Revised Site Characterization Work Plan

Elks Plaza LLC -Site# 130193
157-189 West Merrick Road, Freeport, New York

SUBMITTED TO

New York State Department of
Environmental Conservation

Prepared For:

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1.0 INTRODUCTION

This document is a Site Characterization Work Plan (SC WP) prepared by Preferred Environmental Services (Preferred) on behalf of Elks Plaza LLC. This SC WP has been prepared in accordance with the requirements set forth in the Order on Consent and Administrative Settlement, Index #W1-1120-08-04, between by the New York State Department of Environmental Conservation (NYSDEC) and Elks Plaza LLC signed and executed on September 6, 2008.

The site was designated a potential Registry site in July 2008 and assigned the site ID number 130193. The site is not currently listed in the Registry of Inactive Hazardous Waste Disposal Sites in New York State. The purpose of this Site Characterization Work Plan is to allow for the expedited investigation of the property and remediation, if deemed necessary.

2. 0 SITE DESCRIPTION, HISTORY OF USE AND PROJECT DESCRIPTION

2.1 Site Description

Elks Plaza is a retail shopping plaza (subject property) designated with street addresses between 157, 169-187 and 189 West Merrick Road, Village of Freeport, New York. The areal extent of the property is recorded as approximately 3.41 acres. The development at the subject property contains three (3) one-story commercial, masonry and steel buildings located at the southern side of West Merrick Road, immediately south of its intersection with South Bergen Place (see Figures 1 and 2).

The multi-tenant building located at 165 through 187 West Merrick Road was constructed in 1984, is an "L"-shaped building which has an approximate footprint of 42,876 square feet; and is currently occupied with 14 retail shopping-tenants with one vacant tenant space. The building located at 189 West Merrick Road was constructed in 1984, has an approximate footprint of 7,120 square feet; and is currently used as a Bank of America. The building located at 157 West Merrick Road was constructed in 1984, has an approximate footprint of 3,713 square feet; and is currently used as a food franchise (McDonald's).

The three buildings are serviced by the municipal sewer system and each has a roof-mounted natural gas - fired HVAC units. The land surface area of the subject property consists of asphalt parking areas with limited vegetated landscaping. Twenty (20) Class V underground injection well (UIW) storm water drywells are present on site that receive storm water runoff. The subject property exhibits generally low topographic relief (less than three percent slopes).

2.2 History of Land Use

Review of the available historical records indicates that the subject property was initially developed with residential dwellings and sheds from at least 1910 to 1925. From 1928 to 1980 the subject property maintained a structure utilized by the Elks Club. The three existing buildings were constructed in 1984.

A review of available Sanborn Maps for the subject property revealed that in 1910, 1917, 1925, the property maintained a dwelling on the northern portion of the Site. Six structures labeled as a shed, carriage house, and

a chicken coop are depicted on the central portion of the Site. In 1928, 1941, 1951, and 1961, the subject property is depicted as maintaining an Elks Club House and a private automobile garage. In 1969 the subject property Site is depicted as maintaining an Elks Club House. In 1984, the subject property is depicted as maintaining three commercial structures. The development is labeled as maintaining Elks Plaza Shopping Center.

2.3 Current Occupancy & Adjacent Site Land Use

Based upon observations made during a September 19, 2008 site inspection conducted by Preferred Environmental Services, the current tenants of the three buildings are as follows and are depicted on Figure3:

Address	Tenant
157	McDonald's
165	Crystal Coach, Limited Island Funeral Services (basement unit)
169	The Wine Cellar - liquor store
171	Ebony Beauty Supply
173	Jade Garden Chinese Restaurant
173A	99¢ Super Discount Store
175	South Shore Medical & Rehabilitation
177	Bagel Store
177A	Solgar Health Foods
179	XTC Hair Salon
179A, 181, 181A	Laundry Palace Laundromat
183	Five Star Nails and Spa
183A	Rene's Gift Shop and 30 Minute Photo
185	Eye World Optical
185 A	Vacant
187	Raimo's Pizzeria
189	Bank of America

During the site inspection, the surrounding properties were also identified immediately adjacent to the Site as follows.

North:	West Merrick Road, Residential Apt Buildings
East:	Residential Apartments, Professional Building
South:	Residential Apartments, Commercial Bld, Residential Home
West:	Commercial Building and school

2.4 Historic Occupancy of Potential Environmental Concern

Review of historical documentation reveals that the retail property had two main historic uses of potential environmental concern: dry-cleaning and printing operations at 171, 179A, and 181 Units. The historic tenant units, occupants, length of occupancy is depicted on Figure 3. Detailed history of occupancy of these units was provided in the record research report previously provided to NYSDEC. As only the 165-187 West Merrick Road Building has tenants of potential environmental concern, the information provided in this site characterization work plan is pertinent to only that building.

2.5 Geology and Hydrogeology

A concise and accurate description of the geology, physiography and drainage of Nassau County is found in the Soil Survey of Nassau County, New York (USDA). Relevant excerpts of this study are as follows. Nassau County is underlain by bedrock, but most of it is at a depth of several hundred feet. The closest surficial bedrock is to the west in the boroughs of Bronx and Queens in New York City and areas to the northwest in Westchester County near Long Island Sound. From these areas of surface exposure, the rock surface dips to the southeast to form a solid basement below Nassau County.

During the late Cretaceous Period the sediments from the eroding Appalachian Highlands were carried by streams and rivers to low-lying coastal areas. The sand, silt, and clay of the Raritan and Magothy formations, which form the foundation of Long Island, were deposited as deltas in areas of shallow water. The Raritan formation is below sea level, and the Magothy formation is at the surface of several sites along the north shore. The Magothy is the primary potable water supply aquifer on Long Island.

During the Pleistocene Epoch of the Quaternary Period, several major glacial advances into the northern United States occurred. This epoch is divided into four major glacial stages. From oldest to youngest, they are: Nebraskan, Kansan, Illinoisan, and Wisconsinan. During the Illinoisan advance, the ice sheet reached a position just north of the Long Island area. Outwash sand and gravel, of the Jameco gravel formation, was deposited by meltwater streams. Following the Illinoisan stage, sea level rose close to its present level and a clay (Gardiner clay) containing marine fossils was deposited in the shallow coastal waters surrounding Long Island.

During the Wisconsinan glacial advance, the ice reached a position represented on most of Long Island by the Ronkonkoma terminal moraine. In the latter part of this stage, the ice sheet receded from a point east of Lake Success. This caused the terminal moraine/deposits in Nassau County to form a wide band of irregular topography occupying the northern half of the county, while in adjacent Suffolk County the terminal moraine deposits were far enough apart to be two distinct landforms separated by a flat plain. During the Wisconsinan advance, sea level dropped about 350 feet below its current elevation to expose a broad, flat coastal plain. As the climate again warmed, the Holocene, or present, period began. The ice sheet receded to its present polar limits, and sea level rose to its present level. Currents and wave action modified the outwash plain to create the present-day shoreline.

These overlying Pleistocene deposits are referred to as the Upper Glacial aquifer, is a highly prolific aquifer and consists of three distinct units. The oldest and deepest unit is a sand and gravel layer associated with the Ronkonkoma ice sheet. After the recession of the ice sheet, sea level rose to near its' present level. During this interstadial period, marine and/or lacustrine sediments were deposited over the Ronkonkoma deposits, a clay bed at the base, separated from an upper clay bed by a band of silty, sandy beds. Overlying the clay is a terminal moraine and adjacent outwash deposits associated with the Harbor Hill ice sheet.

Direction and rate of groundwater flow are controlled by the rate and distribution of water entering and leaving the aquifer systems, the geometry of these systems, and the distribution of water transmitting and storage properties of these aquifer systems. Based upon a projection from review of Nassau County Water Table Maps, local groundwater flow direction in the shallowest aquifer (the Upper Glacial aquifer) is expected to be in the south (either southwest or southeast) dependent upon local discharge patterns to surface water headwater areas. Published literature values for estimated average hydraulic conductivity for the Upper

Glacial Aquifer is 270 feet per day horizontal with rates of 27 feet per day for vertical flow.

Groundwater flow at the subject property is in Hydrogeologic Zone VII: South Shore Shallow Flow Discharge System. Zone VII is located south of the Magothy recharge zone on the South Shore and discharges to Nassau and western Suffolk South Shore bays where tidal exchange facilitates the dilution and dispersion of contaminants. Zone VII is a shallow flow zone, thus contamination from activities in Zone VII mainly affects the Glacial aquifer.

From inspection it is confirmed that the area encompassing the study site is highly urbanized with surrounding residential, commercially and industrially-developed parcels. Therefore, groundwater in this area generally is vulnerable to potential contamination from this type of land use. Depth to groundwater has been identified during prior environmental assessment to be at a depth of 12 feet below grade surface (bgs). Regional flow direction is toward the southeast. A regional groundwater elevation and flow map is provided as Figure 3.

3. 0 PREVIOUS ENVIRONMENTAL STUDIES AND ASSESSMENTS

Summaries of existing historic investigations or assessments performed at the subject property were previously provided in the Record Research report dated September 2008 Two main studies were available: 1) a Phase I Environmental Site Assessment (ESA) performed for the subject property dated October 16, 2006; and 2) a Phase II subsurface investigation completed in response to recommendations established in the Phase I ESA. These studies are summarized below:

3.1 Phase I Environmental Site Assessment (ESA)

A Phase I Environmental Site Assessment titled *"Environmental Site Assessment; Phase I Investigation"* was performed at 157-189 Merrick Road, Freeport, New York for the purpose of identifying Potential Environmental Condition (PECs) or Recognized Environmental Conditions (RECs). The Phase I ESA was conducted by Impact Environmental and prepared for Citibank, N.A. 1 in 2006, with a report date of October 16, 2006.

At the time of the Phase I ESA, the subject property consisted of the current development - three one-story masonry and steel buildings with addresses of 157, 169-187 and 189 Merrick Road. Eighteen various tenants occupied the existing buildings at the time of the Phase I ESA. The Phase I ESA documented several recognized environmental conditions due to historical operations within units 171, 179A and 181 of the plaza. Due to the findings of the Phase I ESA, a Phase II ESA was recommended be performed to investigate subsurface conditions for environmental impacts.

3.2 Phase II Environmental Site Assessment (ESA)

A Phase II Environmental Site Assessment was performed by Associated Environmental Services, Ltd. (Associated) in November and December of 2006 at 157-189 Merrick Road, Freeport, New York for the purpose of investigating soil and groundwater conditions at specific areas of recognized environmental conditions identified in the Phase I ESA. The Phase II ESA field activities were conducted on November 13, 2006 and December 6, 2006 with a report issued on December 18, 2006.

Soil and groundwater samples were collected in locations where the prior Recognized Environmental Conditions were noted within the Phase I ESA. The subsurface investigation consisted of a series of soil and groundwater sampling locations both upgradient and downgradient from potential contaminant sources. Five soil samples collected from ten to twelve (10 - 12) feet below grade surface (bgs) and six groundwater samples were submitted for laboratory analysis for Volatile Organic Compounds (VOCs) via EPA Method 8260.

Laboratory analysis of the soil samples revealed no actionable impacts to subsurface soils from historic operations. Two groundwater samples, designated B-2 and B-5 in the Phase II ESA, located to the south and downgradient of the laundromat (south of the former dry cleaners in unit 181) contained levels of cis-1,2-dichloroethene (cis-12 DCE), tetrachloroethene (PCE), and trichloroethene (TCE) above NYSDEC Class GA Groundwater Standards and Guidance Values (SGVs). Subsequent to the review of analytical results, NYSDEC Spill No. 06-10549 was assigned to the subject property. The spill was closed in December of 2006 as the case was re-assigned to the Hazardous Waste Remediation Unit.

4.0 SITE CHARACTERIZATION WORK PLAN

4.1 Work Scope

As per the Order on Consent, the purpose of this Work Plan is to allow for the expedited investigation of the property and to identify the need for remediation, if deemed necessary. Therefore, a site investigation will be conducted in order to identify/characterize the surface and subsurface soils, underlying groundwater, sub-slab vapors, indoor air and soil gas at the subject property. The Phase II investigation will focus on evaluating the potential for impacts from historic on-site uses as well as to provide representative data on the environmental condition of the site.

This section of the work plan provides detailed specifications for the performance of sample collection and analysis of surface, subsurface soils and groundwater at the subject property. The site investigation is divided into several specific tasks - site feature evaluation, magnetometer survey, shallow/subsurface soil sampling, groundwater sampling and as specifically required sub-slab vapor, soil vapor and indoor and outdoor air sampling. The total number of samples to be collected is summarized in Table 1. Table 2 provides a summary of the analytical test methods, quality assurance samples and other requisite information for the proposed sampling. An overview of the sampling methods, etc. is provided in this text with further reference to Appendix C which provides more details on the sampling program, equipment, protocols and handling requirements to be followed for this project..

As indicated in Figure 4, soil borings will be installed within the using a Geoprobe drilling system for the collection of soil samples. In addition, temporary groundwater monitoring wells will be installed utilizing the Geoprobe for the collection of groundwater samples. A Geoprobe is a vehicle-mounted machine that utilizes push technology to drive sampling tools into the subsurface to collect representative and discrete soil and groundwater samples at selected subsurface depths.

Task 1 - Site Feature Evaluation and Magnetometer/Void Survey

Several site features are present that will be further investigated. This includes the following features identified during recent site inspection: former dry cleaning machine location, abandoned private supply well, discharges associated with the in-service private supply well, former dumpster receptacle adjacent to exterior

back door, and storm water drainage wells (Class V, well code 5D2) located proximate to the former dry cleaners and laundromat.

A magnetometer (TW46 Fischer) and Whites TM 508 void detector will be used to screen areas of the property to confirm the absence of other subgrade features that could yield a void and/or a magnetic signal, representative of buried metal (buried tanks, metal reinforced drainage structures, etc.). Any anomalies identified will be further investigated during the site investigation via the installation of soil borings by Geoprobe.

Water samples will be collected from private supply wells, if feasible. Specifically, water samples will be collected from the abandoned private supply well (only if feasible) as well as the in-service private supply well. Other site features such as the former dumpster receptacle area(s), proximate storm water drainage wells will be evaluated under the tasks described below.

Task 2 - Soil and Drainage Investigation

Soil borings are proposed for installation at the following areas depicted on Figure 4.

- Former dry cleaning machine areas (tenant units 171 and 181);
- Projected former dumpster locations (tenant units 171 and 181); and
- Bottom sediments of proximate drainage structures (southwest corner of property);

The soil and other sampling locations will provide site data to compare with downgradient groundwater sampling locations.

Temporary monitoring wells installed via soil borings are proposed for installation at the following areas depicted on Figure 4, with sampling at two vertical depths (water table and 10 feet below water table).

- Property perimeter as upgradient locations (west of tenant unit 179A/181)
- Projected former dumpster locations (tenant units 171 and 181);
- Four wells along a linear transect encompassing the former groundwater sampling locations B-2 and B-5; and
- Two wells along a linear transect downgradient of prior groundwater sampling locations B-2

and B-5 at the southern property boundary.

Collection of groundwater samples associated with the following site features depicted in Figure 4.

- Abandoned (if feasible) and in-service private supply well (prior to filter and storage tanks);

A Geoprobe direct push sampling rig will be mobilized for the collection of soil samples at the projected former dumpster locations (tenant units 171 and 181). The soil borings will be installed to a projected total depth of 12 feet bgs (top of the water table) for the collection of soil samples as shown on Figure 4. A four or five-foot long soil sampling tool will be attached to the drive rods for the collection of continuous undisturbed soil samples. The sample will be protected in a PVC liner that prevents the loss of VOCs prior to field analysis.

Interior locations (former dry cleaning machine locations) will be sampled using a rotary core drill with auger flytes, followed by a decontaminated stainless steel hand auger to access soils within a 0- 3 foot below grade. In the event that this system is not effective a manual GeoProbe® Slam bar system will be used. This is the depth at which soil impacts, if any, would likely be present. Before the advance of the rotary core drill, the core drill will be used to create small concrete penetrations in order to conduct a limited soil gas survey (screening only via the use of a Photoionization Detector (PID)) prior to the installation of a soil boring. If screening of soil gas indicates evidence of elevated field response via the PID, the soil boring will be installed at the location of the highest response.

Any drainage structures present that require bottom sediment sampling (e.g., storm drains) will be sampled using a field decontaminated manually-operated stainless-steel bucket auger. The bottom samples will be collected from three separate locations located at the base (bottom) of the structure, with biased sampling directed toward areas that are clearly underlying influent piping or are stained. The depth to bottom of the structure will be noted as well as the depth of water, if present. These grab samples will be composited for laboratory analysis.

Each sample will be logged to document subsurface conditions including soil types and description of non-soil materials, field instrument measurements and depth to groundwater, when encountered. There will be

additional documentation, if present, of soil mottling, presence of odor, vapors, and soil discoloration. A portion of each sample will be placed in a resealable plastic bag and screened for total volatile organic compounds using the PID. If field measurement readings are detected above background, the coring will be extended (to the deepest feasible depth) until background readings consistent with ambient air or soil concentrations are achieved or groundwater is encountered. Between each sampling event all equipment will be decontaminated following the protocol outlined in Section 5.0.

One soil sample with the highest field measurement recorded at each boring or a discrete sample (from a two-foot interval) collected from a non-detection location between 0-12 feet bgs will be appropriately containerized at the time of its collection and immediately maintained in an ice packed cooler.

Upon completion of each day's sample collection, these samples will be transported under strict chain-of-custody to an NYSDOH-ELAP certified laboratory for analysis by EPA Method 8260 -Target Compound List (TCL) Organics by GC/MS and Tentatively Identified Compounds (TICs) with NYSDEC ASP B deliverables. Those boring locations that will be utilized as temporary monitoring wells will be driven deeper for the collection of groundwater samples as described below. The borings will be abandoned to grade after sampling. Sample collection procedure, quality assurance/quality control, and equipment decontamination procedures are further discussed in Section 5.0.

