Draft Supplemental Remedial Investigation and Pilot Test Work Plan

For
12 Eckford Street (aka 470 Manhattan Avenue)
Brooklyn, New York 11222
Block 2714, Lots 30, 32, and 33
OER Project Number 16CVCP030K

E-Designation E-138
CEQR Number 04DCP003K
Greenpoint-Williamsburg Rezoning

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1.0 INTRODUCTION

This Supplemental Remedial Investigation (SRI) and Pilot Test Work Plan (Work Plan) has been developed for the property located at 12 Eckford Street (aka 470 Manhattan Avenue) in Brooklyn, New York, herein referred to as “the Site”. The Site is located within the Greenpoint neighborhood of Brooklyn and is legally defined as Block 2714, Lots 30, 32, and 33. Although Lot 1 will no longer be developed as part of the Site, it will be accessible for the work outlined in this Work Plan. Currently, the Site consists of a series of vacant lots. The following scope of work has been developed in response to previous investigations conducted at the Site and a conference call with representatives of the New York City Office of Environmental Remediation (NYCOER), the New York State Department of Environmental Conservation (NYSDEC), AKRF, Inc. (AKRF) and 470 Manhattan Ave LLC (the client) on May 3, 2016 and a Brownfield Cleanup Program (BCP) Pre-Application meeting on May 17, 2016 with the above-referenced parties.

2.0 SITE LOCATION, CURRENT USE, AND PROPOSED DEVELOPMENT PLANS

The Site is located in the Greenpoint neighborhood of Brooklyn and is identified as Block 2714 and Lots 30, 32, and 33. The proposed development project consists of the construction of a seven-story building with mechanical space in the partial cellar on the southwestern portion of the Site; residential amenities and a lobby on the first floor; and 108 residential units above. Approximately 20 percent of the units will consist of affordable housing. The proposed building will occupy the southern and western portion of the Site with 37 tenant parking spaces on the northern and eastern portions of the Site. Excavation is expected to extend to approximately 12 feet below grade at the location of the partial cellar and at the location of the elevator pits, and up to 4 feet in the area of the slab-on-grade portion of the building. The northern and eastern portions of the Site will be graded for a parking lot. Proposed development plans are included as Appendix A.

The Site is relatively level and lies at an elevation of approximately 16 feet above sea level. Groundwater was encountered beneath the Site during AKRF’s October 2015 Remedial Investigation (RI) between approximately 10 and 12 feet below grade.

3.0 PREVIOUS ENVIRONMENTAL INVESTIGATIONS

Phase I Environmental Site Assessment (ESA), 470 Manhattan Avenue, Brooklyn, New York, URS Corporation, April 2013

URS Corporation performed a Phase I ESA for Block 2714, Lot 33 at the Site. The Phase I ESA included the findings of a reconnaissance and an evaluation of readily available historical information, selected environmental databases, and electronic records.

This assessment revealed evidence of Recognized Environmental Conditions (RECs), including:

- Lot 33 at the Site contains an (E) Designation for hazardous materials listed in the Department of City Planning (E) Designation database established as part of the rezoning of nearby properties.
- The surrounding area was developed historically with manufacturing facilities, including an electroplating facility, dry cleaners, a steel company, and Mobil Oil Corporation. These properties were listed in multiple databases with open and closed-status spills, hazardous waste generation, soil and groundwater contamination and remediation, chemical and petroleum bulk storage, and leaking storage tanks.
Phase I Environmental Site Assessment (ESA), 119-125 Newton Street, Brooklyn, New York, Hydrotech Environmental, Corp., April 2013

Hydrotech Environmental, Corp. performed a Phase I ESA for Block 2714, Lots 30 and 32 at the Site in April 2003. The Phase I ESA included the findings of a reconnaissance and an evaluation of readily available historical information and selected environmental databases and electronic records.

This assessment revealed evidence of Recognized Environmental Conditions (RECs), including:

- Lots 30 and 32 contain (E) Designations for hazardous materials listed in the Department of City Planning (E) Designation database established as part of the rezoning of nearby properties.
- There is the potential presence of underground storage tank(s) (USTs) on Lot 32 based on historic Sanborn maps from 1942-2007.
- Lots 30 and 32 were historically developed with a garage, a metal fabrication shop, and a scrap metal yard.

