

**186-02 JAMAICA AVENUE
BOROUGH OF QUEENS, NEW YORK**

Remedial Action Work Plan

NYC VCP Number: 15CVCP016Q

OER Project Number: 14EHAZ274Q

Prepared for:

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REMEDIAL ACTION WORK PLAN

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LIST OF ACRONYMS

Acronym	Definition
AOC	Area of Concern
AS/SVE	Air Sparging/Soil Vapor Extraction
BOA	Brownfield Opportunity Area
CAMP	Community Air Monitoring Plan
C/D	Construction/Demolition
COC	Certificate of Completion
CQAP	Construction Quality Assurance Plan
CSOP	Contractors Site Operation Plan
DCR	Declaration of Covenants and Restrictions
ECs/ICs	Engineering and Institutional Controls
HASP	Health and Safety Plan
IRM	Interim Remedial Measure
BCA	Brownfield Cleanup Agreement
MNA	Monitored Natural Attenuation
NOC	Notice of Completion
NYC BCP	New York City Brownfield Cleanup Program
NYC DEP	New York City Department of Environmental Protection
NYC DOHMH	New York State Department of Health and Mental Hygiene
NYCRR	New York Codes Rules and Regulations
NYC OER	New York City Office of Environmental Remediation
NYS DEC	New York State Department of Environmental Conservation
NYS DEC DER	New York State Department of Environmental Conservation Division of Environmental Remediation
NYS DOH	New York State Department of Health
NYS DOT	New York State Department of Transportation
ORC	Oxygen-Release Compound
OSHA	United States Occupational Health and Safety Administration
PE	Professional Engineer

PID	Photo Ionization Detector
QEP	Qualified Environmental Professional
QHHEA	Qualitative Human Health Exposure Assessment
RAOs	Remedial Action Objectives
RAR	Remedial Action Report
RAWP	Remedial Action Work Plan or Plan
RCA	Recycled Concrete Aggregate
RD	Remedial Design
RI	Remedial Investigation
RMZ	Residual Management Zone
SCOs	Soil Cleanup Objectives
SCG	Standards, Criteria and Guidance
SMP	Site Management Plan
SPDES	State Pollutant Discharge Elimination System
SVOC	Semi-Volatile Organic Compound
USGS	United States Geological Survey
UST	Underground Storage Tank
VOC	Volatile Organic Compound

CERTIFICATION

I, Carl Vernick, am a Professional Engineer licensed in the State of New York. I have primary direct responsibility for implementation of the remedial action for the Site located at 186-02 Jamaica Avenue, Queens, New York (OER Project #: 14EHAZ274Q and VCP Number 15CVCP016Q).

I certify that this Remedial Action Work Plan (RAWP) has a plan for handling, transport and disposal of soil, fill, fluids and other materials removed from the property in accordance with applicable City, State and Federal laws and regulations. Importation of all soil, fill and other material from off-Site will be in accordance with all applicable City, State and Federal laws and requirements. This RAWP has provisions to control nuisances during the remediation and all invasive work, including dust and odor suppression.

Carl Vernick

Name

46377

NYS P.E. License Number

Signature

August 15, 2014

Date



EXECUTIVE SUMMARY

186 JAMAICA AVE LLC will apply to enroll in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate the 1.07-acre site located at 186-02 Jamaica Avenue in Queens, New York. A remedial investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP). The remedial action described in this document provides for the protection of public health and the environment consistent with the intended property use, complies with applicable environmental standards, criteria and guidance and conforms with applicable laws and regulations.

Site Location and Current Usage

The Site is located at 186-02 Jamaica Avenue in the Hollis section of Borough of Queens, New York and is identified as Block 10352 and Lot 108 on the New York City Tax Map. Figure 1 shows the Site location. The Site (147.00 FT X 319.00 FT; Irregular) is 47,000-square feet and is bounded by Jamaica Avenue to the north, Long Island Railroad (LIRR) to the south, ABC Supply Co Inc. to the east, and Rodless Properties to the west. A map of the site boundary is shown in Figure 2. Currently, the Site is unoccupied and contains a vacant one-story masonry building (32.00 FT X 240.00 FT) (approximately 7,680 square feet) and asphalt paved surfaces.

Summary of Proposed Redevelopment Plan

The proposed future use of the Site will consist of the complete removal of the existing one-story masonry building, foundations, and asphalt paved parking lot for the redevelopment of the site for a new self-storage facility. Layout of the proposed site redevelopment is presented in Figure 3. The current zoning designation is M1-2 Manufacturing District. The proposed use (self-storage) is consistent with existing zoning for the property.

The proposed site redevelopment will consist of a new slab on grade 6-story building for self-storage use. The first floor will accommodate the sales office area, 5-bay interior loading area, elevators and egress stairs, and storage units. The upper five stories will accommodate all storage units. The building footprint area is 15,850 square feet for a total of 95,100 square feet.

The new building will be situated on the northeast side of the property with new entrance to the asphalt paved parking lot area on the northwest side. Landscaping areas will be provided at the front of the property on both sides of the site entrance. Street trees will also be provided along Jamaica Avenue. Layout of the proposed site development is presented in Figure 3.

The bottom of the new footings for the new building will be approximately 4.0-6.0 feet below grade. The estimated volume of excavation to install the new concrete footings and foundation wall will be approximately 400 cubic yards. The groundwater table is approximately 18.0 – 19.0 feet below ground surface (bgs), therefore, excavation is not anticipated to be below the groundwater table.

The remedial action contemplated under this RAWP may be implemented independently of the proposed redevelopment plan.

Summary of the Remedy

The proposed remedial action achieves protection of public health and the environment for the intended use of the property. The proposed remedial action achieves all of the remedial action objectives established for the project and addresses applicable standards, criterion, and guidance; is effective in both the short-term and long-term and reduces mobility, toxicity and volume of contaminants; is cost effective and implementable; and uses standard methods that are well established in the industry.

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and performance of all required NYC VCP Citizen Participation activities according to an approved Citizen Participation Plan.
2. Perform a Community Air Monitoring Program (CAMP) for particulates and volatile organic carbon compounds.
3. Establishment of Track 4 Site-Specific Soil Cleanup Objectives (SCOs).
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs, and marking & staking excavation areas.

5. Excavation and removal of soil/fill exceeding Track 4 Site Specific SCOs. Hotspot excavations will be completed at two (2) locations across the Site. The hotspot excavations will be conducted at soil borings SB-1 and SB-4 and will consist of approximate 10.0 foot by 10.0 foot by 6.0 foot deep remedial excavations. If soil/fill containing analytes at concentrations above Track 4 Site Specific SCOs is still present at the base of the hotspot excavations after soil removal, additional excavation will be performed to meet Track 4 Site Specific SCOs. Approximately, 600 tons of soil will be excavated and removed from this Site.
6. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID. Appropriate segregation of excavated material on-Site.
7. Removal of underground storage tanks and closure of petroleum spills (if evidence of a spill/leak is encountered during Site excavation) in compliance with applicable local, State and Federal laws and regulations. There is one reported buried tank in northern portion of the property.
8. Remediation of two (2) subsurface drainage structures located at the Site in compliance with applicable local, State and Federal laws and regulations.
9. Removal of oil/water separator located at the Site in compliance with applicable local, State and Federal laws and regulations.
10. Transportation and off-Site disposal of all soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities. Appropriate segregation of excavated media on-Site.
11. Collection and analysis of end-point samples in hot spot areas to determine the performance of the remedy with respect to attainment of Track 4 Site-Specific SCOs.
12. Installation of a vapor barrier below the concrete slab underneath the building, as well as behind foundation walls of the proposed building. The vapor barrier will consist of Stego Wrap 20-Mil Vapor Barrier (Stego Industries, LLC).

13. Placement of a demarcation layer.
14. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.
15. Construction and maintenance of an engineered composite cover consisting of the existing building concrete slab, asphalt pavement, concrete walkways, and landscaped areas. The building slab on grade will be 4 inches thick; the existing asphalt pavement at the rear of the property will be milled and topped with 2 inches of new asphalt; the landscape planting areas will include a two feet of clean soil layer topped with 6 inch layer of topsoil spread evenly.
16. Composite cover system will manage residual soil contamination in-place.
17. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
18. Submission of a Remedial Action Report (RAR) that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, and describes all Engineering and Institutional Controls to be implemented at the Site, and lists any changes from this RAWP.
19. Submission of an approved Site Management Plan (SMP) in the RAR for long-term management of residual contamination, including plans for operation, maintenance, monitoring, inspection, and certification of Engineering and Institutional Controls and reporting at a specific frequency.
20. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
21. The property will continue to be registered with an E-Designation by the NYC Buildings Department. Establishment of Engineering Controls and Institutional Controls; a requirement that management of these controls must be in compliance with an approved SMP. Institutional Controls will include prohibition of the following: (1) vegetable gardening and farming; (2) use of groundwater without treatment rendering it safe for

the intended use; (3) disturbance of residual contaminated material unless it is conducted in accordance with the SMP; and (4) higher level of land usage without OER-approval.

Community Protection Statement

The Office of Environmental Remediation created the New York City Voluntary Cleanup Program (NYC VCP) to provide governmental oversight for the cleanup of contaminated property in NYC. This Remedial Action Work Plan (“cleanup plan”) describes the findings of prior environmental studies that show the location of contamination at the site, and describes the plans to clean up the site to protect public health and the environment.

This cleanup plan provides a very high level of protection for neighboring communities and also includes many other elements that address common community concerns, such as community air monitoring, odor, dust and noise controls, hours of operation, good housekeeping and cleanliness, truck management and routing, and opportunities for community participation. The purpose of this Community Protection Statement is to explain these community protection measures in non-technical language to simplify community review.

Remedial Investigation and Cleanup Plan. Under the NYC VCP, a thorough cleanup study of this property (called a remedial investigation) has been performed to identify past property usage, to sample and test soils, groundwater and soil vapor, and identify contaminant sources present on the property. The cleanup plan has been designed to address all contaminant sources that have been identified during the study of this property.

Identification of Sensitive Land Uses. Prior to selecting a cleanup, the neighborhood was evaluated to identify sensitive land uses nearby, such as schools, day care facilities, hospitals and residential areas. The cleanup program was then tailored to address the special conditions of this community.

Qualitative Human Health Exposure Assessment. An important part of the cleanup planning for the Site is the performance of a study to find all of the ways that people might come in contact with contaminants at the Site now or in the future. This study is called a Qualitative Human Health Exposure Assessment (QHHEA). A QHHEA was performed for this project. This assessment has considered all known contamination at the Site and evaluated the potential for people to come in contact with this contamination. All identified public exposures will be addressed under this cleanup plan.

Health and Safety Plan. This cleanup plan includes a Construction Health and Safety Plan (CHASP) that is designed to protect community residents and on-Site workers. The elements of this plan are in compliance with safety requirements of the United States Occupational Safety and Health Administration (OSHA). This plan includes many protective elements including those discussed below.

Site Safety Coordinator. This project has a designated Site Safety Coordinator to implement the Construction Health and Safety Plan (CHASP). The Site Safety Coordinator maintains an emergency contact sheet and protocol for management of emergencies. The Site Safety Coordinator is Dan Marzano of Soil Mechanics Environmental Services (SMES) who can be reached at (516) 315-0574 or David Shencavitz of SMES who can be reached at (516) 315-1262.

Worker Training. Workers participating in cleanup of contaminated material on this project are required to be trained in a 40-hour hazardous waste operators training course and to take annual refresher training. This pertains only to workers performing specific tasks including removing contaminated material and installing cleanup systems in contaminated areas.

Community Air Monitoring Plan. Community air monitoring will be performed during this cleanup project to ensure that the community is properly protected from contaminants, dust and odors. Air samples will be tested in accordance with a detailed plan called the Community Air Monitoring Plan or CAMP. Results will be regularly reported to the NYC OER. This cleanup plan also has a plan to address any unforeseen problems that might occur during the cleanup (called a 'Contingency Plan').

Odor, Dust and Noise Control. This cleanup plan includes actions for odor and dust control. These actions are designed to prevent off-Site odor and dust nuisances and includes steps to be taken if nuisances are detected. Generally, dust is managed by application of physical covers and by water sprays. Odors are controlled by limiting the area of open excavations, physical covers, spray foams and by a series of other actions (called operational measures). The project is also required to comply with NYC noise control standards. If you observe problems in these areas, please contact the on-Site Project Manager, Dan Marzano of SMES who can be reached at (516) 315-0574 or David Shencavitz of SMES who can be reached at (516) 315-1262 or NYC OER Project Manager, Katherine Glass at (212) 676-4925.

Quality Assurance. This cleanup plan requires that evidence be provided to illustrate that all cleanup work required under the plan has been completed properly. This evidence will be summarized in the final report, called the Remedial Action Report. This report will be submitted to the NYC Office of Environmental Remediation and will be thoroughly reviewed.

Storm-Water Management. To limit the potential for soil erosion and discharge, this cleanup plan has provisions for storm-water management. The main elements of the storm water management include physical barriers such as tarp covers and erosion fencing, and a program for frequent inspection.

Hours of Operation. The hours for operation of cleanup will comply with the NYC Department of Buildings construction code requirements or according to specific variances issued by that agency. For this cleanup project, the hours of operation are Monday – Friday (Saturday, as needed) from 7:00 am – 5:00 pm.