Task 3 - Groundwater Investigation

Temporary groundwater monitoring wells will be installed at the locations depicted in Figure 4 using the Geoprobe direct push sampling rig. As regional groundwater flow direction is anticipated to be to the southeast (towards the closest surface water body), these locations have been selected to evaluate the previously reported VOCs. Upgradient and downgradient groundwater samples are proposed to be collected via a Geoprobe rig equipped with a decontaminated stainless steel mill-slotted well point sampling tool or equivalent. Groundwater samples will be collected within the upper water table (approximately 12-14 feet below grade) as well as 10 feet below the upper water table at a projected depth of 22-24 feet bgs.

Since the potential VOC of concern, tetrachloroethene, is a dense non-aqueous fluid, groundwater grab samples will be collected from the bottom of the mill slotted screen. This will be achieved by lowering the

new dedicated and disposable poly tubing through the probe rods to the bottom of the slotted screen with purging and sampled using a peristaltic pump with a low flow rate (less than 100 ml/minute). Upon completion, the borings will be abandoned by pumping a bentonite grout in the boring annular space to grade. Each of the groundwater samples will be appropriately containerized at the time of its collection and immediately maintained in an ice packed cooler. Upon completion of each day's sample collection, these samples will be transported under strict chain-of-custody to an NYSDOH-ELAP certified laboratory for analysis by EPA Method 8260 -Target Compound List (TCL) Organics by GC/MS and Tentatively Identified Compounds (TICs) with NYSDEC ASP B deliverables.

Task 4 - Sub-slab Vapor, Soil Gas Samples Indoor Air and Outdoor Ambient

As feasible, all sub-slab vapor and soil gas sampling should be conducted during the heating season which begins late October/early November and extends to late March-early April, dependent on specific weather patterns and seasons.

As depicted on Figure 4, two Sub-Slab Vapor (SSV) samples will be collected from within the former dry cleaning equipment locations within tenant spaces 171 and 181. In association with the two SSV samples, a total of four (4) soil vapor samples will be collected at property perimeters. One of the locations will be within the asphalt-paved driveway between the exterior western wall of unit 181 and the western property line, two (2) locations will be within asphalt-paved parking area to the south of units 179A and 171, and the fourth location will be at the southeastern corner of the property adjacent to the neighboring apartment complex.

All soil vapor sampling will be conducted utilizing the Geoprobe and will follow protocols established by the NYSDOH October 2006 *Guidance for Evaluating Soil Vapor Intrusion in New York State (e.g., use of helium tracer gas, completion of NYSDOH Inventory Forms, Inspections, etc.)* as detailed in Appendix C. The minimum detection limits for trichloroethene , vinyl chloride and carbon tetrachloride will be 0.25 micrograms per cubic meter (ug/m3) or less. Soil vapor intrusion data will be reported in *u*g/m3. The borings will be abandoned by clean sand and bentonite grout to grade.

Prior to the collection of these samples, Preferred will complete the appropriate NYSDOH Questionnaire and

Inventory form which will included a product inventory survey documenting sources of volatile chemicals present in the building during the indoor air sampling that could potentially influence the sample results.

Sub-slab Vapor Samples

Sub-Slab Vapor (SSV) samples (SSV-1 and SSV-2) will be installed utilizing a rotary core hammer drill within tenant units 181 and 171, respectively. The drill will install an approximate 5/8-inch diameter hole through the slab floor. A length of polyethylene tubing will be inserted to within two inches below the slab. The annual space surrounding the tubing will be sealed utilizing hydraulic cement or equivalent. The samples will be collected in laboratory-supplied , pre-cleaned, 6 Liter summa canisters (of sufficient volume to ensure the required detection limits are achieved) for laboratory testing. The regulators will set for an eight (8) hour sampling interval.

Soil Vapor Samples

With the Geoprobe equipped with a Post-Run Tubing System (PRT), soil vapor samples will be collected from a minimum depth of five feet below grade surface(bgs). The target depth for installation will be based upon a determination of the surrounding development (buildings and a vacant lot) and the presence or absence of basements. If there are basements present, the sampling depth will be increased to approximately nine feet bgs. Sampling boreholes will be sealed at the land surface using bentonite/quick dry cement in the paved asphalt areas. The samples will be collected in 6 Liter summa canisters over 8 hour time interval (of sufficient volume to ensure the required detection limits are achieved) for laboratory analysis. During sampling events, a helium tracer will be introduced within a confined space surrounding the sample tubing. A direct reading helium detector will be utilized to evaluate the integrity of the soil gas sample. As per the NYSDOH Guidance Document, a sample may contain up to 20% of the tracer gas (helium) and be considered valid. Upon completion of each day's sample collection, the canisters will be transported under strict chain-of-custody to an NYSDOH-ELAP certified laboratory for analysis by EPA Method TO-14 Volatile Organic Compounds (VOC) list analytes by TO-15 method. The minimum detection limits for trichloroethene , vinyl chloride and carbon tetrachloride will be 0.25 *u*g/m3 or less. Soil vapor intrusion data will be reported in *u*g/m3. The borings will be abandoned by clean sand and bentonite grout to grade.

Indoor Air Samples

Indoor air samples will be collected from within tenant units 181 and 171. The indoor air samples will be collected utilizing 6 liter summa canisters with regulators set to an 8 hour sampling interval. The canisters will be set at a height between three and five feet above grade so that samples will be collected representative of the breathing zone.

During sampling, the field sampling team will maintain a sample log sheet summarizing the following:

a. sample identification,
b. date and time of sample collection,
c. sampling height,
d. identity of samplers,
e. sampling methods and devices,
f. depending upon the method, volume of air sampled,
g. vacuum of canisters before and after samples collected, and
h. chain of custody protocols and records used to track samples from sampling point to analysis.

Outdoor Ambient Air Samples

One outdoor ambient air sample will be collected as shown on Figure 4 (eastern property line). The outdoor air sample will be collected utilizing 6 liter summa canisters with regulators set to an 8 hour sampling interval. The canisters will be set at a height between three and five feet above grade so that samples will be collected representative of the breathing zone.

During sampling, the field sampling team will maintain a sample log sheet summarizing the following:

a. sample identification,
b. date and time of sample collection,
c. sampling height,
d. identity of samplers,
e. sampling methods and devices,
f. depending upon the method, volume of air sampled,

g. vacuum of canisters before and after samples collected, and

h. chain of custody protocols and records used to track samples from sampling point to analysis.

QA/QC Protocols

To ensure quality control to conform with an NYSDEC ASP-B deliverable package, one (1) trip blank with organic-free water will be maintained per sampling cooler and one (1) field blank per twenty (20) groundwater or soil samples. The field blank will be collected by rinsing the field equipment with organic-free water and submitting the rinse water in standard sample containers to a certified laboratory for Target Compound List Volatile Organic Compound analysis by EPA Method 8260 plus TICs. One (1) Matrix Spike/Matrix Spike Duplicate (MS/MSD) sample will be collected per twenty soil and groundwater samples and submitted with the rest of the samples to a certified laboratory for the same analysis. The MS/MSD will serve as a duplicate sample. No split samples are anticipated at this time. Trip blank samples are only required for analysis in coordination with groundwater samples to conform with an NYSDEC ASP-B deliverable package. Trip blank and field blank rinse water will be analyte-free and will supplied from the laboratory. Other than the helium tracer gas evaluation, and the outdoor ambient air sample, no QA/QC samples will be collected as part of the sub-slab, indoor air, soil vapor and outdoor air sampling activities. The minimum detection limits for trichloroethene , vinyl chloride and carbon tetrachloride will be 0.25 micrograms per cubic meter (*u*g/m3) or less. Soil vapor intrusion data will be reported in *u*g/m3. The borings will be abandoned by clean sand and bentonite grout to grade.

In addition, as required, a Data Usability Summary Report will be prepared by a party independent from the laboratory performing the analysis.

Project Schedule - Within 30 days of the approval of the SC WP, Preferred will begin performing the investigatory work. These activities are anticipated to take less than one month to complete. Receipt of certified laboratory data in these tasks will require up to 45 days; with an additional 30 days for data usability analysis. A final report will be issued within 60 days of receipt of the complete validated testing data packages.

5.0 QUALITY ASSURANCE / QUALITY CONTROL PROCEDURES

Appropriate Quality Assurance /Quality Control (QA/QC) Procedures were developed to ensure that suitable and verifiable data results from sampling and analysis are maintained. To achieve this objective, the quality assurance procedures detailed in this section were adopted from NYSDEC, DER "Draft Technical Guidance for Site Investigation and Remediation," December, 2000 (revised 3/26/01) and will be followed for all sampling and laboratory analysis activities.

5.1 Quality Assurance Requirements

The person responsible for conducting the investigation and/or remediation will ensure suitable and verifiable data results from sampling and analysis. To achieve this objective, the quality assurance procedures detailed in this section will be followed for all sampling and laboratory analysis activities. Quality Assurance/Quality Control procedures were developed to ensure that suitable and verifiable data will result from the prescribed sampling and analysis programs. The procedures to be implemented during the investigation are summarized below.

5.1.1 Sampling Personnel

The activities associated with the field sampling and analysis program will be performed under the supervision of a Quality Assurance Officer, in accordance with the NYSDEC, DER "Draft Technical Guidance for Site Investigation and Remediation,"December, 2000 (3/26/01). The samplers assigned will possess a minimum of two or more years experience in environmental field work. Additionally, all samplers will have received the mandatory forty-hour Occupational Safety and Health Administration (OSHA) training on working with potentially hazardous materials and appropriate Hazard Communication Program and Right-To-Know training.

5.1.2 Sampling Equipment

Individual QA/QC measures will be implemented for each of the types of equipment, field screening instruments, sample containers, etc. used in the performance of the sampling program as follows:

5.1.3 Geoprobe

Prior to arrival on the subject property and between sample locations, all equipment associated with the Geoprobe drilling system will be decontaminated by a physical scrub with detergent (Alconox) and potable water solution and rinsing them with laboratory grade distilled or deionized water.

5.1.4 Glassware

All sample glassware will be "Level A" certified decontaminated-containers supplied by an NYSDOH-Certified Commercial Laboratory. Samples analyzed for media potentially containing VOCs will be placed in Teflon-lined containers. All samples will be preserved by cooling them to a temperature of approximately four degrees Celsius during maintenance prior to transport to a laboratory.

5.1.5 Sample Documentation

To establish and maintain proper sample documentation control, the following sample identification and chain-of custody procedures will be followed:

5.1.5.1 Sample Identification

Sample identification will be executed by use of a sample tag, log book and chain-of-custody forms. Said documentation will provide the following information: 1) the project code; 2) the sample laboratory number; 3) the sample preservation; 4) the date the sample was secured from the source media; 5) the time the sample was secured from the source media; and 6) the person who secured the sample from the source media.

5.1.5.2 Chain-of Custody Procedures

Due to the evidential nature of samples, possession will be traceable from the time the samples are collected until they are received by the testing laboratory. A sample is considered under custody if it: is in a person's possession; it is in a person's view, after being in possession; if it is in a person's possession and they locked it up; or, it is in a designated secure area. When transferring custody, the individuals relinquishing and receiving the samples will sign, date and note the time on the Chain-of-Custody Form.

5.1.5.3 Laboratory-Custody Procedures

A designated sample custodian will accept custody of the delivered samples and verify that the information

on the sample tags matches that on the Chain-of-Custody Records. Pertinent information as to delivery, pick-up, courier, etc., will be entered in the "remarks" section. The custodian will enter the sample tag data into a bound logbook. The laboratory custodian will use the sample tag number, or assign a unique laboratory number to each sample tag, and assure that all samples will be transferred to the proper analyst or stored in the appropriate source area. The laboratory custodian will distribute samples to the appropriate analysts. Laboratory personnel will be responsible for the care and custody of samples, from the time they are received, until the sample is exhausted or returned to the sample custodian. All identifying data sheets and laboratory records will be retained as part of the permanent documentation. Samples received by the laboratory will be retained until after analysis and quality assurance checks are completed.

5.2 Soil Sample Collection

The soil sampling will be conducted using a Geoprobe direct push sampling rig or equivalent using a discrete sampling device. A new PVC liner will be installed into the sampling barrel between each sampling event. The equipment (drive point, barrel, subs and adaptors) will be decontaminated before each sample collection following NYSDEC Sampling Guidelines & Protocols, 1991. The cleaning procedure will include the use of a standard laboratory grade phosphate-free detergent (Alconox). Non-dedicated sampling equipment will be given a final rinse with laboratory-grade deionized water as part of decontamination procedures. The retrieved samples will be placed in a laboratory supplied certified containers. The samples will be stored in a cooler containing ice to maintain a temperature of 4º Celsius and delivered under strict chain-of-custody to an NYSDOH ELAP-certified laboratory.

5.3 Groundwater Sample Collection

The groundwater sampling will be conducted using a Geoprobe direct push sampling rig equipped with a mill-slotted well point sampling tool or equivalent device depending upon accessibility. Once the desired depth is reached, new polyethylene tubing fitted with a Tubing Check Valve System will be inserted down into the rod to the depth of the slotted point. The groundwater will be then extracted through the polyethylene tubing by a peristaltic pump or check valve until 3 to 5 times the approximate volume in the probe rod has been purged. The retrieved samples will be placed in new laboratory-supplied 40 ml teflon cap glass vials (VOCs). The samples will be stored in a cooler containing ice to maintain a temperature of 4º Celsius and

delivered under strict chain-of-custody to an NYSDOH ELAP-certified laboratory.

The equipment (drive point, well point, subs and adaptors) will be decontaminated before each sample collection following NYSDEC Sampling Guidelines & Protocols, 1991. The cleaning procedure will include the use of a standard laboratory grade phosphate-free detergent (Alconox) followed by a laboratory-supplied distilled or deionized water rinse.

5.4 Sub-slab Vapor, Soil Vapor and Indoor Air Sampling Locations

All sub-slab vapor, soil gas and indoor air sampling will be conducted during the heating season, which begins late October/early November and lasts through March dependent on specific weather patterns.

5.4.1 Sub-Slab Vapor Samples

Sub-slab vapor samples will be collected in accordance with the October 2006 New York State Department of Health(NYSDOH) "Guidance for Evaluating Soil Vapor Intrusion in the State of New York" protocols.

The sub-slab vapor samples will be extracted through the polyethylene tubing connected to a laboratory-supplied, certified clean 6 liter summa canister. Once the samples have been collected, the summa canister will be sealed shut and the sample port will be closed and covered with a dust cap. The samples will be stored in the locked sampling vehicle and delivered under strict chain-of-custody to an NYSDOH ELAP-certified laboratory.

All equipment (e.g., core drill, etc.) will be decontaminated before each sample collection following NYSDEC Sampling Guidelines & Protocols, 1991. The cleaning procedure will include the use of a standard laboratory grade phosphate-free detergent (Alconox) followed by a laboratory-supplied distilled or deionized water rinse.

5.4.2 Soil Vapor Sampling

All soil gas sampling will be conducted utilizing the Geoprobe and will follow protocols established by the NYSDOH October 2006 *Guidance for Evaluating Soil Vapor Intrusion in New York State (e.g., use of helium*

tracer gas, completion of NYSDOH Inventory Forms, Inspections, etc.).

Once the desired depth is reached, new and dedicated polyethylene tubing fitted with a threaded seal inserted down into the rod to the depth of the sample interval. The soil gas will be then extracted through the polyethylene tubing by a personal sampling pump until 3 to 5 times the approximate volume in the PRT has been purged. Purge sampling rate will not exceed 200 ml/minute. Subsequent to purging, the tubing will be connected to a laboratory-supplied, certified clean 6 liter summa canister. Once the samples have been collected, the summa canister will be sealed shut and the sample port will be closed and covered with a dust cap. The samples will be stored in the locked sampling vehicle and delivered under strict chain-of-custody to an NYSDOH ELAP-certified laboratory. A helium detector will be utilized to evaluate the integrity of the soil gas sampling during sample collection.

All equipment (e.g., core drill, etc.) will be decontaminated before each sample collection following NYSDEC Sampling Guidelines & Protocols, 1991. The cleaning procedure will include the use of a standard laboratory grade phosphate-free detergent (Alconox) followed by a laboratory-supplied distilled or deionized water rinse. The borings will be abandoned by clean sand and bentonite grout to grade.

5.4.3 Indoor and Outdoor Air Sampling

In order to evaluate potential VOC impacts to indoor air quality, two indoor air samples and outdoor air samples will be collected from within former dry cleaners in tenant units 181 and 171. The samples will be collected in accordance with the NYSDOH *Guidance for Evaluating Soil Vapor Intrusion in New York State*. The samples will be collected utilizing laboratory-supplied, certified clean 6 liter summa canisters. The samples will be stored in the locked sampling vehicle and delivered under strict chain-of-custody to an NYSDOH ELAP-certified laboratory.

5.5 Laboratory Analysis Requirements

5.5.1 *Certification and Data Acceptance*

Laboratories performing analysis will conform to the following: For the analysis of any aqueous samples for a parameter or category of parameters for which laboratory certification exists pursuant to NYSDOH ELAP Certification, the laboratory will be certified for that specific parameter or category of parameters pursuant to NYSDOH ELAP Certification.

For the analysis of non-aqueous samples using specific analytical methods contained in the EPA Publication SW-846, "Test Methods for Evaluating Solid Waste," third edition, *Update IIIB or greater* , January 1995, as amended and supplemented, for a parameter or category of parameters for which certification exists pursuant to NYSDOH ELAP Certification, the laboratory will be certified for that specific parameter or category of parameters pursuant to NYSDOH ELAP Certification or, at a minimum, have obtained temporary approval to analyze regulatory samples pursuant to NYSDOH ELAP Certification.

5.5.2 *Specific Requirements*

Laboratories will follow all quality assurance/quality control procedures specified in the analytical methods. Sampling methods, sample preservation requirements, sample handling times, decontamination procedure for field equipment, and frequency for field blanks, field duplicates and trip blanks should conform to the appropriate analytical services protocol, unless an alternate method/procedure has been approved. Results from analysis of soils and sediments will be reported on a dry weight basis, except for those results required by the method to be otherwise reported.

