- test analyses results (including TICs for analysis of VOCs and SVOCs).

Category B Data Deliverable includes the information provided for the Category A Data Deliverable outlined above, plus related QA/QC information and documentation consisting of:

- calibration standards;

- surrogate recoveries;
- blank results;
- spike recoveries;
- duplicate results;
- confirmation (lab check/QC) samples;
- internal standard area and retention time summary;
- chromatograms;
- raw data files; and
- other specific information described in the most recent NYSDEC ASP.

Note that a NYSDEC Category B Data Deliverable is required for the development of a DUSR.

7.3 Data Reporting Formats

The data reporting will include appropriate flags based upon the data validation functional guidelines. The data flags will include such items as: 1) concentration below required detection limit; 2) estimated concentration due to poor recovery below required detection limit; 3) estimated concentration due to poor spike recovery; and 4) concentration of any chemicals found in the laboratory blank. Selected data reviewer comments will also become part of the database to indicate whether the data are usable as a quantitative concentration, usable with caution as an estimated concentration, or unusable due to out-of-control QC results.

All data generated will be computerized in a database format organized in an effort to facilitate data review and evaluation. The data set(s) will be available for controlled access by the Project Manager, database coordinators and other authorized personnel.

7.4 Data Handling and Management

A central project file will be created and maintained. The Project Manager will store and archive essential project documents in hard copy and/or electronically, as appropriate. Key project documentation will be organized and categorized in an effort to facilitate ease of project file use. Long-term storage will be arranged after project completion and will comply with standard retention polices.

Data management and handling procedures, internal to the Primary Laboratory, will be detailed in the Primary Laboratory QAPP, which will include an outline of the flow of sample and data management from the time of receipt of samples at the laboratory to data reporting. The Primary Laboratory QAPP will also outline the data handling and management procedures completed upon receipt of laboratory data.

8. Data Validation

This section will describe the methods that will be applied for data validation and addresses methods for both field data and laboratory data. Additionally, this section will discuss the schedule for performance of data validation.

8.1 Field Data Validation

Field data validation will be accomplished by the efforts of the QAO and/or Project Manager. Field data validation includes ensuring that data was properly collected and handled according to the sampling procedures described in Section 3 of this QAPP to repeat data collection may be made by the Project Manager, if necessary, based upon the extent of the deficiencies and their importance in the overall context of the investigation.

8.2 Laboratory Data Validation

Validation of laboratory data will be performed by an independent third-party to be identified in advance of performing any sampling at the Site. Paper and/or electronic copies of the analytical data package will be submitted to the external data validator to review, and will include the reported sample results and batch-specific quality control data, including raw data back-up, in an effort to substantiate the reported values and verify that proper method-specific quality control was performed. In addition, calibration information will be included in an attempt to ensure acceptable instrument performance.

Data validation may be performed on select sets of data generated as part of the routine sampling activities. Data validation will be performed in accordance with the USEPA "Functional Guidelines for Data Validation" and with DER-10 Appendix 2B ("Guidance for Data Deliverables and Development of Data Usability Summary Reports"). The data reviewer will conduct a systematic review of the data for compliance with the established QC criteria based upon the results provided by the laboratory. An evaluation of data accuracy, precision, representativeness, and completeness, based upon criteria in Section 6, will be performed and presented in a DUSR.

The data validator will interact with the Project Manager and/or laboratory in an effort to correct data deficiencies. Decisions to repeat sample collection and analyses may be made by the Project Manager based upon the extent of the deficiencies and their importance in the overall context of the investigation.

After data validation has been completed, it is anticipated that some results may require that data qualifiers be added or changed. The database manager will work closely with the data validator in an effort to identify changes that need to be reflected in the database. Changes will be made by the database manager, with QA/QC checks performed by the Project Manager and QAO.

TABLE

Field and Laboratory QC Summary - Groundwater Sampling

Table 1. Field and Laboratory QC Summary - Groundwater Sampling

QC Check Type	Minimum Frequency	Use
Field QC		
Duplicate	per matrix per 20 samples or SD(	Precision
Trip Blank	1 per VOC cooler	Sensitivity
Field Blank	1 per day	Sensitivity
Laboratory QC		
Laboratory Control Sample	1 per matrix per SDG	Accuracy
Matrix Spike/Matrix Spike Duplicate/Matrix Duplicat	1 per matrix per SDG	Accuracy/Precision
Surrogate Spike	All organics samples	Accuracy
Laboratory Duplicate	1 per matrix per SDG	Precision
Method Blank	1 per matrix per SDG	Sensitivity

Notes:

* SDG - Sample Delivery Group - Assumes a single extraction or preparation

** Provided to lab by field sampling personnel

APPENDIX G

Site-Specific Health and Safety Plan

Site-Specific Health and Safety Plan

Former Cibro Petroleum Terminal Site
Island Park, New York

November 25, 2019

Prepared for:

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3. Site Plan

Appendices

A. Job Safety Analysis (JSA) Forms
B. Site-Specific Emergency Response Plan & Routes to Urgent Care and Emergency Medical Facilities
C. SDSs for Chemicals Used
D. Incident Investigation and Reporting Program
E. Heavy Equipment Exclusion Zone Policy
F. Subsurface Utility Clearance Management Program
G. Personal Protective Equipment 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 site personnel.

Emergency Contact Information			
Site Personnel			
Title	Contact		Telephone
Project Manager (PM)			
Site Health and Safety Officer (SHSO)			
Site Supervisor			
SHSO Alternate			
Outside Assistance			
Agency	Contact	Telephone	Address/Location
Ambulance/EMS			
Police			
Fire			

[INSERT Route to Hospital]

[INSERT Route to Urgent Care Facility]

[INSERT Emergency Response Site Map]

1. Introduction

[Do not make any changes to this section other than where highlighted.]

This site-specific Health and Safety Plan (HASP) has been prepared by [INSERT Contractor Name]. for use during the [Insert brief work description (e.g., sampling and remedial activities being performed] at the [Insert name of the site with associated company name] ("the Site"), located at [Insert address to site] (see 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 [Insert work activities being performed at the site, e.g. sampling and remedial] activities being performed at the Site by [INSERT Contractor Name] and to provide requirements and procedures for the protection of [INSERT Contractor Name] employees, subcontractor personnel, government oversight personnel, Site personnel, and the general public. It also addresses client- and Site-specific requirements for health and safety.

Implementation of this HASP is the joint responsibilities of the project manager, the site health and safety officer, and all field staff, with assistance from the project principal and the office health and safety manager. The project manager for this project is [INSERT NAME], the site health and safety officer is [INSERT NAME] and the site supervisor is [INSERT NAME].

1.1 Roles and Responsibilities

Overall Roles and Responsibilities (R&Rs) of [INSERT Contractor Name] personnel are provided in [INSERT Contractor Name] 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);
- serving as primary site liaison with public agencies and officials and site contractors.

Site Health and Safety Officer (SHSO)

The SHSO has 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;
- coordinating with the Site Supervisor(s) and others as necessary for safety and health efforts.

Site Supervisor

The Site Supervisor is responsible for field operations and reports to the Project Manager (PM). The Site Supervisor 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.

Site Workers

Site workers are responsible for complying with this HASP, using the proper PPE, reporting unsafe acts and conditions, and following the work and safety and health instructions of the Project Manager (PM), SHSO, and Site Supervisor.

2. Background

[This section should be brief providing the information needed for the on-site staff and management team to come away with a level of understanding of the site (i.e., enough to develop a preliminary sense of what the likely site-related physical, chemical, and biological hazards will be). This section and the next should set the table for the JSAs.

The following three subsections are for older, larger sites. If the site is easy to describe and has a limited history, Section 2 can be limited to a few paragraphs with everything blended together.]

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

Limit the site description to three paragraphs: (1) site nature and setting, (2) site features, (3) description of "the neighborhood" re: possible additional hazards (not sensitive receptors). This paragraph should describe the site's nature, physical setting, and bounds.

This paragraph should identify only the principal site features and those that represent physical, chemical, or biological hazards. Figure 3 is the site plan. When possible Figures 2 and 3 can be combined if there are few site details to show.

To the extent that additional hazards may result from public accessibility to the site or work areas, or perhaps from snakes, wild dogs, ticks, etc., discuss the "neighborhood" briefly.]

2.2 Site History

[Provide history only to the extent that there was change over time. If only one use ever, blend that in with the site description above. Again, keep the details to a minimum; the reader only needs to know what went on at the site that could lead to additional chemical hazards beyond those readily apparent based on current site usage.]

2.3 Known and Potential Releases of Hazardous Substances at the Site

[Include reported releases and known on-site waste disposal.]

3. Scope of Work

[This section should list the activities that are ongoing or those which are planned.

Non-routine activities that may be performed by onsite personnel include the following:

- [List these here.]

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 3.

4.2 Site Access

Access to 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 3. Entry and exit at these points is controlled by the following: [INSERT BRIEF DESCRIPTION]. When the site is not operating, access to the site is controlled by the following: [INSERT BRIEF DESCRIPTION].

4.3 Buddy System

[This section applies specifically to HAZWOPER sites. For low-risk activities such as groundwater monitoring wells sampling and gauging or where only one worker is onsite, show this section as Not Applicable.]

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 or other difficulties,
- Periodically checking the integrity of partner's PPE, and
- Notifying the site manager or other site personnel if emergency assistance is needed.

4.4 Site Communications

The following communication equipment is used to support on-site communication: [INSERT INFORMATION HERE e.g. cell phones, walkie-talkies, visual hand signals]

A current list of emergency contact numbers is posted in the following locations: [INSERT INFORMATION HERE]

4.5 Site Work Zones

[Include the below language if the scope of work requires the implementation of work zones.]

This site is divided into three (3) major zones, described below and shown in Figure 3. These zones are characterized by presence or absence of biological and chemical 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 the EZ. This zone will be clearly delineated by orange high visibility fencing. 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
- 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
- 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. The SZ will contain the [INSERT BRIEF DESCRIPTION (e.g., temporary project trailers and provides for field team communications and staging for emergency response.] 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

[For most sites, this section should not be changed at all. Change only as needed (e.g., if there are no biological hazards). Note that this subsection includes no discussions of preventative/protective measures to be taken to address the hazards identified. It's purely for identification of the hazards. The JSAs are where preventative / protective measures are discussed.]

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 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 ongoing 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. Site 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 Employee Notification of Hazards and Overall Site Information Program

The information in the JSAs and safety data sheets 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.

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 Emergency Response Site Map Figure 4. 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 site. If any worker cannot be accounted for, notification is given to 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 procedures outlined below. All work-place injury and illness situations require [INSERT Contractor Name] Project and Corporate Management Team to be notified when an injury / illness incident occurs, and communication with the contracted Occupational Health Care Management Provider, AllOne Health, is initiated. The Injury/Illness Notification Flowchart is provided below and within [INSERT Contractor Name] Incident Investigation and Reporting program included as Appendix D.

If onsite personnel require any medical treatment, the following steps will be taken:

a. Notify [INSERT Contractor Name] 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, immediately following the notifications provided above.

b. 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 location to [Insert Urgent Care/Hospital here] is included as Figure 5 and Figure 6.

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 Project Manager will perform a Loss Investigation (LI) and the Project Team will complete the final Loss Report. If a [INSERT Contractor Name] employee is involved in a vehicular incident, the employee must also complete the Acord Automobile Loss Notice.

6.4 Adverse Weather Conditions

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

- Potential for heat stress and heat-related injuries.
- Potential for cold stress and cold-related injuries.
- Treacherous weather-related conditions.
- Limited visibility.
- Electrical storm potential.

Site activities will be limited to daylight hours and acceptable weather conditions. Inclement working conditions include heavy rain, fog, high winds, and lightning. Observe daily weather reports and evacuate if necessary in case of inclement weather conditions.

6.5 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. Safety Procedures

This section of the HASP presents the specific safety procedures to be implemented during [INSERT Contractor Name] 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 [INSERT Contractor Name] Corporate Health and Safety Manual, which also must be followed in their entirely.

7.1 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 on site per OSHA 29 CFR 1910.120(e) and 29 CFR 1926.65(e). More specifically, all [INSERT Contractor Name], 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.

[INSERT Contractor Name] personnel training records are maintained in a corporate database with records available upon request from either the OHSM/SHSO/CHSM or Human Resources Department.

7.2 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.

7.3 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 that employees are familiar with this HASP and the information and requirements it contains as well as relevant JSAs. Additional briefings are provided as necessary to notify employees of any changes to this HASP as a result of information gathered during ongoing site characterization and analysis. 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.

7.4 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 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) and the following substance-specific requirements: [INSERT REGULATED MATERIAL (e.g., Lead, Benzene)]

7.4.1 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.

7.4.2 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, NY 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)
- Exposure monitoring results

7.4.3 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,
- Review of emergency treatment procedures and emergency contacts list to ensure they were site-specific, effective, and current.

7.5 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 hazards 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.

[INSERT Contractor Name] maintains a comprehensive written PPE program that addresses proper PPE selection, use, maintenance, storage, fit and inspection. PPE to be used at the Site will meet the appropriate American National Standards Institute (ANSI) standards and the following OSHA (General Industry) standards for minimum PPE requirements.

The minimum level of PPE for entry onto the Site is [INSERT LEVEL HERE (e.g., Level D), if assistance is required contact OHSM/CHSM] The following equipment shall be worn:

- Work uniform (long pants, sleeved shirt)
- Hard hat
- Steel or composite toe work boots
- 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)
- 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 immediately communicated to all [INSERT Contractor Name] personnel and subcontractors as applicable. PPE is used in accordance with manufacturer's recommendations.

7.6 Monitoring

An air monitoring program is important to the safety of on- and off-Site personnel. 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 and approximate temperature during all invasive site activities. This survey will be conducted with the appropriate air monitoring instrument(s) as warranted by the field activity. Once this survey has been complete, any change in the type of PPE will be determined.

Air monitoring may be performed to verify that the proper level of equipment is used and to determine if increased protection or work stoppage is required. The following equipment may be used to monitor conditions:

[INSERT EQUIPMENT HERE (e.g., Photoionization Detector (PID) and Lower Explosion Limit / Oxygen Meter (LEL/O_2)]

Monitoring equipment will be calibrated in accordance with applicable regulatory requirements and manufacturer specifications.

Below are monitoring action levels for Site-specific chemicals of concern. In the event that 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 (e.g., client, board of health, regulators, etc.).

OVM/Multi-gas Meter Action Levels

Action Levels for Respiratory Protection	
OVM Reading in Breathing Zone (ppm)	
<5	No Action
≥5 - <25	Level C
≥25	Cease Field Operations
Multi-gas Reading in Breathing Zone (%)	
LEL ≥2	Cease Field Operations
O_2 <19.5 or >21.5	Cease Field Operations

7.7 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 [INSERT Contractor Name] Daily Tailgate Health and Safety Meeting Log/Daily Site Safety Checklist, and all completed forms will become a part of the project file.

7.8 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 no limited to, chemical/product transfer points and handling.

7.8.1 Initial Spill Notification and Response

Any worker who discovers a hazardous substance spill will immediately notify [INSERT NAME/TITLE]. 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.

7.8.2 Spill Evaluation and Response

[INSERT NAME/TITLE] 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.

7.9 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 contamination reduction zone at this site.

7.9.1 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 Support Zone 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.

7.9.2 Decontamination Procedures for Equipment

All tools, equipment, and machinery from the Exclusion Zone or CRZ are decontaminated in the CRZ prior to removal to the Support Zone. 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 Support Zone 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 Exclusion Zone 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.

The following items may be used to decontaminate equipment:

- Fresh water rinse;
- Non-phosphorus detergent wash;
- Distilled water rinse;
- Acetone rinse;
- Distilled water rinse; and
- A steam cleaner or pressure washer (heavy equipment only)

7.9.3 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.

7.10 Confined Space Entry

[State whether or not confined space entry will be performed.]

The following is a list of the safety requirements for confined space entry at the Site:

- [INSERT Contractor Name] **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 [INSERT Contractor Name] 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 1910.146.

7.11 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.

[Include any client and site-specific requirements here.]

7.12 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 CHSM 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, etc.

7.13 Activity-Specific

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. 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: [INSERT NAME]

Name Printed	Signature	Date

9. Approvals

By their signature, the undersigned certify that this HASP is approved and will be utilized at the [INSERT NAME] Facility.