Asbestos Report, 470 Manhattan Avenue and 119-125 Newton Street, Brooklyn, New York, Jet Environmental Consulting, LLC, July 2014

Jet Environmental Consulting, LLC conducted an asbestos survey of the former Site buildings in July 2014. A total of 30 samples were collected for laboratory analysis. The findings of the asbestos investigation identified asbestos within the 470 Manhattan Avenue building at the following locations: entranceway sub-floor tile, cove base mastic, window glazing, and room membrane and flashing. Jet Environmental Consulting, LLC recommended removal of all asbestos-containing material (ACM) prior to demolition of the Site building.

Environmental Summary Report, 470 Manhattan Avenue, Block 2714, Lots 1, 30, 32, and 33, Brooklyn, New York, AKRF, Inc., September 2015

AKRF prepared an Environmental Summary Report of the Site and the north-adjacent Lot 1 in September 2015. The Phase I ESA summary included the findings of a reconnaissance and an evaluation of historical Sanborn insurance maps and selected environmental databases.

This assessment revealed evidence of Recognized Environmental Conditions (RECs), including:

- Each of the Site lots contain (E) Designations for hazardous materials listed in the Department of City Planning (E) Designation database established as part of the rezoning of Williamsburg and Greenpoint.
- Historic uses include unspecified manufacturing, a sash and door storage and a woodworking shop associated with the I. Feldman & Son Inc. Sash & DoorManufacturer, a metal container manufacturer, and an enameling works with a baking oven and spray booths on Lot 1; a garage and an unspecified factory on Lot 30; freight and motor freight storage with a gasoline tank on Lot 32; and a barrel shed, a carriage garage, and a cooperage on Lot 33. These historic uses may have affected subsurface conditions at the Site.
- A vent pipe and fill port were observed on the northeastern exterior wall of the three-story residential building on Lot 1 fronting Eckford Street. The fill port was labeled “No. 2” fuel oil. Minor staining was observed around the fill port. An oil burner switch was observed on the wall of the remaining portion of the building on Lot 30; however, no evidence of a tank was observed. Undocumented discharges from petroleum storage and/or usage may have affected subsurface conditions at the Site.
The surrounding area was developed historically with residential, commercial, educational, manufacturing, automotive, and woodworking uses, including the Joseph Goetz Manhattan Cabinet Works, the I. Feldman Sash and Door Manufacturer, unspecified manufacturing and warehouses, textile printing, cloth combining, a wire spring manufacturer, a cabinet finisher, a tin smith, a fuel oil company, a blacksmith, the George N. Gardiner & Son Marine Paint Manufacturer, a beverage bottling, junk storage, Mesisel Danowitz & Company with associated planing and molding facilities, lumber storage and yards, kilns, cooperages, Atlantic Hardwood Company, an iron pipe warehouse, a metal works, lacquer spraying, a machine shed and shop, a motor grinder, a motor freight station, garages with gasoline tanks, trucking and parking facilities, tractor storage, a truck bay, and automotive repair, washing, and filling stations. Additionally, several properties in the surrounding area were listed in the Resource Conservation Recovery Act (RCRA), Petroleum Bulk Storage (PBS), Spills, (E) Designation, and Leaking Underground Storage Tank (LUST) databases. A groundwater monitoring well was observed east of the Site on the Graham Avenue sidewalk. The purpose of the monitoring well was not known, but may be related to current or historical off-site uses. These past and/or present uses may have affected subsurface conditions at the Site.

Phase II Work Plan (Short Form), 470 Manhattan Avenue, Block 2714, Lots 1, 30, 32, and 33, Brooklyn, New York, AKRF, Inc., September 2015

AKRF prepared a Phase II Work Plan and associated Health and Safety Plan (HASP) for the Site and north-adjacent Lot 1 in September 2015. The work plan proposed sampling locations and included the installation of ten soil borings with the collection and laboratory analysis of twenty soil samples, the installation of five temporary groundwater monitoring wells with the collection and installation of five groundwater samples, and the installation of seven temporary soil vapor points with the collection and analysis of seven soil vapor points and one ambient air sample. The HASP provided Site-specific health and safety measures during implementation of the investigation. The scope of the investigation was based on the previous reports for the Site.