5.6 Project Personnel

Key personnel to be involved in this project are provided as follow with resumes in Appendix B. Preferred's Project Manager/Senior Hydrogeologist William J. Schlageter will be the Project Manager and Site Safety Officer. Ms. Jill S. Haimson, PP, CGWP, Principal of Preferred Environmental Services will serve as the project's Quality Assurance Officer. The third party independent data validator has also been identified (Ms. Lori Beyer, L.A.B. Validation Corp.) with a current resume provided for the individual that will be preparing the Data Usability Summary Report. Other required personnel, drillers, etc. will be named prior to the conduct of the site investigation.

5.6.1 Key Personnel

Ms. Jill Haimson, PG, CGWP - HydroGeologist/Project Coordinator/QA Officer
Responsible for: Technical oversight, Project coordination, scheduling, data collection and interpretation, report preparation.

Mr. William Schlageter - HydroGeologist/Field Manager/Supplemental QA Officer/Health & Safety Officer.

Responsible for: Technical oversight, field scheduling, field personnel oversight, HASP implementation, data collection and interpretation, support in report preparation.

To be named - Drill Master and Technician

Responsible for: GeoProbe®® operator and assistant, sample technician and equipment decontamination.

Ms. Lori Beyers - L.A.B. Data Validation Corp. - Data Usability Analysis

Responsible for: Development of the data usability summary report (DUSR) for Site samples

5.7 Data Usability

The collection and reporting of reliable data is a primary focus of the sampling and analytical activities. Laboratory and field data will be reviewed to determine the limitations, if any, of the data and to assure that the procedures are effective and that the data generated provides sufficient information to achieve the project objectives. A qualified independent third party (L.A.B. Data Validation Corp.) will evaluate the analytical data according to NYSDEC-Division of Environmental Remediation Data Usability Summary Report guidelines.

6.0 HEALTH AND SAFETY PLAN

A site specific Health and Safety Plan has been developed and is attached as Appendix A. The plan will be adhered to by all personnel involved in the conduct of the SCWP investigation.

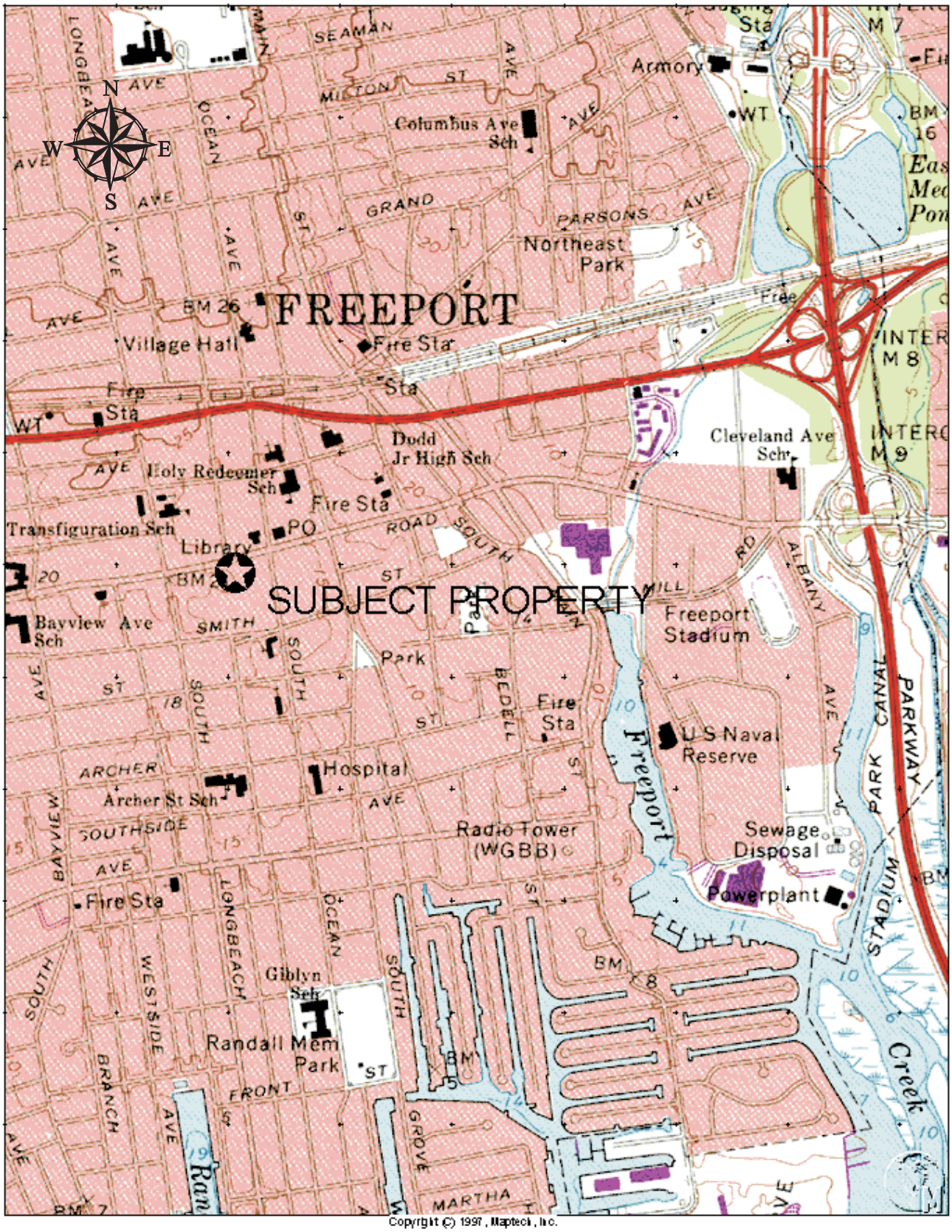


Figure 1- Site Location

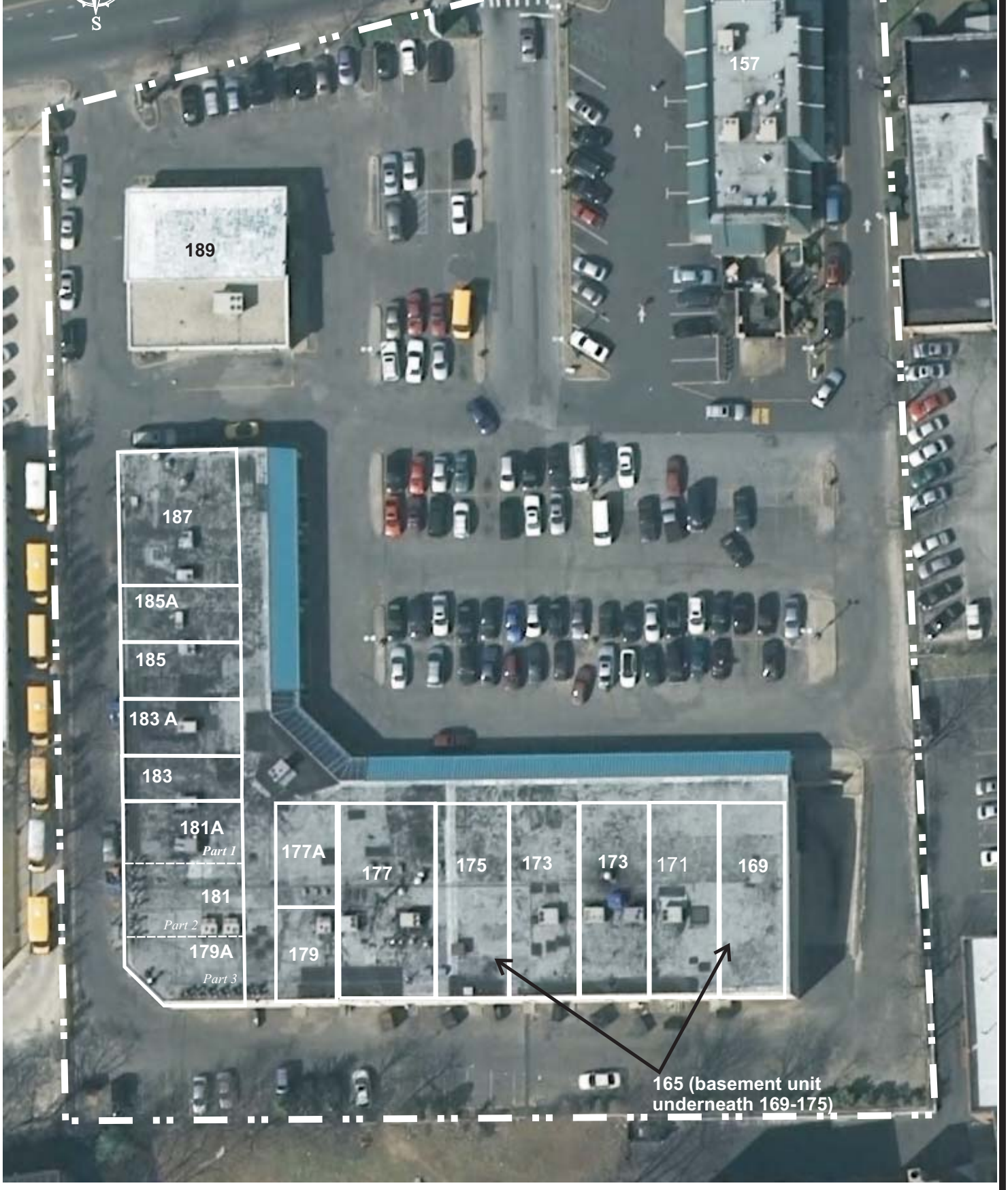
PREFERRED ENVIRONMENTAL SERVICES
323 Merrick Avenue - North Merrick, New York 11566
Tel: (516) 546-1100 Fax : (516) 213-8156

- Location of Subject Property

Client: Elks Plaza LLC.

Site: 157 through 189 West Merrick Road
Freeport, New York

Date: 9-19-2008



Current Occupants

157 - McDonald's
165 - NY Elite Limousine
169 - The Wine Cellar Liquor Store
171 - Ebony Beauty Supply
173 - Jade Garden Chinese Food
173 - 99c Super Discount Store
175 - South Shore Medical & Rehabilitation
177 - Bagel Store
177A -Solgar Health Foods
179 - XTC Hair Salon
179A-181A - Laundry Palace
183 - Five Star Nails & Spa
183A - Rene's Gift Shop and 30 Minute Photo
185 - Eye World Ooptical
185A - Vacant
187 - Raimo's Pizzeria
189 - Bank of America

PREFERRED ENVIRONMENTAL SERVICES

Figure 2 - Current Site Occupants

- Property Border

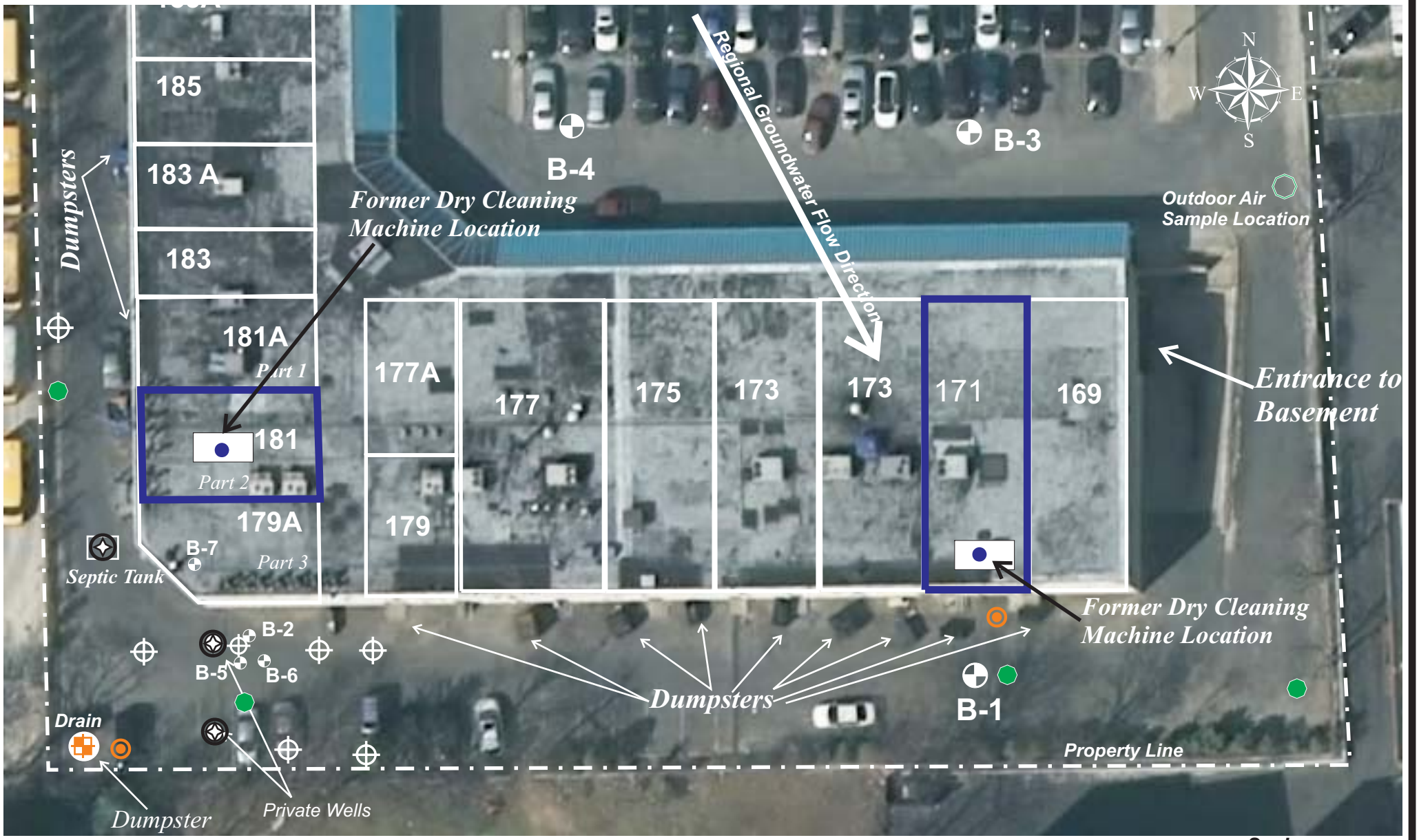
Client: Elks Plaza LLC.
Site: 157 through 189 West Merrick Road
Freeport, New York

Figure 3 - Nassau County Groundwater Elevation Map

⊗ - Approximate Site Location

Client: Elks Plaza LLC.
Site: 157 through 189 West Merrick Road
Freeport, New York
Date: 10-17-08

PREFERRED ENVIRONMENTAL SERVICES
323 Merrick Avenue - North Merrick, New York 11566
Tel: (516) 546-1100 Fax : (516) 213-8156



Tenant Units 181 and 171 are former Dry Cleaners

Scale: 0 — 35 ft

PREFERRED ENVIRONMENTAL SERVICES
323 Merrick Avenue - North Merrick, New York 11566
Tel: (516) 546-1100 Fax : (516) 213-8156

Figure 4 - Revised Proposed Sampling Locations

- Prior Soil and/or Groundwater Sampling Location
- Proposed Soil Sample Location
- Proposed Water Sample Location (if feasible)
- Proposed Soil Vapor Sample Location
- Proposed Temporary Groundwater Monitoring Well Location
- Proposed Soil Boring and Temporary Monitoring Well Location
- Proposed Soil Sample Locations & Indoor Air and Sub-slab Vapor Sampling

Client: Elks Plaza LLC.
Site: 157 through 189 West Merrick Road Freeport, New York
Date: 10-17-08

Table 1
Scope of Work for Investigation -Elks Plaza

Activity (Task)/ Location (in bold)	# Sampling Points	Location See Figure 4	No. Of Samples/Parameters	QA/QC Samples
Task 1 - Site Feature Evaluation and Magnetometer/Void Survey; Private supply wells and municipal discharge.	Two	Abandoned private supply well (only if feasible), in-service private supply well.	Two water samples: TCL VOC analysis by EPA Method 8260 with NYSDEC ASP B deliverables.	One Matrix Spikes (MS)and Matrix Spike Duplicates (MSD) collected per twenty (20) samples/ one per media (soil or groundwater). One field blank per 20 samples per media with analysis for same analytes and one trip blank per field day (VOCs only).[1]
Task 2 - Soil and Drainage Investigation:	Five	Former dry cleaning machine areas (two); former dumpster locations (tenant units 171 and 181); and one drainage structure.	Five soil samples: TCL VOC analysis by EPA Method 8260 plus TICs with NYSDEC ASP B deliverables.	MS/MSDs, field blank and trip blanks.
Task 3- Groundwater Investigation	Nine locations- multiple depths	Groundwater: upgradient location (west); One temporary well at each of the former dumpster locations (tenant units 171 and 181) (water table); four temporary wells in a linear transect (two vertical depths); two temporary wells at downgradient property perimeter (two vertical depths).	15 groundwater samples: TCL VOC analysis by EPA Method 8260 plus TICs with NYSDEC ASP B deliverables.	MS/MSDs, field blank and trip blanks.

[1]The MS/MSD serves as a duplicate soil sample for NYSDEC ASP-B deliverables. No trip blanks are required to be collected for soil samples (only) for NYSDEC ASP-B deliverables.

Activity (Task)/ Location (in bold)	# Sampling Points	Location See Figure 4	No. Of Samples/Parameters	QA/QC Samples
Task 4 - Sub Slab Vapor, Soil Vapor, Indoor and Outdoor Air Sampling	Nine Locations inside and outside of building	Two (2) sub slab samples and two (2) indoor air samples are to be collected within former dry cleaning tenant units 171 and 181. Four (4) soil vapor and one (1) outdoor air sample are to be collected along the western and southern boundaries of property.	9 samples for TO-14 list VOCs by TO-15 method.	Helium Tracer on the soil gas samples and outdoor ambient sample for comparison values.