[INSERT NAME] – Site Health and Safety Officer	Date
[INSERT NAME] - Office Health and Safety Manager	Date
[INSERT NAME] – Project Manager	Date
[INSERT NAME] – Project Principal	Date

APPENDICES

A. OSHA Poster
B. Material Safety Data Sheets
C. JSA Forms
D. Heat and Cold Stress Guidelines
E. Health and Safety Briefing Tailgate Meeting Form
F. Medical Data Form
G. Generic Community Air Monitoring Plan
H. Accident Report and Investigation Form
I. Near-Loss Reporting Form
J. OSHA Log

APPENDIX A

OSHA Poster

Job Safety and Health

It's the law!

OSHA
Occupational Safety and Health Administration
U.S. Department of Labor

EMPLOYEES:

- You have the right to notify your employer or OSHA about workplace hazards. You may ask OSHA to keep your name confidential.
- You have the right to request an OSHA inspection if you believe that there are unsafe and unhealthful conditions in your workplace. You or your representative may participate in that inspection.
- You can file a complaint with OSHA within 30 days of retaliation or discrimination by your employer for making safety and health complaints or for exercising your rights under the *OSH Act*.
- You have the right to see OSHA citations issued to your employer. Your employer must post the citations at or near the place of the alleged violations.
- Your employer must correct workplace hazards by the date indicated on the citation and must certify that these hazards have been reduced or eliminated.
- You have the right to copies of your medical records and records of your exposures to toxic and harmful substances or conditions.
- Your employer must post this notice in your workplace.
- You must comply with all occupational safety and health standards issued under the *OSH Act* that apply to your own actions and conduct on the job.

EMPLOYERS:

- You must furnish your employees a place of employment free from recognized hazards.
- You must comply with the occupational safety and health standards issued under the *OSH Act*.

This free poster available from OSHA –
The Best Resource for Safety and Health

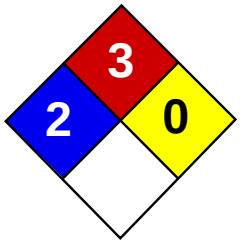
Free assistance in identifying and correcting hazards or complying with standards is available to employers, without citation or penalty, through OSHA-supported consultation programs in each state.

1-800-321-OSHA
www.osha.gov

OSHA 3165-12-06R

APPENDIX B

Material Safety Data Sheets



Health	2
Fire	3
Reactivity	0
Personal Protection	H

Material Safety Data Sheet
Benzene MSDS

Section 1: Chemical Product and Company Identification

Product Name: Benzene

Catalog Codes: SLB1564, SLB3055, SLB2881

CAS#: 71-43-2

RTECS: CY1400000

TSCA: TSCA 8(b) inventory: Benzene

CI#: Not available.

Synonym: Benzol; Benzine

Chemical Name: Benzene

Chemical Formula: C6-H6

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Benzene	71-43-2	100

Toxicological Data on Ingredients: Benzene: ORAL (LD50): Acute: 930 mg/kg [Rat]. 4700 mg/kg [Mouse]. DERMAL (LD50): Acute: >9400 mg/kg [Rabbit]. VAPOR (LC50): Acute: 10000 ppm 7 hours [Rat].

Section 3: Hazards Identification

Potential Acute Health Effects:
Very hazardous in case of eye contact (irritant), of inhalation. Hazardous in case of skin contact (irritant, permeator), of ingestion. Inflammation of the eye is characterized by redness, watering, and itching.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Classified A1 (Confirmed for human.) by ACGIH, 1 (Proven for human.) by IARC. MUTAGENIC EFFECTS: Classified POSSIBLE for human. Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/female [POSSIBLE]. The substance is toxic to blood, bone marrow, central nervous system (CNS). The substance may be toxic to liver, Urinary System. Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. WARM water MUST be used. Get medical attention immediately.

Skin Contact:
In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms appear.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 497.78°C (928°F)

Flash Points: CLOSED CUP: -11.1°C (12°F). (Setaflash)

Flammable Limits: LOWER: 1.2% UPPER: 7.8%

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances:
Highly flammable in presence of open flames and sparks, of heat. Slightly flammable to flammable in presence of oxidizing materials. Non-flammable in presence of shocks.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available. Explosive in presence of oxidizing materials, of acids.

Fire Fighting Media and Instructions:
Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog.

Special Remarks on Fire Hazards:
Extremely flammable liquid and vapor. Vapor may cause flash fire. Reacts on contact with iodine heptafluoride gas. Dioxygenyl tetrafluoroborate is as very powferful oxidant. The addition of a small particle to small samples of benzene, at ambient temperature, causes ignition. Contact with sodium peroxide with benzene causes ignition. Benzene ignites in contact with powdered chromic anhydride. Virgorous or incandescent reaction with hydrogen + Raney nickel (above 210 C) and bromine trifluoride.

Special Remarks on Explosion Hazards:
Benzene vapors + chlorine and light causes explosion. Reacts explosively with bromine pentafluoride, chlorine, chlorine trifluoride, diborane, nitric acid, nitryl perchlorate, liquid oxygen, ozone, silver perchlorate. Benzene + pentafluoride and methoxide (from arsenic pentafluoride and potassium methoxide) in trichlorotrifluoroethane causes explosion. Interaction

of nitryl perchlorate with benzene gave a slight explosion and flash. The solution of permanganic acid (or its explosive anhydride, dimaganese heptoxide) produced by interaction of permanganates and sulfuric acid will explode on contact with benzene. Peroxodisulfuric acid is a very powferful oxidant. Uncontrolled contact with benzene may cause explosion. Mixtures of peroxomonsulfuric acid with benzene explodes.

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill:
Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up.. Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, acids.

Storage:
Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 0.5 STEL: 2.5 (ppm) from ACGIH (TLV) [United States] TWA: 1.6 STEL: 8 (mg/m3) from ACGIH (TLV) [United States] TWA: 0.1 STEL: 1 from NIOSH TWA: 1 STEL: 5 (ppm) from OSHA (PEL) [United States] TWA: 10 (ppm) from OSHA (PEL) [United States] TWA: 3 (ppm) [United Kingdom (UK)] TWA: 1.6 (mg/m3) [United Kingdom (UK)] TWA: 1 (ppm) [Canada] TWA: 3.2 (mg/m3) [Canada] TWA: 0.5 (ppm) [Canada]Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor:
Aromatic. Gasoline-like, rather pleasant. (Strong.)

Taste: Not available.

Molecular Weight: 78.11 g/mole

Color: Clear Colorless. Colorless to light yellow.

pH (1% soln/water): Not available.

Boiling Point: 80.1 (176.2°F)

Melting Point: 5.5°C (41.9°F)

Critical Temperature: 288.9°C (552°F)

Specific Gravity: 0.8787 @ 15 C (Water = 1)

Vapor Pressure: 10 kPa (@ 20°C)

Vapor Density: 2.8 (Air = 1)

Volatility: Not available.

Odor Threshold: 4.68 ppm

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 2.1

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, diethyl ether, acetone.

Solubility:
Miscible in alcohol, chloroform, carbon disulfide oils, carbon tetrachloride, glacial acetic acid, diethyl ether, acetone. Very slightly soluble in cold water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Heat, ignition sources, incompatibles.

Incompatibility with various substances: Highly reactive with oxidizing agents, acids.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity:
Benzene vapors + chlorine and light causes explosion. Reacts explosively with bromine pentafluoride, chlorine, chlorine trifluoride, diborane, nitric acid, nitryl perchlorate, liquid oxygen, ozone, silver perchlorate. Benzene + pentafluoride and methoxide (from arsenic pentafluoride and potassium methoxide) in trichlorotrifluoroethane causes explosion. Interaction of nitryl perchlorate with benzene gave a slight explosion and flash. The solution of permanganic acid (or its explosive anhydride, dimaganese heptoxide) produced by interaction of permanganates and sulfuric acid will explode on contact with benzene. Peroxodisulfuric acid is a very powferful oxidant. Uncontrolled contact with benzene may cause explosion. Mixtures of peroxomonsulfuric acid with benzene explodes.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation.

Toxicity to Animals:
WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 930 mg/kg [Rat]. Acute dermal toxicity (LD50): >9400 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 10000 7 hours [Rat].

Chronic Effects on Humans:

CARCINOGENIC EFFECTS: Classified A1 (Confirmed for human.) by ACGIH, 1 (Proven for human.) by IARC. MUTAGENIC EFFECTS: Classified POSSIBLE for human. Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/female [POSSIBLE]. Causes damage to the following organs: blood, bone marrow, central nervous system (CNS). May cause damage to the following organs: liver, Urinary System.

Other Toxic Effects on Humans:
Very hazardous in case of inhalation. Hazardous in case of skin contact (irritant, permeator), of ingestion.

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans:
May cause adverse reproductive effects (female fertility, Embryotoxic and/or foetotoxic in animal) and birth defects. May affect genetic material (mutagenic). May cause cancer (tumorigenic, leukemia)) Human: passes the placental barrier, detected in maternal milk.

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: Skin: Causes skin irritation. It can be absorbed through intact skin and affect the liver, blood, metabolism,and urinary system. Eyes: Causes eye irritation. Inhalation: Causes respiratory tract and mucous membrane irritation. Can be absorbed through the lungs. May affect behavior/Central and Peripheral nervous systems (somnolence, muscle weakness, general anesthetic, and other symptoms similar to ingestion), gastrointestinal tract (nausea), blood metabolism, urinary system. Ingestion: May be harmful if swallowed. May cause gastrointestinal tract irritation including vomiting. May affect behavior/Central and Peripheral nervous systems (convulsions, seizures, tremor, irritability, initial CNS stimulation followed by depression, loss of coordination, dizziness, headache, weakness, pallor, flushing), respiration (breathlessness and chest constriction), cardiovascular system, (shallow/rapid pulse), and blood.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: CLASS 3: Flammable liquid.

Identification: : Benzene UNNA: 1114 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Benzene California prop. 65 (no significant risk level): Benzene: 0.007 mg/day (value) California prop. 65: This product contains the following ingredients

for which the State of California has found to cause cancer which would require a warning under the statute: Benzene Connecticut carcinogen reporting list.: Benzene Connecticut hazardous material survey.: Benzene Illinois toxic substances disclosure to employee act: Benzene Illinois chemical safety act: Benzene New York release reporting list: Benzene Rhode Island RTK hazardous substances: Benzene Pennsylvania RTK: Benzene Minnesota: Benzene Michigan critical material: Benzene Massachusetts RTK: Benzene Massachusetts spill list: Benzene New Jersey: Benzene New Jersey spill list: Benzene Louisiana spill reporting: Benzene California Director's list of Hazardous Substances: Benzene TSCA 8(b) inventory: Benzene SARA 313 toxic chemical notification and release reporting: Benzene CERCLA: Hazardous substances.: Benzene: 10 lbs. (4.536 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):
R11- Highly flammable. R22- Harmful if swallowed. R38- Irritating to skin. R41- Risk of serious damage to eyes. R45- May cause cancer. R62- Possible risk of impaired fertility. S2- Keep out of the reach of children. S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S39- Wear eye/face protection. S46- If swallowed, seek medical advice immediately and show this container or label. S53- Avoid exposure - obtain special instructions before use.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 3

Reactivity: 0

Personal Protection: h

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 3

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

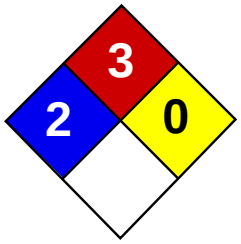
References: Not available.

Other Special Considerations: Not available.

Created: 10/10/2005 08:35 PM

Last Updated: 11/06/2008 12:00 PM

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall ScienceLab.com be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if ScienceLab.com has been advised of the possibility of such damages.



Health	2
Fire	3
Reactivity	0
Personal Protection	H

Material Safety Data Sheet
Ethylbenzene MSDS

Section 1: Chemical Product and Company Identification

Product Name: Ethylbenzene

Catalog Codes: SLE2044

CAS#: 100-41-4

RTECS: DA0700000

TSCA: TSCA 8(b) inventory: Ethylbenzene

CI#: Not available.

Synonym: Ethyl Benzene; Ethylbenzol; Phenylethane

Chemical Name: Ethylbenzene

Chemical Formula: C8H10

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Ethylbenzene	100-41-4	100

Toxicological Data on Ingredients: Ethylbenzene: ORAL (LD50): Acute: 3500 mg/kg [Rat].

Section 3: Hazards Identification

Potential Acute Health Effects:
Hazardous in case of eye contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant, permeator).

Potential Chronic Health Effects:
Slightly hazardous in case of skin contact (irritant, sensitizer). CARCINOGENIC EFFECTS: Classified 2B (Possible for human.) by IARC. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. WARM water MUST be used. Get medical attention.

Skin Contact: Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops.

Serious Skin Contact: Not available.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 432°C (809.6°F)

Flash Points:
CLOSED CUP: 15°C (59°F). (Tagliabue.) OPEN CUP: 26.667°C (80°F) (Cleveland) (CHRIS, 2001) CLOSED CUP: 12.8 C (55 F) (Bingham et al, 2001; NIOSH, 2001) CLOSED CUP: 21 C (70 F) (NFPA)

Flammable Limits: LOWER: 0.8% - 1.6%UPPER: 6.7% - 7%

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances: Highly flammable in presence of open flames and sparks, of heat.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available. Slightly explosive in presence of heat.

Fire Fighting Media and Instructions:
Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog.

Special Remarks on Fire Hazards:
Vapor may travel considerable distance to source of ignition and flash back. Vapors may form explosive mixtures with air. When heated to decomposition it emits acrid smoke and irritating fumes.

Special Remarks on Explosion Hazards: Vapors may form explosive mixtures in air.

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill:
Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Avoid contact with eyes. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents.

Storage:
Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame). Sensitive to light. Store in light-resistant containers.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 100 STEL: 125 (ppm) from OSHA (PEL) [United States] TWA: 435 STEL: 545 from OSHA (PEL) [United States] TWA: 435 STEL: 545 (mg/m3) from NIOSH [United States] TWA: 100 STEL: 125 (ppm) from NIOSH [United States] TWA: 100 STEL: 125 (ppm) from ACGIH (TLV) [United States] TWA: 100 STEL: 125 (ppm) [United Kingdom (UK)] TWA: 100 STEL: 125 (ppm) [Belgium] TWA: 100 STEL: 125 (ppm) [Finland] TWA: 50 (ppm) [Norway] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Sweetish. Gasoline-like. Aromatic.

Taste: Not available.

Molecular Weight: 106.16 g/mole

Color: Colorless.

pH (1% soln/water): Not available.

Boiling Point: 136°C (276.8°F)

Melting Point: -94.9 (-138.8°F)

Critical Temperature: 617.15°C (1142.9°F)

Specific Gravity: 0.867 (Water = 1)

Vapor Pressure: 0.9 kPa (@ 20°C)

Vapor Density: 3.66 (Air = 1)

Volatility: 100% (v/v).

Odor Threshold: 140 ppm

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 3.1

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, diethyl ether.

Solubility:
Easily soluble in diethyl ether. Very slightly soluble in cold water or practically insoluble in water. Soluble in all proportions in Ethyl alcohol. Soluble in Carbon tetrachloride, Benzene. Insoluble in Ammonia. Slightly soluble in Chloroform. Solubility in Water: 169 mg/l @ 25 deg. C.; 0.014 g/100 ml @ 15 deg. C.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Heat, ingnition sources (flames, sparks, static), incompatible materials, light

Incompatibility with various substances: Reactive with oxidizing agents.

Corrosivity: Not considered to be corrosive for metals and glass.

Special Remarks on Reactivity:
Can react vigorously with oxidizing materials. Sensitive to light.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Inhalation.

Toxicity to Animals: Acute oral toxicity (LD50): 3500 mg/kg [Rat].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified 2B (Possible for human.) by IARC. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. May cause damage to the following organs: central nervous system (CNS).

Other Toxic Effects on Humans:
Hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant, permeator).