Signage. While the cleanup is in progress, a placard will be prominently posted at the main entrance of the property with a laminated project Fact Sheet that states that the project is in the NYC Voluntary Cleanup Program, provides project contact names and numbers, and locations of project documents can be viewed.

Complaint Management. The contractor performing this cleanup is required to address all complaints. If you have any complaints, you can call the facility Project Manager, Daren Murphy of SMES who can be reached at (516) 315-1037 or NYC OER Project Manager, Katherine Glass at (212)676-4925 or call 311 and mention the Site is in the NYC Voluntary Cleanup Program.

Utility Mark-outs. To promote safety during excavation in this cleanup, the contractor is required to first identify all utilities and must perform all excavation and construction work in compliance with NYC Department of Buildings regulations.

Soil and Liquid Disposal. All soil and liquid material removed from the Site as part of the cleanup will be transported and disposed of in accordance with all applicable City, State and Federal regulations and required permits will be obtained.

Soil Chemical Testing and Screening. All excavations will be supervised by a trained and properly qualified environmental professional. In addition to extensive sampling and chemical testing of soils on the Site, excavated soil will be screened continuously using hand-held instruments, by sight, and by smell to ensure proper material handling and management, and community protection.

Stockpile Management. Soil stockpiles will be kept covered with tarps to prevent dust, odors and erosion. Stockpiles will be frequently inspected. Damaged tarp covers will be promptly replaced. Stockpiles will be protected with silt fences. Hay bales will be used, as needed to protect storm water catch basins and other discharge points.

Trucks and Covers. Loaded trucks leaving the Site will be covered in compliance with applicable laws and regulations to prevent dust and odor. Trucks will be properly recorded in logs and records and placarded in compliance with applicable City, State and Federal laws, including those of the New York State Department of Transportation. If loads contain wet material that can leak, truck liners will be used. All transport of materials will be performed by licensed truckers and in compliance with all laws and regulations.

Imported Material. All fill materials proposed to be brought onto the Site will comply with rules outlined in this cleanup plan and will be inspected and approved by a qualified worker located on-Site. Waste materials will not be brought onto the Site. Trucks entering the Site with imported clean materials will be covered in compliance with applicable laws and regulations.

Equipment Decontamination. All equipment used for cleanup work will be inspected and washed, if needed, before it leaves the Site. Trucks will be cleaned at a truck inspection station on the property before leaving the Site.

Housekeeping. Locations where trucks enter or leave the Site will be inspected every day and cleaned regularly to ensure that they are free of dirt and other materials from the Site.

Truck Routing. Truck routes have been selected to: (a) limit transport through residential areas and past sensitive nearby properties; (b) maximize use of city-mapped truck routes; (c) limit total distance to major highways; (d) promote safety in entry to highways; (e) promote overall safety in trucking; and (f) minimize off-Site line-ups (queuing) of trucks entering the property. Operators of loaded trucks leaving the Site will be instructed not to stop or idle in the local neighborhood.

Final Report. The results of all cleanup work will be fully documented in a final report (called a Remedial Action Report) that will be available for you to review in the public document repositories located at Queens Public Library - Hollis Branch.

Long-Term Site Management. To provide long-term protection after cleanup is complete, the property owner will be required to comply with an ongoing Site Management Plan that calls for continued inspection of protective controls, such as Site covers. The Site Management Plan is evaluated and approved by the NYC OER. Requirements that the property owner must comply with are established through a city environmental designation. A certification of continued protectiveness of the cleanup will be required from time to time to show that the approved cleanup is still effective.

REMEDIAL ACTION WORK PLAN

1.0 SITE BACKGROUND

186 JAMAICA AVE LLC has applied to enroll in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate a property located at 186-02 Jamaica Avenue in the Hollis section of Queens, New York (the “Site”). A Remedial Investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP) in a manner that will render the Site protective of public health and the environment consistent with the contemplated end use. This RAWP establishes remedial action objectives, provides a remedial alternatives analysis that includes consideration of a permanent cleanup, and provides a description of the selected remedial action. The remedial action described in this document provides for the protection of public health and the environment, complies with applicable environmental standards, criteria and guidance and applicable laws and regulations.

1.1 SITE LOCATION AND CURRENT USAGE

The Site is located at 186-02 Jamaica Avenue in the Hollis section of Borough of Queens, New York and is identified as Block 10352 and Lot 108 on the New York City Tax Map. Figure 1 shows the Site location. The Site (147.00 FT X 319.00 FT; Irregular) is 47,000-square feet and is bounded by Jamaica Avenue to the north, Long Island Railroad (LIRR) to the south, ABC Supply Co Inc. to the east, and Rodless Properties to the west. A map of the site boundary is shown in Figure 2. Currently, the Site is unoccupied and contains a vacant one-story masonry building (32.00 FT X 240.00 FT) (approximately 7,680 square feet) and asphalt paved surfaces.

1.2 PROPOSED REDEVELOPMENT PLAN

The proposed future use of the Site will consist of the complete removal of the existing one-story masonry building, foundations, and asphalt paved parking lot for the redevelopment of the site for a new self-storage facility. Layout of the proposed site redevelopment is presented in Figure 3. The current zoning designation is M1-2 Manufacturing District. The proposed use (self-storage) is consistent with existing zoning for the property.

The proposed site redevelopment will consist of a new slab on grade 6-story building for self-storage use. The first floor will accommodate the sales office area, 5-bay interior loading area, elevators and egress stairs, and storage units. The upper five stories will accommodate all storage units. The building footprint area is 15,850 square feet for a total of 95,100 square feet. The new building will be situated on the northeast side of the property with new entrance to the asphalt paved parking lot area on the northwest side. Landscaping areas will be provided at the front of the property on both sides of the site entrance. Street trees will also be provided along Jamaica Avenue. Layout of the proposed site development is presented in Figure 3.

The bottom of the new footings for the new building will be approximately 4.0-6.0 feet below grade. The estimated volume of excavation to install the new concrete footings and foundation wall will be approximately 400 cubic yards. The groundwater table is approximately 18.0 – 19.0 feet below ground surface (bgs), therefore, excavation is not anticipated to be below the groundwater table.

The remedial action contemplated under this RAWP may be implemented independently of the proposed redevelopment plan.

1.3 DESCRIPTION OF SURROUNDING PROPERTY

The Site is located within an urban area characterized mostly by residential, retail, commercial, and manufacturing properties. The current zoning designation for the Site is M1-2 Manufacturing District. According to OERs *SPEED*, there are no sensitive receptors such as schools, hospitals, and day care facilities within a 500-foot radius of the Site. Figure 4 shows the surrounding land usage.

1.4 REMEDIAL INVESTIGATION

A remedial investigation was performed and the results are documented in a companion document called “*Remedial Investigation Report, 186-02 Jamaica Avenue, Queens, New York*”, dated June 2014 (RIR).

Summary of Past Uses of Site and Areas of Concern

The property was previously utilized as a lumber yard from at least 1926 through about 1991 followed by occupancy of an auto sales & towing facility from approximately 1992 through 2013. During its use as a lumber yard, the site included several buildings (used for office, saw mill, garage, warehouse, and lumber sheds), lumber piles, coal pocket, and railroad spur. According to our review of historical Sanborn fire insurance maps, the existing building appears to have been built prior to 1926 with significant modifications over the years. 186 JAMAICA AVE LLC purchased the site from Ed DiBenedetto Inc in 2014; who purchased the property from Jamaica Lumber Co Inc in 1985.

The AOCs identified for this Site include:

1. The listing of the Site as an E DESIGNATION Site.
2. Historical uses of the Site as a lumber yard (and associated historical buildings).
3. Buried gasoline tank (depicted on historical Sanborn fire insurance maps) located at northern portion of Site.
4. Existing subsurface drainage structures located within asphalt paved surfaces.
5. An apparent oil/water separator located at northern portion of the Site.
6. The presence of historic fill material throughout the Site.

Summary of the Work Performed under the Remedial Investigation

Soil Mechanics Environmental Services (SMES) performed the following scope of work:

1. Conducted a site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);
2. Performed subsurface geophysical investigation, using ground penetrating radar (GPR) equipment, throughout all accessible portions of the Site;
3. Performed exploratory test pit at a GPR anomaly location identified at the Site to confirm the presence/absence of USTs;

4. Investigated two (2) subsurface drainage structures located at the Site to confirm that they discharge into underlying soil formations and collected soil/sludge grab samples from structures for chemical analysis to evaluate soil quality;
5. Completed survey of Site to locate footprint of former building(s);
6. Installed sixteen (16) soil borings across the entire project Site and collected twenty-two (22) soil samples for chemical analysis from the soil borings to evaluate soil quality;
7. Supplemental soil probes GP-1 through GP-11 were installed at designated locations at the Site using a truck mounted Geoprobe. Probe GP-1, GP-2, and GP-3 were installed in the area of the gasoline UST; GP-4 and GP-5 were installed near the oil/water separator; GP-6 and GP-7 were installed near the subsurface drainage structures; GP-8 and GP-9 were completed at random locations to address historic fill; and GP-10 and GP-11 were completed within the southern portion of the existing building at a GPR anomaly location.
8. Installed three (3) groundwater monitoring wells throughout the Site to establish groundwater flow and collected three (3) groundwater samples for chemical analysis to evaluate groundwater quality;
9. Installed six (6) soil vapor probes throughout the Site and collected six (6) soil vapor samples for chemical analysis.

Summary of Environmental Findings

1. Elevation of the property is approximately 50.0 feet above sea level.
2. Depth to groundwater ranges from approximately 18.0 – 19.0 feet bgs at the Site.
3. Groundwater flow is generally from northeast to southwest (south/southwesterly flow component) beneath the Site.
4. The stratigraphy of the site, from the surface down, consists of 2.0 to 8.0 feet of asphalt and soil fill, underlain, generally by a naturally bedded moderately dense coarse to fine sand formation with traces of silt and gravel extending to the deepest depths drilled.

5. Results of soil samples collected during investigations were compared to 6NYCRR Part 375-6.8 (a and b) Unrestricted Use (Track 1) and Restricted Commercial Use Soil Cleanup Objectives (SCO). Soil samples showed VOCs including acetone (max 115 ug/kg), benzene (max 319 ug/kg), toluene (1320 ug/kg), m,p-xylenes (max 3250 ug/kg), and 1,2,4-trimethylbenzene (max 13100 ug/kg) were detected in the samples at concentrations that exceeded Track 1 Unrestricted Use SCO. None of VOCs exceeded Restricted – Commercial Use SCO. Several SVOCs including pentachlorophenol (max 1140 ug/kg), benzo(a)anthracene (max 2840 ug/kg), chrysene (max 3130), benzo(b)fluoranthene (max 5490 ug/kg), benzo(k)fluoranthene (max 1360 ug/kg), benzo(a)pyrene (max 3370 ug/kg), indeno(1,2,3-cd)pyrene (max 3400 ug/kg), and dibenzo(a,h)anthracene (max 962 ug/kg) were detected at concentrations that exceeded Track 1 Unrestricted Use SCO. And of these, benzo(a)pyrene and dibenzo(a,h)anthracene also exceeded Restricted Commercial (Track 2) Use SCO in one shallow soil sample. One pesticides, dieldrin (max 5.91 ug/kg) in one (1) shallow (0-2 foot) sample exceeded Track 1 Unrestricted Use SCO. Several metals including arsenic (max 47.4 mg/kg), barium (max 476 mg/kg), cadmium (max 2.85 mg/kg), chromium (max 34.9 mg/kg), copper (max 921 mg/kg), lead (max 2260 mg/kg), nickel (42.0 mg/kg), and zinc (max 986 mg/kg) were detected exceeded Track 1 Unrestricted Use SCO. Of these, barium, copper and lead also exceeded Track 2 Restricted Commercial Use SCO. No PCBs were detected in the samples.
6. Soil/sludge samples collected during the RI showed VOCs including acetone (max 1320 ug/kg), cis-1,2-dichloroethylene (max 666 ug/kg), and toluene (max 3780 ug/kg) were detected in the samples at concentrations that exceeded Soil Cleanup Objectives (SCO). SVOCs including benzo(a)anthracene (max 4130 ug/kg), chrysene (max 4530 ug/kg), benzo(b)fluoranthene (max 5610 ug/kg), and benzo(k)fluoranthene (max 2190 ug/kg) were detected above Restricted Commercial Use SCOs. Metals including arsenic (max 21.5 mg/kg), cadmium (max 15.2 mg/kg), chromium (max 135 mg/kg), lead (max 3250 mg/kg), and nickel (max 154 mg/kg) exceeded Unrestricted Use as well as Restricted Commercial Use SCOs.

7. Groundwater samples results were compared to NYSDEC 6NYCRR Part 703.5 Groundwater Quality Standards (GQS). Groundwater detected several metals but only iron, manganese, and sodium were detected above their respective GQS. There were no detections of VOCs, SVOCs, PCBs, or pesticides in groundwater samples.
8. Soil vapor results collected during the RI were compared to the compounds listed in Table 3.1 Air Guideline Values Derived by the NYSDOH located in the New York State Department of Health (NYSDOH) Final Guidance for Evaluating Soil Vapor Intrusion dated October 2006. Soil vapor samples showed low concentrations of petroleum related and chlorinated VOCs. The maximum concentrations of BTEX compounds was at 45 $\mu\text{g}/\text{m}^3$. Highest reported concentrations were for acetone at 44 $\mu\text{g}/\text{m}^3$. Chlorinated VOCs, tetrachloroethylene was detected at a maximum concentration of 2.7 $\mu\text{g}/\text{m}^3$. 1,1,1-trichloroethane, carbon tetrachloride, and trichloroethene were not detected. Concentrations of chlorinated compounds are well below the monitoring levels established by NYSDOH matrix.