Remedial Investigation Report, 470 Manhattan Avenue, Block 2714, Lots 1, 30, 32, and 33, Brooklyn, New York, AKRF, Inc., October 2015

AKRF conducted a Remedial Investigation (RI) for the Site and Lot 1 in November 2015. The RI was conducted in accordance with the AKRF’s September 2015 Phase II Work Plan. Soil beneath the Site consisted of approximately 12 feet of historic fill characterized by sand, gravel, silt, concrete, asphalt, brick, and ash, underlain by apparent native sand, gravel, and silt. Groundwater was encountered between approximately 10 and 12 feet below grade.

Soil and groundwater samples were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), pesticides, and target analyte list (TAL) metals. Analytical results were compared to NYSDEC 6 NYCRR Part 375 Unrestricted Use Soil Cleanup Objectives (UUSCOs) and Part 375 Soil Cleanup Objectives for Restricted-Residential Use (RRSCOs) and groundwater sample analytical results were compared to the New York State 6 NYCRR Part 703.5 Class GA Ambient Water Quality Standards (AWQS). The RIR concluded that some elevated concentrations of VOCs, SVOCs, metals, and PCBs were detected in soil and some elevated VOCs [including 1,1-dichloroethane on Lot 1 and methyl tert-butyl ether (MTBE)], SVOCs, and metals were detected in groundwater.

Soil vapor sample analytical results were compared to the New York State Department of Health (NYSDOH) 2006 Guidance for Evaluating Soil Vapor Intrusion soil vapor intrusion air guidance values (AGVs) and Matrices, the September 2013 NYSDOH Fact Sheet update for tetrachloroethylene (PCE), and the August 2015 NYSDOH Fact Sheet update for trichloroethene (TCE). VOCs associated with
petroleum were detected at individual concentrations up to 279 micrograms per cubic meter (µg/m³). Solvent-related VOCs [including acetone, carbon disulfide, carbon tetrachloride, chloroform, dichlorodifluoromethane, isopropyl alcohol, tetrachloroethylene (PCE), trichloroethylene (TCE), trans-1,2-dichloroethene, trichlorofluoromethane, 1,1,1-trichloroethane (1,1,1-TCA), and 1,1-dichloroethane (1,1-DCA)] were detected at individual concentrations up to 2,580 µg/m³. TCE was detected in two of the soil vapor samples at concentrations of 14.6 µg/m³ and 46 µg/m³, above the AGV of 2 µg/m³ on the northeastern portion of the Site.

Remedial Action Work Plan, 470 Manhattan Avenue, Block 2714, Lots 1, 30, 32, and 33, Brooklyn, New York, AKRF Engineering, P.C., October 2015

AKRF Engineering, P.C. prepared a Remedial Action Work Plan (RAWP) for the Site and north-adjacent Lot 1 in October 2015. The RAWP outlined the remedial action objectives, which established procedures and cleanup objectives for the protection of public health and the environment. The RAWP established Track 4 Site-Specific Soil Cleanup Objectives (SSSCOs) and soil handling procedures, required the installation of an active sub-slab depressurization system (SSDS) to address potential vapor intrusion into the proposed building, and outlined a project schedule for construction. The RAWP and associated Stipulation List were approved by NYCOER in November 2015.

Delineation Sampling Work Plan, 470 Manhattan Avenue Block 2714, Lots 1, 30, 32, and 33, Brooklyn, New York, AKRF, Inc., February 2016

AKRF prepared a work plan to delineate the elevated solvent-related VOC contamination identified in soil vapor during the RI. The work plan was developed in response to AKRF’s November 2015 RIR and a telephone conference with representatives of NYCOER. The work plan proposed sampling locations and included the installation of three soil borings with the collection and laboratory analysis of three soil samples, and the installation of four soil vapor points with the collection and laboratory analysis of four soil vapor samples.