Special Remarks on Toxicity to Animals:
Lethal Dose/Conc 50% Kill: LD50 [Rabbit] - Route: Skin; Dose: 17800 ul/kg Lowest Published Lethal Dose/Conc: LDL[Rat] - Route: Inhalation (vapor); Dose: 4000 ppm/4 H

Special Remarks on Chronic Effects on Humans:
May cause adverse reproductive effects and birth defects (teratogenic) based on animal test data. May cause cancer based on animals data. IARC evidence for carcinogenicity in animals is sufficient. IARC evidence of carcinogenicity in humans inadequate. May affect genetic material (mutagenic).

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: Skin: Can cause mild skin irritation. It can be absorbed through intact skin. Eyes: Contact with vapor or liquid can cause severe eye irritation depending on concentration. It may also cause conjunctivitis. At a vapor exposure level of 85 - 200 ppm , it is mildly and transiently irritating to the eyes; 1000 ppm causes further irritation and tearing; 2000 ppm results in immediate and severe irritation and tearing; 5,000 ppm is intolerable (ACGIH, 1991; Clayton and Clayton, 1994). Standard draize test for eye irritation using 500 mg resulted in severe irritation (RTECS) Inhalation: Exposure to high concentrations can cause nasal, mucous membrane and respiratory tract irritation and can also result in chest constriction and, trouble breathing, respiratory failure, and even death. It can also affect behavior/Central Nervous System. The effective dose for CNS depression in experimental animals was 10,000 ppm (ACGIH, 1991). Symptoms of CNS depression include

headache, nausea, weakness, dizziness, vertigo, irritability, fatigue, lightheadedness, sleepiness, tremor, loss of coordination, judgement and conciousness, coma, and death. It can also cause pulmonary edema. Inhalation of 85 ppm can produce fatigue, insomnia, headache, and mild irritation of the respiratory tract (Haley & Berndt, 1987). Ingestion: Do not drink, pipet or siphon by mouth. May cause gastroinestinal/digestive tract irritation with Abdominal pain, nausea, vomiting. Ethylbenzene is a pulmonary aspiration hazard. Pulmonary aspiration of even small amounts of the liquid may cause fatal pneumonitis. It may also affect behavior/central nervous system with

Section 12: Ecological Information

Ecotoxicity:
Ecotoxicity in water (LC50): 14 mg/l 96 hours [Fish (Trout)] (static). 12.1 mg/l 96 hours [Fish (Fathead Minnow)] (flow-through)]. 150 mg/l 96 hours [Fish (Blue Gill/Sunfish)] (static). 275 mg/l 96 hours [Fish (Sheepshead Minnow)]. 42.3 mg/l 96 hours [Fish (Fathead Minnow)](soft water). 87.6mg/l 96 hours [Shrimp].

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: CLASS 3: Flammable liquid.

Identification: : Ethylbenzene UNNA: 1175 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
Connecticut hazardous material survey.: Ethylbenzene Illinois toxic substances disclosure to employee act: Ethylbenzene Illinois chemical safety act: Ethylbenzene New York release reporting list: Ethylbenzene Rhode Island RTK hazardous substances: Ethylbenzene Pennsylvania RTK: Ethylbenzene Minnesota: Ethylbenzene Massachusetts RTK: Ethylbenzene Massachusetts spill list: Ethylbenzene New Jersey: Ethylbenzene New Jersey spill list: Ethylbenzene Louisiana spill reporting: Ethylbenzene California Director's List of Hazardous Substances: Ethylbenzene TSCA 8(b) inventory: Ethylbenzene TSCA 4(a) proposed test rules: Ethylbenzene TSCA 8(d) H and S data reporting: Ethylbenzene: Effective Date: 6/19/87; Sunset Date: 6/19/97 SARA 313 toxic chemical notification and release reporting: Ethylbenzene

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-2A: Material causing other toxic effects (VERY TOXIC). CLASSE D-2B: Material causing other toxic effects (TOXIC).

DSCL (EEC):
R11- Highly flammable. R20- Harmful by inhalation. S16- Keep away from sources of ignition - No smoking. S24/25- Avoid contact with skin and eyes. S29- Do not empty into drains.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 3

Reactivity: 0

Personal Protection: h

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 3

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

References:
-Manufacturer's Material Safety Data Sheet. -Fire Protection Guide to Hazardous Materials, 13th ed., Nationial Fire Protection Association (NFPA) -Registry of Toxic Effects of Chemical Substances (RTECS) -Chemical Hazard Response Information System (CHRIS) -Hazardous Substance Data Bank (HSDB) -New Jersey Hazardous Substance Fact Sheet -Ariel Global View -Reprotext System

Other Special Considerations: Not available.

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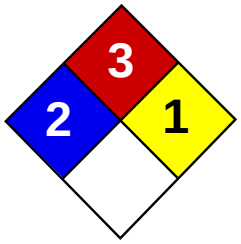

Health	2
Fire	3
Reactivity	0
Personal Protection	H

Material Safety Data Sheet
Cumene MSDS

Section 1: Chemical Product and Company Identification

Product Name: Cumene

Catalog Codes: SLC3052

CAS#: 98-82-8

RTECS: GR8575000

TSCA: TSCA 8(b) inventory: Cumene

CI#: Not available.

Synonym: Isopropyl benzene; Cumol; 2-Phenyl propane; (1-Methylethyl)benzene

Chemical Name: Isopropylbenzene

Chemical Formula: C6H5CH(CH3)2

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Cumene	98-82-8	100

Toxicological Data on Ingredients: Cumene: ORAL (LD50): Acute: 1400 mg/kg [Rat]. 12750 mg/kg [Mouse]. DERMAL (LD50): Acute: 12300 mg/kg [Rabbit].

Section 3: Hazards Identification

Potential Acute Health Effects:
Very hazardous in case of skin contact (irritant, permeator), of eye contact (irritant), of ingestion, of inhalation. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Potential Chronic Health Effects:
Very hazardous in case of skin contact (permeator). CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance is toxic to lungs, the nervous system, mucous membranes. Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Do not use an eye ointment. Seek medical attention.

Skin Contact:
After contact with skin, wash immediately with plenty of water. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Cover the irritated skin with an emollient. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation: Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Ingestion:
Do not induce vomiting. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 424°C (795.2°F)

Flash Points: CLOSED CUP: 36°C (96.8°F). OPEN CUP: 44°C (111.2°F).

Flammable Limits: LOWER: 0.9% UPPER: 6.5%

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances: Flammable in presence of open flames and sparks.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill:
Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all ignition sources. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapour/spray. In case of insufficient ventilation, wear suitable respiratory equipment If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes

Storage:
Flammable materials should be stored in a separate safety storage cabinet or room. Keep away from heat. Keep away from sources of ignition. Keep container tightly closed. Keep in a cool, well-ventilated place. Ground all equipment containing material. A refrigerated room would be preferable for materials with a flash point lower than 37.8°C (100°F).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 50 CEIL: 75 (ppm) TWA: 245 CEIL: 365 (mg/m3) Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Not available.

Taste: Not available.

Molecular Weight: 120.2 g/mole

Color: Clear Colorless.

pH (1% soln/water): Not available.

Boiling Point: 152.4°C (306.3°F)

Melting Point: -96°C (-140.8°F)

Critical Temperature: Not available.

Specific Gravity: 0.862 (Water = 1)

Vapor Pressure: 8 mm of Hg (@ 20°C)

Vapor Density: 4.14 (Air = 1)

Volatility: Not available.

Odor Threshold: 1.2 ppm

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 3.7

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility: Very slightly soluble in cold water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Not available.

Incompatibility with various substances: Not available.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: No.

Section 11: Toxicological Information

Routes of Entry: Dermal contact. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:
Acute oral toxicity (LD50): 1400 mg/kg [Rat]. Acute dermal toxicity (LD50): 12300 mg/kg [Rabbit].

Chronic Effects on Humans: The substance is toxic to lungs, the nervous system, mucous membranes.

Other Toxic Effects on Humans: Very hazardous in case of skin contact (irritant, permeator), of ingestion, of inhalation.

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans: Not available.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are more toxic.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Section 14: Transport Information

DOT Classification: Class 3: Flammable liquid.

Identification: : Isopropylbenzene : UN1918 PG: III

Special Provisions for Transport: Marine Pollutant

Section 15: Other Regulatory Information

Federal and State Regulations:
Pennsylvania RTK: Cumene Massachusetts RTK: Cumene TSCA 8(b) inventory: Cumene SARA 313 toxic chemical notification and release reporting: Cumene CERCLA: Hazardous substances.: Cumene

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications:

WHMIS (Canada):
CLASS B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F).

DSCL (EEC):
R10- Flammable. R22- Harmful if swallowed. R38- Irritating to skin. R41- Risk of serious damage to eyes.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 3

Reactivity: 0

Personal Protection: h

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 3

Reactivity: 1

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

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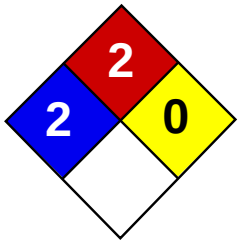

Health	2
Fire	2
Reactivity	0
Personal Protection	E

Material Safety Data Sheet
Naphthalene MSDS

Section 1: Chemical Product and Company Identification

Product Name: Naphthalene

Catalog Codes: SLN1789, SLN2401

CAS#: 91-20-3

RTECS: QJ0525000

TSCA: TSCA 8(b) inventory: Naphthalene

CI#: Not available.

Synonym:

Chemical Name: Not available.

Chemical Formula: C10H8

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Naphthalene	91-20-3	100

Toxicological Data on Ingredients: Naphthalene: ORAL (LD50): Acute: 490 mg/kg [Rat]. 533 mg/kg [Mouse]. 1200 mg/kg [Guinea pig]. DERMAL (LD50): Acute: 20001 mg/kg [Rabbit]. VAPOR (LC50): Acute: 170 ppm 4 hour(s) [Rat].

Section 3: Hazards Identification

Potential Acute Health Effects:
Very hazardous in case of ingestion. Hazardous in case of eye contact (irritant), of inhalation. Slightly hazardous in case of skin contact (irritant, permeator). Severe over-exposure can result in death.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Classified Development toxin [POSSIBLE]. The substance is toxic to blood, kidneys, the nervous system, the reproductive system, liver, mucous membranes, gastrointestinal tract, upper respiratory tract, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage. Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Do not use an eye ointment. Seek medical attention.

Skin Contact:
After contact with skin, wash immediately with plenty of water. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Cover the irritated skin with an emollient. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.

Serious Skin Contact: Not available.

Inhalation: Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion:
Do not induce vomiting. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 567°C (1052.6°F)

Flash Points: CLOSED CUP: 88°C (190.4°F). OPEN CUP: 79°C (174.2°F).

Flammable Limits: LOWER: 0.9% UPPER: 5.9%

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances: Not available.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
Flammable solid. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill: Use appropriate tools to put the spilled solid in a convenient waste disposal container.

Large Spill:
Flammable solid. Stop leak if without risk. Do not touch spilled material. Use water spray curtain to divert vapor drift. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all ignition sources. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe dust. Avoid contact with eyes Wear suitable protective clothing In case of insufficient ventilation, wear suitable respiratory equipment If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents.

Storage:
Flammable materials should be stored in a separate safety storage cabinet or room. Keep away from heat. Keep away from sources of ignition. Keep container tightly closed. Keep in a cool, well-ventilated place. Ground all equipment containing material. Keep container dry. Keep in a cool place.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection:
Splash goggles. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
Israel: TWA: 10 (ppm) TWA: 10 STEL: 15 (ppm) from ACGIH (TLV) [1995] TWA: 52 STEL: 79 (mg/m3) from ACGIH [1995]
Australia: STEL: 15 (ppm) Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid. (Crystalline solid.)

Odor: Aromatic.

Taste: Not available.

Molecular Weight: 128.19 g/mole

Color: White.

pH (1% soln/water): Not available.

Boiling Point: 218°C (424.4°F)

Melting Point: 80.2°C (176.4°F)

Critical Temperature: Not available.

Specific Gravity: 1.162 (Water = 1)

Vapor Pressure: Not applicable.

Vapor Density: 4.4 (Air = 1)

Volatility: Not available.

Odor Threshold: 0.038 ppm

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties:
Partially dispersed in hot water, methanol, n-octanol. Very slightly dispersed in cold water. See solubility in methanol, n-octanol.

Solubility:
Partially soluble in methanol, n-octanol. Very slightly soluble in cold water, hot water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Not available.

Incompatibility with various substances: Highly reactive with oxidizing agents.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: May attack some forms of rubber and plastic

Polymerization: No.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:
WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 490 mg/kg [Rat]. Acute dermal toxicity (LD50): 20001 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 170 ppm 4 hour(s) [Rat].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH. DEVELOPMENTAL TOXICITY: Classified Development toxin [POSSIBLE]. The substance is toxic to blood, kidneys, the nervous system, the reproductive system, liver, mucous membranes, gastrointestinal tract, upper respiratory tract, central nervous system (CNS).

Other Toxic Effects on Humans:
Very hazardous in case of ingestion. Hazardous in case of inhalation. Slightly hazardous in case of skin contact (irritant, permeator).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans: Not available.

Section 12: Ecological Information

Ecotoxicity: Ecotoxicity in water (LC50): 305.2 ppm 96 hour(s) [Trout].

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are more toxic.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Section 14: Transport Information

DOT Classification: CLASS 4.1: Flammable solid.

Identification: : Naphthalene, refined : UN1334 PG: III

Special Provisions for Transport: Marine Pollutant

Section 15: Other Regulatory Information

Federal and State Regulations:
Rhode Island RTK hazardous substances: Naphthalene Pennsylvania RTK: Naphthalene Florida: Naphthalene Minnesota: Naphthalene Massachusetts RTK: Naphthalene TSCA 8(b) inventory: Naphthalene TSCA 8(a) PAIR: Naphthalene TSCA 8(d) H and S data reporting: Naphthalene: 06/01/87 SARA 313 toxic chemical notification and release reporting: Naphthalene: 1% CERCLA: Hazardous substances.: Naphthalene: 100 lbs. (45.36 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS B-4: Flammable solid. CLASS D-1B: Material causing immediate and serious toxic effects (TOXIC). CLASS D-2B: Material causing other toxic effects (TOXIC).

DSCL (EEC):
R36- Irritating to eyes. R40- Possible risks of irreversible effects. R48/22- Harmful: danger of serious damage to health by prolonged exposure if swallowed. R48/23- Toxic: danger of serious damage to health by prolonged exposure through inhalation. R63- Possible risk of harm to the unborn child.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 2

Reactivity: 0

Personal Protection: E

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 2

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

Created: 10/11/2005 01:30 PM

Last Updated: 11/06/2008 12:00 PM

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MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MATHESON TRI-GAS, INC.
150 Allen Road Suite 302
Basking Ridge, New Jersey 07920
Information: 1-800-416-2505

Emergency Contact:
CHEMTREC 1-800-424-9300
Calls Originating Outside the US:
703-527-3887 (Collect Calls Accepted)

SUBSTANCE: BUTYL BENZENE

TRADE NAMES/SYNONYMS:
MTG MSDS 139; BUTYLBENZENE; 1-PHENYLBUTANE; N-BUTYLBENZENE; UN 2709; MAT03530; RTECS CY9070000

CHEMICAL FAMILY: hydrocarbons, aromatic

CREATION DATE: Jan 24 1989
REVISION DATE: Dec 11 2008

2. COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENT: BUTYL BENZENE
CAS NUMBER: 104-51-8
PERCENTAGE: 100

3. HAZARDS IDENTIFICATION

NFPA RATINGS (SCALE 0-4): HEALTH=2 FIRE=2 REACTIVITY=0

EMERGENCY OVERVIEW:
COLOR: colorless
PHYSICAL FORM: liquid
ODOR: odorless
MAJOR HEALTH HAZARDS: respiratory tract irritation, skin irritation, eye irritation, central nervous system depression
PHYSICAL HAZARDS: Combustible liquid and vapor.

POTENTIAL HEALTH EFFECTS:
INHALATION:
SHORT TERM EXPOSURE: irritation, vomiting, headache, symptoms of drunkenness, coma

LONG TERM EXPOSURE: lung damage
SKIN CONTACT:
SHORT TERM EXPOSURE: irritation, headache, symptoms of drunkenness
LONG TERM EXPOSURE: same as effects reported in short term exposure
EYE CONTACT:
SHORT TERM EXPOSURE: irritation, tearing
LONG TERM EXPOSURE: same as effects reported in short term exposure
INGESTION:
SHORT TERM EXPOSURE: vomiting, headache, symptoms of drunkenness, coma
LONG TERM EXPOSURE: lung damage

4. FIRST AID MEASURES

INHALATION: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

SKIN CONTACT: Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

EYE CONTACT: Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

INGESTION: DO NOT induce vomiting. Never make an unconscious person vomit or drink fluids. If vomiting occurs, keep head lower than hips to help prevent aspiration. If person is unconscious, turn head to side. Get medical attention.