For more detailed results, consult the RIR. Based on an evaluation of the data and information from the RIR and this RAWP, disposal of significant amounts of hazardous waste is not suspected at this Site.

2.0 REMEDIAL ACTION OBJECTIVES

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

Soil

- Prevent direct contact with contaminated soil.
- Prevent exposure to contaminants volatilizing from contaminated soil.
- Prevent migration of contaminants that would result in groundwater or surface water contamination.

Groundwater

- Prevent direct exposure to groundwater.

Soil Vapor

- Prevent migration of soil vapor into dwelling and other occupied structures.

3.0 REMEDIAL ALTERNATIVES ANALYSIS

The goal of the remedy selection process below is to select a remedy that is protective of human health and the environment taking into consideration the current, intended and reasonably anticipated future use of the property. The remedy selection process begins by establishing RAOs for media in which chemical constituents were found in exceedance of applicable standards, criteria and guidance values (SCGs). A remedy is then developed based on the following ten criteria:

- Protection of human health and the environment;
- Compliance with SCGs;
- Short-term effectiveness and impacts;
- Long-term effectiveness and permanence;
- Reduction of toxicity, mobility, or volume of contaminated material;
- Implementability;
- Cost effectiveness;
- Community acceptance;
- Land use; and
- Sustainability.

The following is a detailed description of the alternatives analysis and remedy selection to address impacted media at the Site. As required, a minimum of two remedial alternatives (Alternative #1 and Alternative #2) are considered for alternative analysis for this Site:

Alternative #1 involves:

1. Selection of NYSDEC 6NYCRR Part 375 Table 6.8 Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs).

2. Removal of all soil/fill exceeding Track 1 SCOs throughout the Site and confirmation that Track 1 SCOs have been achieved with post-excavation endpoint sampling. If soil/fill-containing analytes at concentrations above Track 1 SCOs are still present at the base of the excavation, additional excavation will be performed to ensure complete removal of soil that does not meet Track 1 SCOs.
3. No engineering or institutional controls are required in a Track 1 Unrestricted Use cleanup, but a final concrete cap and a vapor barrier would be installed as part of a development to prevent any potential future exposures.

Alternative #2 involves:

1. Establishment of Site Specific (Track 4) Soil Cleanup Objectives (SCOs).
2. Removal of all soil/fill exceeding Track 4 SCOs and confirmation that Track 4 SCOs have been achieved with post-excavation endpoint sampling. The property will be minimally excavated for footings. In addition, hotspot excavations will be completed at two (2) (at soil borings SB-1 and SB-4) and will consist of approximate 10.0 foot by 10.0 foot by 6.0 foot deep remedial excavations. If soil/fill containing analytes at concentrations above Track 4 Site Specific SCOs is still present at the base of the hotspot excavations after soil removal, additional excavation will be performed to meet Track 4 Site Specific SCOs.
3. Placement of a soil vapor barrier (a 20-mil polyethylene sheeting) beneath the building slab and along foundation side walls to prevent any potential future exposures from off-Site soil vapor.
4. Placement of a final cover over the entire site to eliminate exposure to remaining soil/fill.
5. Establishment of use restrictions including prohibitions on the use of groundwater from the Site and prohibitions on other sensitive site uses, such as farming or vegetable gardening, to eliminate future exposure pathways.
6. Establishment of an approved Site Management Plan (SMP) to ensure long-term management of these engineering and institutional controls, including the performance

of periodic inspections and certification that the controls are performing as they were intended.

7. Continued registration as an E-designated property to memorialize the remedial action and the Engineering and Institutional Controls required by this RAWP.

3.1 THRESHOLD CRITERIA

Protection of Public Health and the Environment

This criterion is an evaluation of the remedy's ability to protect public health and the environment, and an assessment of how risks posed through each existing or potential pathway of exposure are eliminated, reduced or controlled through removal, treatment, and implementation of Engineering Controls or Institutional Controls. Protection of public health and the environment must be achieved for all approved remedial actions.

Alternative #1 would be protective of human health and the environment by removing the soil/fill exceeding Track 1 Unrestricted Use SCOs, thus eliminating the potential for human and environmental exposure to contaminated soil/fill once construction is complete and eliminating the risk of contamination leaching into groundwater.

Alternative #2 would achieve comparable protection of human health and the environment by excavating and removing soil/fill at the Site and by ensuring that remaining soil/fill on-Site meets Track 4 Site Specific SCOs, as well as by employing Institutional and Engineering controls, including a vapor barrier and a composite cover system. The composite cover system would prevent direct contact with any remaining on-Site soil/fill. Implementing Institutional controls including a Site Management Plan (SMP) would ensure that the composite cover system remains intact and protective. Establishment of Track 4 Site Specific SCOs would minimize the risk of contamination leaching into groundwater.

For both Alternatives, implementing a Construction Health and Safety Plan (CHASP), an approved Soils/Materials Management Plan (SMP), and Community Air Monitoring Plan (CAMP) would minimize potential exposure to contaminated soils during construction. Potential use of groundwater for potable supply would be prevented by city laws and regulations prohibit

its use. Potential future migration of off-site soil vapors into the new building would be prevented by installing a vapor barrier system beneath the proposed new building.

3.2. BALANCING CRITERIA

Compliance with Standards, Criteria and Guidance (SCGs)

This evaluation criterion assesses the ability of the alternative to achieve applicable standards, criteria and guidance.

Alternative #1 would achieve compliance with remedial goals, chemical-specific SCGs, and RAOs for soil through the removal of soil/fill to Track 1 Unrestricted Use SCOs groundwater protection standards.

Alternative #2 would achieve compliance with remedial goals, chemical-specific SCGs, and RAOs for soil through the removal of soil/fill to Track 4 Site Specific SCOs and capping the Site with a composite cover. A Site Management Plan would ensure that these controls remained protective for the long term.

Health and safety measures contained in the CHASP and Community Air Monitoring Program (CAMP) that comply with the applicable SCGs shall be implemented during Site redevelopment under this RAWP. For both Alternatives, focused attention on means and methods employed during the remedial action would ensure that handling and management of contaminated material would be in compliance with the applicable SCGs. These measures would protect on-Site workers and the surrounding community from exposure to Site-related contaminants.

Short-term effectiveness and impacts

This evaluation criterion assesses the effects of the alternative during the construction and implementation phase until remedial action objectives are met. Under this criterion, alternatives are evaluated with respect to their effects on public health and the environment during implementation of the remedial action, including protection of the community, environmental impacts, time until remedial response objectives are achieved, and protection of workers during remedial actions.

Both Alternatives #1 and #2 have short term effectiveness during their respective implementations, as each requires excavation of historic fill material. Both alternatives would result in short term dust generation impacts associated with excavation, handling, load out of materials, and truck traffic. Short term impacts would be higher for Alternative #1 since greater amounts of soil/fill exceeding Track 1 SCOs would be removed.

An additional short-term adverse impact and risks to the community associated with both remedial alternatives is increased truck traffic. Both Alternatives #1 and #2 will require truck trips to transport fill and soil excavated during Site development, however, a significant increase in truck traffic would occur if the Track 1 SCOs were met. Truck traffic will be routed on the most direct course using major thoroughfares where possible and flaggers would be used to protect pedestrians at Site entrances and exits.

The effects of these potential adverse impacts to the community, workers, and the environment would be minimized through implementation of corresponding control plans including a CHASP, CAMP, and a Soil/Materials Management Plan (SMMP), during all on-Site soil disturbance activities and would minimize the release of contaminants into the environment. Both alternatives provide short term effectiveness in protecting the surrounding community by decreasing the risk of contact with on-Site contaminants. Construction workers operating under appropriate management procedures and a CHASP would be protected from on-Site contaminants (personal protective equipment would be worn consistent with the documented and encountered risks within the respective work zones).

Long-term effectiveness and permanence

This evaluation criterion addresses the results of a remedial action in terms of its permanence and quantity/nature of waste or residual contamination remaining at the Site after response objectives have been met, such as permanence of the remedial alternative, magnitude of remaining contamination, adequacy of controls including the adequacy and suitability of ECs/ICs that may be used to manage contaminant residuals that remain at the Site and assessment of containment systems and ICs that are designed to eliminate exposures to contaminants, and long-term reliability of Engineering Controls.

Alternative #1 would achieve long-term effectiveness and permanence related to on-Site contamination by permanently removing all impacted soil/fill and enabling unrestricted usage of the property.

Alternative #2 would provide long-term effectiveness by removing on-Site contamination and attaining Track 4 Site-Specific SCOs; a composite cover system across the Site, maintaining use restrictions, establishing a Site Management Plan (SMP) to ensure long-term management of ICs, ECs, and maintaining continuing registration as an E-designated property to memorialize these controls for the long term. The SMP would ensure long-term effectiveness of all ECs and ICs by requiring periodic inspection and certification that these controls and restrictions continue to be in place and are functioning as they were intended assuring that protections assuring that protections designed into the remedy will provide a continued high of level of protection in perpetuity.

Both alternatives would result in removal of soil contamination exceeding the SCOs providing the highest level, most effective and permanent remedy over the long-term with respect to a remedy for contaminated soil, which would eliminate any migration to groundwater. Potential sources of soil vapor and groundwater contamination will also be eliminated as part of the remedy.

Reduction of toxicity, mobility, or volume of contaminated material

This evaluation criterion assesses the remedial alternative's use of remedial technologies that permanently and significantly reduce toxicity, mobility, or volume of contaminants as their principal element. The following is the hierarchy of source removal and control measures that are to be used to remediate a Site, ranked from most preferable to least preferable: removal and/or treatment, containment, elimination of exposure and treatment of source at the point of exposure. It is preferred to use treatment or removal to eliminate contaminants at a Site, reduce the total mass of toxic contaminants, cause irreversible reduction in contaminants mobility, or reduce of total volume of contaminated media.

Alternative #1 would permanently eliminate the toxicity, mobility, and volume of contaminants from on-Site soil by removing all soils in excess of Track 1 Unrestricted Use SCOs.

Alternative #2 would permanently eliminate the toxicity, mobility, and volume of contaminants from on-Site soil by removing all soils in excess of Site Specific (Track 4) Soil Cleanup Objectives (SCOs). Alternative #1 would eliminate a greater total mass of contaminants on-Site.

Implementability

This evaluation criterion addresses the technical and administrative feasibility of implementing an alternative and the availability of various services and materials required during its implementation, including technical feasibility of construction and operation, reliability of the selected technology, ease of undertaking remedial action, monitoring considerations, administrative feasibility (e.g. obtaining permits for remedial activities), and availability of services and materials.

The techniques, materials, and equipment to implement Alternatives #1 and #2 are readily available and have been proven effective in remediating the contaminants associated with the Site. They use standard materials and services that are well established technology. The reliability of each remedy is also high. There are no special difficulties associated with any of the activities proposed.

Cost effectiveness

This evaluation criterion addresses the cost of alternatives, including capital costs (such as construction costs, equipment costs, and disposal costs, engineering expenses) and site management costs (costs incurred after remedial construction is complete) necessary to ensure the continued effectiveness of a remedial action.

Since historic fill at the Site was found during the RI to extend to depths of up to 8.0 feet below grade and the bottom of the new footings for the new building will be approximately 4.0-6.0 feet below grade, the costs associated with Alternative #1 would be much greater than Alternative #2.

There would be additional costs associated with Alternative #1 if soil with analytes above Unrestricted Use SCOs is encountered below the depth required for excavation. Additional costs would include installation of shoring/underpinning, disposal of additional soil, and import of clean soil for backfill. However, long-term costs for Alternative #2 may be higher than Alternative #1 based on implementation of a SMP as part of Alternative #2.

The remedial plan creates an approach that combines the remedial action with the redevelopment of the Site, including the construction of the building foundation and/or subgrade structures. The remedial plan is also cost effective in that it will take into consideration the selection of the closest and most appropriate disposal facilities to reduce transportation and disposal costs during the excavation of historic fill and other soils during the redevelopment of the Site.

Community Acceptance

This evaluation criterion addresses community opinion and support for the remedial action. Observations here will be supplemented by public comment received on the RAWP.

Based on the overall goals of the remedial program and initial permitting associated with the proposed site development, no adverse community opinion is anticipated for either alternative. This RAWP will be subject to a public review under the NYC VCP and will provide the opportunity for detailed public input on the remedial alternatives and the selected remedy. This public comment will be considered by OER prior to approval of this plan. The Citizen Participation Plan for the project is provided in Appendix A.

Land use

This evaluation criterion addresses the proposed use of the property. This evaluation has considered reasonably anticipated future uses of the Site and takes into account: current use and historical and/or recent development patterns; applicable zoning laws and maps; NYS Department of State's Brownfield Opportunity Areas (BOA) pursuant to section 970-r of the general municipal law; applicable land use plans; proximity to real property currently used for residential use, and to commercial, industrial, agricultural, and/or recreational areas; environmental justice impacts, Federal or State land use designations; population growth patterns and projections; accessibility to existing infrastructure; proximity of the site to important cultural resources and natural resources, potential vulnerability of groundwater to contamination that might emanate from the site, proximity to flood plains, geography and geology; and current Institutional Controls applicable to the site.