AKRF conducted delineation sampling of the northeastern portion of the Site in April 2016. The results of the delineation sampling did not identify elevated concentrations of VOCs in soil. 1,1,1-TCA and acetone were detected in one or more of the soil samples at a low level estimated concentration below applicable standards. A review of the soil vapor sample analytical results identified 30 VOCs detected in the four soil vapor samples. PCE was detected in three of the four soil vapor samples at concentrations between 13.6 mg/m³ and 956 µg/m³, above the AGV of 30 µg/m³. TCE was detected in two of the soil vapor samples at concentrations of 3.24 µg/m³ and 1,120 µg/m³, above the AGV of 2 µg/m³. 1,1-DCA was detected in three of the soil vapor samples at concentrations ranging between 5.54 µg/m³ and 9,230 µg/m³. 1,1,1-TCA was detected in each of the soil vapor samples at concentrations ranging between 2,58 µg/m³ and 37,300 µg/m³. 1,1-DCA and 1,1,1-TCA currently do not have established AGVs.

4.0 INVESTIGATION

4.1 Supplemental Remedial Investigation Scope

4.1.1 Soil, Groundwater, and Soil Vapor Summary

An investigation of soil, soil vapor, and groundwater is being performed to further characterize and delineate solvent-related VOCs identified on the northeastern portion of the Site during AKRF’s October 2015 Remedial Investigation (RI) and AKRF’s April 2016 Delineation Sampling. The proposed sampling will attempt to delineate the solvent contamination identified on the northeastern portion of the Site for remediation and development purposes. A soil vapor extraction (SVE) pilot test will be implemented to
expedite design for in-situ treatment of potential source area contaminants in soil and/or soil vapor. The sampling procedures of this investigation will be performed in accordance with the New York State Department of Environmental Conservation (NYSDEC) Technical Guidance for Site Investigation and Remediation DER-10. Field work will be conducted under the Site-specific Health and Safety Plan (HASP) provided as Appendix B. Emergency contact information is provided in Section 3.2 of the HASP.

Eight soil samples; at least four groundwater samples; and four soil vapor samples, one indoor air sample, and one ambient air sample will be collected as part of the SRI. Groundwater is expected to be first encountered at approximately 10 below grade and flow towards the East River, located approximately 1-mile west of the Site. Each sampling location will be accurately measured to fixed benchmarks (e.g., property lines or adjacent structures). A Proposed Sampling Location Plan is provided as Figure 2.

4.1.2 Soil Sampling

To advance the soil borings, AKRF proposes to use a Geoprobe® Direct-Push Probe (DPP) drill rig at eight proposed sampling locations shown on Figure 2, denoted as SRI-SB-1 through SRI-SB-8. The exact sampling locations will be finalized in the field based on access considerations, utilities, etc. Utility mark outs will be requested from the New York City/Long Island One Call Center prior to commencing drilling.

The proposed soil borings will be advanced to approximately 5 feet below the groundwater interface, expected to be encountered approximately 10 feet below grade. Soil samples will be obtained in a stainless steel, macro-core sampler with an internal acetate liner and will be field-screened using a photoionization detector (PID), which measures relative concentrations of VOCs. At each boring, AKRF field personnel [Qualified Environmental Professional (QEP), geologist, engineer, or other qualified technician working under the direction of a QEP] will prepare DER-10 compliant boring logs, and will screen the recovered soil using headspace analysis for organic vapors with a PID and evaluate for visual and olfactory impacts prior to selecting samples. At each boring location, AKRF field personnel will record and document subsurface conditions. All field work will be recorded in a field log.

One soil sample will be selected for laboratory analysis from each of the borings at the interval displaying the greatest evidence of contamination is observed (e.g., odor, staining, or PID readings). In the absence of contamination, the soil sample will be collected from the interval directly above the groundwater interface.