NOTE TO PHYSICIAN: For inhalation, consider oxygen. For ingestion, consider gastric lavage, catharsis and activated charcoal slurry.

5. FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARDS: Severe fire hazard. Vapor/air mixtures are explosive above flash point. The vapor is heavier than air. Vapors or gases may ignite at distant ignition sources and flash back.

EXTINGUISHING MEDIA: regular dry chemical, carbon dioxide, water, regular foam

Large fires: Use regular foam or flood with fine water spray.

FIRE FIGHTING: Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. For fires in cargo or storage area: Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. If this is impossible then take the following precautions: Keep unnecessary people away, isolate hazard area and deny

entry. Let the fire burn. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. For tank, rail car or tank truck: Evacuation radius: 800 meters (1/2 mile). Do not attempt to extinguish fire unless flow of material can be stopped first. Flood with fine water spray. Do not scatter spilled material with high-pressure water streams. Cool containers with water spray until well after the fire is out. Apply water from a protected location or from a safe distance. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

FLASH POINT: 160 F (71 C) (OC)
LOWER FLAMMABLE LIMIT: 0.8%
UPPER FLAMMABLE LIMIT: 5.8%
AUTOIGNITION: 770 F (410 C)
FLAMMABILITY CLASS (OSHA): IIIA

6. ACCIDENTAL RELEASE MEASURES

OCCUPATIONAL RELEASE:
Avoid heat, flames, sparks and other sources of ignition. Stop leak if possible without personal risk. Reduce vapors with water spray. Small spills: Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal. Large spills: Dike for later disposal. Remove sources of ignition. Keep unnecessary people away, isolate hazard area and deny entry.

7. HANDLING AND STORAGE

STORAGE: Store and handle in accordance with all current regulations and standards.

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS:
BUTYL BENZENE:
No occupational exposure limits established.

VENTILATION: Provide local exhaust ventilation system. Ensure compliance with applicable exposure limits.

EYE PROTECTION: Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

CLOTHING: Wear appropriate chemical resistant clothing.

GLOVES: Wear appropriate chemical resistant gloves.

RESPIRATOR: Under conditions of frequent use or heavy exposure, respiratory protection may be needed. Respiratory protection is ranked in order from minimum to maximum. Consider warning properties before

use.
Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode.
Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: liquid
COLOR: colorless
ODOR: odorless
MOLECULAR WEIGHT: 134.21
MOLECULAR FORMULA: C10-H14
BOILING POINT: 356 F (180 C)
FREEZING POINT: -116 F (-82 C)
VAPOR PRESSURE: 1 mmHg @ 23 C
VAPOR DENSITY (air=1): 4.6
SPECIFIC GRAVITY (water=1): 0.9
WATER SOLUBILITY: insoluble
PH: Not available
VOLATILITY: Not available
ODOR THRESHOLD: Not available
EVAPORATION RATE: Not available
COEFFICIENT OF WATER/OIL DISTRIBUTION: Not available
SOLVENT SOLUBILITY:
Miscible: alcohol, ether, benzene

10. STABILITY AND REACTIVITY

REACTIVITY: Stable at normal temperatures and pressure.

CONDITIONS TO AVOID: Avoid heat, flames, sparks and other sources of ignition. Containers may rupture or explode if exposed to heat. Keep out of water supplies and sewers.

INCOMPATIBILITIES: oxidizing materials

HAZARDOUS DECOMPOSITION:
Thermal decomposition products: miscellaneous decomposition products

POLYMERIZATION: Will not polymerize.

11. TOXICOLOGICAL INFORMATION

BUTYL BENZENE:
LOCAL EFFECTS:
Irritant: inhalation, skin, eye
TARGET ORGANS: central nervous system

12. ECOLOGICAL INFORMATION

ECOTOXICITY DATA:
INVERTEBRATE TOXICITY: 340 ug/L 48 hour(s) EC50 (Immobilization) Water flea (Daphnia magna)

13. DISPOSAL CONSIDERATIONS

Dispose in accordance with all applicable regulations.

14. TRANSPORT INFORMATION

U.S. DOT 49 CFR 172.101:
PROPER SHIPPING NAME: Butyl benzenes
ID NUMBER: UN2709
HAZARD CLASS OR DIVISION: 3
PACKING GROUP: III
LABELING REQUIREMENTS: 3
MARINE POLLUTANT: BUTYL BENZENE

CANADIAN TRANSPORTATION OF DANGEROUS GOODS:
SHIPPING NAME: Butylbenzenes
UN NUMBER: UN2709
CLASS: 3
PACKING GROUP/CATEGORY: III

15. REGULATORY INFORMATION

U.S. REGULATIONS:
CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4): Not regulated.

SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355 Subpart B): Not regulated.

SARA TITLE III SECTION 304 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355 Subpart C): Not regulated.

SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370 Subparts B

and C):
ACUTE: Yes
CHRONIC: No
FIRE: Yes
REACTIVE: No
SUDDEN RELEASE: No

SARA TITLE III SECTION 313 (40 CFR 372.65): Not regulated.

OSHA PROCESS SAFETY (29 CFR 1910.119): Not regulated.

STATE REGULATIONS:
California Proposition 65: Not regulated.

CANADIAN REGULATIONS:
WHMIS CLASSIFICATION: Not determined.

NATIONAL INVENTORY STATUS:
U.S. INVENTORY (TSCA): Listed on inventory.

TSCA 12(b) EXPORT NOTIFICATION: Not listed.

CANADA INVENTORY (DSL/NDSL): Not determined.

16. OTHER INFORMATION

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TCI AMERICA

Material Safety Data Sheet

HAZARD WARNINGS	RISK PHRASES	PROTECTIVE CLOTHING
	Combustible material; avoid heat and sources of ignition. The health risks of this compound have not been fully determined. Exposure may cause irritation of the skin, eyes, and respiratory system.	

Section I. Chemical Product and Company Identification

Chemical Name **n-Propylbenzene**

Catalog Number	P0523
Synonym	1-Phenylpropane
Chemical Formula	$CH_3CH_2CH_2C_6H_5$
CAS Number	103-65-1

Supplier: TCI America, 9211 N. Harborgate St., Portland OR, 1-800-423-8616

In case of Emergency Call: **Chemtrec® (800) 424-9300 (U.S.) (703) 527-3887 (International)**

Section II. Composition and Information on Ingredients

Chemical Name	CAS Number	Percent (%)	TLV/PEL	Toxicology Data
n-Propylbenzene	103-65-1	Min. 99.0 (GC)	Not available.	Rat LD_{50} (inhalation) 65000ppm/2H Rat LD_{50} (oral) 6040mg/kg

Section III. Hazards Identification

Acute Health Effects

No specific information is available in our data base regarding the toxic effects of this material for humans. However, exposure to any chemical should be kept to a minimum. Skin and eye contact may result in irritation. May be harmful if inhaled or ingested. Always follow safe industrial hygiene practices and wear proper protective equipment when handling this compound.

Chronic Health Effects

CARCINOGENIC EFFECTS : Not available.
MUTAGENIC EFFECTS : Not available.
TERATOGENIC EFFECTS : Not available.
DEVELOPMENTAL TOXICITY: Not available.
Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Section IV. First Aid Measures

Eye Contact

Check for and remove any contact lenses. IMMEDIATELY flush eyes with runing water for at least 15 minutes. keeping eyelids open. COLD water may be used. DO NOT use an eye oitment. Flush eyes with running water for a minimum of 15 minutes, occasionally lifting the upper eyelids. Seek medical attention. Treat symptomatically and supportively.

Skin Contact

After contact with skin, wash immediately with plenty of water. Gently and thorough wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. COLD water may be used. Cover the irritated skin with an emollient. Seek medical attention. Treat symptomatically and supportively. Wash any contaminated clothing before reusing.

Inhalation

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform artificial respiration. WARNING: It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention and, if possible, show the chemical label. Treat symptomatically and supportively.

Ingestion

INDUCE VOMITING by sticking finger in throat. Lower the head so that the vomit will not reenter the mouth and throat. Loosen tight clothing such as a collar, tie, belt, or waistband. If the victim is not breathing, administer artificial respiration. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive. Seek immediate medical attention and, if possible, show the chemical label. Treat symptomatically and supportively.

Section V. Fire and Explosion Data

Flammability	Combustible.	Auto-Ignition	Not available.
Flash Points	47.8°C (118°F).	Flammable Limits	Not available.

Combustion Products

These products are toxic carbon oxides (CO, CO_2).

Fire Hazards

No specific information is available regarding the flammability of this compound in the presence of various materials.

Explosion Hazards

Risks of explosion of the product in presence of mechanical impact: Not available.
Risks of explosion of the product in presence of static discharge: Not available.
No additional information is available regarding the risks of explosion.

Continued on Next Page

Emergency phone number (800) 424-9300

Fire Fighting Media and Instructions	SMALL FIRE: Use DRY chemicals, CO_2, alcohol foam or water spray. LARGE FIRE: Use alcohol foam, water spray or fog.

Section VI. Accidental Release Measures

Spill Cleanup Instructions	Combustible liquid. Keep away from heat and sources of ignition. Mechanical exhaust required. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. DO NOT touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all sources of ignition. Consult federal, state, and/or local authorities for assistance on disposal.

Section VII. Handling and Storage

Handling and Storage Information	COMBUSTIBLE. Handle with caution and minimize exposure. DO NOT ingest. Do not breathe gas, fumes, vapor or spray. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label. Treat symptomatically and supportively. Always store away from incompatible compounds such as oxidizing agents.

Section VIII. Exposure Controls/Personal Protection

Engineering Controls	Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash station and safety shower is proximal to the work-station location.
Personal Protection	Splash goggles. Lab coat. Dust respirator. Boots. Gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.
Exposure Limits	Not available.

Section IX. Physical and Chemical Properties

Physical state @ 20°C	Liquid.	Solubility	Very slightly soluble in water. Soluble in alcohol, ether, all proportions in acetone, benzene, and petroleum ether.
Specific Gravity	0.86		
Molecular Weight	120.19	Partition Coefficient	Not available.
Boiling Point	159°C (318.2°F)	Vapor Pressure	Not available.
Melting Point	-99°C (-146.2°F)	Vapor Density	Not available.
Refractive Index	1.4920 @ 20°C	Volatility	Not available.
Critical Temperature	Not available.	Odor	Not available.
Viscosity	Not available.	Taste	Not available.

Section X. Stability and Reactivity Data

Stability	This material is stable if stored under proper conditions. (See Section VII for instructions)
Conditions of Instability	Avoid excessive heat and light.
Incompatibilities	Reactive with strong oxidizing agents.

Section XI. Toxicological Information

RTECS Number	DA8750000
Routes of Exposure	Eye contact. Ingestion. Inhalation.
Toxicity Data	Rat LD_{50} (inhalation) 65000ppm/2H Rat LD_{50} (oral) 6040mg/kg
Chronic Toxic Effects	**CARCINOGENIC EFFECTS** : Not available. **MUTAGENIC EFFECTS** : Not available. **TERATOGENIC EFFECTS** : Not available. **DEVELOPMENTAL TOXICITY**: Not available. Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.
Acute Toxic Effects	No specific information is available in our data base regarding the toxic effects of this material for humans. However, exposure to any chemical should be kept to a minimum. Skin and eye contact may result in irritation. May be harmful if inhaled or ingested. Always follow safe industrial hygiene practices and wear proper protective equipment when handling this compound.

Continued on Next Page

Section XII. Ecological Information

Ecotoxicity	Not available.
Environmental Fate	Not available.

Section XIII. Disposal Considerations

Waste Disposal	Recycle to process, if possible. Consult your local or regional authorities. You may be able to dissolve or mix material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber system. Observe all federal, state, and local regulations when disposing of the substance.

Section XIV. Transport Information

DOT Classification	DOT CLASS 3: Flammable liquid.
PIN Number	UN2364
Proper Shipping Name	n-Propylbenzene
Packing Group (PG)	III
DOT Pictograms	

Section XV. Other Regulatory Information and Pictograms

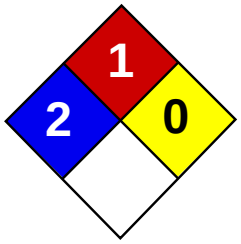
TSCA Chemical Inventory (EPA)	This compound is **ON** the EPA Toxic Substances Control Act (TSCA) inventory list.
WHMIS Classification (Canada)	WHMIS CLASS B-3: Combustible liquid with a flash point between 35°C (100°F) and 93.3°C (200°F).
EINECS Number (EEC)	203-132-9
EEC Risk Statements	R10- Flammable. R18- In use, may form flammable/explosive vapor-air mixture.
Japanese Regulatory Data	Not available.

Section XVI. Other Information

Version 1.0
Validated on 10/26/1998.
Printed 3/18/2005.

Notice to Reader

TCI laboratory chemicals are for research purposes only and are NOT intended for use as drugs, food additives, households, or pesticides. The information herein is believed to be correct, but does not claim to be all inclusive and should be used only as a guide. Neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All chemical reagents must be handled with the recognition that their chemical, physiological, toxicological, and hazardous properties have not been fully investigated or determined. All chemical reagents should be handled only by individuals who are familiar with their potential hazards and who have been fully trained in proper safety, laboratory, and chemical handling procedures. Although certain hazards are described herein, we can not guarantee that these are the only hazards which exist. Our MSDS sheets are based only on data available at the time of shipping and are subject to change without notice as new information is obtained. Avoid long storage periods since the product is subject to degradation with age and may become more dangerous or hazardous. It is the responsibility of the user to request updated MSDS sheets for products that are stored for extended periods. Disposal of unused product must be undertaken by qualified personnel who are knowledgeable in all applicable regulations and follow all pertinent safety precautions including the use of appropriate protective equipment (e.g. protective goggles, protective clothing, breathing equipment, facial mask, fume hood). For proper handling and disposal, always comply with federal, state, and local regulations.



Health	2
Fire	1
Reactivity	0
Personal Protection	E

Material Safety Data Sheet
Phenanthrene MSDS

Section 1: Chemical Product and Company Identification

Product Name: Phenanthrene

Catalog Codes: SLP1318

CAS#: 85-01-8

RTECS: SF7175000

TSCA: TSCA 8(b) inventory: Phenanthrene

CI#: Not available.

Synonym:

Chemical Name: Not available.

Chemical Formula: C14H10

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Phenanthrene	85-01-8	100

Toxicological Data on Ingredients: Phenanthrene: ORAL (LD50): Acute: 700 mg/kg [Mouse].

Section 3: Hazards Identification

Potential Acute Health Effects:
Hazardous in case of skin contact (irritant, sensitizer), of eye contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (permeator).

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. Repeated or prolonged exposure is not known to aggravate medical condition.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Do not use an eye ointment. Seek medical attention.

Skin Contact:
After contact with skin, wash immediately with plenty of water. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Cover the irritated skin with an emollient. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation: Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

Serious Inhalation: Not available.

Ingestion:
Do not induce vomiting. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: May be combustible at high temperature.

Auto-Ignition Temperature: Not available.

Flash Points: OPEN CUP: 171°C (339.8°F).

Flammable Limits: Not available.

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances: Not available.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill:
Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Large Spill:
Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.

Section 7: Handling and Storage

Precautions:
Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe dust. Wear suitable protective clothing In

case of insufficient ventilation, wear suitable respiratory equipment If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes

Storage:
Keep container dry. Keep in a cool place. Ground all equipment containing material. Keep container tightly closed. Keep in a cool, well-ventilated place. Combustible materials should be stored away from extreme heat and away from strong oxidizing agents.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection:
Splash goggles. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits: Not available.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid.

Odor: Not available.

Taste: Not available.

Molecular Weight: 178.22 g/mole

Color: Not available.

pH (1% soln/water): Not available.

Boiling Point: 340°C (644°F)

Melting Point: 101°C (213.8°F)

Critical Temperature: Not available.