The proposed redevelopment of the Site is compatible with its current zoning and is consistent with recent development patterns. Following remediation, the Site will meet either Track 1 Unrestricted Use or Track 4 Site-Specific SCOs, both of which are appropriate for its proposed

use (self-storage). Improvements in the current environmental condition of the property achieved by both alternatives are also consistent with the City's goals for cleanup of contaminated land and bringing such properties into productive reuse. Both alternatives are equally protective of material resources and cultural resources.

Sustainability of the Remedial Action

This criterion evaluates the overall sustainability of the remedial action alternatives and the degree to which sustainable means are employed to implement the remedial action including those that take into consideration NYC's sustainability goals defined in *PlaNYC: A Greener, Greater New York*. Sustainability goals may include: maximizing the recycling and reuse of non-virgin materials; reducing the consumption of virgin and non-renewable resources; minimizing energy consumption and greenhouse gas emissions; improving energy efficiency; and promotion of the use of native vegetation and enhancing biodiversity during landscaping associated with Site development.

While Alternative #2 would potentially result in lower energy usage based on reducing the volume of material transported off-Site, both remedial alternatives are comparable with respect to the opportunity to achieve sustainable remedial action. A complete list of green remedial activities considered as part of the NYC VCP is included in the Sustainability Statement, included as Appendix B.

4.0 REMEDIAL ACTION

4.1 SUMMARY OF PREFERRED REMEDIAL ACTION

The preferred remedial action alternative is Alternative #2, the Track 4 Alternative. The preferred remedial action alternative achieves protection of public health and the environment for the intended use of the property. The preferred remedial action alternative will achieve all of the remedial action objectives established for the project and addresses applicable SCGs. The preferred remedial action alternative is effective in both the short-term and long-term and reduces mobility, toxicity and volume of contaminants. The preferred remedial action alternative is cost effective and implementable and uses standard methods that are well established in the industry.

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and performance of all required NYC VCP Citizen Participation activities according to an approved Citizen Participation Plan.
2. Perform a Community Air Monitoring Program (CAMP) for particulates and volatile organic carbon compounds.
3. Establishment of Track 4 Site-Specific Soil Cleanup Objectives (SCOs).
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs, and marking & staking excavation areas.
5. Excavation and removal of soil/fill exceeding Track 4 Site Specific SCOs. Hotspot excavations will be completed at two (2) locations across the Site. The hotspot excavations will be conducted at soil borings SB-1 and SB-4 and will consist of approximate 10.0 foot by 10.0 foot by 6.0 foot deep remedial excavations. If soil/fill containing analytes at concentrations above Track 4 Site Specific SCOs is still present at the base of the hotspot excavations after soil removal, additional excavation will be performed to meet Track 4 Site Specific SCOs. Approximately, 600 tons of soil will be excavated and removed from this Site.

6. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID. Appropriate segregation of excavated material on-Site.
7. Removal of underground storage tanks and closure of petroleum spills (if evidence of a spill/leak is encountered during Site excavation) in compliance with applicable local, State and Federal laws and regulations. There is one reported buried tank in northern portion of the property.
8. Remediation of two (2) subsurface drainage structures located at the Site in compliance with applicable local, State and Federal laws and regulations.
9. Removal of oil/water separator located at the Site in compliance with applicable local, State and Federal laws and regulations.
10. Transportation and off-Site disposal of all soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities. Appropriate segregation of excavated media on-Site.
11. Collection and analysis of end-point samples in hot spot areas to determine the performance of the remedy with respect to attainment of Track 4 Site-Specific SCOs.
12. Installation of a vapor barrier below the concrete slab underneath the building, as well as behind foundation walls of the proposed building. The vapor barrier will consist of Stego Wrap 20-Mil Vapor Barrier (Stego Industries, LLC).
13. Placement of a demarcation layer.
14. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.
15. Construction and maintenance of an engineered composite cover consisting of the existing building concrete slab, asphalt pavement, concrete walkways, and landscaped areas. The building slab on grade will be 4 inches thick; the existing asphalt pavement at the rear of the property will be milled and topped with 2 inches of new asphalt; the

landscape planting areas will include a two feet of clean soil layer topped with 6 inch layer of topsoil spread evenly.

16. Composite cover system will manage residual soil contamination in-place.
17. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
18. Submission of a Remedial Action Report (RAR) that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, and describes all Engineering and Institutional Controls to be implemented at the Site, and lists any changes from this RAWP.
19. Submission of an approved Site Management Plan (SMP) in the RAR for long-term management of residual contamination, including plans for operation, maintenance, monitoring, inspection, and certification of Engineering and Institutional Controls and reporting at a specific frequency.
20. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
21. The property will continue to be registered with an E-Designation by the NYC Buildings Department. Establishment of Engineering Controls and Institutional Controls; a requirement that management of these controls must be in compliance with an approved SMP. Institutional Controls will include prohibition of the following: (1) vegetable gardening and farming; (2) use of groundwater without treatment rendering it safe for the intended use; (3) disturbance of residual contaminated material unless it is conducted in accordance with the SMP; and (4) higher level of land usage without OER-approval.

4.2 SOIL CLEANUP OBJECTIVES AND SOIL/FILL MANAGEMENT

Track 4 Site Specific Soil Cleanup Objectives (SCOs) are proposed for this project. The following Track 4 Site-Specific SCOs will be used:

<u>Contaminant</u>	<u>Track 4 SCOs</u>
Arsenic	23 mg/kg
Barium	650 mg/kg
Copper	350 mg/kg
Lead	1,000 mg/kg

Soil and materials management on-Site and off-Site, including excavation, handling and disposal, will be conducted in accordance with the Soil/Materials Management Plan in Appendix C. The location of planned excavations is shown in Figure 5.

Discrete contaminant sources (such as hotspots) identified during the remedial action will be identified by GPS or surveyed. This information will be provided in the Remedial Action Report (RAR).

Estimated Soil/Fill Removal Quantities

The total quantity of soil/fill expected to be excavated and disposed off-Site is 600 tons.

Disposal facilities will be reported promptly to OER when they are identified and prior to the start of remedial action.

End-Point Sampling

Removal actions under this plan will be performed in conjunction with confirmation soil sampling. Post-excavation end-point sampling and testing will be performed promptly following materials removed and completed prior to Site development activities. To evaluate attainment of Track 4 Site Specific SCOs, five (5) post excavation endpoint samples will be collected from each of the two (2) hotspot excavations and will be analyzed for VOCs – High/Low (EPA Method 8260), SVOCs – BNA (EPA Method 8270), and TAL metals (EPA Method 6010).

Hotspot removal end-point sampling frequency will consist of the following:

1. For excavations less than 20 feet in total perimeter, at least one bottom sample and one sidewall sample biased in the direction of surface runoff.
2. For excavations 20 to 300 feet in perimeter:
 - For surface removals, one sample from the top of each sidewall for every 30 linear feet of sidewall and one sample from the excavation bottom for every 900 square feet of bottom area.
 - For subsurface removals, one sample from each sidewall for every 30 linear feet of sidewall and one sample from the excavation bottom for every 900 square feet of bottom area. The sidewall samples will be collected at depths of 6.0 feet bgs at the hotspot excavation associated with soil boring SB-1 and the sidewall samples will be collected at depths of 4.0 feet bgs at the hotspot excavation associated with soil boring SB-4
3. For sampling of volatile organics, bottom samples should be taken within 24 hours of excavation, and should be taken from the zero to six-inch interval at the excavation floor. Samples taken after 24 hours should be taken at six to twelve inches.
4. For contaminated soil removal, post remediation soil samples for laboratory analysis should be taken immediately after contaminated soil removal. If the excavation is enlarged horizontally, additional soil samples will be taken pursuant to bullets 1-3 above.

Post-remediation end-point sample locations and depth will be biased towards the areas and depths of highest contamination identified during previous sampling episodes unless field indicators such as field instrument measurements or visual contamination identified during the remedial action indicate that other locations and depths may be more heavily contaminated. In all cases, post-remediation samples should be biased toward locations and depths of the highest expected contamination.

New York State ELAP certified labs will be used for all confirmation and end-point sample analyses. Labs performing confirmation and end-point sample analyses will be reported in the

RAR. The RAR will provide a tabular and map summary of all confirmation and end-point sample results and will include all data including non-detects and applicable standards and/or guidance values. End-point samples will be analyzed for compounds and elements as described above utilizing the following methodology:

Soil analytical methods will include:

- VOCs – High/Low by EPA Method 8260;
- SVOCs – BNA by EPA Method 8270;
- TAL metals by EPA Method 6010; and

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

Quality Assurance/Quality Control

The fundamental QA objective with respect to accuracy, precision, and sensitivity of analysis laboratory analytical data is to achieve the QC acceptance of the analytical protocol. The accuracy, precision, and completeness requirements will be addressed by the laboratory for all data generated.

Collected samples will be appropriately packaged, placed in coolers and delivered directly to the analytical laboratory by field personnel. Samples will be containerized in appropriate laboratory provided glassware and delivered in plastic coolers. The samples will be preserved through the use of ice or “cold packs” to maintain a temperature of 4° C.

Dedicated disposal sampling materials will be used for the collection of end-point samples, eliminating the need to prepare field equipment (rinsate) blanks. However, if non-disposable equipment is used (stainless steel scoop, etc.) field rinsate blanks will be prepared at the rate of 1 for every 8 samples collected. Decontamination of non-dedicated sampling equipment will consist of the following:

- Gently tap or scrape to remove adhered soil.
- Rinse with tap water.

- Wash withalconox detergent solution and scrub.
- Rinse with tap water.
- Rinse with distilled or deionized water.

Prepared field blanks by pouring distilled or deionized water over decontaminated equipment and collecting the water in laboratory provided containers. Trip blanks will be used whenever samples are transported to the laboratory for analysis of VOCs. Trip blanks will not be used for samples to be analyzed for SVOCs or TAL metals. One blind duplicate sample will be prepared and submitted for analysis of every 20 samples.

Import and Reuse of Soils

Import of soils onto the property and reuse of soils already onsite will be performed in conformance with the Soil/Materials Management Plan in Appendix C. The estimated quantity of soil to be imported into the Site for backfill and cover soil is approximately 110-120 tons. Topsoil (6 inch deep layer spread evenly) will be installed at the Site for the landscaped areas. The estimated quantity of onsite soil/fill expected to be reused/relocated on Site is 0 tons. Only minor quantities of on-site soil/fill are expected to be relocated in association with the re-grading of the Site.

4.3 ENGINEERING CONTROLS

The excavations required for the proposed Site development will achieve Track 4 Site Specific SCOs. Engineering Controls are required to address residual contamination at the Site. The following elements will be incorporated into the foundation design as part of the development: composite cover system and soil vapor barrier.

Composite Cover System

As part of proposed Site development, the entire property will be covered by an engineered permanent cover system. This cover system will be comprised of the concrete building slab, asphalt pavement, concrete walkways, and landscaped areas. The building slab on grade will be 4 inches thick; the existing asphalt pavement at the rear of the property will be milled and topped

with 2 inches of new asphalt; new asphalt pavement areas to be set on compacted sub-grade with an 8 inch dense grade aggregate base course, 3 inches asphalt/concrete binder topped with 2 inch thick asphalt/concrete wearing course; the landscape planting areas will include a 6 inch layer of topsoil spread evenly.

Figure 3 shows the location of each cover type built at the Site.

The composite cover system is a permanent engineering control for the Site. The cover system will be inspected and reported at specified intervals as required by this RAWP and the SMP. A Soil Management Plan will be included in the Site Management Plan and will outline the procedures to be followed in the event that the composite cover system and underlying residual soil/fill is disturbed after the remedial action is complete. Maintenance of this composite cover system will be described in the Site Management Plan in the RAR.

Vapor Barrier

As part of development, migration of potential soil vapor from off-site in the future will be achieved with a combination of building slab and vapor barrier. A 20-mil polyethylene sheeting vapor barrier will be installed below all portions of the concrete slab of the new slab on grade 6-story building for self-storage use. The vapor barrier will consist of **Stego Wrap 20-Mil Vapor Barrier (Stego Industries, LLC)**, which is a multi-layer plastic extrusion manufactured with only high grade prime, virgin, polyolefin resins. The specifications for the installation will be provided to the construction management company and the foundation contractor or installer of the liner. The specifications state that all seams are to be overlapped a minimum of six inches and taped using Stego Tape or Crete Claw Tape. All penetrations must be sealed using a combination of Stego Wrap and Stego accessories.

The project's Professional Engineer licensed by the State of New York will have primary direct responsibility for overseeing the implementation of the vapor barrier. The 20-mil polyethylene sheeting vapor barrier will be installed below all portions of the concrete slab of the new slab on grade 6-story building for self-storage use (see Figure 3). Product specification sheets are provided in Attachment A. The Remedial Action Report will include photographs (maximum of two photos per page) of the installation process, PE/RA certified letter (on company letterhead) from primary contractor responsible for installation oversight and field inspections, and a copy of the manufacturers certificate of warranty.

4.4 INSTITUTIONAL CONTROLS

Institutional Controls (IC) will be utilized in this remedial action to manage residual soil/fill and other media and render the Site protective of public health and the environment. Institutional Controls are listed below. Long-term employment of EC/ICs will be implemented under a site specific Site Management Plan (SMP) that will be included in the RAR.