4.1.3 Monitoring Well Installation and Groundwater Sampling

AKRF’s drilling contractor will install four semi-permanent groundwater monitoring wells (denoted as SRI-MW-1 through SRI-MW-4) at the locations shown on Figure 2. The well points will be installed approximately 5 feet into the water table and constructed with 10 feet of pre-packed screen straddling the water table. Immediately following well installation, the wells will be purged of three to five times their volume prior to sampling and will be sampled utilizing peristaltic pump and dedicated polyethylene tubing. The samples will be field-screened for evidence of contamination (i.e., odor, sheen, and PID reading). AKRF will collect one groundwater sample from each of the wells using low-flow sampling techniques. Sampling will be conducted in accordance with NYSDEC Draft DER-10 Technical Guidance for Site Investigation and Remediation, dated May
2010, and Sampling Guidelines and Protocols, dated March 1991. Groundwater wells will be gauged with a water level meter to record a depth to groundwater reading (1/100 foot), and if necessary, an interface meter to determine the thickness of light non-aqueous phase liquid (LNAPL).

The well heads will be protected with flush-mount well cover and locking j-plug for later use during the SVE pilot test. The wells will be surveyed by a NYS-licensed surveyor to determine groundwater elevation and flow beneath the Site. One groundwater sample will be collected for laboratory analysis from each of the four groundwater wells.

4.1.4 Soil Vapor Sampling

Four soil vapor samples (denoted as SRI-SV-1 through SRI-SV-4) will be collected to assess subsurface conditions at the proposed sampling locations shown on Figure 2. The three soil vapor samples collected from soil vapor points SRI-SV-1 through SRI-SV-3 will be collected from approximately 5 feet below grade. One sub-slab soil vapor sample (SRI-SV-4) will be collected on Lot 29 from immediately below the cellar floor slab within the east-adjacent residential building. One indoor air sample and one ambient air sample will also be collected concurrently with the soil vapor samples.

The three soil vapor sampling points on Lot 1 will be installed using a Geoprobe® DPP drill rig and the soil vapor point in the cellar on Lot 29 will be installed using a slide hammer or hammer drill due to access considerations. At each location, a monitoring point (consisting of tubing connecting an expendable drive point to a vapor sampler) will be installed, the tubing will then be retracted approximately 12 inches to create a void, and hydrated bentonite will be used to seal the gap around the tubing. One to three implant volumes will be purged from each sampling point prior to the collection of samples. Samples will then be collected into 6-liter stainless steel Summa canisters that have been batch-certified clean by the laboratory, each with a flow controller calibrated for sample collection over two hours. Flow rate of both purging and sampling will not exceed 0.2 liters per minute (L/min). Samples will be collected in accordance with the Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York (NYSDOH October 2006).

A log sheet will be maintained summarizing sample identification, date and time of sample collection, sampling depth, identity of samplers, sampling methods and devices, soil vapor purge volumes, volume of the soil vapor extracted, vacuum of canisters before and after the samples are collected, apparent moisture content of the sampling zone, and chain of custody protocols.

Helium will be used as a tracer gas in accordance with NYSDOH protocols to serve as a QA/QC device to verify the integrity of the soil vapor probe seal. A container (box, plastic pail, etc.) will serve to keep the tracer gas in contact with the probe during testing. A portable monitoring device will be used to analyze a sample of soil vapor for the tracer gas prior to sampling. If the tracer sample results show a significant presence of helium, the probe seals will be adjusted to prevent infiltration. At the conclusion of the sampling round, tracer monitoring will be performed a second time to confirm the integrity of the probe seals. Additionally, an indoor air sample in the east-adjacent residential building on Lot 29 and an ambient air sample will be collected concurrently to determine if off-site intrusion of target VOCs has occurred. An indoor air quality (IAQ) building inventory will be completed to establish background indoor air conditions for data...
comparison. The Summa canisters will be analyzed by a NYSDOH-certified laboratory for VOCs by EPA Method TO-15.

The soil vapor points will be left in place for use during the SVE pilot test.