Table 2
Analytical Methods/Quality Assurance Table
Revised Site Charactreization Work Plan
Elks Plaza LLC
Site# 130193
157-189 West Merrick Road, Freeport, New York

Analytical Parameter	Sample Matrix	Analytical Method	Number of Samples	Field Duplicates [a]	Field Blank [b]	Trip Blank(s) [c]	MS/MSD Samples [d]	Number of Split Samples	Number of Performance evaluation samples to be evaluated	Glassware	Sample Preservation	Holding Time
GROUNDWATER/LIQUID SAMPLES												
Volatile Organic Compounds	Groundwater/Liquid	EPA 8260	21	1	2	2	1	0	to be determined by lab	two - 40 mil clear glass vials with teflon septum	HCL to pH <2 Cool to 4°C	14 days
SOIL SAMPLES												
Volatile Organic Compounds	Soil	EPA 8260	5	1	1	0	1	0	to be determined by lab	one - 2oz clear glass jar with teflon-lined plastic cap.	Cool to 4°C	14 days
SOIL GAS, SUB SLAB VAPOR, INDOOR AIR AND OUTDOOR AIR SAMPLES												
Volatile Organic Compounds	Air	EPA TO-15	9	0	0	0	0	0	to be determined by lab	6 Liter Summa Canister with 24 hours regulator	Not applicable	14 days

[a] One duplicate sample per twenty samples collected - if MS/MSD collected - this will suffice as duplicate.
[b] Field blanks are collected at a frequencvy of 1 per day per sampling tool
[c] Trip blanks will be copllected at a one per cooler rate
[d] MS/MSD Samples will be collected at a frequency of 1 sample per 20 samples collected

A PP E N D I X A

HASP

Site-Specific Health and Safety Plan
Revised Site Characterization Investigation

at

Elks Plaza LLC -Site# 130193
157-189 West Merrick Road, Freeport, New York

PREPARED FOR SUBMISSION TO:

NEW YORK STATE DEPARTMENT OF
ENVIRONMENTAL CONSERVATION
625 BROADWAY
ALBANY, NEW YORK

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FOREWORD

The Occupational Safety and Health Act (OSHA) implementing regulations of 29 CFR 1910.120 govern hazardous waste operations and emergency response. These regulations require that employers of employees involved in certain specific hazardous waste operations 1) develop and implement a written safety and health Program for employees involved in hazardous waste operations, and 2) that the Program incorporate a site-specific safety and health plan.

Preferred Environmental Services (Preferred) has employees conducting activities which fall within the scope of these regulations, and thus, has in place a written safety and health Program as required. Its contents are contained in the Preferred HAZWOPER Program Manual. Some activities conducted at the contaminated portion of the 157-189 West Merrick Road, Freeport property may fall within the scope of these OSHA regulations. Thus, to assure regulatory compliance, this site-specific safety and health plan covering investigation activities to be conducted at the 157-189 West Merrick Road, Freeport, New York property has been prepared. The Integrated Safety Management System (ISMS) and Environmental Safety, Health, and Quality check lists will be used to define safe work procedures for work conducted in uncontaminated areas of the property.

The regulatory requirements for site-specific safety and health plans are found at 29 CFR 1910.120 (b)(4) and include ten specific elements which are designated with the letters A through J. Each of these elements is addressed in this safety and health plan for the 157-189 West Merrick Road, Freeport, New York property. Each element is listed below along with the section number where it is addressed in this safety and health plan.

	SAFETY AND HEALTH PLAN ELEMENT	**SECTION NO. IN THIS PLAN**
A)	Safety and health risk hazard analysis	4.0
B)	Employee training assignments and requirements	6.1
C)	Personal protective equipment requirements	4.0, 5.4
D)	Medical surveillance requirements	6.2
E)	Frequency and types of monitoring required	4.0, 5.2
F)	Site control measures	5.3
G)	Decontamination procedures	4.0, 5.6
H)	Emergency response plan	5.7
I)	Confined space entry procedures	none (no confined space entry)
J)	Spill containment program	5.3

1.0 INTRODUCTION AND PROJECT DESCRIPTION

A Site Characterization Work Plan (SC WP) has been prepared by Preferred Environmental Services (Preferred) on behalf of Elks Plaza LLC. This SCWP was prepared in accordance with the requirements set forth in the Order On Consent and Administrative Settlement, Index #W1-1120-08-04, between by the New York State Department of Environmental Conservation (NYSDEC) and Elks Plaza LLC signed and executed on September 6, 2008.

The Site is not currently listed in the Registry of Inactive Hazardous Waste Disposal Sites in New York State. However, as per the Order on Consent, the site has released and potentially continues to release hazardous substances to the environment, if the source is not identified and remediated. Therefore, the purpose of this Site Characterization Work Plan and its associated HASP is to allow for the expedited investigation of the property and remediation, if deemed necessary.

This Site-Specific Health and Safety Plan (HASP) addresses the safety aspects of the spectrum of work activities to be conducted at the contaminated area(s). Activities at the contaminated area (but not the uncontaminated background area) fall under the scope of Code of Federal Regulations, 29 CFR 1910.120, *Hazardous Waste Operations and Emergency Response (HAZWOPER*). The purpose of this document is to establish overall site-specific health and safety guidelines to be followed by all personnel conducting work at this site regardless of organizational affiliation. Work will be performed in accordance with requirements, as stipulated.

The levels of protection and procedures specified in this HASP are based on the best information available from historical data and recent evaluations of the area. Therefore, these recommendations represent the minimum health and safety requirements to be observed by all personnel engaged in work at the site. Unforeseeable site conditions, changes in scope of work, or hazardous conditions not previously considered will warrant a reassessment of the protection levels and controls stated. Refer to Section 5.1 for requirements pertaining to field modifications and changes to the HASP.

2.0 SITE ORGANIZATION AND COORDINATION

Subsurface investigation activities will be performed by Preferred personnel. All work is performed under the direction of the Site Supervisor and support staff, all of whom are Preferred employees.

The following section describes the organizational structure for the subsurface investigation. Key personnel and their responsibilities are listed. Ms. Jill Haimson will be the Project Manager (PM), Mr. William Schlageter will be the Site Supervisor (SS), Mr. David Kahn will serve as the Field Manager/Site Safety and Health Officer (SSHO), and Mr. Bryan Gammons will act as the Emergency Response Coordinator (ERC).

2.1 SITE SAFETY AND HEALTH OFFICER

The SSHO advises the Site Supervisor on safety and health issues and conducts briefings prior to initiation of site activities. The SSHO assesses the potential for worker exposures to hazardous agents, recommends appropriate hazard controls for protection of task site personnel, and will require personnel to obtain immediate medical attention in the event of a work-related injury or illness. The SSHO ensures any necessary monitoring of potential chemical hazards is performed, reviews the effectiveness of monitoring and personal protective equipment, and recommends upgrades or downgrades in protective safety and health measures. The SSHO ensures that appropriate fall protection measures are available and that needed work permits are obtained. The SSHO has stop work authority and advises emergency response personnel of an emergency. The SSHO authorizes the return to work following resolution of any safety and health hazards or other stop work issues. The SSHO ensures that this HASP is revised and approved if there are changes in site conditions or tasks. The SSHO will be available for consultation when required and will be aware of project-related work occurring on-site.

2.2 SITE SUPERVISOR

The Site Supervisor has primary responsibility for directing and managing all subsurface investigation field activities, including coordination with any support organizations. The Site Supervisor ensures that all on-site project personnel meet the required level of training, have reviewed the HASP, and are instructed in safe work practices. The Site Supervisor also ensures that a qualified SSHO is designated, maintains a current copy of the HASP, and documents field changes to the HASP in the project logbook. In addition, the Site Supervisor and staff perform oversight of field activities, maintain awareness of site operations, and ensure that all project personnel adhere to ES&H requirements in order to prevent potential accidents from occurring.

The Site Supervisor is responsible for ensuring that the following five core functions of the Integrated Safety Management System (ISMS) are fulfilled appropriately:

- Define the work, roles and responsibilities. Allocate resources to ensure that research goals are balanced with safe work practices.

- Identify and analyze the hazards using the ES&H evaluation, consultation with subject matter experts, material safety data sheet information, Work Smart Standards (WSS), lessons learned by other Principal Investigators (PIs) and staff, and other resources.

- Develop and implement hazard controls tailored to the work being performed.

    - Resources include staff, subject matter experts, Laboratory Operating Manuals, Laboratory Stewards, and Lessons Learned and Alerts.
    - Examples of actions and tools include optimization of engineering controls and procedural approaches with training, HAZCOM job-specific training, job pre-briefings, compliance-based and project-specific training, ES&H permits (e.g., Lockout/Tagout process), and protective equipment.

- Perform work within controls to ensure the work is done safely:

    - Communicate expectations to project staff.
    - Ensure that the controls identified in the ESH&Q evaluation and this HASP are carried out.
    - Ensure opportunity for procedure modification to respond to unanticipated situations.
    - Stop work if imminent danger exists.

- Provide feedback and continuous improvement:

    - Solicit feedback from project staff regarding ESH&Q issues and act on that input.
    - Communicate concerns to and seek help from supervisors and the ESH&Q group.
    - Reallocate resources to address issues that arise.
    - Ensure safety meetings and site briefings are performed.

2.3 PRINCIPAL INVESTIGATORS (PI) & FIELD PROJECT PERSONNEL

PIs and field project personnel involved in onsite operations are responsible for understanding the intent of the principles of Integrated Safety Management and are to be knowledgeable of the processes in place to satisfy the intent of Integrated Safety Management.

Define the Scope of Work

- Understand the expectations they are to meet in their particular work assignment.
- Understand the responsibilities of the Site Supervisor and SSHO.
- Provide documentation of training to the Site Supervisor.

Identify and Analyze the Hazard

- Notify the SSHO of any special medical conditions (i.e., allergies, diabetes, etc.).
- Actively participate in identification of hazards prior to beginning work.
- Ensure that potential work hazards have been evaluated by subject matter experts and are accounted for in all work practices.

Develop and Implement Hazard Controls

- Seek the help of the SSHO and other subject matter experts, as appropriate, to analyze the hazards.
- Ensure that control strategies are developed and implemented, as appropriate, before work begins.
- Ensure safety measures are incorporated into activities (i.e., through HASP addendums or amendments, work aides, or standard operating procedures).

Perform Work Within Controls

- Perform only those tasks that they believe they can do safely.
- Meet the responsibilities and safely perform the tasks that are delegated to them.
- Take all reasonable precautions to prevent injury to themselves and to their fellow employees; be alert to potentially harmful situations.
- Suspend work if unexpected concerns arise and modify plans to address concerns before resuming work.
- Comply with the work plan and HASP as well as postings and rules at the project site.

Provide Feedback and Continuous Improvement

- Keep the SSHO and Site Supervisor informed of any issues, problems, or concerns regarding all aspects of their work.
- Notify appropriate management personnel or the facility point of contact of any unsafe condition, violation, noncompliance, or environmental threat discovered in a facility.
- Report to the SSHO any changes in site conditions that may affect safety and health.
- Immediately notify the SSHO of symptoms or signs of exposure potentially related to any chemical, physical, or biological hazards present at the site and immediately report any accidents, injuries, and/or unsafe conditions to the SSHO.
- If unsafe conditions develop, task site personnel are authorized and expected to stop work and notify the SSHO and Site Supervisor of the unsafe condition.

3.0 INTEGRATED SAFETY MANAGEMENT SYSTEM (ISMS)

The ISMS process systematically integrates safety into management and work practices at all levels so missions are accomplished while protecting the public, the worker, and the environment. Direct involvement of workers during the development and implementation of safety management systems is essential for success. Therefore, all Preferred personnel are expected to incorporate the following basic ISMS functions during all work activities:

- Defining the scope of work;
- Identifying and analyzing hazards associated with the work;
- Developing and implementing hazard controls;
- Performing work activities within these controls; and
- Providing feedback on the adequacy of the controls to continue improving safety management.

4.0 TASK SPECIFIC HAZARD EVALUATION AND CONTROLS

The purpose of this Site Investigation hazard evaluation is to identify and assess potential hazards that personnel might encounter and to prescribe methods of hazard control. Historical site data provided in Appendix A gives the results of chemical analyses in subsurface soils and groundwater at the 157-189 West Merrick Road, Freeport New York property. Material Safety Data Sheets (MSDS) for chemicals that are likely to be handled when conducting field work are included in Attachment B.

A description of sampling procedures and the activities that may be conducted at the property is provided below.

4.1 WATER LEVEL MEASUREMENTS

Task Description: Manual water level measurements will be collected from any monitoring wells installed in order to determine current depth to groundwater in the area. These measurements are taken by lowering an electronic water level sounder down the well. As the sounder is brought out of the well the tip of the sounder that has been submerged is rinsed with distilled water to rinse off the groundwater. The rinse water is allowed to drip back down into the well.

Equipment and Materials: Equipment includes water level sounder.

Task Hazards and Controls:

Chemical Hazards

- Groundwater Contact: Based on previously obtained sample data, the risk of chemical or radiological surface water samples is minimal. However, direct contact with contaminated materials should be avoided; therefore, disposable latex or nitrile gloves and safety glasses will be worn when conducting groundwater monitoring and during the handling of sample tubes to prevent eye and skin contact.

- Downhole equipment: Rinse downhole equipment with distilled water as it is brought out of the well.

Physical Hazards

- Tripping/Falling: Precautions should be taken to avoid trip, slip, and fall accidents

when climbing irregular or slippery surfaces. Before changing location visually survey the area for slippery surfaces and tripping hazards.

- Heat/Cold Stress: Wear clothing appropriate for environmental and weather conditions. Temperature extremes may be a hazard for consideration depending on the timing of the activity. Refer to Section 5.5 for discussion of recognition of symptoms and controls.

Biological/Vector Hazards

- Ticks/Snakes/Pathogens: Be cautious of snakes, and vector carriers such as ticks. Check clothing and skin for ticks after walking in brush. Wash hands before eating and drinking.

Personal Protective Equipment Required to Address General Site Hazards

- Level of Protection: D
- Protective Clothing: Preferred-issued work clothes or disposable tyvek
- Head Gear: Safety glasses
- Gloves: Latex or nitrile (when conducting groundwater sampling or handling corrosive or oxidizing reagents)
- Footwear: Sturdy work shoes

Monitoring Requirements

- None

4.2 FIELD SAMPLING AND ANALYSIS OF GROUNDWATER

Task Description: Procedures for field sampling and analysis of groundwater (if any) are described in the 157-189 West Merrick Road, Freeport Site Characterization Work Plan. Groundwater will generally be sampled with a peristaltic pump. Slow purge techniques will be used in order to reduce the disturbance caused by removal of large volumes of water from the system. The purge water will be collected in DOT approved 55-gallon drums, if deemed to be necessary or discharged in proximity to the wellhead with regulatory approval.

Samples will be handled and transported according to regulatory requirements and procedures outlined in the 157-189 West Merrick Road, Freeport Investigation Work Plan. Samples will be

preserved and stored as required by the analytical protocols (e.g. cooled, preservative added). Storage on site may occur for short periods of time in ice chests containing “blue ice” but will be quickly transferred to refrigerator storage in the field laboratory or at the fixed base laboratory at the appropriate temperatures. All storage of contaminated samples will follow procedures and relevant regulations.

Equipment and Materials: Sampling equipment includes sampling tubing which is dedicated for each sample collected; peristaltic pump; filters and sample containers (for collecting samples). Some samples may be preserved with a few drops of nitric, hydrochloric or sulfuric acid. Calibration standards including pH and conductivity are also used.

Task Hazards and Controls:

- **Chemical Hazards**

  - Groundwater Contact: Limited groundwater sampling data is available that indicates that low level VOCs were present. Due to the limited concentrations, the risk of chemical exposure from short-term exposure to groundwater is considered to be minimal. However, direct contact with contaminated materials should be avoided, therefore, disposable latex or nitrile gloves and safety glasses will be worn when conducting groundwater and surface water sampling to prevent eye and skin contact.

  - Reagent Contact: Corrosive or oxidizing reagents pose a contact hazard. To prevent eye and skin contact when corrosive or oxidizing reagents are used disposable latex or nitrile gloves and safety glasses will be worn.

- **Physical Hazards**

  - Tripping/Falling: Precautions should be taken to avoid trip, slip, and fall accidents when climbing irregular or slippery surfaces. Before changing location visually survey the area for slippery surfaces and tripping hazards.

  - Heat/Cold Stress: Wear clothing appropriate for environmental and weather conditions. Temperature extremes may be a hazard for consideration depending on the timing of the activity. Refer to Section 5.5 for discussion of recognition of symptoms and controls.

- **Explosion Hazards**

- Gas cylinders: Pressurized gas cylinders (if any) will be transported and handled in accordance with applicable Department of Transportation guidance and regulations. Care will be taken to secure the cylinders upright during transport to ensure they are not damaged. Cylinders will also be secured at the site so they will not tip over during the injection process.

Biological/Vector Hazards

- Ticks/Snakes/Pathogens: Be cautious of snakes, and vector carriers such as ticks. Check clothing and skin for ticks after walking in brush. Wash hands before eating and drinking.

Personal Protective Equipment Required to Address General Site Hazards

- Level of Protection: D
- Protective Clothing: Preferred-issued work clothes or disposable tyvek
- Head Gear: Safety glasses
- Gloves: Latex or nitrile (when conducting groundwater sampling or handling corrosive or oxidizing reagents)
- Footwear: Sturdy work shoes

Monitoring Requirements

- Air Quality: Air monitoring with an organic vapor analyzer or other suitable instrument will be performed during all groundwater or surface water sampling activities. A VOC ambient air monitoring result of 3ppm will trigger a warning response. If a detection of 5ppm VOC in ambient air is detected, the SSHO will suspend work and instruct the workers to move to a safe zone until such time the work zone is tested safe.