Institutional Controls for this remedial action are:

- Continued registration of the E-Designation for the property. This RAWP includes a description of all ECs and ICs and summarizes the requirements of the Site Management Plan which will note that the property owner and property owner's successors and assigns must comply with the approved SMP;
- Site Management Plan approved by OER that provides procedures for appropriate operation, maintenance, monitoring, inspection, reporting and certification of ECs. SMP will require that the property owner and property owner's successors and assigns will submit to OER a periodic written statement that certifies that: (1) controls employed at the Site are unchanged from the previous certification or that any changes to the controls were approved by OER; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. OER retains the right to enter the Site in order to evaluate the continued maintenance of any controls. This certification shall be submitted at a frequency to be determine by OER in the SMP and will comply with RCNY §43-1407(1)(3).
- Vegetable gardens and farming on the Site are prohibited;
- Use of groundwater underlying the Site is prohibited without treatment rendering it safe for its intended use;
- All future activities on the Site that will disturb residual material must be conducted pursuant to the soil management provisions in an approved SMP;

4.5 SITE MANAGEMENT PLAN

Site Management will be performed for this Track 4 cleanup and will be the last phase of remediation and begins with the approval of the Remedial Action Report and issuance of the Notice of Completion (NOC) for the Remedial Action. The SMP describes appropriate methods and procedures to ensure implementation of all ECs and ICs that are required by this RAWP. The SMP is submitted as part of the RAR but will be written in a manner that allows its use as an independent document. Site Management continues until terminated in writing by OER. The property owner is responsible to ensure that all Site Management responsibilities defined in the DCR and the Site Management Plan are implemented.

The SMP will provide a detailed description of the procedures required to manage residual soil/fill left in place following completion of the remedial action in accordance with the Voluntary Cleanup Agreement with OER. This includes a plan for: (1) implementation of EC's and ICs; (2) implementation of monitoring programs; (3) operation and maintenance of EC's; (4) inspection and certification of EC's; and (5) reporting.

Site management activities, reporting, and EC/IC certification will be scheduled by OER on a periodic basis to be established in the SMP and will be subject to review and modification by OER. The Site Management Plan will be based on a calendar year and certification reports will be due for submission to OER by March 31 of the year following the reporting period.

4.6 QUALITATIVE HUMAN HEALTH EXPOSURE ASSESSMENT

The objective of the qualitative exposure assessment is to identify potential receptors to the contaminants of concern (COC) that are present at, or migrating from, the Site. The identification of exposure pathways describes the route that the COC takes to travel from the source to the receptor. An identified pathway indicates that the potential for exposure exists; it does not imply that exposures actually occur.

Investigations reported in the Remedial Investigation Report (RIR) are sufficient to complete a Qualitative Human Health Exposure Assessment (QHHEA). As part of the VCP process, a QHHEA was performed to determine whether the Site poses an existing or future health hazard to the Site's exposed or potentially exposed population. The sampling data from the RI were evaluated to determine whether there is any health risk by characterizing the exposure setting,

identifying exposure pathways, and evaluating contaminant fate and transport. This QHHEA was prepared in accordance with Appendix 3B and Section 3.3 (b) 8 of the NYSDEC Draft DER-10 Technical Guidance for Site Investigation and Remediation.

Known and Potential Sources

Historic fill material is present at the Site from grade to approximately 2.0 to 8.0 feet below grade. Based on the results of the RIR, the contaminants of concern found are:

Soil:

- VOCs, including acetone, benzene, toluene, m,p-xylenes, and 1,2,4-trimethylbenzene exceeding Unrestricted Use (Track 1) SCOs;
- SVOCs, including benzo(a)pyrene and dibenzo(a,h)anthracene also exceeding Restricted Commercial (Track 2) Use SCOs;
- Pesticides, including dieldrin in one (1) shallow sample exceeding Unrestricted Use (Track 1) SCOs; and
- Metals, including barium, copper, and lead also exceeding Restricted Commercial (Track 2) Use SCOs.

Soil/sludge:

- VOCs, including acetone, cis-1,2-dichloroethylene, and toluene exceeding SCOs;
- SVOCs, including benzo(a)anthracene, chrysene, benzo(b)fluoranthene, and benzo(k)fluoranthene exceeding Restricted Commercial Use SCOs; and
- Metals, including arsenic, cadmium, chromium, lead, and nickel exceeding Unrestricted Use as well as Restricted Commercial Use SCOs.

Groundwater:

- Metals, including iron, manganese, sodium exceeding Groundwater Quality Standard (GQS).

- There were no detections of VOCs, SVOCs, PCBs, or pesticides in the groundwater samples.

Soil vapor:

- Soil vapor samples showed low concentrations of petroleum related and chlorinated VOCs. Concentrations of chlorinated compounds were well below the monitoring levels established by NYSDOH matrix.

Nature, Extent, Fate and Transport of Contaminants

VOCs, SVOCs, pesticides, and metals are present in the historic fill materials to depths of approximately 2.0-8.0 feet below grade. VOCs, SVOCs, and metals were identified in soil/sludge samples collected from subsurface drainage structures. There were no detections of VOCs, SVOCs, PCBs, or pesticides in the groundwater samples. Metals, including iron, manganese, and sodium were identified exceeding Groundwater Quality Standards (GQS). Concentrations of chlorinated compounds were well below the monitoring levels established by the NYSDOH matrix.

Receptor Populations

On-Site Receptors – Currently, the site is unoccupied and contains a vacant one-story masonry building and asphalt paved surfaces. On-site receptors consist of site visitors and trespassers. During redevelopment of the Site, the on-Site potential receptors will include construction workers, site representatives, and visitors. Once the Site is redeveloped, the on-Site potential sensitive receptors will include employees and customers associated with the proposed self-storage facility.

Off-Site Receptors – Potential off-Site receptors within a 0.25-mile radius of the Site include: adult and child residents, and commercial and construction workers, pedestrians, trespassers, and cyclist, based on the following:

1. Manufacturing Businesses (up to 0.25 mile) – existing and future

2. Commercial Businesses (up to 0.25 mile) – existing and future
3. Residential Buildings (up to 0.25 mile) – existing and future
4. Building Construction/Renovation (up to 0.25 mile) – existing and future
5. Pedestrians, Trespassers, Cyclists (up to 0.25 mile) – existing and future

Potential Routes of Exposure

The five elements of an exposure pathway are: (1) a containment source; (2) contaminant release and transport mechanisms; (3) a point of exposure; (4) a route of exposure; and (5) a receptor population. An exposure pathway is considered complete when all five elements of an exposure pathway are documented. A potential exposure pathway exists when any one or more of the five elements comprising an exposure pathway cannot be documented. An exposure pathway may be eliminated from further evaluation when any one of the five elements comprising an exposure pathway has not existed in the past, does not exist in the present, and will never exist in the future. Three potential primary routes exist by which chemicals can enter the body:

- Ingestion of water, fill, or soil;
- Inhalation of vapors and particulates; and
- Dermal contact with water, fill, soil, or buildings materials.

Existence of Human Health Exposure

Current Conditions: The potential for exposure to surficial historic fill is restricted by the foundation slab of the existing commercial building and asphalt paved surfaces. Groundwater is contaminated with select metals but is not exposed at the Site and because the Site is served by the public water supply and groundwater use for potable supply is prohibited, groundwater is not used at the Site. Based upon data collected from the RI, soil vapor at the Site is not a concern.

Construction /Remediation Activities: Once redevelopment activities begin, construction workers will come into direct contact with surface and subsurface soils, as a result of on-Site construction and excavation activities. On-Site construction workers potentially could ingest, inhale, or have dermal contact with any exposed impacted soil and fill. Similarly, off-Site receptors could be exposed to dust from on-Site activities. During construction, on-Site and off-

Site exposures to contaminated dust from on-Site will be addressed through the Soil/Materials Management Plan, dust controls, and through the implementation of the Community Air-Monitoring Program (CAMP) and a Construction Health and Safety Plan (CHASP).

Proposed Future Conditions: Under future remediated conditions all soils in excess of Track 4 Site Specific SCOs will be removed. The Site will be fully capped, limiting potential direct exposure to soil and groundwater remaining in place. The Site is served by a public water supply and groundwater is not used at the Site for potable supply. There are no plausible off-Site pathways for ingestion, inhalation, or dermal exposure to contaminants derived from the Site under future conditions.

Overall Human Health Exposure Assessment

There are no complete exposure pathways (i.e., source, route to exposure, receptor population) for the current condition and for the post-construction condition. There is a potential complete, exposure pathway that requires mitigation during implementation of the remedy. This assessment takes into consideration the reasonably anticipated use of the Site, which includes a new self-storage facility and site-wide hard, i.e., building slab, asphalt surfaces, concrete walkways and soft, i.e., landscaped areas surface cover caps. Potential post-construction use of groundwater is not considered an option because groundwater in this area of New York City is not used as a potable water source. There are no surface waters in close proximity to the Site that could be impacted or threatened.

Based upon this analysis, complete on-Site exposure pathways appear to be present only during the current un-remediated phase and the remedial action phase. Under current conditions, on-Site and off-Site exposures to contaminated dust from historic fill material will be addressed through dust controls and the implementation of the CAMP, the SMMP, and the CHASP. After the remedial action is complete, there will not be remaining exposure pathways to on-Site soil/fill as all soil above Track 4 Site Specific SCOs will have been removed and a site wide composite cover system will be in place

5.0 REMEDIAL ACTION MANAGEMENT

5.1 PROJECT ORGANIZATION AND OVERSIGHT

Principal personnel who will participate in the remedial action include Daren Murphy, facility Project Manager of Soil Mechanics Environmental Services (SMES) and Dan Marzano, on-Site Project Manager of SMES or David Shencavitz of SMES. The Professional Engineer (PE) for this project is Carl Vernick of SMES.

5.2 SITE SECURITY

Site access will be controlled by a chain-link or wooden fence or construction fence, which will surround the property.

5.3 WORK HOURS

The hours for operation of remedial construction are Monday – Friday (Saturday, as needed) from 7:00 am – 5:00 pm. These hours conform to the New York City Department of Buildings construction code requirements.

5.4 CONSTRUCTION HEALTH AND SAFETY PLAN

The Construction Health and Safety Plan (CHASP) is included in Appendix D. The Site Safety Coordinator will be Dan Marzano of SMES or David Shencavitz of SMES. Remedial work performed under this RAWP will be in full compliance with applicable health and safety laws and regulations, including Site and OSHA worker safety requirements and HAZWOPER requirements. Confined space entry, if any, will comply with OSHA requirements and industry standards and will address potential risks. The parties performing the remedial construction work will ensure that performance of work is in compliance with the CHASP and applicable laws and regulations. The CHASP pertains to remedial and invasive work performed at the Site until the issuance of the Notice of Completion.

All field personnel involved in remedial activities will participate in training required under 29 CFR 1910.120, including 40-hour hazardous waste operator training and annual 8-hour refresher training. Site Safety Officer will be responsible for maintaining workers training records.

Personnel entering any exclusion zone will be trained in the provisions of the CHASP and be required to sign an CHASP acknowledgment. Site-specific training will be provided to field personnel. Additional safety training may be added depending on the tasks performed.

Emergency telephone numbers will be posted at the site location before any remedial work begins. A safety meeting will be conducted before each shift begins. Topics to be discussed include task hazards and protective measures (physical, chemical, environmental); emergency procedures; PPE levels and other relevant safety topics. Meetings will be documented in a log book or specific form.

An emergency contact sheet with names and phone numbers is included in the CHASP. That document will define the specific project contacts for use in case of emergency.

5.5 COMMUNITY AIR MONITORING PLAN

Real-time air monitoring for volatile organic compounds (VOCs) and particulate levels at the perimeter of the exclusion zone or work area will be performed. Continuous monitoring will be performed for all ground intrusive activities and during the handling of contaminated or potentially contaminated media. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pit excavation or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be performed during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. Periodic monitoring during sample collection, for instance, will consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. Depending upon the proximity of potentially exposed individuals, continuous monitoring may be performed during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence. Exceedances of action levels observed during performance of the Community Air Monitoring Plan (CAMP) will be reported to the OER Project Manager and included in the Daily Report.

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

- 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 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.
- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities will be shutdown.

All 15-minute readings must be recorded and be available for OER 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 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 will continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed $150 \text{ mcg}/\text{m}^3$ 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 $150 \text{ mcg}/\text{m}^3$ 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 $150 \text{ mcg}/\text{m}^3$ of the upwind level and in preventing visible dust migration.

All readings will be recorded and be available for OER personnel to review.

5.6 AGENCY APPROVALS

All permits or government approvals required for remedial construction have been or will be obtained prior to the start of remedial construction. Approval of this RAWP by OER does not constitute satisfaction of these requirements and will not be a substitute for any required permit.

5.7 SITE PREPARATION

Pre-Construction Meeting

OER will be invited to attend the pre-construction meeting at the Site with all parties involved in the remedial process prior to the start of remedial construction activities.

Mobilization

Mobilization will be conducted as necessary for each phase of work at the Site. Mobilization includes field personnel orientation, equipment mobilization (including securing all sampling equipment needed for the field investigation), marking/staking sampling locations and utility mark-outs. Each field team member will attend an orientation meeting to become familiar with the general operation of the Site, health and safety requirements, and field procedures.