4.2 Pilot Test Scope

4.2.1 Pilot Test SVE Well Installation

Two 4-inch diameter polyvinyl chloride (PVC) 10-foot deep SVE wells will be installed in the vicinity of the solvent-related VOC hotspot on the northeastern portion of the Site using a Geoprobe® drill rig equipped with augers. The soil vapor sample collected from soil vapor point SSV-2 during AKRF’s April 2016 delineation sampling exhibited the highest concentrations of the target solvent-related compounds [1,1,1-TCA, 1,1-DCA, tetrachloroethene (PCE), and trichloroethene(TCE)]. Therefore, the pilot test extraction wells will be installed northeast and southwest of soil vapor point SSV-2. The soil vapor extraction wells (denoted as SVE-01 and SVE-02) are shown on Figure 2. While the target area for a potential full-scale SVE system would be further defined based upon the SRI findings, pilot test results, and remedial design, it is envisioned that one or both of the SVE pilot test wells would be utilized (for the full-scale system design).

A blower equipped with a moisture separator, flow meter, and vacuum gauge will be connected to each of the extraction wells. One granular activated carbon (GAC) filter equipped with 170 pounds of carbon will be used to treat recovered vapors during the pilot test. Sampling ports will be provided to determine the influent VOC concentrations.

Three additional soil vapor points (denoted as SRI-SV-5 through SRI-SV-7) will be installed in the vicinity of the SVE wells on the northeastern portion of the Site as shown on Figure 2. The three soil vapor point clusters will be and installed at approximately 3 and 8 feet below grade for use as observation wells during the pilot test (denoted as SRI-SV-5 through SRI-SV-7). In addition to the three clustered soil vapor points, the four groundwater wells (denoted as SRI-MW-1 through SRI-MW-4) installed as part of the SRI will also be used as observation wells during the SVE pilot test. The effective radius of influence (ROI) will be evaluated for both of the extraction wells by plotting the observed vacuum versus distance from each extraction well from each of the seven observation wells.

4.2.2 SVE Communication Testing

The pilot test will be performed as a step test with varying flow rates and applied vacuums used to optimize the system design. Throughout the pilot test, extraction flow rate, applied (at the SVE pilot test wells) and induced (at the observation points) vacuum, and total VOC concentrations will be measured in extraction wells and observation wells using a PID. The data will be recorded on pilot test data sheets and graphically plotted to aid in optimizing the system design.

After each well is constructed, it will be connected to a blower and the corresponding sub-slab negative pressure will be measured using manegheic differential pressure gauges at soil vapor points in the vicinity of the extraction well. The communication testing will be used to establish the necessary quantity and location of extraction wells for a full-scale SVE system.
Monitoring will consist of measuring vacuum at each point with a maneghelic differential pressure gauge during full system operation. A vacuum reading of 0.1 inches of water column will be utilized at the minimum induced vacuum target for the monitoring points during the SVE communication testing to establish the design ROI for the respective extraction well.

This iterative design approach of SVE well installation with communication testing ensures a continuous zone of extraction with adequate vacuum to mobilize and/or contain target contamination. The capacity (vacuum and flow) at each SVE well will also be evaluated for use in the final system design, including the potential need for additional SVE wells, blower specifications, and treatment components. Any temporary monitoring points will be removed after completing the communication testing.

One influent air sample will be collected during each step test for laboratory analysis of VOCs by EPA Method TO-15 to determine VOC mass loading and associated treatment requirements as part of the design for a full-scale SVE system. The laboratory sample collected during the pilot testing will be analyzed by a NYSDOH-certified laboratory using Category B deliverables.

4.3 Sample Analysis

Soil and groundwater samples slated for laboratory analysis will be placed in laboratory-supplied containers and shipped in accordance with appropriate Environmental Protection Agency (EPA) protocols to a New York State Department of Health (NYSDOH)-certified laboratory. The samples will be analyzed for VOCs using EPA Method 8260. Soil vapor, ambient air, and indoor air samples will be analyzed for VOCs by EPA Method TO-15. A standard five to seven business-day turnaround time will be requested from the laboratory. Category B deliverables will be completed for all laboratory analyses.

If either LNAPL and/or DNAPL are detected, appropriate samples will be collected for characterization and “fingerprint analysis” and required regulatory reporting (i.e. NYSDEC spills hotline) will be performed.