Specific Gravity: 1.179 (Water = 1)

Vapor Pressure: Not applicable.

Vapor Density: 6.14 (Air = 1)

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility: Very slightly soluble in cold water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Not available.

Incompatibility with various substances: Not available.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: No.

Section 11: Toxicological Information

Routes of Entry: Eye contact. Inhalation. Ingestion.

Toxicity to Animals: Acute oral toxicity (LD50): 700 mg/kg [Mouse].

Chronic Effects on Humans: Not available.

Other Toxic Effects on Humans:
Hazardous in case of skin contact (irritant, sensitizer), of ingestion, of inhalation. Slightly hazardous in case of skin contact (permeator).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans: Not available.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are more toxic.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Section 14: Transport Information

DOT Classification: Not a DOT controlled material (United States).

Identification: Not applicable.

Special Provisions for Transport: Not applicable.

Section 15: Other Regulatory Information

Federal and State Regulations: TSCA 8(b) inventory: Phenanthrene

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications:

WHMIS (Canada): Not controlled under WHMIS (Canada).

DSCL (EEC):
R36/38- Irritating to eyes and skin. R43- May cause sensitization by skin contact.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 1

Reactivity: 0

Personal Protection: E

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 1

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Splash goggles.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

Created: 10/10/2005 11:16 AM

Last Updated: 11/06/2008 12:00 PM

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Material Safety Data Sheet

sec-Butylbenzene, 99+%

MSDS# 73785

Section 1 - Chemical Product and Company Identification

MSDS Name:	sec-Butylbenzene, 99+%
Catalog Numbers:	AC107860000, AC107860050, AC107860500, AC107861000, AC107862500, AC107865000 AC107865000
Synonyms:	2-Phenylbutane; Benzene, (1-methylpropyl)-; (1-Methylpropyl)benzene; Benzene, sec-butyl-
Company Identification:	Acros Organics BVBA Janssen Pharmaceuticalaan 3a 2440 Geel, Belgium
Company Identification: (USA)	Acros Organics One Reagent Lane Fair Lawn, NJ 07410
For information in the US, call:	800-ACROS-01
For information in Europe, call:	+32 14 57 52 11
Emergency Number, Europe:	+32 14 57 52 99
Emergency Number US:	201-796-7100
CHEMTREC Phone Number, US:	800-424-9300
CHEMTREC Phone Number, Europe:	703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#:	135-98-8
Chemical Name:	sec-Butylbenzene
%:	99+
EINECS#:	205-227-0

Hazard Symbols: XI

Risk Phrases: 10 36/37/38

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Warning! Flammable liquid and vapor. May cause central nervous system depression. Causes eye, skin, and respiratory tract irritation. Target Organs: Central nervous system.

Potential Health Effects

Eye:	Causes eye irritation.
Skin:	Causes skin irritation.
Ingestion:	May cause gastrointestinal irritation with nausea, vomiting and diarrhea. Ingestion of large amounts may cause CNS depression.
Inhalation:	Causes respiratory tract irritation.
Chronic:	Prolonged or repeated skin contact may cause dermatitis.

Section 4 - First Aid Measures

Eyes:	Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
Skin:	Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.
Ingestion:	Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid.
Inhalation:	Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
Notes to Physician:	Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information:	As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors may form an explosive mixture with air. Vapors can travel to a source of ignition and flash back. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Will burn if involved in a fire. Use water spray to keep fire-exposed containers cool. Containers may explode in the heat of a fire. Flammable liquid and vapor.
Extinguishing Media:	For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam. For large fires, use water spray, fog, or alcohol-resistant foam. Use water spray to cool fire-exposed containers. Water may be ineffective. Use agent most appropriate to extinguish fire. Do NOT use straight streams of water.
Autoignition Temperature:	415 deg C (779.00 deg F)
Flash Point:	45 deg C (113.00 deg F)
Explosion Limits: Lower:	0.80 vol %
Explosion Limits: Upper:	6.90 vol %
NFPA Rating:	health: 2; flammability: 2; instability: 0;

Section 6 - Accidental Release Measures

General Information:	Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks:	Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Clean up spills immediately, observing precautions in the Protective Equipment section. Remove all sources of ignition. Use a spark-proof tool. Provide ventilation. A vapor suppressing foam may be used to reduce vapors.

Section 7 - Handling and Storage

Handling:	Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use only in a well-ventilated area. Ground and bond containers when transferring material. Use spark-proof tools and explosion proof equipment. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep container tightly closed. Keep away from heat, sparks and flame. Avoid ingestion and inhalation. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.
Storage:	Keep away from sources of ignition. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Flammables-area.

Section 8 - Exposure Controls, Personal Protection

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
sec-Butylbenzene	none listed	none listed	none listed

OSHA Vacated PELs: sec-Butylbenzene: None listed

Engineering Controls:

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local explosion-proof ventilation to keep airborne levels to acceptable levels.

Exposure Limits

Personal Protective Equipment

Eyes:	Wear chemical splash goggles.
Skin:	Wear appropriate protective gloves to prevent skin exposure.
Clothing:	Wear appropriate protective clothing to prevent skin exposure.
Respirators:	A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

Section 9 - Physical and Chemical Properties

Physical State:	Liquid
Color:	clear colorless
Odor:	None reported.
pH:	Not available
Vapor Pressure:	4 mm Hg @ 37.7 deg C
Vapor Density:	4.62
Evaporation Rate:	Not available
Viscosity:	Not available
Boiling Point:	173 - 174 deg C @ 760 mm Hg
Freezing/Melting Point:	-75 deg C (-103.00°F)
Decomposition Temperature:	Not available
Solubility in water:	0.015 g/L water
Specific Gravity/Density:	0.8630 g/cm3
Molecular Formula:	C10H14
Molecular Weight:	134.22

Section 10 - Stability and Reactivity

Chemical Stability:	Stable under normal temperatures and pressures.
Conditions to Avoid:	Ignition sources, excess heat.
Incompatibilities with Other Materials	Strong oxidizing agents.
Hazardous Decomposition Products	Carbon monoxide, carbon monoxide, carbon dioxide.
Hazardous Polymerization	Has not been reported.

Section 11 - Toxicological Information

RTECS#:	CAS# 135-98-8: CY9100000
LD50/LC50:	RTECS: **CAS# 135-98-8:** Draize test, rabbit, eye: 500 mg/24H Mild; Draize test, rabbit, skin: 100 mg/24H Moderate; Oral, mouse: LD50 = 8700 mg/kg; Oral, rat: LD50 = 2240 uL/kg; Oral, rat: LD50 = 6300 mg/kg; Skin, rabbit: LD50 = >16 mL/kg; .
Carcinogenicity:	sec-Butylbenzene - Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.
Other:	See actual entry in RTECS for complete information.

Section 12 - Ecological Information

Not available

Section 13 - Disposal Considerations

Dispose of in a manner consistent with federal, state, and local regulations.

Section 14 - Transport Information

US DOT
Shipping Name: BUTYL BENZENES
Hazard Class: 3
UN Number: UN2709
Packing Group: III
Canada TDG

Shipping Name: Not available
Hazard Class:
UN Number:
Packing Group:

Section 15 - Regulatory Information

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: XI

Risk Phrases:

R 10 Flammable.

R 36/37/38 Irritating to eyes, respiratory system and skin.

Safety Phrases:

S 9 Keep container in a well-ventilated place.

S 16 Keep away from sources of ignition - No smoking.

S 33 Take precautionary measures against static discharges.

WGK (Water Danger/Protection)

CAS# 135-98-8: 1

Canada

CAS# 135-98-8 is listed on Canada's DSL List

Canadian WHMIS Classifications: B3, D2B

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

CAS# 135-98-8 is not listed on Canada's Ingredient Disclosure List.

US Federal

TSCA

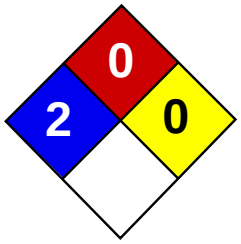
CAS# 135-98-8 is listed on the TSCA Inventory.

Section 16 - Other Information

MSDS Creation Date: 9/02/1997

Revision #9 Date 7/20/2009

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantibility or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential, or exemplary damages howsoever arising, even if the company has been advised of the possibility of such damages.



Health	2
Fire	0
Reactivity	0
Personal Protection	G

Material Safety Data Sheet
Tetrachloroethylene MSDS

Section 1: Chemical Product and Company Identification

Product Name: Tetrachloroethylene

Catalog Codes: SLT3220

CAS#: 127-18-4

RTECS: KX3850000

TSCA: TSCA 8(b) inventory: Tetrachloroethylene

CI#: Not available.

Synonym: Perchloroethylene; 1,1,2,2-Tetrachloroethylene; Carbon bichloride; Carbon dichloride; Ankilostin; Didakene; Dilatin PT; Ethene, tetrachloro-; Ethylene tetrachloride; Perawin; Perchlor; Perclene; Perclene D; Percosolvel; Tetrachloroethene; Tetraleno; Tetralex; Tetravec; Tetroguer; Tetropil

Chemical Name: Ethylene, tetrachloro-

Chemical Formula: C2-Cl4

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Tetrachloroethylene	127-18-4	100

Toxicological Data on Ingredients: Tetrachloroethylene: ORAL (LD50): Acute: 2629 mg/kg [Rat]. DERMAL (LD): Acute: >3228 mg/kg [Rabbit]. MIST(LC50): Acute: 34200 mg/m 8 hours [Rat]. VAPOR (LC50): Acute: 5200 ppm 4 hours [Mouse].

Section 3: Hazards Identification

Potential Acute Health Effects:
Hazardous in case of skin contact (irritant), of inhalation. Slightly hazardous in case of skin contact (permeator), of eye contact (irritant), of ingestion.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Classified A3 (Proven for animal.) by ACGIH. Classified 2A (Probable for human.) by IARC, 2 (anticipated carcinogen) by NTP. MUTAGENIC EFFECTS: Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to kidneys, liver, peripheral nervous system, respiratory tract, skin, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.

Skin Contact:
In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms appear.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Non-flammable.

Auto-Ignition Temperature: Not applicable.

Flash Points: Not applicable.

Flammable Limits: Not applicable.

Products of Combustion: Not available.

Fire Hazards in Presence of Various Substances: Not applicable.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions: Not applicable.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill:
Absorb with an inert material and put the spilled material in an appropriate waste disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Do not ingest. Do not breathe gas/fumes/ vapor/spray. Avoid contact with skin. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents, metals, acids, alkalis.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value.

Personal Protection:
Safety glasses. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 25 (ppm) from OSHA (PEL) [United States] TWA: 25 STEL: 100 (ppm) from ACGIH (TLV) [United States] TWA: 170 (mg/m3) from OSHA (PEL) [United States] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Ethereal.

Taste: Not available.

Molecular Weight: 165.83 g/mole

Color: Clear Colorless.

pH (1% soln/water): Not available.

Boiling Point: 121.3°C (250.3°F)

Melting Point: -22.3°C (-8.1°F)

Critical Temperature: 347.1°C (656.8°F)

Specific Gravity: 1.6227 (Water = 1)

Vapor Pressure: 1.7 kPa (@ 20°C)

Vapor Density: 5.7 (Air = 1)

Volatility: Not available.

Odor Threshold: 5 - 50 ppm

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 3.4

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility:
Miscible with alcohol, ether, chloroform, benzene, hexane. It dissolves in most of the fixed and volatile oils. Solubility in water: 0.015 g/100 ml @ 25 deg. C It slowly decomposes in water to yield Trichloroacetic and Hydrochloric acids.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Incompatible materials

Incompatibility with various substances: Reactive with oxidizing agents, metals, acids, alkalis.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity:
Oxidized by strong oxidizing agents. Incompatible with sodium hydroxide, finely divided or powdered metals such as zinc, aluminum, magnesium, potassium, chemically active metals such as lithium, beryllium , barium. Protect from light.

Special Remarks on Corrosivity: Slowly corrodes aluminum, iron, and zinc.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:
WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 2629 mg/kg [Rat]. Acute dermal toxicity (LD50): >3228 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 5200 4 hours [Mouse].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified A3 (Proven for animal.) by ACGIH. Classified 2A (Probable for human.) by IARC, 2 (Some evidence.) by NTP. MUTAGENIC EFFECTS: Mutagenic for bacteria and/or yeast. May cause damage to the following organs: kidneys, liver, peripheral nervous system, upper respiratory tract, skin, central nervous system (CNS).

Other Toxic Effects on Humans:
Hazardous in case of skin contact (irritant), of inhalation. Slightly hazardous in case of skin contact (permeator), of ingestion.

Special Remarks on Toxicity to Animals:
Lowest Publishe Lethal Dose/Conc: LDL [Rabbit] - Route: Oral; Dose: 5000 mg/kg LDL [Dog] - Route: Oral; Dose: 4000 mg/kg LDL [Cat] - Route: Oral; Dose: 4000 mg/kg

Special Remarks on Chronic Effects on Humans:
May cause adverse reproductive effects and birth defects(teratogenic). May affect genetic material (mutagenic). May cause cancer.

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: Skin: Causes skin irritation with possible dermal blistering or burns. Symtoms may include redness, itching, pain, and possible dermal blistering or burns. It may be absorbed through the skin with possible systemic effects. A single prolonged skin exposure is not likely to result in the material being absorbed in harmful amounts. Eyes: Contact causes transient eye irritation, lacrimation. Vapors cause eye/conjunctival irritation. Symptoms may include redness and pain. Inhalation: The main route to occupational exposure is by inhalation since it is readily absorbed through the lungs. It causes respiratory tract irritation, . It can affect behavior/central nervous system (CNS depressant and anesthesia ranging from slight inebriation to death, vertigo, somnolence, anxiety, headache, excitement, hallucinations, muscle incoordination, dizziness, lightheadness, disorentiation, seizures, enotional instability, stupor, coma). It may cause pulmonary edema Ingestion: It can cause nausea, vomiting, anorexia, diarrhea, bloody stool. It may affect the liver, urinary system (proteinuria, hematuria, renal failure, renal tubular disorder), heart (arrhythmias). It may affect behavior/central nervous system with symptoms similar to that of inhalation. Chronic Potential Health Effects: Skin: Prolonged or repeated skin contact may result in excessive drying of the skin, and irritation. Ingestion/Inhalation: Chronic exposure can affect the liver(hepatitis,fatty liver degeneration), kidneys, spleen, and heart (irregular heartbeat/arrhythmias, cardiomyopathy, abnormal EEG), brain, behavior/ central nervous system/peripheral nervous system (impaired memory, numbness of extremeties, peripheral neuropathy and other

Section 12: Ecological Information

Ecotoxicity:
Ecotoxicity in water (LC50): 18.4 mg/l 96 hours [Fish (Fatthead Minnow)]. 18 mg/l 48 hours [Daphnia (daphnia)]. 5 mg/l 96 hours [Fish (Rainbow Trout)]. 13 mg/l 96 hours [Fish (Bluegill sunfish)].

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The product itself and its products of degradation are not toxic.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: CLASS 6.1: Poisonous material.

Identification: : Tetrachloroethylene UNNA: 1897 PG: III

Special Provisions for Transport: Marine Pollutant

Section 15: Other Regulatory Information

Federal and State Regulations:
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Tetrachloroethylene California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Tetrachloroethylene Connecticut hazardous material survey.: Tetrachloroethylene Illinois toxic substances disclosure to employee act: Tetrachloroethylene Illinois chemical safety act: Tetrachloroethylene New York release reporting list: Tetrachloroethylene Rhode Island RTK hazardous substances: Tetrachloroethylene Pennsylvania RTK: Tetrachloroethylene Minnesota: Tetrachloroethylene Michigan critical material: Tetrachloroethylene Massachusetts RTK: Tetrachloroethylene Massachusetts spill list: Tetrachloroethylene New Jersey: Tetrachloroethylene New Jersey spill list: Tetrachloroethylene Louisiana spill reporting: Tetrachloroethylene California Director's List of Hazardous Substances: Tetrachloroethylene TSCA 8(b) inventory: Tetrachloroethylene TSCA 8(d) H and S data reporting: Tetrachloroethylene: Effective date: 6/1/87; Sunset date: 6/1/97 SARA 313 toxic chemical notification and release reporting: Tetrachloroethylene CERCLA: Hazardous substances.: Tetrachloroethylene: 100 lbs. (45.36 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS D-1B: Material causing immediate and serious toxic effects (TOXIC). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):
R40- Possible risks of irreversible effects. R51/53- Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. S23- Do not breathe gas/fumes/vapour/spray S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S37- Wear suitable gloves. S61- Avoid release to the environment. Refer to special instructions/Safety data sheets.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 0

Reactivity: 0

Personal Protection: g

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 0

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Safety glasses.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

Created: 10/10/2005 08:29 PM

Last Updated: 11/06/2008 12:00 PM

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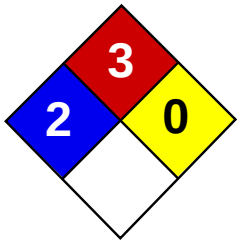

Health	2
Fire	3
Reactivity	0
Personal Protection	H

Material Safety Data Sheet
Toluene MSDS

Section 1: Chemical Product and Company Identification

Product Name: Toluene

Catalog Codes: SLT2857, SLT3277

CAS#: 108-88-3

RTECS: XS5250000

TSCA: TSCA 8(b) inventory: Toluene

CI#: Not available.