Utility Marker Layouts, Easement Layouts

The presence of utilities and easements on the Site will be fully investigated prior to the performance of invasive work such as excavation or drilling under this plan by using, at a minimum, the One-Call System (811). Underground utilities may pose an electrocution, explosion, or other hazard during excavation or drilling activities. All invasive activities will be performed in compliance with applicable laws and regulations to assure safety. Utility companies and other responsible authorities will be contacted to locate and mark the locations, and a copy of the Markout Ticket will be retained by the contractor prior to the start of drilling, excavation or other invasive subsurface operations. Overhead utilities may also be present within the anticipated work zones. Electrical hazards associated with drilling in the vicinity of overhead utilities will be prevented by maintaining a safe distance between overhead power lines and drill rig masts.

Proper safety and protective measures pertaining to utilities and easements, and compliance with all laws and regulations will be employed during invasive and other work contemplated under this RAWP. The integrity and safety of on-Site and off-Site structures will be maintained during all invasive, excavation or other remedial activity performed under the RAWP.

Dewatering

The bottom of the new footings for the new building will be approximately 4.0-6.0 feet below grade. The groundwater table is approximately 18.0-19.0 feet below ground surface (bgs), therefore, excavation is not anticipated to be below the groundwater table.

Equipment and Material Staging

Equipment and materials will be stored and staged in a manner that complies with applicable laws and regulations.

Stabilized Construction Entrance

Steps will be taken to ensure that trucks departing the site will not track soil, fill or debris off-Site. Such actions may include use of cleaned asphalt or concrete roads or use of stone or other aggregate-based egress paths between the truck inspection station and the property exit. Measures will be taken to ensure that adjacent roadways will be kept clean of project related soils, fill and debris.

Truck Inspection Station

An outbound-truck inspection station will be set up close to the Site exit. Before exiting the NYC VCP Site, trucks will be required to stop at the truck inspection station and will be examined for evidence of contaminated soil on the undercarriage, body, and wheels. Soil and debris will be removed. Brooms, shovels and potable water will be utilized for the removal of soil from vehicles and equipment, as necessary.

Extreme Storm Preparedness and Response Contingency Plan

Damage from flooding or storm surge can include dislocation of soil and stockpiled materials, dislocation of site structures and construction materials and equipment, and dislocation of support of excavation structures. Damage from wind during an extreme storm event can create unsafe or unstable structures, damage safety structures and cause downed power lines creating dangerous site conditions and loss of power. In the event of emergency conditions caused by an extreme storm event, the enrollee will undertake the following steps for site preparedness prior to the event and response after the event.

Storm Preparedness

Preparations in advance of an extreme storm event will include the following: containerized hazardous materials and fuels will be removed from the property; loose materials will be secured to prevent dislocation and blowing by wind or water; heavy equipment such as excavators and

generators will be removed from holes, trenches and depressions on the property to high ground or removed from the property; an inventory of the property with photographs will be performed to establish conditions for the site and equipment prior to the event; stockpile covers for soil and fill will be secured by adding weights such as sandbags for added security and worn or ripped stockpile covers will be replaced with competent covers; stockpiled hazardous wastes will be removed from the property; stormwater management systems will be inspected and fortified, including, as necessary: clean and reposition silt fences, haybales; clean storm sewer filters and traps; and secure and protect pumps and hosing.

Storm Response

At the conclusion of an extreme storm event, as soon as it is safe to access the property, a complete inspection of the property will be performed. A site inspection report will be submitted to OER at the completion of site inspection and after the site security is assessed. Site conditions will be compared to the inventory of site conditions and material performed prior to the storm event and significant differences will be noted. Damage from storm conditions that result in acute public safety threats, such as downed power lines or imminent collapse of buildings, structures or equipment will be reported to public safety authorities via appropriate means such as calling 911. Petroleum spills will be reported to NYS DEC within 2 hours of identification and consistent with State regulations. Emergency and spill conditions will also be reported to OER. Public safety structures, such as construction security fences will be repaired promptly to eliminate public safety threats. Debris will be collected and removed. Dewatering will be performed in compliance with existing laws and regulations and consistent with emergency notifications, if any, from proper authorities. Eroded areas of soil including unsafe slopes will be stabilized and fortified. Dislocated materials will be collected and appropriately managed. Support of excavation structure will be inspected and fortified as necessary. Impacted stockpiles will be contained and damaged stockpile covers will be replaced. Storm-water control systems and structures will be inspected and maintained as necessary. If soil or fill materials are discharged off site to adjacent properties, property owners and OER will be notified and corrective measure plan designed to remove and clean dislocated material will be submitted to OER and implemented following approval by OER and granting of site access by the property owner. Impacted offsite areas may require characterization based on site conditions, at the discretion of OER. If onsite petroleum spills are identified, a qualified environmental

professional will determine the nature and extent of the spill and report to NYS DEC's spill hotline at DEC 800-457-7362. If the source of the spill is ongoing and can be identified, it should be stopped if this can be done safely. Potential hazards will be addressed immediately, consistent with guidance issued by NYS DEC.

Storm Response Reporting

A site inspection report will be submitted to OER at the completion of site inspection. An inspection report established by OER is available on OER's website (www.nyc.gov/oer) and will be used for this purpose. Site conditions will be compared to the inventory of site conditions and material performed prior to the storm event and significant differences will be noted. The site inspection report will be sent to the OER project manager and will include the site name, address, tax block and lot, site primary and alternate contact name and phone number. Damage and soil release assessment will include: whether the project had stockpiles; whether stockpiles were damaged; photographs of damage and notice of plan for repair; report of whether soil from the site was dislocated and whether any of the soil left the site; estimates of the volume of soil that left the site, nature of impact, and photographs; description of erosion damage; description of equipment damage; description of damage to the remedial program or the construction program, such as damage to the support of excavation; presence of onsite or offsite exposure pathways caused by the storm; presence of petroleum or other spills and status of spill reporting to NYS DEC; description of corrective actions; schedule for corrective actions. This report should be completed and submitted to OER project manager with photographs within 24 hours of the time of safe entry to the property after the storm event.

5.8 TRAFFIC CONTROL

Drivers of trucks leaving the NYC VCP Site with soil/fill will be instructed to proceed without stopping in the vicinity of the site to prevent neighborhood impacts. The planned route on local roads for trucks leaving the site is as follows:

- Head east on JAMAICA AVENUE;
- Turn left onto FRANCIS LEWIS BOULEVARD;

- Continue north on FRANCIS LEWIS BOULEVARD to LONG ISLAND EXPRESSWAY (LIE – 495).

5.9 DEMOBILIZATION

Demobilization will include:

- As necessary, restoration of temporary access areas and areas that may have been disturbed to accommodate support areas (e.g., staging areas, decontamination areas, storage areas, temporary water management areas, and access area);
- Removal of sediment from erosion control measures and truck wash and disposal of materials in accordance with applicable laws and regulations;
- Equipment decontamination, and;
- General refuse disposal.

Equipment will be decontaminated and demobilized at the completion of all field activities. Investigation equipment and large equipment (*e.g.*, soil excavators) will be washed at the truck inspection station as necessary. In addition, all investigation and remediation derived waste will be appropriately disposed.

5.10 REPORTING AND RECORD KEEPING

Daily Reports

Daily reports providing a general summary of activities for each day of *active remedial work* will be emailed to the OER Project Manager by the end of the following day. Those reports will include:

- Project number and statement of the activities and an update of progress made and locations of work performed;
- Quantities of material imported and exported from the Site;
- Status of on-Site soil/fill stockpiles;
- A summary of all citizen complaints, with relevant details (basis of complaint; actions taken; etc.);

- A summary of CAMP excursions, if any;
- Photograph of notable Site conditions and activities.

The frequency of the reporting period may be revised in consultation with OER project manager based on planned project tasks. Daily email reports are not intended to be the primary mode of communication for notification to OER of emergencies (accidents, spills), requests for changes to the RAWP or other sensitive or time critical information. However, such information will be included in the daily reports. Emergency conditions and changes to the RAWP will be communicated directly to the OER project manager by personal communication. Daily reports will be included as an Appendix in the Remedial Action Report.

Record Keeping and Photo-Documentation

Job-site record keeping for all remedial work will be performed. These records will be maintained on-Site during the project and will be available for inspection by OER staff. Representative photographs will be taken of the Site prior to any remedial activities and during major remedial activities to illustrate remedial program elements and contaminant source areas. Photographs will be submitted at the completion of the project in the RAR in digital format (i.e. jpeg files).

5.11 COMPLAINT MANAGEMENT

All complaints from citizens will be promptly reported to OER. Complaints will be addressed and outcomes will also be reported to OER in daily reports. Notices to OER will include the nature of the complaint, the party providing the complaint, and the actions taken to resolve any problems.

5.12 DEVIATIONS FROM THE REMEDIAL ACTION WORK PLAN

All changes to the RAWP will be reported to the OER Project Manager and will be documented in daily reports and reported in the Remedial Action Report. The process to be followed if there are any deviations from the RAWP will include a request for approval for the change from OER noting the following:

- Reasons for deviating from the approved RAWP;
- Effect of the deviations on overall remedy; and
- Determination that the remedial action with the deviation(s) is protective of public health and the environment.

6.0 REMEDIAL ACTION REPORT

A Remedial Action Report (RAR) will be submitted to OER following implementation of the remedial action defined in this RAWP. The RAR will document that the remedial work required under this RAWP has been completed and has been performed in compliance with this plan. The RAR will include:

- Information required by this RAWP;
- As-built drawings for all constructed remedial elements, required certifications, manifests and other written and photographic documentation of remedial work performed under this remedy;
- Site Management Plan;
- Description of any changes in the remedial action from the elements provided in this RAWP and associated design documents;
- Tabular summary of all end point sampling results and all material characterization results, QA/QC results for end-point sampling, and other sampling and chemical analysis performed as part of the remedial action;
- Test results or other evidence demonstrating that remedial systems are functioning properly;
- Account of the source area locations and characteristics of all contaminated material removed from the Site including a map showing source areas;
- Account of the disposal destination of all contaminated material removed from the Site. Documentation associated with disposal of all material will include transportation and disposal records, and letters approving receipt of the material.
- Account of the origin and required chemical quality testing for material imported onto the Site.
- Continue registration of the property with an E-Designation by the NYC Department of Buildings.

- Reports and supporting material will be submitted in digital form.

Remedial Action Report Certification

The following certification will appear in front of the Executive Summary of the Remedial Action Report. The certification will include the following statements:

I, Carl Vernick, am currently a professional engineer licensed by the State of New York. I had primary direct responsibility for implementation of the remedial program for the Site (186-02 Jamaica Avenue, Queens, New York)(OER Project Number: 14EHAZ274Q).

I certify that the OER-approved Remedial Action Work Plan dated August 15, 2014 and Stipulations in a letter dated month day, year; if any were implemented and that all requirements in those documents have been substantively complied with. I certify that contaminated soil, fill, liquids or other material from the property were taken to facilities licensed to accept this material in full compliance with applicable laws and regulations.

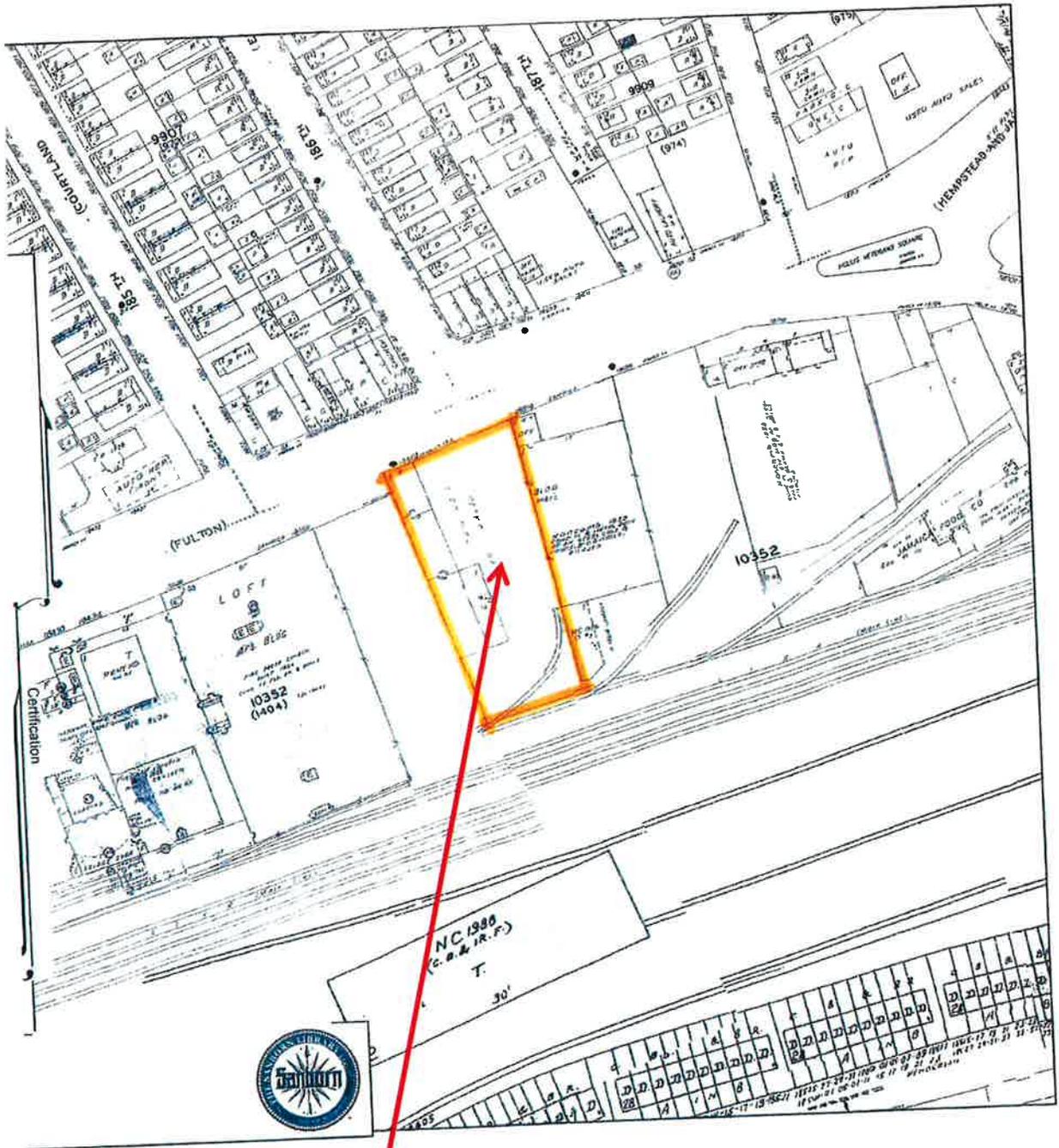
7.0 SCHEDULE

The table below presents a schedule for the proposed remedial action and reporting. If the schedule for remediation and development activities changes, it will be updated and submitted to OER. Currently, a three (3) month remediation period is anticipated.