4.4 Quality Assurance/Quality Control (QA/QC) Procedures

QA/QC procedures will be used to provide performance information with regard to accuracy, precision, sensitivity, representation, completeness, and comparability associated with the sampling and analysis for this investigation. Field QA/QC procedures will be used (1) to document that samples are representative of actual conditions at the Site and (2) identify possible cross-contamination from field activities or sample transit. Laboratory QA/QC procedures and analyses will be used to demonstrate whether analytical results have been biased either by interfering compounds in the sample matrix, or by laboratory techniques that may have introduced systematic or random errors to the analytical process. One trip blank will be sent with each sample shipment and will be analyzed for VOCs by EPA Method 8260. One field blank, one duplicate, and one matrix spike/matrix spike duplicate (MS/MSD) will be collected for soil and groundwater samples and will be analyzed for VOCs by EPA Method 8260. One ambient air sample will be collected concurrently with the soil vapor and indoor air samples and will be analyzed for VOCs by EPA Method TO-15. The QA/QC samples
will be collected and analyzed by an ELAP-certified laboratory using Category B deliverables.

4.5 Investigation Derived Waste

Cuttings may be disposed at the Site within the borehole that generated them to within 24 inches of the surface and purged groundwater and decontamination fluids may be discharged to the ground surface unless:

- Free product or grossly contaminated soil are present in the cuttings;
- The borehole has penetrated an aquitard, aquiclude, or other confining layer; or extends significantly into bedrock;
- Backfilling the borehole with cuttings will create a significant path for vertical movement of contaminants. Soil additives (bentonite) may be added to the cuttings to reduce permeability; and/or
- The soil cannot fit into the borehole.

Those soil cuttings and liquids needing to be managed off-site will be containerized in properly labeled Department of Transportation (DOT)-approved 55-gallon drums for future off-site disposal at a permitted facility. All boreholes which require drill cuttings disposal would ultimately be filled with bentonite chips (hydrated) and asphalt/concrete capping. Disposable sampling equipment including, spoons, gloves, bags, paper towels, etc. that come in contact with environmental media will be double bagged and disposed as municipal trash in a facility trash dumpster as non-hazardous trash.

4.6 Reporting

A Supplemental Remedial Investigation and Pilot Test Report will be prepared following completion of the field activities and receipt of the laboratory data. The report will provide detailed summaries of the investigative findings. Soil, groundwater, soil vapor, and indoor air analytical results will be compared to the NYSDEC Part 375-6.8(a) Unrestricted Used Soil Cleanup Objectives, appropriate Part 375-6.8(b) Restricted Soil Cleanup Objectives and NYSDEC Part 703 Groundwater Quality Standards (GQS) (class GA) or Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards (AWQS), and NYSDOH October 2006 Final Guidance for Evaluating Soil Vapor Intrusion Matrices with updates for PCE and TCE. The report will include an updated sampling plan, box plot diagrams, analytical data tables for all reported constituent compounds (including non-detectable concentrations), and remedial recommendations, as warranted.

4.7 Investigation Health and Safety Plan

The Occupation Health and Safety Administration (OSHA) compliant Health and Safety Plan (HASP) that meets all OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER) requirements will be implemented during the Site work to protect worker safety. The Site Safety Coordinator will ensure full compliance of the HASP in accordance with applicable health and safety laws and regulations. All field personnel involved in investigation activities will participate in training required under OSHA HAZWOPER 29 CFR 1910.120, including 40-hour hazardous waste operator training and annual 8-hour refresher training. Emergency telephone numbers will be posted at the Site location before any work begins. A safety meeting will be conducted before each shift begins. Topics to be discussed include task
hazards and protective measures (physical, chemical, and environmental); emergency procedures; personal protective equipment (PPE) levels and other relevant safety topics including a highlighted route map to the nearest hospital/emergency room. Meetings will be documented in a log book or specific form. Potential on-site chemicals of concern include VOCs, SVOCs, pesticides, PCBs, and metals. Information fact sheets and/or summary tables for each contaminant group are included in the HASP. A copy of this HASP will be on-site during each sampling event and is included as Appendix B.