Synonym: Toluol, Tolu-Sol; Methylbenzene; Methacide; Phenylmethane; Methylbenzol

Chemical Name: Toluene

Chemical Formula: C6-H5-CH3 or C7-H8

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Toluene	108-88-3	100

Toxicological Data on Ingredients: Toluene: ORAL (LD50): Acute: 636 mg/kg [Rat]. DERMAL (LD50): Acute: 14100 mg/kg [Rabbit]. VAPOR (LC50): Acute: 49000 mg/m 4 hours [Rat]. 440 ppm 24 hours [Mouse].

Section 3: Hazards Identification

Potential Acute Health Effects:
Hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (permeator).

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to blood, kidneys, the nervous system, liver, brain, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.

Skin Contact:
In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 480°C (896°F)

Flash Points: CLOSED CUP: 4.4444°C (40°F). (Setaflash) OPEN CUP: 16°C (60.8°F).

Flammable Limits: LOWER: 1.1% UPPER: 7.1%

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances:
Flammable in presence of open flames and sparks, of heat. Non-flammable in presence of shocks.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
Flammable liquid, insoluble in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray or fog.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards:
Toluene forms explosive reaction with 1,3-dichloro-5,5-dimethyl-2,4-imidazolididione; dinitrogen tetraoxide; concentrated nitric acid, sulfuric acid + nitric acid; N2O4; AgClO4; BrF3; Uranium hexafluoride; sulfur dichloride. Also forms an explosive mixture with tetranitromethane.

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill:
Toxic flammable liquid, insoluble or very slightly soluble in water. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents.

Storage:
Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 200 STEL: 500 CEIL: 300 (ppm) from OSHA (PEL) [United States] TWA: 50 (ppm) from ACGIH (TLV) [United States] SKIN TWA: 100 STEL: 150 from NIOSH [United States] TWA: 375 STEL: 560 (mg/m3) from NIOSH [United States] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Sweet, pungent, Benzene-like.

Taste: Not available.

Molecular Weight: 92.14 g/mole

Color: Colorless.

pH (1% soln/water): Not applicable.

Boiling Point: 110.6°C (231.1°F)

Melting Point: -95°C (-139°F)

Critical Temperature: 318.6°C (605.5°F)

Specific Gravity: 0.8636 (Water = 1)

Vapor Pressure: 3.8 kPa (@ 25°C)

Vapor Density: 3.1 (Air = 1)

Volatility: Not available.

Odor Threshold: 1.6 ppm

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 2.7

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, diethyl ether, acetone.

Solubility:
Soluble in diethyl ether, acetone. Practically insoluble in cold water. Soluble in ethanol, benzene, chloroform, glacial acetic acid, carbon disulfide. Solubility in water: 0.561 g/l @ 25 deg. C.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Heat, ignition sources (flames, sparks, static), incompatible materials

Incompatibility with various substances: Reactive with oxidizing agents.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity:
Incompatible with strong oxidizers, silver perchlorate, sodium difluoride, Tetranitromethane, Uranium Hexafluoride. Frozen Bromine Trifluoride reacts violently with Toluene at -80 deg. C. Reacts chemically with nitrogen oxides, or halogens to form nitrotoluene, nitrobenzene, and nitrophenol and halogenated products, respectively.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:
WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 636 mg/kg [Rat]. Acute dermal toxicity (LD50): 14100 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 440 24 hours [Mouse].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC. May cause damage to the following organs: blood, kidneys, the nervous system, liver, brain, central nervous system (CNS).

Other Toxic Effects on Humans:
Hazardous in case of skin contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (permeator).

Special Remarks on Toxicity to Animals:
Lowest Published Lethal Dose: LDL [Human] - Route: Oral; Dose: 50 mg/kg LCL [Rabbit] - Route: Inhalation; Dose: 55000 ppm/40min

Special Remarks on Chronic Effects on Humans:
Detected in maternal milk in human. Passes through the placental barrier in human. Embryotoxic and/or foetotoxic in animal. May cause adverse reproductive effects and birth defects (teratogenic). May affect genetic material (mutagenic)

Special Remarks on other Toxic Effects on Humans:

Acute Potential Health Effects: Skin: Causes mild to moderate skin irritation. It can be absorbed to some extent through the skin. Eyes: Cauess mild to moderate eye irritation with a burning sensation. Splash contact with eyes also causes conjunctivitis, blepharospasm, corneal edema, corneal abraisons. This usually resolves in 2 days. Inhalation: Inhalation of vapor may cause respiratory tract irritation causing coughing and wheezing, and nasal discharge. Inhalation of high concentrations may affect behavior and cause central nervous system effects characterized by nausea, headache, dizziness, tremors, restlessness, lightheadedness, exhilaration, memory loss, insomnia, impaired reaction time, drowsiness, ataxia, hallucinations, somnolence, muscle contraction or spasticity, unconsciousness and coma. Inhalation of high concentration of vapor may also affect the cardiovascular system (rapid heart beat, heart palpitations, increased or decreased blood pressure, dysrhythmia,), respiration (acute pulmonary edema, respiratory depression, apnea, asphyxia), cause vision disturbances and dilated pupils, and cause loss of appetite. Ingestion: Aspiration hazard. Aspiration of Toluene into the lungs may cause chemical pneumonitis. May cause irritation of the digestive tract with nausea, vomiting, pain. May have effects similar to that of acute inhalation. Chronic Potential Health Effects: Inhalation and Ingestion: Prolonged or repeated exposure via inhalation may cause central nervous system and cardiovascular symptoms similar to that of acute inhalation and ingestion as well liver damage/failure, kidney damage/failure (with hematuria, proteinuria, oliguria, renal tubular acidosis), brain damage, weight loss, blood (pigmented or nucleated red blood cells, changes in white blood cell count), bone marrow changes, electrolyte imbalances (Hypokalemia, Hypophostatemia), severe, muscle weakness and Rhabdomyolysis. Skin: Repeated or prolonged skin contact may cause defatting dermatitis.

Section 12: Ecological Information

Ecotoxicity:
Ecotoxicity in water (LC50): 313 mg/l 48 hours [Daphnia (daphnia)]. 17 mg/l 24 hours [Fish (Blue Gill)]. 13 mg/l 96 hours [Fish (Blue Gill)]. 56 mg/l 24 hours [Fish (Fathead minnow)]. 34 mg/l 96 hours [Fish (Fathead minnow)]. 56.8 ppm any hours [Fish (Goldfish)].

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: CLASS 3: Flammable liquid.

Identification: : Toluene UNNA: 1294 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Toluene California prop. 65 (no significant risk level): Toluene: 7 mg/day (value) California prop. 65 (acceptable daily intake level): Toluene: 7 mg/day (value) California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: Toluene Connecticut hazardous material survey.: Toluene Illinois

toxic substances disclosure to employee act: Toluene Illinois chemical safety act: Toluene New York release reporting list: Toluene Rhode Island RTK hazardous substances: Toluene Pennsylvania RTK: Toluene Florida: Toluene Minnesota: Toluene Michigan critical material: Toluene Massachusetts RTK: Toluene Massachusetts spill list: Toluene New Jersey: Toluene New Jersey spill list: Toluene Louisiana spill reporting: Toluene California Director's List of Hazardous Substances.: Toluene TSCA 8(b) inventory: Toluene TSCA 8(d) H and S data reporting: Toluene: Effective date: 10/04/82; Sunset Date: 10/0/92 SARA 313 toxic chemical notification and release reporting: Toluene CERCLA: Hazardous substances.: Toluene: 1000 lbs. (453.6 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):
R11- Highly flammable. R20- Harmful by inhalation. S16- Keep away from sources of ignition - No smoking. S25- Avoid contact with eyes. S29- Do not empty into drains. S33- Take precautionary measures against static discharges.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 3

Reactivity: 0

Personal Protection: h

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 3

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

Created: 10/10/2005 08:30 PM

Last Updated: 11/06/2008 12:00 PM

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MATERIAL SAFETY DATA SHEET

Section 1 - Chemical Product and Company Identification

MSDS Name:	1,2,4-Trimethylbenzene
Catalog Numbers:	AC140090000, AC140090010, AC140090025, AC140095000
Synonyms:	Pseudocumene.
Company Identification:	Acros Organics BVBA Janssen Pharmaceuticalaan 3a 2440 Geel, Belgium
Company Identification: (USA)	Acros Organics One Reagent Lane Fair Lawn, NJ 07410
For information in the US, call:	800-ACROS-01
For information in Europe, call:	+32 14 57 52 11
Emergency Number, Europe:	+32 14 57 52 99
Emergency Number US:	201-796-7100
CHEMTREC Phone Number, US:	800-424-9300
CHEMTREC Phone Number, Europe:	703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#:	95-63-6
Chemical Name:	1,2,4-Trimethylbenzene
%:	98
EINECS#:	202-436-9

Hazard Symbols: XN N

Risk Phrases: 10 20 36/37/38 51/53

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Warning! Flammable liquid and vapor. Harmful if inhaled. Causes eye, skin, and respiratory tract irritation. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Target Organs: Blood, central nervous system, respiratory system, eyes, skin.

Potential Health Effects

Eye: Causes eye irritation. Causes redness and pain.

Skin: Causes skin irritation. Causes redness and pain. May be harmful if absorbed through the skin.

Ingestion: May cause irritation of the digestive tract. Aspiration of material into the lungs may cause chemical pneumonitis, which may be fatal. May be harmful if swallowed. May cause central nervous system depression.

Inhalation: Harmful if inhaled. Causes respiratory tract irritation. May cause drowsiness, unconsciousness, and central nervous system depression.

Chronic: Prolonged or repeated skin contact may cause dermatitis. May cause anemia and other blood cell abnormalities. Prolonged exposure may produce a narcotic effect. Prolonged or repeated exposure may cause nausea, dizziness, and headache.

Section 4 - First Aid Measures

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

Skin: Get medical aid. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

Ingestion: Do not induce vomiting. Possible aspiration hazard. Get medical aid immediately. Call a poison control center.

Inhalation: Get medical aid immediately. Remove from exposure and move to fresh air immediately. If breathing is difficult, give oxygen. Possible aspiration hazard. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

Notes to Physician:

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors may form an explosive mixture with air. Vapors can travel to a source of ignition and flash back. Will burn if involved in a fire. Containers may explode in the heat of a fire. Flammable liquid and vapor.

Extinguishing Media: Use water spray to cool fire-exposed containers. Use water spray, dry chemical, carbon dioxide, or chemical foam.

Autoignition Temperature: 500 deg C (932.00 deg F)

Flash Point: 48 deg C (118.40 deg F)

Explosion Limits: Lower: 0.9 vol %

Explosion Limits: Upper: 6.4 vol %

NFPA Rating: health: 2; flammability: 2; instability: 0;

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Wear a self contained breathing apparatus and appropriate personal protection. (See Exposure Controls, Personal Protection section). Remove all sources of ignition. Use a spark-proof tool. Do not let this chemical enter the environment.

Section 7 - Handling and Storage

Handling: Use spark-proof tools and explosion proof equipment. Do not get in eyes, on skin, or on clothing. Do not ingest or inhale. Use only in a chemical fume hood. Keep away from heat, sparks and flame.

Storage: Keep away from sources of ignition. Store in a cool, dry place. Store in a tightly closed container. Flammables-area.

Section 8 - Exposure Controls, Personal Protection

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
1,2,4-Trimethylbenzene	25 ppm TWA (listed under Trimethyl benzene).	25 ppm TWA; 125 mg/m3 TWA	none listed

OSHA Vacated PELs: 1,2,4-Trimethylbenzene: 25 ppm TWA; 125 mg/m3 TWA (listed under Trimethyl benzene)

Engineering Controls:

Use explosion-proof ventilation equipment. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use only under a chemical fume hood.

Exposure Limits

Personal Protective Equipment

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

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

Section 9 - Physical and Chemical Properties

Physical State: Clear liquid
Color: colorless
Odor: aromatic odor
pH: Not available
Vapor Pressure: 7 mm Hg @ 44.4 deg C
Vapor Density: 4.15 (air=1)
Evaporation Rate: Not available
Viscosity: Not available
Boiling Point: 168 deg C @ 760 mmHg (334.40°F)
Freezing/Melting Point: -44 deg C (-47.20°F)
Decomposition Temperature: Not available
Solubility in water: Insoluble
Specific Gravity/Density: 0.880 g/cm3
Molecular Formula: C9H12
Molecular Weight: 120.19

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures.
Conditions to Avoid: Incompatible materials, ignition sources, excess heat.
Incompatibilities with Other Materials Strong oxidizing agents.
Hazardous Decomposition Products Carbon monoxide, carbon dioxide.
Hazardous Polymerization Will not occur.

Section 11 - Toxicological Information

RTECS#: CAS# 95-63-6: DC3325000

LD50/LC50: RTECS:
CAS# 95-63-6: Inhalation, rat: LC50 = 18000 mg/m3/4H;
Oral, mouse: LD50 = 6900 mg/kg;
Oral, rat: LD50 = 5 gm/kg;
.

Carcinogenicity: 1,2,4-Trimethylbenzene - Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.

Other: See actual entry in RTECS for complete information.

Section 12 - Ecological Information

Ecotoxicity: Fish: Fathead Minnow: LC50 = 77.2 mg/L; 96 Hr; Flow-through at 25 C (pH 7.24)

Other: Do not empty into drains.

Section 13 - Disposal Considerations

Dispose of in a manner consistent with federal, state, and local regulations.

Section 14 - Transport Information

US DOT
Shipping Name: FLAMMABLE LIQUIDS, N.O.S. (1,2,4-Trimethylbenzene)
Hazard Class: 3
UN Number: UN1993
Packing Group: III
Canada TDG

Shipping Name: Not available
Hazard Class:
UN Number:
Packing Group:

Section 15 - Regulatory Information

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: XN N

Risk Phrases:

R 10 Flammable.

R 20 Harmful by inhalation.

R 36/37/38 Irritating to eyes, respiratory system and skin.

R 51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety Phrases:

S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S 61 Avoid release to the environment. Refer to special instructions/safety data sheets.

WGK (Water Danger/Protection)

CAS# 95-63-6: 3

Canada

CAS# 95-63-6 is listed on Canada's DSL List

Canadian WHMIS Classifications: B3, D1B, D2B

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

CAS# 95-63-6 is listed on Canada's Ingredient Disclosure List

US Federal

TSCA

CAS# 95-63-6 is listed on the TSCA Inventory.

Section 16 - Other Information

MSDS Creation Date: 5/19/1999

Revision #5 Date 8/30/2007

Revisions were made in Sections: 3, 4, 5, 6, 7, 8, 9, 10, 11, 1

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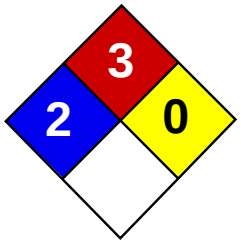

Health	2
Fire	3
Reactivity	0
Personal Protection	H

Material Safety Data Sheet
Xylenes MSDS

Section 1: Chemical Product and Company Identification

Product Name: Xylenes

Catalog Codes: SLX1075, SLX1129, SLX1042, SLX1096

CAS#: 1330-20-7

RTECS: ZE2100000

TSCA: TSCA 8(b) inventory: Xylenes

CI#: Not available.