Schedule Milestone	Weeks from Remedial Action Start	Duration (weeks)
OER Approval of RAWP	0	-
Fact Sheet 2 announcing start of remedy	0	-
Mobilization	1	1
Remedial Excavation	2	2
Demobilization		
Submit Remedial Action Report		

FIGURES

FIGURE 1
SITE LOCATION MAP



SUBJECT PROPERTY



SOIL MECHANICS
Environmental Services

3770 MERRICK ROAD • SEAFORD, NY 11783
(516) 221-7500 FAX (516) 679-1900
www.soilmechanicscorp.com

FIGURE 1	
SITE LOCATION MAP	
QUEENS, NEW YORK	
DATE:	5/1/2014
SCALE:	N.T.S.
JOB NO.:	13-671



FIGURE 2
SITE BOUNDARY MAP

FIGURE 3
LAYOUT OF PROPOSED SITE
REDEVELOPMENT

THIS DOCUMENT IS PREPARED FOR THE ARCHITECTURE OF THE CITY OF NEW YORK AND IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF FRANK O. ZIEGLER ARCHITECT, P.C.

NO.	DATE	COMMENTS
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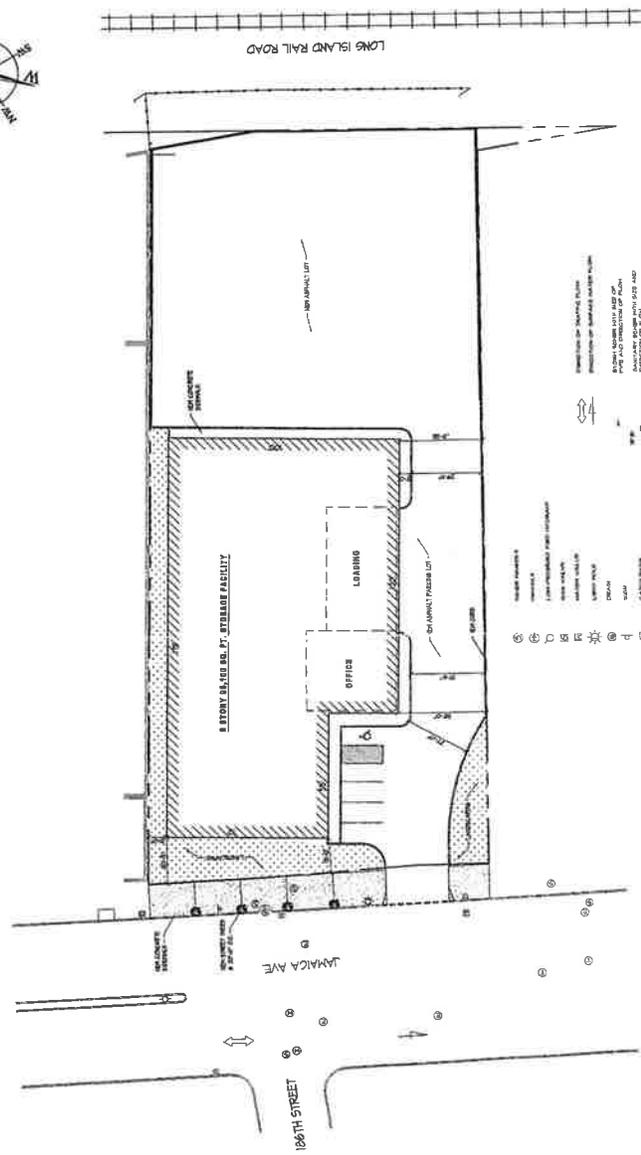
SAFE N LOCK SELF STORAGE

PROJECT: 186-02 JAMAICA AVE QUEENS N.Y.

TITLE SHEET

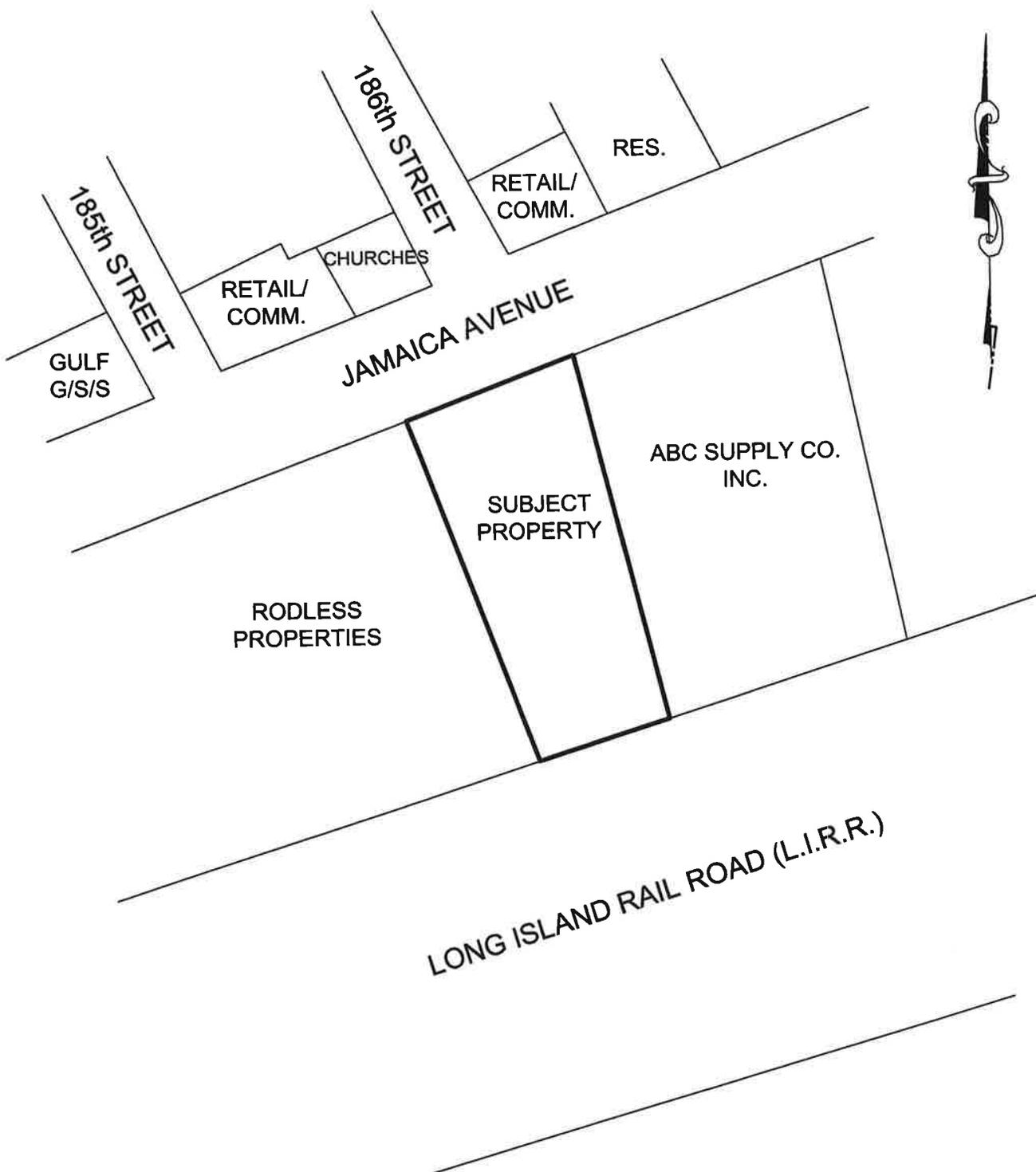
SCALE: 1/8" = 1'-0"	DATE: 10/10/02
DESIGNER: F.O.Z.	CHECKED: F.O.Z.
DRAWN BY: J.L.	DATE: 10/10/02
PROJECT NO.: 186-02	SHEET NO.: 1
A-005.00	

DATE EXPIRES:



1 ARCHITECTURAL SITE PLAN
 SCALE: 1/8" = 1'-0"

FIGURE 4
SURROUNDING LAND USE MAP



SOIL MECHANICS ENVIRONMENTAL SERVICES

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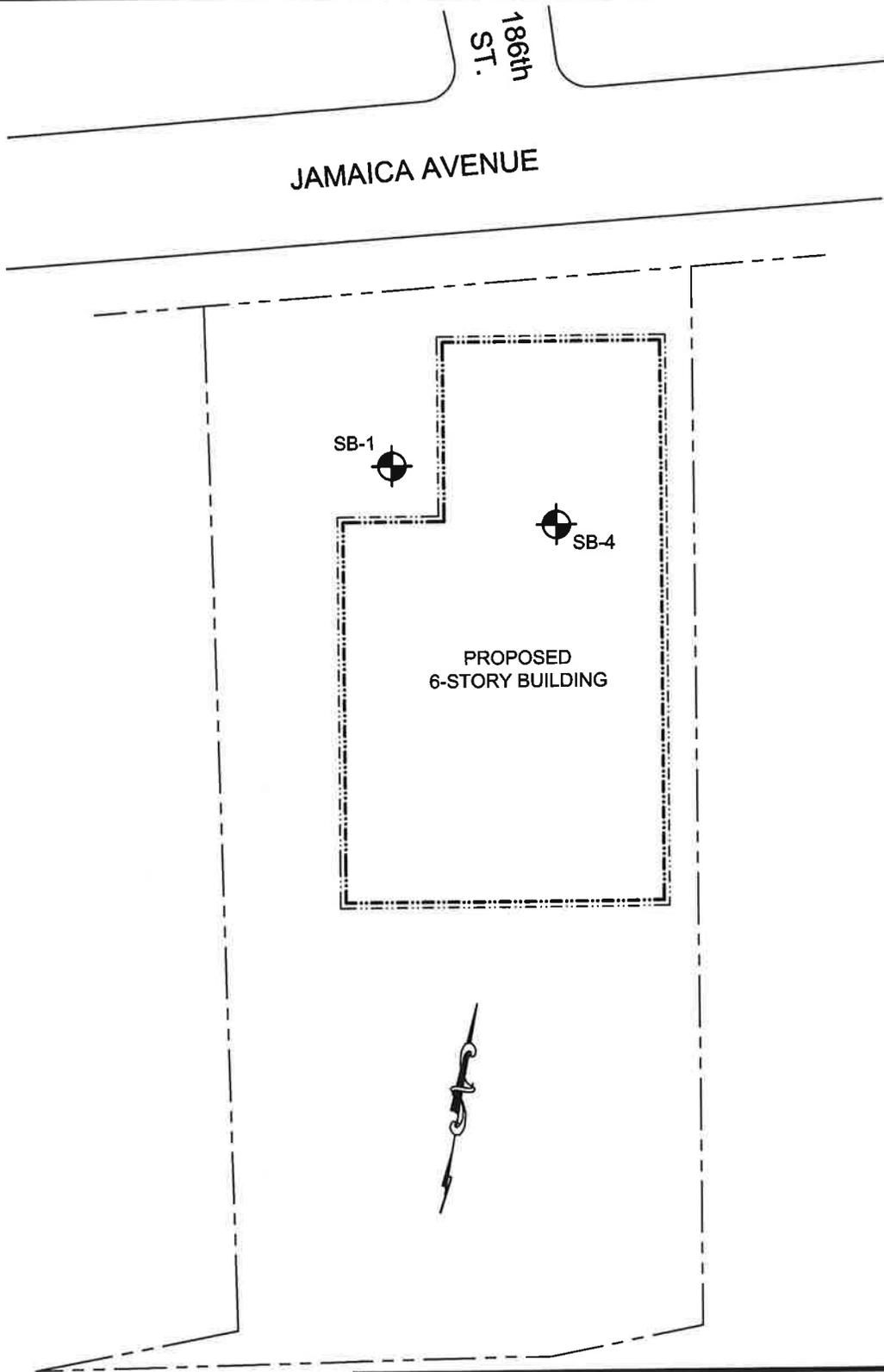
FIGURE #4

SURROUNDING LAND USE MAP

QUEENS, NEW YORK

SCALE:	N.T.S.	DATE:	MAY 7, 2014	JOB NO.	13S671
		REVISED:			JMR

FIGURE 5
SITE EXCAVATIONS



NOTES:

SB-1 = 10.0'x10.0'x6.0' REMEDIAL EXCAVATION

SB-4 = 10.0'x10.0'x6.0' REMEDIAL EXCAVATION

PROPOSED 6-STORY BUILDING = EXCAVATION
4.0'-6.0' B.G.S.