4.3 FIELD SAMPLING AND ANALYSIS OF SOIL

Task Description: Procedures for field sampling and analysis of subsurface soils, are described in the 157-189 West Merrick Road, Freeport SC Work Plan. Soil samples will generally be obtained by a discrete sampler by hand, Geoprobe direct push sampling rig or Drilling Rig. This method ensures dedicated, undisturbed soil samples protected in a PVC liner or split spoon sampler. Field testing for total volatile organic compounds (VOCs) in the breathing zone (work zone), as well

as the downwind perimeter will be monitored by a portable Photoionization Detector (PID). The air monitoring action levels using PID readings cited will be used to safeguard workers and observers during the implementation of the field investigation program. Discarded soil will be placed back in the bore hole if approved by the regulators or containerized as necessary.

Samples will be handled and transported according to regulatory requirements and procedures outlined in the 157-189 West Merrick Road, Freeport SCWP. Samples will be preserved and stored as required by the analytical protocols (e.g. cooled, preservative added). Storage on site may occur for short periods of time in ice chests containing ice but will be quickly transferred to refrigerator storage in the field laboratory or at the fixed base laboratory at the appropriate temperatures. All storage of contaminated samples will follow procedures and relevant regulations.

Equipment and Materials: Sampling equipment includes a Geoprobe direct push sampling rig for exterior sample locations and a weighted slide hammer or mobile Geoprobe unit for interior sample collection. A PVC liner is dedicated for each soil sample collected.

Task Hazards and Controls:

- **Chemical Hazards**

  - Soil Contact: Based on previously obtained sample data, the risk of chemical exposure from short-term exposure to soil samples is present (See Appendix A). However, direct contact with contaminated materials will be avoided, therefore, disposable latex or nitrile gloves and safety glasses will be worn when conducting soil and sediment sampling to prevent eye and skin contact.

- **Physical Hazards**

  - Tripping/Falling: Precautions should be taken to avoid trip, slip, and fall accidents when climbing irregular or slippery surfaces. Before changing location visually survey the area for slippery surfaces and tripping hazards.

  - Heat/Cold Stress: Wear clothing appropriate for environmental and weather conditions. Temperature extremes may be a hazard for consideration depending on the timing of the activity. Refer to Section 5.5 for discussion of recognition of symptoms and controls.

- **Biological/Vector Hazards**

- Ticks/Snakes/Pathogens: Be cautious of snakes, and vector carriers such as ticks. Check clothing and skin for ticks after walking in brush. Wash hands before eating and drinking.

Personal Protective Equipment Required to Address General Site Hazards

- Level of Protection: D
- Protective Clothing: Preferred-issued work clothes or disposable tyvek
- Head Gear: Safety glasses
- Gloves: Latex or nitrile (when conducting groundwater sampling or handling corrosive or oxidizing reagents)
- Footwear: Sturdy work shoes

Monitoring Requirements

- Air Quality: Air monitoring with an organic vapor analyzer or other suitable instrument will be performed during all soil sampling activities. A VOC ambient air monitoring result of 3ppm will trigger a warning response. If a detection of 5ppm VOC in ambient air is detected, the SSHO will suspend work and instruct the workers to move to a safe zone until such time the work zone is tested safe.

4.4 GEOPROBE BORINGS/ MONITORING WELL INSTALLATION/SOIL REMOVAL

Task Description: Probe rods are installed by using a Geoprobe direct push rig which hydraulically pushes or hammers steel drive pipe into the ground (please refer to the 157-189 West Merrick Road, Freeport SC Work Plan for a more complete description). Sections of probe rods are added (threaded attachment) until the desired depth is reached. A sampling tool is opened to obtain the soil or groundwater, which then is retrieved. If desired, a small diameter well can then be constructed inside the hollow pipe as it is withdrawn from the ground or in the uncased hole after the drive pipe is removed completely. The drive point is left in the ground. Sampling equipment and probe rods are cleaned and decontaminated by detergent wash and potable water rinse. Hollow-stem augers and other drilling methods may also be used to install groundwater monitoring wells and/or to collect soil samples. These methods produce drill cuttings that will be collected with discarded soil back in the bore hole if approved by the regulators.

Soil will be removed via backhoe/trackhoe with operator. Preferred personnel will be charge of directing soil removal and screening/sampling of soil column and stockpiles.

Equipment and Materials: Equipment includes Geoprobe rig, drill rigs and associated equipment and support vehicles such as air compressors, pressure washers, generators, probe rod, and well construction materials, backhoe, trackhoe, shovels, augers, etc.

Task Hazards and Controls:

- **Chemical Hazards**

  - Groundwater Contact: Based on previously obtained sample data, the risk of chemical exposure from short-term exposure to groundwater is present (See Appendix A). However, direct contact with contaminated materials will be avoided, therefore, disposable latex or nitrile gloves and safety glasses will be worn when conducting groundwater sampling to prevent eye and skin contact. Therefore, the risk of chemical exposure from short-term exposure to groundwater samples is considered to be minimal, at this time.

  - Soil/drill cuttings Contact: Workers could be exposed to contaminated soil remaining on the probe rods and/or backhoe buckets as they are raised out of the ground. This hazard will be minimized by screening the drive pipe as it is raised out of the hole. Prior to removal from the site, all drill pipe, drill cuttings, and any core samples collected will be scanned for VOC contamination. An exclusion area will be set up around the drill rig to prevent entry by personnel that are not trained or wearing proper protection. However, direct contact with contaminated materials should be avoided, therefore, disposable latex or nitrile gloves will be worn when conducting soil sampling to prevent eye and skin contact. Dust suppression will be implemented based upon community air monitoring. The same criteria will be used for on-site controls.

- **Physical Hazards**

  - Tripping/Falling: Precautions should be taken to avoid trip, slip, and fall accidents when climbing irregular or slippery surfaces. Before changing location visually survey the area for slippery surfaces and tripping hazards. Operators will avoid accessing locations greater than six feet above ground. If it becomes necessary to perform work on the drill mast, the mast will be lowered prior to performing work.
  - Heat/Cold Stress: Wear clothing appropriate for environmental and weather conditions. Temperature extremes may be a hazard for consideration depending on the timing of the activity. Refer to Sect. 5.5 for discussion of recognition of

symptoms and controls.

- Abrasions, Scrapes and Sprains: Always use appropriate care when using tools and mechanical equipment. Maintain awareness of body and limb location and think ahead to probable body and object path before applying force to tools. Wear protective clothing as listed below. Drill rods, augers, and tools will be properly stowed and restrained during transport. Support rails will have adequate strength to hold tools. Operators will avoid placing body parts at points of operation and/or pinch points.
- Lifting: Use your legs to lift heavy objects, avoid awkward positions and twisting of the body and ask for assistance with awkward or heavy loads.
- Mechanical Hazard: Working with drill rigs can result in injuries from equipment dislodging and striking unsuspecting personnel, and from impacts due to flying objects or overturning vehicles. Therefore, follow these precautions:
  - ✓ Drill rig/Backhoe will be inspected visually before each use. If inspection reveals unsafe conditions, rig will be removed from service and repaired. Only qualified individuals shall make repairs to the drill rig.
  - ✓ Drill rig cabs/Backhoe will be kept free of all nonessential items and all loose items will be secured.
  - ✓ Drill rigs/Backhoe will be provided with necessary safety equipment.
  - ✓ Drill rig/Backhoe shall be properly maintained per manufacturer's recommendations. Only qualified individuals shall make repairs to the drill rig.
  - ✓ Parking brakes will be set before shutting off any heavy equipment or vehicle.
  - ✓ High pressure hoses will be secured to prevent "whipping" in the event of a failure.
  - ✓ Only competent individuals shall be allowed to operate the drill rig.
  - ✓ To minimize overhead hazards, wire cables will be inspected by the rig operator prior to use. Any frayed, kinked, marked, or otherwise damaged cables will be taken out of service. Operator and other personnel in area during lifting of tools onto rig mast shall position themselves so that they are not under the load and/or between equipment.
- Electrical Hazard: Of special concern to drilling operations is the possibility for conducting electricity through the drilling tower/backhoe through either inadvertent contact with underground or overhead power lines, or by lightning strikes. In addition, some of the equipment used is operated by electricity. Unless safe work practices are observed, serious injury or death can result. Therefore, observe the following precautions:

- ✓ Treat all electrical wires and circuits as ‘live” unless certain they are not.
- ✓ Always maintain a firm work base to prevent a loss of balance and potential fall onto energized busses or parts (which should be covered with a good electrical insulator such as a rubber blanket).
- ✓ All tools should have insulated handles, be electrically grounded, or double insulated.
- ✓ Do not drill within 10 ft of an overhead power line that is ≤ 50 kV (or within 50 ft for > 50 kV) unless power to the line is first turned off for the duration of the drilling.
- ✓ Ground fault circuit interrupters will be used for electrical extension cords in use between a fixed electrical system (permanent outlet) and a tool.
- ✓ Prior to drilling have site representatives delineate location of underground power lines and other utilities.
- ✓ Do not drill within 25 ft of any known underground power line; also allow a reasonable separation distance from other site utilities.
- ✓ Maintain a watch for electrical storms. If electrical activity appears to be imminent, cease drilling operations and evacuate the area around the drill rig. If time permits do not leave auger or drill string in the borehole.

- ▸ Noise: Unprotected exposure of site workers to noise from drilling activities can result in noise induced hearing loss. Hearing protection must be worn where noise levels are greater than 85 dBA. The SSHO will ensure that either ear muffs or disposable foam earplugs are made available to all personnel and are used by the personnel in the immediate vicinity of the drill rig.

Biological/Vector Hazard

- ▸ Ticks/Snakes/Pathogens: Be cautious of snakes, and vector carriers such as ticks. Check clothing and skin for ticks after walking in brush. Wash hands before eating and drinking.

Personal Protective Equipment Required to Address General Site Hazard

- ▸ Level of Protection: D
- ▸ Protective Clothing: Preferred-issued work clothes or disposable tyvek
- ▸ Head Gear

  - Hard hat required for drill rig operations; not required for steam cleaning and washing
  - Safety glasses or goggles required during drilling and decon operations

- Ear muffs or disposable foam earplugs required in the vicinity of drill rig

- Gloves: Leather work gloves over nitrile or latex gloves during drilling or decon operations
- Footwear: Steel-toed work shoes

Monitoring Requirements - Air Quality

- VOCs: Air monitoring with a PID or other suitable instrument will be performed during all well installation activities. A VOC ambient air monitoring result of 3ppm will trigger a warning response. If a detection of 5 ppm VOC in ambient air is detected, the SSHO will suspend work and instruct the workers to move to a safe zone until such time the work zone is tested safe.

- Particulate Monitoring, Response Levels, and Actions: Particulate concentrations will be monitored continuously at temporary particulate monitoring stations at the downwind perimeter of the immediate work area (i.e., the exclusion zone) or as otherwise specified. Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background conditions. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/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 will 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.

- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work will 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.

5.0 OTHER HEALTH AND SAFETY PLAN ELEMENTS

5.1 REVISIONS/ MODIFICATIONS TO THE HASP

The following actions will warrant revision and approval of this plan by the appropriate health and safety disciplines:

- Change in tasks (or previously unidentified tasks) that could impact employee health and safety.
- Changes in hazards (unknown or not previously addressed) which require a significant change in, or addition to, respiratory protection (as defined in exemptions to the plan modifications), physical/barrier protection features, or other engineering controls.

5.1.1 Modifications allowed

The SSHO may upgrade PPE. These changes must be documented in the field logbook. The change and reason or evidence for the change must also be documented in the field logbook. For upgrades to include respiratory protection (including air-purifying and supplied air) for previously unidentified non-radiological issues or contaminants such as VOCs, the appropriate health and safety disciplines must be contacted. The SSHO will approve and document changes in PPE in the field logbook. Upgrades to include respiratory protection will require the SSHO to ensure workers have 40 Hour HAZWOPER Training and to assess any additional medical surveillance requirements.

5.2 MONITORING

Historical soil and air monitoring site data indicate that chemical exposure of site personnel with proper personal protection can be minimized to not pose a significant concern within the scope of this project. However as only limited site characterization has been performed, monitoring will be required for all field activities. Site monitoring requirements may change based on site conditions. All changes must be documented in the site logbook.

5.3 SITE AND SPILL CONTROL

Site access is available from public roads through the area and therefore will not be controlled to the general site. However, certain areas of concern are interior or exterior to the building and are enclosed. As necessary, based on the levels of contamination identified during SC WP, formal barricaded work zones will not be established unless new monitoring data indicate the need for such

barriers. An exclusion zone may be required for drilling operations and other field activities if required to reduce the accidental spread of hazardous substances from contaminated areas to clean areas. The SSHO will determine, as needed, the locations of the support zone, contamination reduction zone, and the exclusion zone. Personnel accessing the zones must meet access requirements as stated in this plan.

5.4 PERSONAL PROTECTIVE EQUIPMENT

Level D protection is normally used when the potential for personnel contamination is low, as is the case with this project. Level D protection will include Preferred-furnished clothing or disposable tyvek. Details and special requirements have been covered in the hazard control sections of the specific tasks in Sect. 4 above. Unexpected new hazards will require a reassessment of the specified PPE.

5.5 TEMPERATURE EXTREMES AND SITE CHARACTERISTICS

The effect of temperature extremes on personnel is a primary hazard associated with the activities conducted at the site. Symptoms and controls related to temperature extremes are considered in detail in this section.

Field activities conducted during the summer or winter pose a hazard because of temperature extremes. Since the project site is located in a relatively open area, workers shall dress appropriately for environmental conditions, wearing clothing that provides reasonable protection against winter cold and summer sun. Although extreme physical exertion will not be likely within the scope of this project, during hot weather workers are encouraged to be aware of their own symptoms of heat stress (headaches, dizziness, increased heart rate), to drink plenty of water, and to take breaks as needed. Heat stress symptoms, remedies, and monitoring are discussed in Section 5.5.1. Cold exposure effects are discussed in Section 5.5.2.

Workers are also encouraged to apply insect repellant and/or sunscreen as needed prior to field activities. Workers should exercise caution by visually inspecting their immediate area of activity for presence of poisonous/harmful plant, insect, and animal species as well as any hazard resulting from previous human activity.

5.5.1 Effects and Prevention of Heat Stress

If the body’s physiological processes fail to maintain a normal body temperature because of excessive heat, a number of physical reactions can occur. They can range from mild symptoms such as fatigue, irritability, anxiety, and decreased concentration, dexterity, or movement, to death.

Heat-related health concerns can include the following:

- **Heat rash:** Caused by continuous exposure to heat and humid air and aggravated by chafing clothes. Decreases ability to tolerate heat and is a nuisance.
- **Heat cramps:** Caused by profuse perspiration combined with inadequate fluid intake and chemical replacement, particularly salts. Signs include muscle spasm and pain in the extremities and abdomen.
- **Heat exhaustion:** Caused by increased stress on various organs to meet increased demands to cool the body. Signs include shortness of breath; increased pulse rate (120-200 beats per minute); pale, cool, moist skin; profuse sweating; dizziness; and lassitude.
- **Heat stroke:** Is the most severe form of heat stress. Body must be cooled immediately to prevent severe injury and/or death. Signs include red, hot, dry skin; no perspiration; nausea; dizziness and confusion; strong, rapid pulse; and possibly coma. Medical help must be obtained immediately.

Medical attention must be obtained for the more serious symptoms of heat stress. One or more of the following methods are recommended to help reduce the potential for heat stress:

1. Provide plenty of liquids. To replace body fluids (water and electrolytes) lost due to sweating, use a 0.1 percent saltwater solution, more heavily salted foods, or commercial mixes. The commercial mixes may be preferable for those employees on a low-sodium diet.
2. Provide cooling devices to aid natural body ventilation. These devices, however, add weight, and their use should be balanced against worker efficiency.
3. Wear long cotton underwear, which acts as a wick to help absorb moisture and protect the skin from direct contact with heat-absorbing protective clothing.
4. Install mobile showers and/or hose-down facilities to reduce body temperature and cool protective clothing.
5. In extremely hot weather, conduct non-emergency response operations in the early morning or evening.
6. Ensure that adequate shelter is available to protect personnel against sun, heat, or other adverse weather conditions that decrease physical efficiency and increase the probability of accidents.
7. In hot weather, rotate workers wearing protective clothing.
8. Maintain good hygiene frequently changing clothing and showering daily. Clothing should be permitted to dry during rest periods. Workers who notice skin problems should immediately consult medical personnel.

5.5.2 Cold Exposure

Persons working outdoors in temperatures at or below freezing may suffer from cold exposure. During prolonged outdoor periods with inadequate clothing for protection, the effects of cold exposure may occur even at temperatures well above freezing. Cold exposure may cause severe injury due to freezing of exposed body surfaces (frostbite), or profound generalized cooling (hypothermia), possibly resulting in death. Areas of the body which have high surface area-to-volume ratios such as fingers, toes, and ears are the most susceptible to frostbite.

Local injury resulting from cold is included in the generic term frostbite. There are several degrees of damage. Frostbite of the extremities can be categorized into:

- **Frost nip or incident frostbite:** characterized by sudden blanching or whitening of skin.
- **Superficial frostbite:** skin has a waxy or white appearance and is firm to the touch, but tissue beneath is resilient.
- **Deep frostbite:** tissues are cold, pale, and solid; extremely serious injury.

Systemic hypothermia, or lowering of the core body temperature, is caused by exposure to freezing or rapidly dropping temperatures. Symptoms are usually exhibited in five stages: 1) shivering and loss of coordination; 2) apathy, listlessness, sleepiness, and (sometimes) rapid cooling of the body to less than 95ºF (35ºC); 3) unconsciousness, glassy stare, slow pulse, and slow respiratory rate; 4) freezing the extremities; and 5) death.

5.6 DECONTAMINATION

Preferred will maintain on-site decontamination equipment as required, such as a steam cleaner, potable water, alconox, pressure washer, water reservoir tank, etc.. Groundwater, soil sampling, and drilling equipment will be decontaminated between each boring, well installation, sampling event, and prior to mobilization on or off site.

Decontamination of personnel shall be conducted only in the unexpected event that contamination is detected. At a minimum, personnel who have conducted work at the site will wash their hands prior to eating or drinking. Preferred personnel shall supervise, assist, and document incidents involving personnel contamination.