Synonym: Xylenes; Dimethylbenzene; xylol; methyltoluene

Chemical Name: Xylenes (o-, m-, p- isomers)

Chemical Formula: C6H4(CH3)2

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Xylenes	1330-20-7	100

Toxicological Data on Ingredients: Xylenes: ORAL (LD50): Acute: 4300 mg/kg [Rat]. 2119 mg/kg [Mouse]. DERMAL (LD50): Acute: >1700 mg/kg [Rabbit].

Section 3: Hazards Identification

Potential Acute Health Effects: Hazardous in case of skin contact (irritant, permeator), of eye contact (irritant), of ingestion, of inhalation.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: 3 (Not classifiable for human.) by IARC. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to blood, kidneys, liver, mucous membranes, bone marrow, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.

Skin Contact:
In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms appear.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 464°C (867.2°F)

Flash Points: CLOSED CUP: 24°C (75.2°F). (Tagliabue.) OPEN CUP: 37.8°C (100°F).

Flammable Limits: LOWER: 1% UPPER: 7%

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances:
Highly flammable in presence of open flames and sparks, of heat. Non-flammable in presence of shocks.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Slightly explosive in presence of open flames and sparks, of heat.

Fire Fighting Media and Instructions:
Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion.

Special Remarks on Fire Hazards: Vapors may travel to source of ignition and flash back.

Special Remarks on Explosion Hazards:
Vapors may form explosive mixtures with air. Containers may explode when heated. May polymerize explosively when heated. An attempt to chlorinate xylene with 1,3-Dichloro-5,5-dimethyl-2,4-imidazolidindione (dichlorohydrantoin) caused a violent explosion

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill:
Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined

areas; dike if needed. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, acids.

Storage:
Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 100 (ppm) [Canada] TWA: 435 (mg/m3) [Canada] TWA: 434 STEL: 651 (mg/m3) from ACGIH (TLV) [United States] TWA: 100 STEL: 150 (ppm) from ACGIH (TLV) [United States] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Sweetish.

Taste: Not available.

Molecular Weight: 106.17 g/mole

Color: Colorless. Clear

pH (1% soln/water): Not available.

Boiling Point: 138.5°C (281.3°F)

Melting Point: -47.4°C (-53.3°F)

Critical Temperature: Not available.

Specific Gravity: 0.864 (Water = 1)

Vapor Pressure: 0.9 kPa (@ 20°C)

Vapor Density: 3.7 (Air = 1)

Volatility: Not available.

Odor Threshold: 1 ppm

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 3.1

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility:
Insoluble in cold water, hot water. Miscible with absolute alcohol, ether, and many other organic liquids.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Heat, ignition sources, incompatibles

Incompatibility with various substances: Reactive with oxidizing agents, acids.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Store away from acetic acid, nitric acid, chlorine, bromine, and fluorine.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation.

Toxicity to Animals:
WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 2119 mg/kg [Mouse]. Acute dermal toxicity (LD50): >1700 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 5000 4 hours [Rat].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: 3 (Not classifiable for human.) by IARC. May cause damage to the following organs: blood, kidneys, liver, mucous membranes, bone marrow, central nervous system (CNS).

Other Toxic Effects on Humans: Hazardous in case of skin contact (irritant, permeator), of ingestion, of inhalation.

Special Remarks on Toxicity to Animals:
Lowest Lethal Dose: LDL [Human] - Route: Oral; Dose: 50 mg/kg LCL [Man] - Route: Oral; Dose: 10000 ppm/6H

Special Remarks on Chronic Effects on Humans:
Detected in maternal milk in human. Passes through the placental barrier in animal. Embryotoxic and/or foetotoxic in animal. May cause adverse reproductive effects (male and femael fertility (spontaneous abortion and fetotoxicity)) and birth defects based animal data.

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: Skin: Causes skin irritation. Can be absorbed through skin. Eyes: Causes eye irritation. Inhalation: Vapor causes respiratory tract and mucous membrane irritation. May affect central nervous system and behavior (General anesthetic/CNS depressant with effects including headache, weakness, memory loss, irritability, dizziness, giddiness, loss of coordination and judgement, respiratory depression/arrest or difficulty breathing, loss of appetite, nausea, vomiting, shivering, and possible coma and death). May also affects blood, sense organs, liver, and peripheral nerves. Ingestion: May cause gastrointestinal irritation including abdominal pain, vomiting, and nausea. May also affect liver and urinary system/ kidneys. May cause effects similar to those of acute inhalation. Chronic Potential Health Effects: Chronic inhalation may affect the urinary system (kidneys) blood (anemia), bone marrow (hyperplasia of bone marrow) brain/behavior/Central Nervous system. Chronic inhalation may alsocause mucosal bleeding. Chronic ingestion may affect the liver and metabolism (loss of appetite) and may affect urinary system (kidney damage)

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: CLASS 3: Flammable liquid.

Identification: : Xylenes UNNA: 1307 PG: III

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
Connecticut hazardous material survey.: Xylenes Illinois chemical safety act: Xylenes New York acutely hazardous substances: Xylenes Rhode Island RTK hazardous substances: Xylenes Pennsylvania RTK: Xylenes Minnesota: Xylenes Michigan critical material: Xylenes Massachusetts RTK: Xylenes Massachusetts spill list: Xylenes New Jersey: Xylenes New Jersey spill list: Xylenes Louisiana spill reporting: Xylenes California Director's List of Hazardous Substances: Xylenes TSCA 8(b) inventory: Xylenes SARA 302/304/311/312 hazardous chemicals: Xylenes SARA 313 toxic chemical notification and release reporting: Xylenes CERCLA: Hazardous substances.: Xylenes: 100 lbs. (45.36 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):
R10- Flammable. R21- Harmful in contact with skin. R36/38- Irritating to eyes and skin. S2- Keep out of the reach of children. S36/37- Wear suitable protective clothing and gloves. S46- If swallowed, seek medical advice immediately and show this container or label.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 3

Reactivity: 0

Personal Protection: h

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 3

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

Created: 10/11/2005 12:54 PM

Last Updated: 11/06/2008 12:00 PM

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APPENDIX C

JSA Forms

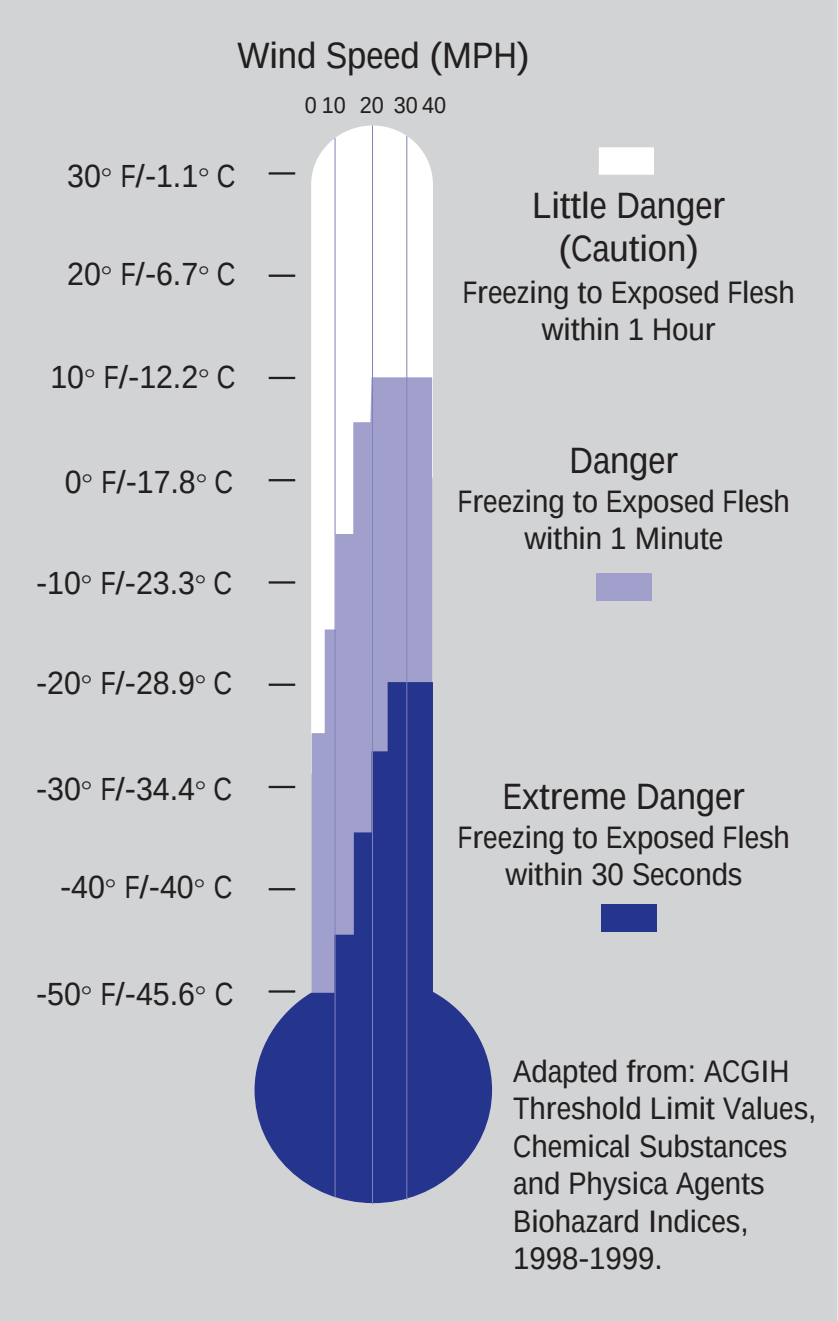
APPENDIX D

Heat and Cold Stress Guidelines

THE COLD STRESS EQUATION

LOW TEMPERATURE + WIND SPEED + WETNESS = INJURIES & ILLNESS

When the body is unable to warm itself, serious cold-related illnesses and injuries may occur, and permanent tissue damage and death may result. **Hypothermia** can occur when *land temperatures* are **above** freezing or *water temperatures* are below 98.6°F/ 37°C. Cold-related illnesses can slowly overcome a person who has been chilled by low temperatures, brisk winds, or wet clothing.



U.S. Department of Labor
Occupational Safety and Health Administration
OSHA 3156
1998

FROST BITE

What Happens to the Body:

FREEZING IN DEEP LAYERS OF SKIN AND TISSUE; PALE, WAXY-WHITE SKIN COLOR; SKIN BECOMES HARD and NUMB; USUALLY AFFECTS THE FINGERS, HANDS, TOES, FEET, EARS, and NOSE.

What Should Be Done: (land temperatures)

- Move the person to a warm dry area. Don't leave the person alone.
- Remove any wet or tight clothing that may cut off blood flow to the affected area.
- **DO NOT** rub the affected area, because rubbing causes damage to the skin and tissue.
- **Gently** place the affected area in a warm (105°F) water bath and monitor the water temperature to **slowly** warm the tissue. Don't pour warm water directly on the affected area because it will warm the tissue too fast causing tissue damage. Warming takes about 25-40 minutes.
- After the affected area has been warmed, it may become puffy and blister. The affected area may have a burning feeling or numbness. When normal feeling, movement, and skin color have returned, the affected area should be dried and wrapped to keep it warm. **NOTE:** If there is a chance the affected area may get cold again, do not warm the skin. If the skin is warmed and then becomes cold again, it will cause severe tissue damage.
- Seek medical attention as soon as possible.

HYPOTHERMIA - (Medical Emergency)

What Happens to the Body:

NORMAL BODY TEMPERATURE (98.6° F/37°C) DROPS TO OR BELOW 95°F (35^0 C); FATIGUE OR DROWSINESS; UNCONTROLLED SHIVERING; COOL BLUISH SKIN; SLURRED SPEECH; CLUMSY MOVEMENTS; IRRITABLE, IRRATIONAL OR CONFUSED BEHAVIOR.

What Should Be Done: (land temperatures)

- Call for emergency help (i.e., Ambulance or Call 911).
- Move the person to a warm, dry area. Don't leave the person alone. Remove any wet clothing and replace with warm, dry clothing or wrap the person in blankets.
- Have the person drink warm, sweet drinks (sugar water or sports-type drinks) if they are alert. **Avoid drinks with caffeine** (coffee, tea, or hot chocolate) or alcohol.
- Have the person move their arms and legs to create muscle heat. If they are unable to do this, place warm bottles or hot packs in the arm pits, groin, neck, and head areas. **DO NOT** rub the person's body or place them in warm water bath. This may stop their heart.

What Should Be Done: (water temperatures)

- Call for emergency help (Ambulance or Call 911). Body heat is lost up to 25 times faster in water.
- **DO NOT** remove any clothing. Button, buckle, zip, and tighten any collars, cuffs, shoes, and hoods because the layer of trapped water closest to the body provides a layer of insulation that slows the loss of heat. Keep the head out of the water and put on a hat or hood.
- Get out of the water as quickly as possible or climb on anything floating. **DO NOT** attempt to swim unless a floating object or another person can be reached because swimming or other physical activity uses the body's heat and reduces survival time by about 50 percent.
- If getting out of the water is not possible, wait quietly and conserve body heat by folding arms across the chest, keeping thighs together, bending knees, and crossing ankles. If another person is in the water, huddle together with chests held closely.

How to Protect Workers

- Recognize the environmental and workplace conditions that lead to potential cold-induced illnesses and injuries.
- Learn the signs and symptoms of cold-induced illnesses/injuries and what to do to help the worker.
- Train the workforce about cold-induced illnesses and injuries.
- Select proper clothing for cold, wet, and windy conditions. Layer clothing to adjust to changing environmental temperatures. Wear a hat and gloves, in addition to underwear that will keep water away from the skin (polypropylene).
- Take frequent short breaks in warm dry shelters to allow the body to warm up.
- Perform work during the warmest part of the day.
- Avoid exhaustion or fatigue because energy is needed to keep muscles warm.
- Use the buddy system (work in pairs).
- Drink warm, sweet beverages (sugar water, sports-type drinks). Avoid drinks with caffeine (coffee, tea, or hot chocolate) or alcohol.
- Eat warm, high-calorie foods like hot pasta dishes.

Workers Are at Increased Risk When…

- They have predisposing health conditions such as cardiovascular disease, diabetes, and hypertension.
- They take certain medication (check with your doctor, nurse, or pharmacy and ask if any medicines you are taking affect you while working in cold environments).
- They are in poor physical condition, have a poor diet, or are older.

OSHA® QUICK CARD™

Protecting Workers from Heat Stress

Heat Illness

Exposure to heat can cause illness and death. The most serious heat illness is heat stroke. Other heat illnesses, such as heat exhaustion, heat cramps and heat rash, should also be avoided.

There are precautions your employer should take any time temperatures are high and the job involves physical work.

Risk Factors for Heat Illness

- High temperature and humidity, direct sun exposure, no breeze or wind
- Low liquid intake; previous heat illnesses
- Heavy physical labor
- Waterproof clothing
- No recent exposure to hot workplaces

Symptoms of Heat Exhaustion

- Headache, dizziness, or fainting
- Weakness and wet skin
- Irritability or confusion
- Thirst, nausea, or vomiting

Symptoms of Heat Stroke

- May be confused, unable to think clearly, pass out, collapse, or have seizures (fits)
- May stop sweating

To Prevent Heat Illness, Your Employer Should

- Provide training about the hazards leading to heat stress and how to prevent them.
- Provide a lot of cool water to workers close to the work area. At least one pint of water per hour is needed.

For more complete information:

OSHA® Occupational Safety and Health Administration

U.S. Department of Labor

www.osha.gov (800) 321-OSHA

OSHA 3154-08-10R v2

OSHA® QUICK CARD™

- Schedule frequent rest periods with water breaks in shaded or air-conditioned areas.
- Routinely check workers who are at risk of heat stress due to protective clothing and high temperature.
- Consider protective clothing that provides cooling.

How You Can Protect Yourself and Others

- Know signs/symptoms of heat illnesses; monitor yourself; use a buddy system.
- Block out direct sun and other heat sources.
- Drink plenty of fluids. Drink often and BEFORE you are thirsty.
- Avoid beverages containing alcohol or caffeine.
- Wear lightweight, light colored, loose-fitting clothes.
- Be aware that poor physical condition, some health problems (such as high blood pressure or diabetes), pregnancy, colds and flu, and some medications can increase your personal risk. If you are under treatment, ask your healthcare provider.