5.7 EMERGENCY PREPAREDNESS/RESPONSE

All emergency services can be reached by dialing 911 from any facility or mobile telephone. Access to phones and/or radios will be provided to onsite personnel. The Emergency Response Coordinator

(ERC) will coordinate all emergency response operations.

Should evacuation from the site become necessary, the evacuation route to the hospital is shown in Figure 2. Emergency telephone numbers are given below.

Emergency Telephone Numbers

FIRE / POLICE 911

Village of Freeport Fire Prevention
46 North Ocean Avenue
Freeport, NY 11520
516 378-0400

Village of Freeport Police Department
911 (emergency)
516-378-0700 (non-emergency)
40 North Ocean Ave
Freeport, NY 11520

Freeport Electric Dept – EMERGENCY

516-378-0146

Freeport Water Department

516-377-2370

Hospital - Mercy Medical Center

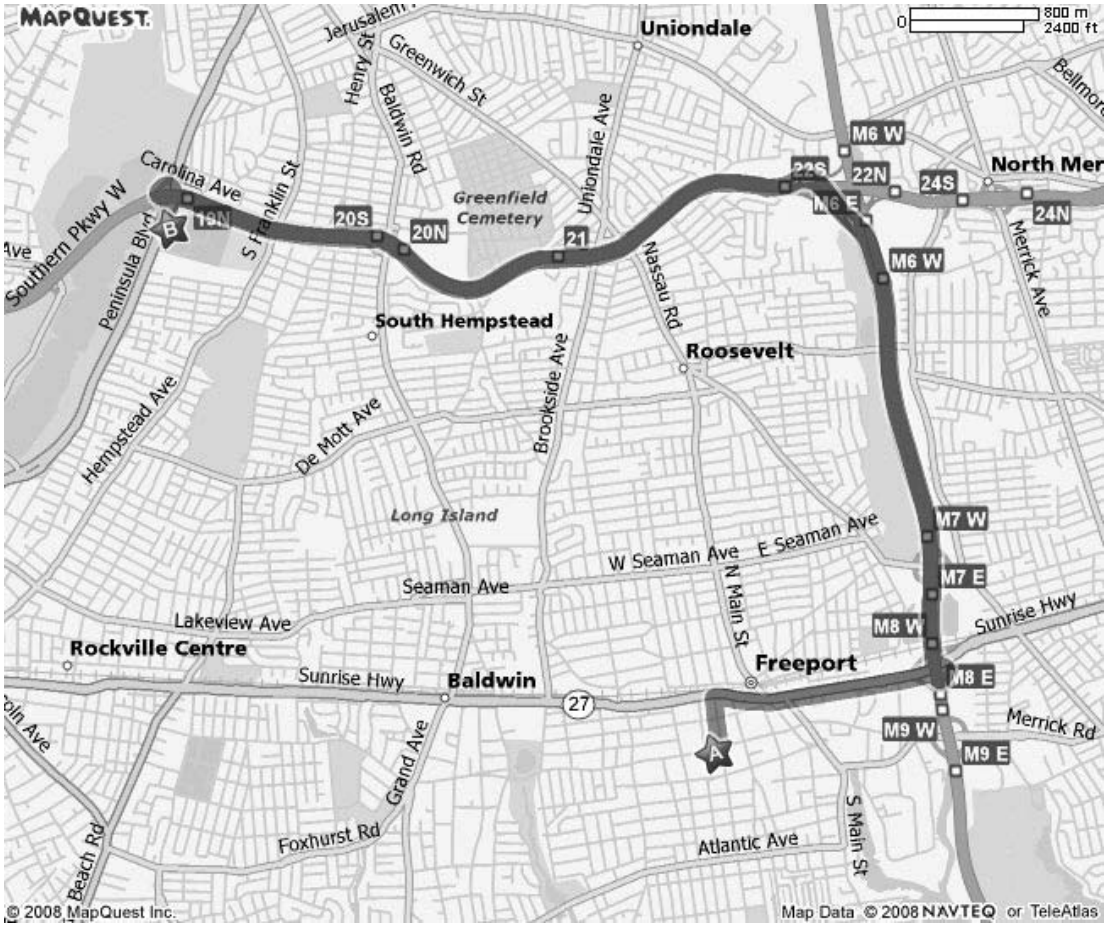

Figure 1 - EMERGENCY ROUTE TO MERCY MEDICAL CENTER

Total Est. Time:

1: Start out going EAST on W MERRICK RD toward S OCEAN AVE. 0.0 mi

2: Turn LEFT onto S OCEAN AVE. 0.2 mi

3: Turn RIGHT onto W SUNRISE HWY/NY-27 E. 1.0 mi

4: Merge onto MEADOWBROOK PKWY N toward MINEOLA. 2.0 mi

5: Take the WEST SOUTHERN PARKWAY exit, EXIT M6 W, on the left toward NY 0.8 mi

6: Merge onto SOUTHERN PKWY W/SOUTHERN STATE PKWY. 2.9 mi

7: Take the SOUTH PENINSULA BLVD exit, EXIT 19S, toward ROCKVILLE CTR.0.1 mi

8: Merge onto PENINSULA BLVD. 0.2 mi

9: Turn LEFT. 0.0 mi

10: Turn LEFT onto N VILLAGE AVE. 0.0 mi

11: End at 1000 N Village Ave Rockville Centre, NY 11570-1000

Total Time: 12 minutes Total Distance: 7.36 miles

6.0 TRAINING/MEDICAL REQUIREMENTS

6.1 SITE-SPECIFIC HAZARD COMMUNICATION AND ACCESS BRIEFING

- Since different training requirements may be needed based on the nature of different tasks to be performed, specific training requirements may be identified. However, generally applicable training requirements are presented here. Visitors not entering any exclusion zone or contamination reduction zone who have very limited potential for exposure to contaminants require:
- Site-specific hazard communication and access briefing.
- All project personnel performing hands-on work that could potentially expose them to hazardous substances, safety, or health hazards will meet the following training requirements:

 General Employee Training (GET)

 40 hour HAZWOPER (SARA/OSHA) training, or equivalent (Note: for certain types of low risk work, 24 hour training is acceptable)

 Current HAZWOPER 8-hour Annual Refresher (as applicable)

 Site-specific hazard communication and access briefing

- In addition, the Site Safety and Health Officer requires:

 8-hour HAZWOPER Supervisor training

- Personnel involved in service or maintenance work on energized equipment require:

 Lockout/Tagout training

Prior to beginning work at the project site, all personnel will review this Health and Safety Plan and sign the training acknowledgment form (Appendix C). The site-specific hazard communication and access briefing is documented in the project logbook. If site conditions change, or other hazards are detected, the training and access requirements will be revised accordingly.

6.2 MEDICAL SURVEILLANCE

- A medical surveillance program will be conducted in accordance with the requirements of 29 CFR 1910.120 for:

 All employees who are or may be exposed to hazardous substances or health hazards at or above the established permissible exposure limits or, if there is no permissible exposure limit, above the published exposure levels for these substances, without regard to the use of respirators, for 30 days or more a year.

- All employees who wear a respirator for 30 days or more a year or as required by 29 CFR 1910.134.
- All employees who are injured, become ill or develop signs or symptoms due to possible overexposure involving hazardous substances or health hazards from an emergency response or hazardous waste operation.
- Members of HAZMAT teams.

All Preferred employees receive periodic medical examinations. Because of the low potential for exposure to hazardous agents, it is not expected that additional medical surveillance will be required for Preferred personnel at the 157-189 West Merrick Road, Freeport property. Non-Preferred personnel will be required to acknowledge coverage by a medical surveillance program sufficient to satisfy the requirements of 29 CFR 1910.120 (Appendix C).

7.0 COMMUNITY AIR MONITORING PLAN (CAMP)

Community Air Monitoring

Continuous monitoring will be required for all ground intrusive activities and during the excavation of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil excavation, tank and piping removal, test pitting and the installation of soil borings and temporary groundwater monitoring wells.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) will 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 will be measured at the start of each workday and periodically thereafter to establish background conditions. The

monitoring work will be performed using a MiniRae 2000 Photoionization Detector (PID). The PID will be calibrated at daily utilizing the factory-supplied and recommended calibration gas (isobutylene).

• 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 will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 PPM over background, work activities will resume with continued monitoring.

• If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 PPM over background but less than 25 PPM, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities will resume provided that the total organic vapor level at the downwind property line (within 50 feet of the exclusion zone), is below 5 PPM over background for the 15-minute average.

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

All 15-minute readings will be recorded and be available for NYSDEC personnel to review. Instantaneous readings, if any, used for decision purposes will also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations will be monitored continuously at the upwind and downwind perimeters of the

exclusion zone at temporary particulate monitoring stations. The particulate monitoring will 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 will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration will be visually assessed during all work activities.

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

• If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than

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

All readings will be recorded and be available for State (DEC and DOH) personnel to review. A datalogger will be utilized and all data collected during the CAMP will be provided to NYSDEC as part of the site investigation report

Appendix A

HISTORIC SITE DATA

SUMMARY OF PAST INVESTIGATIONS

Phase I Environmental Site Assessment

A Phase I Environmental Site Assessment titled *"Environmental Site Assessment; Phase I Investigation"* was performed at 157-189 Merrick Road, Freeport, New York for the purpose of identifying Potential Environmental Condition (PECs) or Recognized Environmental Conditions (RECs). The Phase I ESA was conducted by Impact Environmental and prepared for Citibank, N.A. 1 in 2006, with a report date of October 16, 2006.

At the time of the Phase I ESA, the subject property consisted of the current development - three one-story masonry and steel buildings with addresses of 157, 169-187 and 189 Merrick Road. Eighteen various tenants occupied the existing buildings at the time of the Phase I ESA. The Phase I ESA documented several recognized environmental conditions due to historical operations within units 171, 179A and 181 of the plaza.

Due to the findings of the Phase I ESA, a Phase II ESA was recommended be performed to investigate subsurface conditions for environmental impacts.

Phase II Environmental Site Assessment

A Phase II Environmental Site Assessment was performed by Associated Environmental Services, Ltd. (Associated) in November and December of 2006 at 157-189 Merrick Road, Freeport, New York for the purpose of investigating soil and groundwater conditions at specific areas of recognized environmental conditions identified in the Phase I ESA. The Phase II ESA field activities were conducted on November 13, 2006 and December 6, 2006 with a report issued on December 18, 2006.

Soil and groundwater samples were collected in locations where the prior Recognized Environmental Conditions were noted within the Phase I ESA. The subsurface investigation consisted of a series of soil and groundwater sampling locations both upgradient and downgradient from potential contaminant sources. Five soil samples collected from ten to twelve (10 - 12) feet below grade surface (bgs) and six groundwater samples were submitted for laboratory analysis for Volatile Organic Compounds (VOCs) via EPA Method 8260.

Laboratory analysis of the soil samples revealed no actionable impacts to subsurface soils from historic operations. Two groundwater samples, designated B-2 and B-5 in the Phase II ESA, located to the south and downgradient of the laundromat (south of the former dry cleaners in unit 181) contained levels of cis-1,2-dichloroethene (cis-12 DCE), tetrachloroethene (PCE), and trichloroethene (TCE) above NYSDEC Class GA Groundwater Standards and Guidance Values (SGVs). Subsequent to the review of analytical results, NYSDEC Spill No. 06-10549 was assigned to the subject property. The spill was closed in December of 2006 as the case was re-assigned to the Hazardous Waste Remediation Unit.

Appendix B

MATERIAL SAFETY DATA SHEETS

Appendix C

HEALTH AND SAFETY PLAN ACCEPTANCE AND TRAINING ACKNOWLEDGMENT

Instructions: This form is to be completed by each person that works on the 157-189 West Merrick Road, Freeport SCWP Work Plan site and returned to the Site Safety and Health Officer.

I have read and agree to abide by the contents of the SITE-SPECIFIC HEALTH AND SAFETY PLAN for work activities at the site. I have completed the training requirements specified in the plan. I am currently participating in a medical surveillance program that satisfies the requirements of CFR 1910.120.

Signature:	Date:
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Return to:

Site Safety and Health Officer or

Preferred Environmental Services

323 Merrick Avenue, Merrick, New York 11566

A P E N D I X B

Resumes of Project Personnel

Jill S. Haimson, CGWP, PG
Preferred Environmental Services

323 Merrick Avenue • North Merrick, New York 11566
Telephone: (516) 546-1100 • Facsimile: (516) 213-8156 • Cell: (516) 647-4211

PROFESSIONAL EXPERIENCE

Jill Haimson has more than 28 years of experience as a Project Director and Senior Hydrogeologist who has been responsible for technical oversight of projects involving the investigation, delineation and management and/or remediation of soil, sediment, surface water and groundwater contamination. Her diversified technical experience includes but is not limited to the following: implementation and management of remedial investigations; regulatory compliance activities; petroleum spill loss control and response; spill cause and origin analysis and insurance coverage determinations; environmental impact assessment and remediation including supervision and management of staff and subcontractors. She specializes in the management and implementation of Voluntary Cleanup Programs (VCPs), Brownfield Cleanup Programs (BCPs), Remedial Investigation/Feasibility Study (RI/FS); comprehensive site investigations, remedial design and remedial action programs; interim remedial measures; subslab depressurization studies; gasoline station decommissioning and redevelopment; petroleum/MTBE spill investigation and response; UST/hazardous and non-hazardous waste investigations and regulatory compliance; developing and scoping of field programs including QA/QC protocols, sampling plans and health and safety control plans; as well as regulatory compliance and negotiations. Ms. Haimson has extensive experience in the management and negotiation of projects under administrative consent orders with regulatory agencies under the Navigation Law, NCP, CERCLA, RCRA and other state and federal programs and local county authorities as well as voluntary remediation programs. She has also provided expert testimony for sites involving determinations of cost of remedial compliance.

Ms. Haimson has a strong working knowledge of local, state and federal regulations affecting hazardous and non-hazardous waste materials as well as standards and guidances for soil and groundwater quality. She also serves as an expert witness providing testimony and deposition to assist in litigation and variance projects.

Major projects which Ms. Haimson has supervised and/or had a significant technical role in include, but are not limited to:

- Remedial Investigation/Feasibility Study (RI/FS) for a 40 acre National Priority List (NPL) former aircraft part manufacturing facility, Nassau County, USEPA Region II ARCS, where she served as Project Manager. The project was performed under the authority of the USEPA; comprehensive RI with over 800 environmental samples collected, with on- and off-site feasibility study analysis for full range of contaminated media. Participated in numerous public meetings, inclusive of coordination and presentations.

- Soil, sediment and groundwater remediation of over 150 properties in Nassau, Suffolk, Westchester, Dutchess and Ulster Counties under the oversight of the USEPA, NYSDEC, WCDH, NCDH and/or SCDHS;

- Phase I, Phase II and remediation coordination of the former 14 acre Roosevelt Raceway property, Westbury, Nassau County under the federal and county programs, prior to re-development;

- Phase I and Phase II Environmental Site Assessments of the former St. Johns Episcopal Hospital in Smithtown, NY, Hempstead General Hospital and South Shore Community Hospital in Bay Shore;

- Environmental compliance (investigation and remediation) for more than 200 residential No. 2 fuel oil spills; coordination with insurance carriers and regional spill regulatory agencies;

- Cause and Origin Evaluations for fuel oil and other petroleum releases into residential and commercial structures to facilitate insurance coverage determinations. Collection of soil and groundwater samples to document first or third party impacts. Summary reports for reserve estimation and spill management oversight. Loss control services as needed.

- Site Investigations and Associated Environmental Activities at Various Locations, New York City School Construction Authority, where she served as Hazardous Waste Project Manager for five years as the Authority's Environmental Representative for large scale construction projects and integration of environmental restoration and Subslab systems during school construction;

- Decommissioning of numerous gasoline service stations for redevelopment; representation of station owners against major oil companies, due diligence, redevelopment of properties with E designations under NYCDEP jurisdiction;

- Environmental Compliance Audits, Determination of Monitoring Requirements, preparation of Spill Prevention and Control plans, Management of facility chemical storage and reporting requirements, Due Diligence, Regulatory Interface, and related compliance activities for petroleum retail distributors, inland petroleum terminal, printing direct mail facility, and several bus garage facilities;

- Phase I and II Site Assessment and Remediation Coordination, various financial lenders, Metropolitan New York Area. Project Manager for the completion of over 220 combined Phase I/II and Remediation projects involving commercial-industrial lenders during property transactions, risk mitigation and compliance activities.

Jill S. Haimson, CGWP, PG
Preferred Environmental Services

323 Merrick Avenue • North Merrick, New York 11566
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WORK HISTORY

Preferred Environmental Services, Principal 2001- present
Project Director, Freudenthal & Elkowitz, Commack, New York 1996-2001
Principal Project Manager, Roy F. Weston, Carle Place, New York 1991-1996
Section Head, Hydrogeology, H2M Group, Melville, New York 1986-1991
Senior Hydrogeologist, Golden StrataServices, Houston, Texas 1982-1986
Geologist, Arizona Department of Water Resources 1980-1982

EDUCATION

B.S., Geology - Queens College, New York
Graduate Studies towards M.S. Hydrogeology - Arizona State University
Specialized Courses - Compliance with RCRA Groundwater Contamination; Geophysical Well Logging; Bioremediation of Hazardous Waste Site Workshop; Remediation Alternatives for Contaminated Sediments; Technical Writing Workshop; Remediation of DNAPL and LNAPL Contaminated Sites, Characterization and Remediation of DNAPLS, Hazardous Waste Management for the Utility Industry, ASTM Seminar on Risk-based Corrective Action, Natural Attenuation of Groundwater Contamination. ORC- Regenesis for Remediation of DNAPLs/NAPLs.

REGISTRATIONS

NORA Certificate of Achievement for Storage Tank Installers & Maintenance Training
Registered Professional Geologist in the Commonwealth of Pennsylvania, 1995.
Certified Groundwater Professional (CGWP No. 294), National Association of Groundwater Scientists and Engineers (since 1989).
Certified Health and Safety Operator at Hazardous Materials Sites (1989-present).
Licensed New York State Property and Casualty Broker, 1996.