What to Do When a Worker is Ill from the Heat

- Call a supervisor for help. If the supervisor is not available, call 911.
- Have someone stay with the worker until help arrives.
- Move the worker to a cooler/shaded area.
- Remove outer clothing.
- Fan and mist the worker with water; apply ice (ice bags or ice towels).
- Provide cool drinking water, if able to drink.

IF THE WORKER IS NOT ALERT or seems confused, this may be a heat stroke. CALL 911 IMMEDIATELY and apply ice as soon as possible.

If you have any questions or concerns, call OSHA at 1-800-321-OSHA.

For more complete information:

OSHA® Occupational Safety and Health Administration
U.S. Department of Labor
www.osha.gov (800) 321-OSHA

APPENDIX E

Health and Safety Briefing Tailgate Meeting Form

HEALTH & SAFETY BRIEFING / TAILGATE MEETING FORM

Site Name / Location _____

Date: _____ Weather Forecast: _____

Names of Personnel Attending Briefing

_____ _____ _____

_____ _____ _____

_____ _____ _____

Planned Work _____

_____

_____

_____

_____

Items Discussed _____

_____

_____

_____

_____

_____

_____

Work Permit Type and
Applicable Restrictions: _____

_____

_____

_____

Signatures of Attending Personnel

_____ _____ _____

_____ _____ _____

_____ _____ _____

APPENDIX F

Medical Data Form

APPENDIX G

Generic Community Air Monitoring Plan

APPENDIX G

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.

APPENDIX H

Accident Report and Investigation Form

APPENDIX I

Near Loss Reporting Form

APPENDIX J

OSHA Log

OSHA's Form 300 (Rev. 01/2004)

Log of Work-Related Injuries and Illnesses

Attention: This form contains information relating to employee health and must be used in a manner that protects the confidentiality of employees to the extent possible while the information is being used for occupational safety and health purposes.

Year _____

U.S. Department of Labor
Occupational Safety and Health Administration

You must record information about every work-related injury or illness that involves loss of consciousness, restricted work activity or job transfer, days away from work, or medical treatment beyond first aid. You must also record significant work-related injuries and illnesses that are diagnosed by a physician or licensed health care professional. You must also record work-related injuries and illnesses that meet any of the specific recording criteria listed in 29 CFR 1904.8 through 1904.12. Feel free to use two lines for a single case if you need to. You must complete an injury and illness incident report (OSHA Form 301) or equivalent form for each injury or illness recorded on this form. If you're not sure whether a case is recordable, call your local OSHA office for help.

Form approved OMB no. 1218-0176

Establishment name _____

City _____ State _____

Identify the person			Describe the case			Classify the case											
						CHECK ONLY ONE box for each case based on the most serious outcome for that case:				Enter the number of days the injured or ill worker was:		Check the "injury" column or choose one type of illness:					
(A) Case No.	(B) Employee's Name	(C) Job Title (e.g., Welder)	(D) Date of injury or onset of illness (mo./day)	(E) Where the event occurred (e.g. Loading dock north end)	(F) Describe injury or illness, parts of body affected, and object/substance that directly injured or made person ill (e.g. Second degree burns on right forearm from acetylene torch)	Death	Days away from work	Remained at work		Away From Work (days)	On job transfer or restriction (days)	(M) Injury	Skin Disorder	Respiratory Condition	Poisoning	Hearing Loss	All other illnesses
								Job transfer or restriction	Other record-able cases								
						(G)	(H)	(I)	(J)	(K)	(L)	(1)	(2)	(3)	(4)	(5)	(6)
					Page totals	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*

Be sure to transfer these totals to the Summary page (Form 300A) before you post it.

Injury	Skin Disorder	Respiratory Condition	Poisoning	Hearing Loss	All other illnesses
(1)	(2)	(3)	(4)	(5)	(6)

Public reporting burden for this collection of information is estimated to average 14 minutes per response, including time to review the instruction, search and gather the data needed, and complete and review the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments about these estimates or any aspects of this data collection, contact: US Department of Labor, OSHA Office of Statistics, Room N-3644, 200 Constitution Ave, NW, Washington, DC 20210. Do not send the completed forms to this office.

OSHA's Form 300A (Rev. 01/2004)

Summary of Work-Related Injuries and Illnesses

Year _____

U.S. Department of Labor
Occupational Safety and Health Administration

Form approved OMB no. 1218-0176

All establishments covered by Part 1904 must complete this Summary page, even if no injuries or illnesses occurred during the year. Remember to review the Log to verify that the entries are complete

Using the Log, count the individual entries you made for each category. Then write the totals below, making sure you've added the entries from every page of the log. If you had no cases write "0."

Employees former employees, and their representatives have the right to review the OSHA Form 300 in its entirety. They also have limited access to the OSHA Form 301 or its equivalent. See 29 CFR 1904.35, in OSHA's Recordkeeping rule, for further details on the access provisions for these forms.

Number of Cases

Total number of deaths	Total number of cases with days away from work	Total number of cases with job transfer or restriction	Total number of other recordable cases
0	0	0	0
(G)	(H)	(I)	(J)

Number of Days

Total number of days away from work	Total number of days of job transfer or restriction
0	0
(K)	(L)

Injury and Illness Types

Total number of…

	(M)		
(1) Injury	0	(4) Poisoning	0
(2) Skin Disorder	0	(5) Hearing Loss	0
(3) Respiratory Condition	0	(6) All Other Illnesses	0

Establishment information

Your establishment name _____

Street _____

City _____ State _____ Zip _____

Industry description (e.g., Manufacture of motor truck trailers)

_____

Standard Industrial Classification (SIC), if known (e.g., SIC 3715)

___ ___ ___ ___

OR North American Industrial Classification (NAICS), if known (e.g., 336212)

___ ___ ___ ___ ___ ___

Employment information

Annual average number of employees _____

Total hours worked by all employees last year _____

Sign here

Knowingly falsifying this document may result in a fine.

I certify that I have examined this document and that to the best of my knowledge the entries are true, accurate, and complete.

_____ Company executive

_____ Title

_____ Phone

_____ Date

Post this Summary page from February 1 to April 30 of the year following the year covered by the form

Public reporting burden for this collection of information is estimated to average 50 minutes per response, including time to review the instruction, search and gather the data needed, and complete and review the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments about these estimates or any aspects of this data collection, contact: US Department of Labor, OSHA Office of Statistics, Room N-3644, 200 Constitution Ave. NW, Washington, DC 20210. Do not send the completed forms to this office.

OSHA's Form 301
Injuries and Illnesses Incident Report

Attention: This form contains information relating to employee health and must be used in a manner that protects the confidentiality of employees to the extent possible while the information is being used for occupational safety and health purposes.

U.S. Department of Labor

Occupational Safety and Health Administration

Form approved OMB no. 1218-0176

This *Injury and Illness Incident Repor* t is one of the first forms you must fill out when a recordable work-related injury or illness has occurred. Together with the *Log of Work-Related injuries and Illnesses* and the accompanying *Summary*, these forms help the employer and OSHA develop a picture of the extent and severity of work-related incidents.

Within 7 calendar days after you receive information that a recordable work-related injury or illness has occurred, you must fill out this form or an equivalent. Some state workers' compensation, insurance, or other reports may be acceptable substitutes. To be considered an equivalent form, any substitute must contain all the information asked for on this form.

According to Public Law 91-596 and 29 CFR 1904, OSHA's recordkeeping rule, you must keep this form on file for 5 years following the year to which it pertains

If you need additional copies of this form, you may photocopy and use as many as you need.

Completed by _____

Title _____

Phone _____ Date _____

Information about the employee

1) Full Name _____

2) Street _____

City _____ State _____ Zip _____

3) Date of birth _____

4) Date hired _____

5) ☐ Male
☐ Female

Information about the physician or other health care professional

6) Name of physician or other health care professional

_____

_____

7) If treatment was given away from the worksite, where was it given?

Facility _____

Street _____

City _____ State _____ Zip _____

8) Was employee treated in an emergency room?
☐ Yes
☐ No

9) Was employee hospitalized overnight as an in-patient?
☐ Yes
☐ No

Information about the case

10) Case number from the Log _____ *(Transfer the case number from the Log after you record the case.)*

11) Date of injury or illness _____

12) Time employee began work _____ AM/PM

13) Time of event _____ AM/PM ☐ Check if time cannot be determined

14) **What was the employee doing just before the incident occurred?** Describe the activity, as well as the tools, equipment or material the employee was using. Be specific. Examples: "climbing a ladder while carrying roofing materials"; "spraying chlorine from hand sprayer"; "daily computer key-entry."

15) **What happened?** Tell us how the injury occurred. Examples: "When ladder slipped on wet floor, worker fell 20 feet"; "Worker was sprayed with chlorine when gasket broke during replacement"; "Worker developed soreness in wrist over time."

16) **What was the injury or illness?** Tell us the part of the body that was affected and how it was affected; be more specific than "hurt", "pain", or "sore." Examples: "strained back"; "chemical burn, hand"; "carpal tunnel syndrome."

17) **What object or substance directly harmed the employee?** Examples: "concrete floor"; "chlorine"; "radial arm saw." If this question does not apply to the incident, leave it blank.

18) **If the employee died, when did death occur?** Date of death

Public reporting burden for this collection of information is estimated to average 22 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Persons are not required to respond to the collection of information unless it displays a current valid OMB control number. If you have any comments about this estimate or any other aspects of this data collection, including suggestions for reducing this burden, contact: US Department of Labor, OSHA Office of Statistics, Room N-3644, 200 Constitution Ave, NW, Washington, DC 20210. Do not send the completed forms to this office.

APPENDIX H

Site Management Forms

APPENDIX H
SITE MANAGEMENT FORMS

Summary of Green Remediation Metrics for Site Management

Site Name: _____ Site Code: _____
Address: _____ City: _____
State: _____ Zip Code: _____ County: _____

Initial Report Period (Start Date of period covered by the Initial Report submittal)
Start Date: _____

Current Reporting Period
Reporting Period From: _____ To: _____

Contact Information
Preparer's Name: _____ Phone No.: _____
Preparer's Affiliation: _____

I. Energy Usage: Quantify the amount of energy used directly on-site and the portion of that derived from renewable energy sources.

	Current Reporting Period	**Total to Date**
Fuel Type 1 (e.g. natural gas (cf))		
Fuel Type 2 (e.g. fuel oil, propane (gals))		
Electricity (kWh)		
Of that Electric usage, provide quantity:		
Derived from renewable sources (e.g. solar, wind)		
Other energy sources (e.g. geothermal, solar thermal (Btu))		

Provide a description of all energy usage reduction programs for the site in the space provided on Page 3.

II. Solid Waste Generation: Quantify the management of solid waste generated on-site.

	Current Reporting Period (tons)	**Total to Date (tons)**
Total waste generated on-site		
OM&M generated waste		
Of that total amount, provide quantity:		
Transported off-site to landfills		
Transported off-site to other disposal facilities		
Transported off-site for recycling/reuse		
Reused on-site		

Provide a description of any implemented waste reduction programs for the site in the space provided on Page 3.

III. Transportation/Shipping: Quantify the distances travelled for delivery of supplies, shipping of laboratory samples, and the removal of waste.

	Current Reporting Period (miles)	**Total to Date (miles)**
Standby Engineer/Contractor		
Laboratory Courier/Delivery Service		
Waste Removal/Hauling		

Provide a description of all mileage reduction programs for the site in the space provided on Page 3. Include specifically any local vendor/services utilized that are within 50 miles of the site.

IV. Water Usage: Quantify the volume of water used on-site from various sources.

	Current Reporting Period (gallons)	**Total to Date (gallons)**
Total quantity of water used on-site		
Of that total amount, provide quantity:		
Public potable water supply usage		
Surface water usage		
On-site groundwater usage		
Collected or diverted storm water usage		

Provide a description of any implemented water consumption reduction programs for the site in the space provided on Page 3.

V. Land Use and Ecosystems: Quantify the amount of land and/or ecosystems disturbed and the area of land and/or ecosystems restored to a pre-development condition (i.e. Green Infrastructure).

	Current Reporting Period (acres)	**Total to Date (acres)**
Land disturbed		
Land restored		

Provide a description of any implemented land restoration/green infrastructure programs for the site in the space provided on Page 3.

Description of green remediation programs reported above (Attach additional sheets if needed)
Energy Usage:
Waste Generation:
Transportation/Shipping:
Water usage:
Land Use and Ecosystems:
Other:

CERTIFICATION BY CONTRACTOR
I, _____ (**Name**) do hereby certify that I am _____ (**Title**) of the Company/Corporation herein referenced and contractor for the work described in the foregoing application for payment. According to my knowledge and belief, all items and amounts shown on the face of this application for payment are correct, all work has been performed and/or materials supplied, the foregoing is a true and correct statement of the contract account up to and including that last day of the period covered by this application. _____ **Date** **Contractor**

Well Sampling Data Form

Client: _____ **Project Number:** _____

Site Location: _____

Well No: _____ Weather: _____

Date: _____ Purge Water Disposal: _____

Sampled By: _____ Well Diameter / Type: _____

Depth of Well (ft): _____ Water Column (ft): _____

Depth to Water(ft): _____ Volume of Water in Well (gal) _____

Depth to Product (ft): _____ Volume of Water to Remove (gal): _____

well diameter:	1 in	2 in	4 in	6 in	8 in
gallons per foot:	0.041	0.163	0.653	1.469	2.611

Start Purging: _____ Purge Rate: _____

End Purging: _____ Volume of Water Removed (gal): _____

Method of Purge: _____ Method of Sampling: _____

Physical Appearance/ Comments: _____

Samples Collected: _____
(analyses / no. bottles)

_____

_____ Laboratory : _____

Field Measurements:

Time	Volume gal	Dissolved O_2 mg/L	ORP mV	Conductivity mS/cm S/m	Turbidity NTU	pH SU	Temperature C° F°	Salinity %

Soil Vapor/Ambient Air Sampling Data Form

Client: _____ **Project Number:** _____

Site Location: _____

Sample Location No: _____ Weather: _____

Date: _____ Purge Water Disposal: _____

Sampled By: _____ Sampling Device Type: _____

Canister/Device No: _____ Regulator No: _____

Sample Time Duration: _____ Volume of Water in Well (gal) _____

Depth to Product (ft): _____ Volume of Water to Remove (gal): _____

well diameter:	1 in	2 in	4 in	6 in	8 in
gallons per foot:	0.041	0.163	0.653	1.469	2.611

Sample Start Time: _____ Canister Starting Pressure: _____

Sample End Time: _____ Canister End Pressure: _____

Sample Location Describtion/Comments: _____

Samples Collected: (analyses / no. bottles) _____

Sample Time: _____ Laboratory : _____

Duplicate Sample/Time: _____

Field Measurements:

Start PID Concentration: _____

End PID Concentration: _____

Additional Comments: _____

WELL INSPECTION CHECKLIST

WELL No. _____ **DATE:** _____

CHECKLIST FOR INSPECTION OF OUTSIDE OF EXISTING WELLS

WEATHER CONDITIONS: _____

AIR TEMPERATURE: _____

	Yes	No	Remarks
1. CEMENT SEAL			
Intact:			
Cracked:			
Missing:			
2. PONDING OF WATER AROUND CEMENT SEAL:			
3. PROTECTIVE STEEL PIPE AND LOCK (If Used)			
Pipe - Intact:			
Lock - Intact:			
4. PVC CASING (Stick-Up) STRAIGHT:			
5. DESIGNATED LEVELING POINT CLEARLY MARKED:			
6. WELL IS PROTECTED:			
7. WELL IS CLEARLY MARKED:			

CHECKLIST FOR INSPECTION OF INSIDE OF EXISTING WELLS

1. %lel: _____
2. PID (PPM): _____
3. DEPTH TO WATER FROM TOP OF PVC: _____
4. DEPTH TO BOTTOM FROM TOP OF PVC: _____

APPENDIX I

Permits and/or Permit Equivalent

APPENDIX I
PERMITS AND/OR PERMIT EQUIVALENT

(To be added as required)