COMMITTEES/MEMBERSHIP

National Oil Heat Research Alliance (NORA) Tank Committee
Steering Committee, Long Island Association of Professional Geologist
Long Island Ready, ACE – Sustainable Long Island
Hauppauge Industrial Association Environmental Committee
Suffolk County Women-Owned Business Committee
Gotham City Network, Long Island Group
National Brownfield Association
Association for Groundwater Scientists and Engineers – National Water Well

William J. Schlageter
Preferred Environmental Services

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PROFESSIONAL EXPERIENCE

Bill Schlageter has more than 10 years of experience as a Project Manager and Senior Hydrogeologist responsible for technical management of projects involving due diligence, site investigation, delineation and remediation of contamination. Mr. Schlageter has designed and implemented more than 330 Phase I and II Environmental Site Assessments involving complex commercial and industrial properties for a multitude of clients (cellular communications facilities; residential, commercial, scholastic and industrial properties; health care facilities; municipally-owned properties; and vacant land). His expertise includes extensive experience navigating the complex world of regulatory negotiations, effective communication and strategy development with client and clients' attorney and knowledge of state-of-the-art remediation technologies.

His diversified technical experience includes but is not limited to the following: implementation and management of comprehensive site investigations; regulatory compliance activities; environmental impact assessment and remediation including supervision and management of staff and subcontractors. He specializes in the development and scoping of field programs including QA/QC protocols, sampling plans and health and safety control plans; as well as regulatory compliance, negotiations and detailed reporting. Mr. Schlageter has served as a liaison between clients and regulatory authorities, from discovery of release, to regulatory closure. He is the company's Health and Safety Officer in charge of ensuring the all staff have the proper OSHA training and are outfitted with adequate personal protective equipment.

Major projects which Mr. Schlageter has supervised and/or had a significant technical role in include, but are not limited to:

- Phase I, Phase II and remediation coordination of the former 14 acre Roosevelt Raceway property, Westbury, Nassau County under the federal and county programs, prior to re-development;

- Preparation and completion of underground storage tank (UST) removal and/or abandonment activities for over thirty facilities in Nassau, Suffolk, Queens and Kings Counties.

- Assistance in the preparation of a Draft Environmental Impact Statement for proposed Middle School of Sachem Central School District and proposed expansion of Westhampton Beach School District High School;

- Operation and Maintenance of an air-sparge groundwater remediation system of the former Central Islip Psychiatric Center Power Plant under the oversight of the NYSDEC with Spill Closure achieved;

- Soils and sediment remediation of over fifty properties in Nassau and Suffolk Counties under the oversight of the USEPA, NCDH and SCDHS in conjunction with the USEPA Underground Injection Control program;

- Phase I and Phase II Environmental Site Assessments of the former St. Johns Episcopal Hospital in Smithtown, NY, Hempstead General Hospital and South Shore Community Hospital in Bay Shore;

- Phase I Assessments for more than 20 proposed acquisitions of open space and historical preservation by the Suffolk County Planning Department;

- Phase I/Phase II Assessments and remediation management for institutional facilities seeking HUD financing;

- Environmental Compliance Audits, Determination of Monitoring Requirements, preparation of Spill Prevention and Control plans, Management of facility chemical storage and reporting requirements, Due Diligence, Regulatory Interface, and related compliance activities for petroleum retail distributors; and

- Phase I and II Site Assessment and Remediation Coordination, various financial lenders, Metropolitan New York Area. Project Manager for the completion of over 300 combined Phase I/II and Remediation projects involving commercial-industrial lenders during property transactions, risk mitigation and compliance activities.

WORK HISTORY
Senior Project Manager - Preferred Environmental Services, 2005 present
Project Manager, Freudenthal & Elkowitz, Environmental Consulting, Commack, New York 1999-2005

EDUCATION
B.S., Geology, State University of New York at Stony Brook, December, 1998.
A.A., Liberal Arts, Suffolk County Community College, May 1995.

REGISTRATIONS/CERTIFICATIONS
OSHA 40 hour Hazwoper Certification
OSHA Confined Space Entry Certification - 2004

COMMITTEES/MEMBERSHIP
NORA Certificate of Achievement for Storage Tank Installers & Maintenance Training
Long Island Association of Professional Geologist
Hauppauge Industrial Association Environmental Committee
National Brownfield Association

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

Lori A. Beyer

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

EXPERIENCE:

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

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

1998-Present American Analytical Laboratories, Inc. 56 Toledo Street, Farmingdale, NY
Laboratory Director

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

1996-1998 Nytest Environmental, Inc. (NEI) Port Washington, New York
General Manager

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

1994-1996 Nytest Environmental, Inc. (NEI) Port Washington, New York
Technical Project Manager

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

1995-1996 Nytest Environmental, Inc. (NEI) Port Washington, New York
Corporate QA/QC Officer

- Responsible for the implementation of QA practices as required in the NJDEP X26174 and X22651 Contract
- Primary contact for NJDEP QA/QC issues including SOP preparation, review and approval
- Responsible for review, verification and adherence to the Contract requirements and NEI QA Plan

1992-1994 Nytest Environmental, Inc. (NEI) Port Washington, New York
Data Review Manager

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

1987-1991 Nytest Environmental, Inc. (NEI) Port Washington, New York
Data Review Specialist

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

1986-1987 Nytest Environmental, Inc (NEI) Port Washington, New York
GC/MS VOA Analyst

EDUCATION:

1982-1985 State University of New York at Stony Brook, New York; BS Biology/Biochemistry
1981-1982 University of Delaware; Biology/Chemistry
5/91 Rutgers University; Mass Spectral Data Interpretation Course, GC/MS Training
8/92 Westchester Community College; 40 hour Organic Data Validation Course
9/93 Westchester Community College; 40 hour Inorganic Data Validation Course

L.A.B. Validation Corp.
Qualification Summary

Services Overview

L.A.B. Validation is an independent outside source that evaluates data integrity, compliance and usability. L.A.B Validation utilizes the USEPA National Functional Guidelines, as well as other program specific requirements supplied by the client. L.A.B. Validation has a dedicated office facility and secure data storage area. Projects are scheduled and completed within client specified deadlines. Reports are issued via hardcopy and or fax/email/disk deliverables. L.A.B. Validation Corp. operates under Employer Identification Number 58-238-1714 and maintains General Liability Insurance for all projects.

Personnel Overview

L.A.B. Validation has a unique blend of technical expertise and environmental laboratory operational experience. Ms. Beyer has 18 years of progressive positions that required analytical and QA working knowledge. She is well versed in Organic and Inorganic analyses and the associated USEPA requirements as well as other Federal Agency (i.e. USCOE) and State (NY, NJ, CT) regulations. She has completed data validation training for both Organic and Inorganic analyses (see attached Certificates).

References

Mr. Scott Haas
Foster Wheeler Environmental Corporation
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Program: US NAVY RAC

Mr. Steve Malinowski
CA Rich Consultants
17 Dupont Street
Plainview, New York 11771
Phone (516) 589-0093
Program: USEPA/NYSDEC SUPERFUND

Mr. Chris Candela
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2700 Capitol Trail
Newark, DE 19711
Phone (302) 999-0925
Program: USACOE

Mr. Carl Hsu
Tetratech, Inc.
58 West Main Street
Christiana, DE 19702
Phone (302) 738-7551
Program: USACOE

Mr. David Allen
The Kevric Company, Inc.
Silver Spring Metro Plaza One
8401 Colesville Road, Suite 610
Silver Spring, Maryland 20910
Program: US NAVY RAC

Mr. Joseph Heaney
Walden Associates
16 Spring Street
Oyster Bay, New York 11771

Mr. Dan Palmer
Modern Continental Construction Co., Inc.
950 Fountain Avenue
Brooklyn, New York 11208
Program: NYCDEP

APPENDIX - C

Sampling & Quality Assurance Project Plan

QUALITY ASSURANCE PROJECT PLAN

General field activities, including mobilization, health and safety, and decontamination, are described in the work plan. A Quality Assurance Project Plan (QAPP) is the documentation of the quality assurance/quality control (QA/QC) procedures required to complete projects under NYSDEC DER-10 requirements. Applicable elements of the QAPP is provided below

Purpose & Objectives

The principal purpose of this document is to specify quality assurance/quality control (QA/QC) procedures for the collection, analysis, and evaluation of data that will be legally and scientifically defensible. The QAPP provides general information and procedures applicable to the activities and analytical program detailed in the site-specific Work Plan. This information includes definitions and generic goals for data quality and required types and quantities of QA/QC samples. The procedures address field documentation; sample handling, custody, and shipping; instrument calibration and maintenance; auditing; data reduction, validation, and reporting; corrective action requirements; and QA reporting specific to the analyses performed by the laboratories.

Several key activities will be performed as part of the field and analytical work. These activities include:

- Ensuring that sample collection, testing and data collection procedures are performed according to DER-10 requirements;
- Health and safety procedures as outlined in the site-specific health and safety plan (HASP) are followed;
- That the field QA/QC procedures are implemented; and
- That laboratory analysis, data validation, data processing, and data QC activities are performed in accordance with NYSDEC guidelines.

Responsibility

The primary responsibilities for program management activities rest with the Project Manager (PM). The PM will have ultimate responsibility for the project, including responsibility for the technical content of all work. The Project Manager will have overall responsibility for the technical and financial aspects of this project. He/she will assign technical staff, maintain control of the project budget and schedule, prepare monthly progress reports, review and approve project invoices, evaluate the technical quality of the project deliverables as well as the adherence to QA/QC procedures and manage subcontractors.

The Program Quality Assurance Officer will monitor QC activities of program management and technical staff, as well as identify and report the needs for corrective action to the PM. The Health and Safety Officer will review and make recommendations to the Subcontractors on health and safety plans for compliance with OSHA requirements. The Health and Safety Site Supervisor/Coordinator will be responsible for ensuring that the Health and Safety Plan is implemented during field activities and that a copy of the site-specific Health and Safety Plan are maintained at the site at all times. He/she is also responsible for upgrading or downgrading personnel protection based on actual conditions at the time of the investigation. The Coordinator must also present an overview of the Health and Safety Plan to field personnel prior to initiating any field activities and is responsible for insuring that field personnel sign off on this plan.

Mobilization

Upon receiving authorization to begin fieldwork, mobilization to the Site will begin. Mobilization will include obtaining utility clearances and acquisition of the following:

- Transportation to and from the Site;
- Geoprobe® equipment and supplies;

- health and safety clothing and monitoring equipment;
- decontamination supplies and equipment; and
- sampling equipment.

A field team orientation meeting will be held on-site with all personnel to familiarize field workers with site history, health and safety requirements, equipment calibration procedures, and other field procedures.

Health and Safety

The site specific HASP is provided as Appendix B to this document. Based on available site information, the field investigation activities will be conducted at Level D personal protection. Specific field investigation activities and required level of personal protection are set forth in the site specific HASP (see Appendix B). Criteria for upgrading or downgrading the specified level of protection are also provided in the site specific HASP. Should site conditions pose a threat to those present on-site, and/or should site conditions warrant an upgrade from Level D, as defined by the Site specific HASP, work will stop and the situation will be reevaluated.

Decontamination

Sampling methods and equipment for this field program have been chosen to minimize decontamination requirements and minimize possibility of cross contamination. Disposable sampling equipment will be used as much as practical to minimize decontamination time and water disposal. Non disposable sampling equipment will be decontaminated before and after the collection of each sample. Decontamination methods and materials are described in detail in the work plan and here. Non-disposable sampling equipment will be decontaminated by:

1) scrubbing the sample collection equipment with potable water and Liquinox, rinsing with potable water, rinsing with distilled or deionized water, and then allowing the equipment to air dry, or

2) steam cleaning the equipment and then allowing the equipment to air dry. Decontamination fluids will be released on-site to the ground surface in the area of decontamination, so as to allow the liquids to infiltrate into the soil and not run off-site. In the event that decontamination fluids exhibit visual or olfactory evidence of contamination, fluids will be containerized for offsite disposal.

Sample Identification

Each sample collected will be designated by an alphanumeric code that will identify the type of sampling location, matrix sampled, and the specific sample designation (identifier). The sample identification for all samples will begin with the Site ID for the site. The following terminology shall be used for the soil sample identification:

SITE ID - BORING/SAMPLE LOCATION ID (SB) – DEPTH
The sample ID for the soil vapor and groundwater samples will then include the sample type designation, followed by the sample number. The following terminology shall be used for the **soil vapor** sample identification:

SITE ID - SV- #
SITE ID – SV - #

Where there are shallow and deep samples at a location, the shallow samples will be designated “S” and the deep samples designated “D”. The following terminology shall be used for the groundwater sample identification:

SITE ID - MONITORING WELL ID - DEPTH (for monitoring well samples)

SITE ID – GW - BORING ID - DEPTH (for temporary well point or hydropunch samples)

For sub-slab and indoor air samples, the site ID will be followed by the sample type designation, the sample number and then the date. The following terminology shall be used for the structure sample identification:

SITE ID-SS-xx-DATE (for sub-slab locations)
SITE ID-IA-xx-DATE (for indoor ambient air)
SITE ID-OA-xx-DATE (for outdoor ambient air)
Field blank and **trip blank** samples will be designated as follows:
SITE ID-FB-DATE (for field blanks)
SITE ID-TB-DATE (for trip blanks)

Chain-of-Custody Procedures

This section describes the procedures used to ensure that sample integrity and chain of-custody are maintained throughout the sampling and analysis program. Chain-of custody (COC) procedures provide documentation of sample handling from the time of collection until its disposal by a licensed waste hauler. This documentation is essential in assuring that each sample collected is of known and ascertainable quality. The COC begins at the time of sample collection. Sample collection is documented in the field notebooks in accordance with the specified SOP. At the same time, the sampler fills out the label on the sample container with the following information:

- Sample ID code
- Required analyses
- Sampler initials
- Date and time of sample collection

The COC forms are a paper trail system that follows the samples collected and indicates which laboratory analyses are to be performed on which samples. Each sample should be clearly labeled and listed on the COC. The laboratory will only perform analyses on samples indicated and all other samples should be indicated with a "HOLD" designation. By labeling a sample "HOLD", the laboratory will store the sample until further instruction is given. Do not check the request for analysis blocks on the COC for samples designated with "HOLD" Status. Never indicate duplicate or blank samples on a COC. It is the responsibility of the field manager to coordinate COC forms and supply copies of all COC to the project manager for data management use. A COC form is filled out for each sample type at each sampling location. Each time the samples are transferred to another custodian or to the laboratory, the signatures of the people relinquishing the sample and receiving the sample, as well as the time and date, are documented. Labels will be filled out with an indelible, waterproof, marking pen.

The COC record is a three-part form. The laboratory retains the original form and the person relinquishing the samples keeps a copy of the form at the time of sample submittal. This form is then returned to the project manager or person in charge of data coordination. The COC Record will be placed in a Ziplock bag and placed inside of all shipping and transport containers. All samples will be hand delivered or shipped by Federal Express to the laboratory specified by the field manager. Samples should be packed so that no breakage will occur (e.g. placed upright in the cooler surrounded by packing materials). Sample vials may be placed on their sides if frozen. Custody seals will be placed on all coolers/packages containing laboratory samples during shipment.

Sample Handling, Packaging, and Shipping

The shipping containers (coolers or shuttles) will be provided by the laboratory providing the analysis. These containers, once filled, will be secured and delivered by the field crew or picked up by a laboratory provided courier. Consequently, the strict packaging, labeling and shipping of hazardous wastes and substances

requirements set forth by the U.S. Department of Transportation (DOT) under CFR 49 will not be necessary. However, the following sample packaging procedures will be followed to guard against sample breakage and to maintain chain-of-custody.

- Check to ensure that the sample is properly filled; tighten cap securely.
- Enclose and seal sample containers in a clear plastic bag.
- Place freezer packages or ice in large ziplock plastic bags and place the bags in a sample cooler so that ice is not in direct contact with sample bottles. Sufficient ice will be added to cool the samples to 4˚C.
- Pack noncombustible, absorbent vermiculite around bottles and ice to avoid sample breakage during transport.
- Complete Chain-of-Custody Records and other shipping/sample documentation including air bill numbers for each shipment of samples using a ballpoint pen.
- Seal documentation in a waterproof plastic bag and tape the bag inside the shipping container under the container lid. Include a return address for the cooler.
- Close the container and seal it with fiber tape and custody seals in such a manner that the custody seals would be broken if the cooler were opened.

Field Quality Control Samples

In order to maintain QA/QC in both the field and the laboratory, additional samples such as trip blanks, duplicates, field blanks, performance evaluation samples and background samples will be collected. Each type of QA/QC sample is described below. Details of the QA/QC samples collected will be provided to the project data validator for use in their evaluation.

Quality Control for Soil & Groundwater Sampling

QA/QC samples act as a verification of appropriate field and laboratory procedures. These samples should be recorded in the field book but should not be identified on the Chain-of-Custody (COC) form other than with an MD (Miscellaneous Discrete). All QA/QC samples should be numbered sequentially with other field samples on the soil log form. The following is a breakdown of types of QA/QC samples that are to be taken:

Duplicate Samples

Soil duplicates shall be field-homogenized samples. To ensure laboratory "blind" analyses, duplicate samples will be identified with the next sequential sample number on sample containers and the COC forms. The actual identification of the duplicate samples shall be recorded in the field book. Duplicate samples are collected from the same split spoon sampler, homogenized in the field and analyzed for the same compounds.

Field Blanks

Approximately two percent of all soil samples analyzed should be field blanks. Rinsate blanks are collected after a sample is taken and the equipment used (i.e., sampler) has been decontaminated. Distilled water is then poured over the decontaminated sampling equipment and collected in sample jars for analysis. It should be documented in the field book which soil sample preceded the field blank and which soil sample followed the field blank for the equipment used.

Sampling Methodologies

Groundwater : Field investigation activities include the completion of Geoprobe® borings, the collection and analysis of groundwater via temporary wells. No existing wells are present other than the private water supply well. The purpose of the activities is to provide groundwater data for comparison to NYS Class GA Groundwater Quality Standards set forth under 6 NYCRR Parts 700-705 (NYS, 1999b). Groundwater samples

will be collected using a small diameter stainless steel screen that will be exposed to the aquifer, after being pushed to the desired depth interval. A peristaltic pump or check valve (depending on sample depth) will be used for the collection of discrete groundwater samples. One tubing volume of water will be purged. VOC samples will be collected at a low purge rate (approximately 100 milliliters per minute) to minimize potential volatilization.

VOCs are to be sampled first. Pour water slowly into the 40-ml vial, tipping the vial and allowing water to run down the side to prevent aeration. Fill until a meniscus forms and tightly seal the vial. Invert the vial and check for bubbles. If bubbles are present, add water and repeat. It may be necessary to discard the vial and use another if bubbles continue to appear. Remaining bottles should then be filled, again preventing aeration. If filtering is required (filtering is sometimes requested when samples are to be analyzed for metals and turbidity is high), use a dedicated 0.45 micron filter for each sample and filter prior to preservation. Label bottles with sample designation, project, date, time, preservative and required analysis. Clear tape may be used to cover the completed label. Place sample in a cooler with ice to maintain temperature at 4˚C +/- 2˚C. Samples will be maintained at this temperature throughout the sampling and transportation period.

Soil Sampling: Subsurface soil samples may be collected using a hand auger at depths of up to 10 feet (typical). For deeper depths, a drilling subcontractor is typically used to perform a boring and collect subsurface soil samples by split spoon or Shelby tube via rotary drilling methods, or by direct push methods. The following steps should be taken when preparing for subsurface soil sampling:

Don the appropriate personal protective clothing as dictated by the site-specific health and safety plan. Locate sampling location(s) in accordance with project documents (e.g., work plan) and document pertinent information in the appropriate field logbook. When possible, reference locations back to existing site features such as buildings, roads, intersections, etc. Clear away vegetation and debris from the ground surface at the boring location. Prepare an area next to the sample collection location for laying out cuttings by placing plastic sheeting on the ground to cover the immediate area surrounding the borehole.

- VOC samples or samples that may be degraded by aeration shall be collected first and with the least disturbance possible.
- Sampling information shall be recorded in the field logbook and on any associated forms.
- Describe lithology, including color, grains size, moisture, odor and other observations.

VOCs are to be sampled first. Fill the jar completely such that there is no air space. VOCs must not be homogenized. For the remaining parameters, homogenize the samples with a decontaminated stainless bowl and trowel prior to filling the remaining bottles. Label bottles with sample designation, project, date, time, preservative and required analysis. Clear tape may be used to cover the completed label. Place sample in a cooler with ice to maintain temperature at 4˚C +/- 2˚C. Samples will be maintained at this temperature throughout the sampling and transportation period.

Private Well (Tap) Water Sampling: Tap water sampling is required to be performed. The most common tap water samples are used to obtain groundwater samples from private wells. Follow these protocols:

- Obtain permission to access the property and collect samples.
- Determine the location of the tap to be sampled based on its proximity to the water source. It is preferable that the tap water sampling be conducted at a tap located prior to any holding or pressure tanks, filters, water softeners, or other treatment devices that may be present.
- If possible, obtain well construction details, holding tank volumes etc. to evaluate standing volume of water in the system.
- If the sample must be collected at a point in the water line beyond a pressurization or holding tank, a sufficient volume of water should be purged to provide a complete exchange of fresh water into the tank and at the location where the sample is collected. If the sample is collected from a tap or spigot located just before a storage tank, spigots located inside the building or structure should be turned on to prevent

any backflow from the storage tank to the sample tap or spigot. It is generally advisable to open as many taps as possible during the purge, to ensure a rapid and complete exchange of water in the tanks.

Samples collected to determine if system related variables (e.g., transmission pipes, water coolers/heaters, holding/pressurization tanks, etc.) are contributing to the quality of potable water should be collected after a specific time interval (e.g., weekend, holiday, etc.). Sample collection should consist of an initial flush,a sample after several minutes, and another sample after the system has been purged. Devices such as hoses, filters, or aerators attached to the tap may harbor a bacterial population and therefore should be removed prior to sampling.

Prior to sample collection, the supply system should be purged by turning the cold-water tap on. The following general guidelines should be followed to determine when the system is adequately purged (refer to the site-specific sampling plans for any other requirements):

Onsite Water Supply: A minimum of three standing volumes of water (i.e., the static volume of water in the well and holding tank, if present) should be purged. Obtain water temperature, conductivity, and pH measurements after each volume of water is purged. If the standing volume of water in the supply system is unknown, the tap should be allowed to run for a minimum of 15 minutes and temperature, conductivity, and pH measurements, or other parameters as specified by the project plan, should be collected at approximately 3- to 5-minute intervals. (In general, well construction details and holding tank volumes should be obtained prior to conducting the sampling event to estimate the standing volume of the water supply system.) The system is considered adequately purged when the temperature, conductivity, and pH stabilize within 10 percent for three consecutive readings. If these parameters do not stabilize within 15 minutes, then purging should be discontinued and tap water samples may be collected.

Large Distribution Systems. Because it is impractical to purge the entire volume of standing water in a large distribution network, a tap should be run for a minimum of 5 minutes, which should be adequate to purge the water service line. Obtain temperature, conductivity, and pH measurements at approximately 1-minute intervals. The system is considered adequately purged when the temperature, conductivity, and pH readings, or other parameters as specified by the project plan, stabilize within 10 percent for three consecutive readings. If these parameters do not stabilize within 5 minutes, then purging should be discontinued and tap water samples may be collected. During purging, a 5-gallon bucket and stopwatch may be used to estimate the flow rate if required by the site-specific plans. Dispose the purged water according to the site-specific plans. Record the temperature/conductivity/pH readings, or other parameters as specified by the project plan, the volume of water purged, the flow rate if measured, and the method of disposal in the field logbook. After purging the supply system, collect the samples directly from the tap (i.e., if a hose was used for purging, the hose should be disconnected prior to sampling). Any fittings on the end of the faucet that might introduce air into the sample (i.e., a fine mesh screen that is commonly screwed onto the faucet) should be removed prior to sample collection also.

Provide a sketch of the water supply/distribution system noting the location of any filters or holding tanks and the water supply source (i.e., an onsite groundwater well or surface water intake or a water service line from a public water main). If an onsite water supply is present, observe and record the surrounding site features that may provide potential sources of contamination to the water supply.

Soil Vapor Sampling: Soil vapor sampling will be conducted in accordance with the NYSDOH "*Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York, dated October 2006"* . Generally, soil vapor samples will be collected with 6-liter summa canisters, with flow controllers (regulators) and particulate filters (if required) based upon project requirements. Flow rate shall not exceed 200 ml/min. Sub slab soil vapor samples will be collected with 6-liter summa canisters, with controllers (regulators) and particulate filters (if required). Sample flow rate shall not exceed 200 ml/minute. Soil Vapor samples will be collected with 6-liter summa canisters, with flow controllers (regulators) and particulate filters (if required). Sample flow rate shall not exceed 200 ml/minute. Indoor and outdoor ambient air samples will be collected with 6-liter summa canisters, with flow controllers (regulators) and particulate filters (if required). Sample flow rate shall not exceed 200 ml/minute. Summa canisters are not chilled or otherwise preserved.

Soil Vapor Probe Installation :A Soil vapor probe installation will be performed according to the following: At each location, a Geoprobe will be used to drive stainless steel rods equipped with detachable stainless steel drive points to the desired depth (approximately 8 feet bgs). Once the probe is in place, retract the drive rod slightly to expose a 6-inch sampling screen and sampling port. Insert Teflon-lined tubing through the rods and attach it to the soil gas probe just above the tip. Seal the probe at the surface using electrical conduit putty or non-shrink bentonite grout. The borehole will then be backfilled with sand to a minimum depth of 6 inches above the screen interval. Bentonite chips or pellets will then be placed from approximately 6 inches above the screen to the ground surface and immediately hydrated. Repeat steps 1 through 4 at a second co-located borehole to the second depth (~2 feet above the water table).

Tracer Testing: Tracer tests will be conducted at all soil vapor locations to verify the integrity of the soil vapor probe seal. Tracer tests will be conducted according to the following procedures: Set up the tracer test apparatus by first sealing the open area around the tubing with wax or bentonite. A bucket is then placed upside down over the borehole with the tubing coming out through a hole at the top. Helium will then be injected through a hole near the bottom of the bucket to enrich the atmosphere to at least 80 percent helium. The concentration of helium inside the bucket will be monitored by a helium detector located at a second hole near the bottom of the bucket. Once the atmosphere is enriched to the appropriate concentration, the helium detector will then be used to check the concentration coming out of the tubing from the borehole located at the top of the bucket. If the reading is below 20 percent tracer gas, the probe seal is sufficient; proceed with sampling, as described in the following sections. If the reading is above 20 percent tracer gas, the probe seal is not sufficient; reseal the probe surface with bentonite and repeat the tracer test until the reading is below 20 percent tracer gas.

Soil Vapor Sampling Procedures**:** Once the soil gas probe is installed and a tracer test is conducted, soil gas samples for off site analysis will be collected according to the following procedures: The soil vapor samples will be collected using a laboratory-certified clean summa canister with a two-hour regulator ensuring that the sample flow rate less than 200 milliliters per minute (ml/min) to minimize outdoor air infiltration during sampling. The summa canisters will have a vacuum of 28 inches mercury (in Hg) ± 2 inches prior to the collection of the soil vapor sample. Calculate the volume of the tubing including the screen interval as part of the volume. The tubing has an inside diameter of ¼ inch and a volume of 9.65 ml/foot. Attach the vacuum pump and purge at least 3 tube volumes from the tubing. Syringes will be utilized to purge the tubing if obtaining a flow rate of 200 ml/min is difficult with vacuum pump. A Tedlar™ bag will be filled toward the end of the purge volume to be screened using the PID meter. The PID readings will be observed and recorded on the appropriate field form. After purging is complete, the tubing will be connected to the summa canister.

Record the initial pressure in the stainless steel summa canister to be used for the sample prior to connecting the tubing. The samples will be collected using laboratory-certified clean summa canisters with flow regulators and a vacuum of 28 inches Hg ± 2 inches. Vacuum readings in the canister should be approximately 28-30 inches Hg. If no vacuum reading is obtained, use a different canister as this indicates the canister was not properly evacuated. Connect the end of the tubing directly to the summa canister intake valve. Sample flow rate will not exceed 200 ml/min. When the vacuum gauge reads 5 inches Hg, close the valve. Sampling is complete. A vacuum of 5 inches Hg ± 1 inch must be present when sample collection is terminated to prevent contamination during transit.

Record the final pressure reading in the summa canister. Label, pack and ship the samples to an NYSDOH ELAP-approved laboratory. The serial numbers for the summa canisters and the regulators will be recorded on the chain of custody. Custody seals will be placed on all coolers/packages containing laboratory samples during shipment. It is critical to ensure that moisture does not enter the summa canister which can compromise the analytical results. The field sampling team will maintain a sample log sheet summarizing the following:

- sample identification.
- date and time of sample collection
- sampling height
- serial numbers for summa canisters and regulators

- sampling methods and devices
- purge volumes
- volume of soil vapor extracted
- vacuum of summa canisters before and after sample collection
- apparent moisture content (dry, moist, saturated, etc.) of the sampling zone
- chain of custody protocols and records used to track samples from sampling point to analysis.

Sub-Slab Soil Vapor Sampling**:** Sub-slab soil gas samples for off site analysis will be collected according to the following procedures: Prior to installation of the sub-slab vapor probe, the building floor should be inspected and any penetrations (cracks, floor drains, utility perforations, sumps, etc.) should be noted and recorded. Probes should be installed at locations where the potential for ambient air infiltration via floor penetrations is minimal. After the slab has been inspected and the location of any subsurface utilities determined, the ambient air surrounding the proposed sampling location will be screened with a PID.

A hammer drill with a 1.25-inch diameter drill bit will be used to advance a boring to a depth of approximately three to six inches beneath the slab. When drilling is complete, clean around drilled area. Insert probe constructed with 3/8-inch outer diameter, ¼-inch inner diameter Teflon® tubing. The tubing should not extend further than 2 inches into the subslab material The annular space between the borehole and the sample tubing will be filled and sealed with electrical conduit putty (or equivalent) at the surface. Conduct tracer testing in accordance with the procedures detailed prior.

The tubing will be connected to a low-flow sample pump. A three-way valve will be used to allow purging of all the lines. Flow rates for both purging and collection must not exceed 200 milliliters per minute to minimize the ambient air infiltration during sampling. Approximately 1 liter of gas will be purged from the subsurface probe and captured in a Tedlar™ bag using the low-flow pump. PID readings will be observed from this sample and the highest reading shall be recorded on the appropriate field form. Record the initial pressure in the stainless steel SUMMA canister to be used for the sample prior to connecting the tubing. The samples will be collected using laboratory-certified clean summa canisters with flow regulators and a vacuum of 28 inches Hg ± 2 inches. Vacuum readings in the canister should be approximately 28-30 inches Hg. If no vacuum reading is obtained, use a different canister as this indicates the canister was not properly evacuated.

The end of the tubing will be connected directly to the summa canister's regulator intake valve via the three-way valve. Flexible silicone tubing will be used at a minimum and as a tubing adapter only. The sample shall be collected with a 6 Liter laboratory-certified summa canister with dedicated regulator set for a pre-determined time period for sample collection. Sample flow rate will not exceed 200 ml/min.

When the vacuum gauge reads 5 inches Hg, close the valve. Sampling is complete. A vacuum of 5 inches Hg ± 1 inch must be present when sample collection is terminated to prevent contamination during transit. Record the final pressure reading in the summa canister. Label, pack and ship the samples to an NYSDOH ELAP-approved laboratory. The serial numbers for the SUMMA canisters and the regulators will be recorded on the chain of custody. Custody seals will be placed on all coolers/packages containing laboratory samples during shipment. Remove the sample port and patch the floor with concrete. When sub-slab vapor samples are collected, the following actions should be taken to document conditions during sampling and ultimately to aid in the interpretation of the sampling results:

- historic and current storage and uses of volatile chemicals should be identified, especially if sampling within a commercial or industrial building (e.g., use of volatile chemicals in commercial or industrial processes and/or during building maintenance);
- the use of heating or air conditioning systems during sampling should be noted;
- floor plan sketches should be drawn that include the floor layout with sampling locations, chemical storage areas, garages, doorways, stairways, location of basement sumps or subsurface drains and utility perforations through building foundations, HVAC system air supply and return registers, compass orientation (north), footings that create separate foundation sections, and any other pertinent
- information should be completed;

- outdoor plot sketches should be drawn that include the building site, area streets, outdoor air sampling locations (if applicable), compass orientation (north), and paved areas;
- weather conditions (e.g., precipitation and indoor and outdoor temperature) and ventilation conditions (e.g., heating system active and windows closed) should be reported; and
- any pertinent observations, such as spills, floor stains, smoke tube results, odors and readings from field instrumentation should be recorded.

Additional documentation that could be gathered to assist in the interpretation of the results includes information about air flow patterns and pressure relationships obtained by using smoke tubes or other devices (especially between floor levels and between suspected contaminant sources and other areas), the barometric pressure and photographs to accompany floor plan sketches. The field sampling team should maintain a sample log sheet summarizing the following:

- sample identification,
- date and time of sample collection,
- sampling depth,
- identity of samplers,
- sampling methods and devices,
- soil vapor purge volumes,
- volume of soil vapor extracted,
- if canisters used, vacuum of canisters before and after samples collected,
- apparent moisture content (dry, moist, saturated, etc.) of the sampling zone, and
- chain of custody protocols and records used to track samples from sampling point to analysis.

Indoor & Outdoor (Ambient) Air Sampling Procedures: All indoor air samples will be collected with a 6 Liter laboratory-certified summa canister regulated for a 24-hour sample collection. Sample collection will be similar to outdoor ambient air sample collection. The summa canister will be placed in such a location as to collect a representative sample from the breathing zone at four or six feet above the floor. Personnel should avoid lingering in the immediate area of the sampling device while samples are being collected. The New York State Department of Health *Indoor Air Quality Questionnaire and Building Inventory* shall be completed for each structure where indoor air testing is being conducted. The same documentation of site conditions should be made as all air sampling programs.

Investigation Derived Wastes

The method of disposing investigation derived wastes (IDW) generated during the field work will be based upon whether the wastes are considered hazardous or non hazardous. The approach to field screening and handling of the IDW are described in the following paragraphs. United States Department of Transportation (USDOT) approved 55 gallon containers filled during the field investigation will be staged on site if necessary. Containers will be labeled as described in the site specific QAPP.

Personal Protective Equipment: Used disposable equipment and protective clothing will be double bagged in polyethylene trash bags and sealed with twist ties. Consultant personnel will measure the headspace in the closed bags with a photoionization detector (PID) at least one hour after sealing the bags. If the headspace reading is greater than 5 parts per million (ppm), the tubing will be decontaminated by flushing with potable water and re-bagged. This process will be repeated until PID readings are below 5 ppm. If the headspace is below 5 ppm, the disposable equipment and clothing will be disposed of as non-hazardous refuse.

Well Purge Water: Purge water will be released on-site to the ground surface in the area of well/boring, so as to allow the liquids to infiltrate into the soil and not run off-site. In the event that purge water exhibits visual or olfactory evidence of contamination, fluids will be containerized in USDOT approved 55-gallon containers for off-site disposal.

Drill Cuttings: Geoprobe® soil cuttings will be screened for VOCs with a PID. Soils with visual evidence of contamination or with PID readings greater than 5 ppm will be containerized in USDOT approved 55-gallon containers for off-site disposal. Soils with sustained PID readings of less than or equal to 5 ppm will be considered non-contaminated and will be used as backfill for the borings at the approximate interval from which they were extracted. Remaining uncontaminated soils will be spread evenly on the ground surface in unpaved areas of the Site and in locations approved by the site owner. If no on-site location is suitable for disposal of uncontaminated soils, the containerized material will be disposed of at an off-site disposal facility.