**SOIL MECHANICS
ENVIRONMENTAL SERVICES**

3770 MERRICK ROAD - SEAFORD, L I, NEW YORK - (516) 221-7500

FIGURE #5

SITE EXCAVATIONS

QUEENS, NEW YORK

SCALE:	1"=50'-0"	DATE:	JULY 17, 2014	JOB NO.	13S671
		REVISED:			JMR

APPENDIX A

CITIZEN PARTICIPATION PLAN

The NYC Office of Environmental Remediation and 186 JAMAICA AVE LLC have established this Citizen Participation Plan because the opportunity for citizen participation is an important component of the NYC Voluntary Cleanup Program. This Citizen Participation Plan describes how information about the project will be disseminated to the Community during the remedial process. As part of its obligations under the NYC VCP, 186 JAMAICA AVE LLC will maintain a repository for project documents and provide public notice at specified times throughout the remedial program. This Plan also takes into account potential environmental justice concerns in the community that surrounds the project Site. Under this Citizen Participation Plan, project documents and work plans are made available to the public in a timely manner. Public comment on work plans is strongly encouraged during public comment periods. Work plans are not approved by the NYC Office of Environmental Remediation (OER) until public comment periods have expired and all comments are formally reviewed. An explanation of cleanup plans in the form of a public meeting or informational session is available upon request to OER's project manager assigned to this Site, Kathleen Glass, who can be contacted about these issues or any others questions, comments or concerns that arise during the remedial process at (212) 788-8841.

Project Contact List. OER has established a Site Contact List for this project to provide public notices in the form of fact sheets to interested members of the Community. Communications will include updates on important information relating to the progress of the cleanup program at the Site as well as to request public comments on the cleanup plan. The Project Contact List includes owners and occupants of adjacent buildings and homes, principal administrators of nearby schools, hospitals and day care centers, the public water supplier that serves the area, established document repositories, the representative Community Board, City Council members, other elected representatives and any local Brownfield Opportunity Area (BOA) grantee organizations. Any member of the public or organization will be added to the Site Contact List on request. A copy of the Site Contact List is maintained by OER's project manager. If you

would like to be added to the Project Contact List, contact NYC OER at (212) 788-8841 or by email at brownfields@cityhall.nyc.gov.

Repositories. A document repository is maintained in the nearest public library that maintains evening and weekend hours. This document repository is intended to house, for community review, all principal documents generated during the cleanup program including Remedial Investigation plans and reports, Remedial Action work plans and reports, and all public notices and fact sheets produced during the lifetime of the remedial project. 186 JAMAICA AVE LLC will inspect the repositories to ensure that they are fully populated with project information. The repository for this project is:

Repository Name: Queens Public Library – Hollis Branch

Repository Address: 202-05 Hillside Avenue, Hollis, New York 11423

Repository Telephone Number: (718) 465-7355

Repository Hours of Operation: Please call for hours of operation

Digital Documentation. NYC OER strongly encourages the use of digital documents in repositories as a means of minimizing paper use while also increasing convenience in access and ease of use.

Identify Issues of Public Concern. The major issues of concern to the public will be potential impacts of nuisance odors and dust during the disturbance of historic fill soils at the Site. This work will be performed in accordance with procedures which will be specified under a detailed Remedial Program which considers and takes preventive measures for exposures to future workers or customers associated with the property and those on adjacent properties during construction. Detailed plans to monitor the potential for exposure including a CHASP and CAMPM are required components of the remedial program. Implementation of these plans will be under direct oversight of the NYC OER.

These plans will specify the following worker and community health and safety activities during remedial activity at the Site:

- On-Site air monitoring for worker protection.

- Perimeter air monitoring for community protection.

The CHASP and CAMP prepared as part of the RAWP will be available for public review at the document repository.

Public Notice and Public Comment. Public notice to all members of the Project Contact List is required at three major steps during the performance of the cleanup program (listed below) and at other points that may be required by OER. Notices will include Fact Sheets with descriptive project summaries, updates on recent and upcoming project activities, repository information, and important phone and email contact information. All notices will be prepared by 186 JAMAICA AVE LLC, reviewed and approved by OER prior to distribution and mailed by 186 JAMAICA AVE LLC. Public comment is solicited in public notices for all work plans developed under the NYC Voluntary Cleanup Program. Final review of all work plans by OER will consider all public comments. Approval will not be granted until the public comment period has been completed.

Citizen Participation Milestones. Public notice and public comment activities occur at several steps during a typical NYC VCP project. See flow chart on the following page, which identifies when during the NYC VCP public notices are issued: These steps include:

- **Public Notice of the availability of the Remedial Investigation Report and Remedial Action Work Plan and a 30-day public comment period on the Remedial Action Work Plan.**

Public notice in the form of a Fact Sheet is sent to all parties listed on the Site Contact List announcing the availability of the Remedial Investigation Report and Remedial Action Work Plan and the initiation of a 30-day public comment period on the Remedial Action Work Plan. The Fact Sheet summarizes the findings of the RIR and provides details of the RAWP. The public comment period will be extended an additional 15 days upon public request. A public meeting or informational session will be conducted by OER upon request.

- **Public Notice announcing the approval of the RAWP and the start of remediation**

Public notice in the form of a Fact Sheet is sent to all parties listed on the Site Contact List announcing the approval of the RAWP and the start of remediation.

- **Public Notice announcing the completion of remediation, designation of Institutional and Engineering Controls and issuance of the Notice of Completion**

Public notice in the form of a Fact Sheet is sent to all parties listed on the Site Contact List announcing the completion of remediation, providing a list of all Institutional and Engineering Controls implemented for to the Site and announcing the issuance of the Notice of Completion.

APPENDIX B

SUSTAINABILITY STATEMENT

This Sustainability Statement documents sustainable activities and green remediation efforts planned under this remedial action.

Reuse of Clean, Recyclable Materials. Reuse of clean, locally-derived recyclable materials reduces consumption of non-renewable virgin resources and can provide energy savings and greenhouse gas reduction.

An estimate of the quantity (in tons) of clean, non-virgin materials (reported by type of material) reused under this plan will be quantified and reported in the RAR.

Reduce Consumption of Virgin and Non-Renewable Resources. Reduced consumption of virgin and non-renewable resources lowers the overall environmental impact of the project on the region by conserving these resources.

An estimate of the quantity (in tons) of virgin and non-renewable resources, the use of which will be avoided under this plan, will be quantified and reported in the RAR.

Reduced Energy Consumption and Promotion of Greater Energy Efficiency. Reduced energy consumption lowers greenhouse gas emissions, improves local air quality, lessens in-city power generation requirements, can lower traffic congestion, and provides substantial cost savings.

Best efforts will be made to quantify energy efficiencies achieved during the remediation and will be reported in the Remedial Action Report (RAR). Where energy savings cannot be easily quantified, a gross indicator of the amount of energy saved or the means by which energy savings was achieved will be reported.

Conversion to Clean Fuels. Use of clean fuel improves NYC's air quality by reducing harmful emissions.

An estimate of the volume of clean fuels used during remedial activities will be quantified and reported in the RAR.

Recontamination Control. Recontamination after cleanup and redevelopment is completed undermines the value of work performed, may result in a property that is less protective of public health or the environment, and may necessitate additional cleanup work later or impede future redevelopment. Recontamination can arise from future releases that occur within the property or by influx of contamination from off-Site.

An estimate of the area of the Site that utilizes recontamination controls under this plan will be reported in the RAR in square feet.

Storm-water Retention. Storm-water retention improves water quality by lowering the rate of combined storm-water and sewer discharges to NYC's sewage treatment plants during periods of precipitation, and reduces the volume of untreated influent to local surface waters.

An estimate of the enhanced storm-water retention capability of the redevelopment project will be included in the RAR.

Linkage with Green Building. Green buildings provide a multitude of benefits to the city across a broad range of areas, such as reduction of energy consumption, conservation of resources, and reduction in toxic materials use.

The number of Green Buildings that are associated with this brownfield redevelopment property will be reported in the RAR. The total square footage of green building space created as a function of this brownfield redevelopment will be quantified for residential, commercial and industrial/manufacturing uses.

Paperless Brownfield Cleanup Program. 186 JAMAICA AVE LLC is participating in OER's Paperless Brownfield Cleanup Program. Under this program, submission of electronic documents will replace submission of hard copies for the review of project documents, communications and milestone reports.

Low-Energy Project Management Program. 186 JAMAICA AVE LLC is participating in OER's low-energy project management program. Under this program, whenever possible, meetings are held using remote communication technologies, such as videoconferencing and teleconferencing to reduce energy consumption and traffic congestion associated with personal transportation.

Trees and Plantings. Trees and other plantings provide habitat and add to NYC's environmental quality in a wide variety of ways. Native plant species and native habitat provide optimal support to local fauna, promote local biodiversity, and require less maintenance.

An estimate of the land area that will be vegetated, including the number of trees planted or preserved, will be reported in square feet in the RAR.

APPENDIX C

SOIL/MATERIALS MANAGEMENT PLAN

1.1 SOIL SCREENING METHODS

Visual, olfactory and PID soil screening and assessment will be performed under the supervision of a Qualified Environmental Professional and will be reported in the RAR. Soil screening will be performed during invasive work performed during the remedy and development phases prior to issuance of the Notice of Completion.

1.2 STOCKPILE METHODS

Excavated soil from suspected areas of contamination (e.g., hot spots, USTs, drains, etc.) will be stockpiled separately and will be segregated from clean soil and construction materials.

Stockpiles will be used only when necessary and will be removed as soon as practicable. While stockpiles are in place, they will be inspected daily, and before and after every storm event.

Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by OER. Excavated soils will be stockpiled on, at minimum, double layers of 8-mil minimum sheeting, will be kept covered at all times with appropriately anchored plastic tarps, and will be routinely inspected. Broken or ripped tarps will be promptly replaced.

All stockpile activities will be compliant with applicable laws and regulations. Soil stockpile areas will be appropriately graded to control run-off in accordance with applicable laws and regulations. Stockpiles of excavated soils and other materials shall be located at least of 50 feet from the property boundaries, where possible. Hay bales or equivalent will surround soil stockpiles except for areas where access by equipment is required. Silt fencing and hay bales will be used as needed near catch basins, surface waters and other discharge points.

1.3 CHARACTERIZATION OF EXCAVATED MATERIALS

Soil/fill or other excavated media that is transported off-Site for disposal will be sampled in a manner required by the receiving facility, and in compliance with applicable laws and regulations. Soils proposed for reuse on-Site will be managed as defined in this plan.

1.4 MATERIALS EXCAVATION, LOAD-OUT AND DEPARTURE

The PE/QEP overseeing the remedial action will:

- Oversee remedial work and the excavation and load-out of excavated material;
- Ensure that there is a party responsible for the safe execution of invasive and other work performed under this work plan;
- Ensure that Site development activities and development-related grading cuts will not interfere with, or otherwise impair or compromise the remedial activities proposed in this RAWP;
- Ensure that the presence of utilities and easements on the Site has been investigated and that any identified risks from work proposed under this plan are properly addressed by appropriate parties;
- Ensure that all loaded outbound trucks are inspected and cleaned if necessary before leaving the Site; and
- Ensure that all egress points for truck and equipment transport from the Site will be kept clean of Site-derived materials during Site remediation.

Locations where vehicles exit the Site shall be inspected daily for evidence of soil tracking off premises. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site-derived materials.

Open and uncontrolled mechanical processing of historical fill and contaminated soil on-Site will not be performed without prior OER approval.

1.5 OFF-SITE MATERIALS TRANSPORT

Loaded vehicles leaving the Site will comply with all applicable materials transportation requirements (including appropriate covering, manifests, and placards) in accordance with applicable laws and regulations, including use of licensed haulers in accordance with 6 NYCRR Part 364. If loads contain wet material capable of causing leakage from trucks, truck liners will be used. Queuing of trucks will be performed on-Site, when possible in order to minimize off Site disturbance. Off-Site queuing will be minimized.

An outbound truck transport route is as follows:

- Head east on JAMAICA AVENUE;
- Turn left onto FRANCIS LEWIS BOULEVARD;
- Continue north on FRANCIS LEWIS BOULEVARD to LONG ISLAND EXPRESSWAY (LIE – 495).

This routing takes into account the following factors: (a) limiting transport through residential areas and past sensitive sites; (b) use of mapped truck routes; (c) minimizing off-Site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport. To the extent possible, all trucks loaded with Site materials will travel from the Site using these truck routes. Trucks will not stop or idle in the neighborhood after leaving the project Site.

1.6 MATERIALS DISPOSAL OFF-SITE

The following documentation will be established and reported by the PE/QEP for each disposal destination used in this project to document that the disposal of regulated material exported from the Site conforms with applicable laws and regulations: (1) a letter from the PE/QEP or Enrollee to each disposal facility describing the material to be disposed and requesting written acceptance of the material. This letter will state that material to be disposed is regulated material generated at an environmental remediation Site in Queens, New York under a governmental remediation program. The letter will provide the project identity and the name and phone number of the PE/QEP or Enrollee. The letter will include as an attachment a summary of all chemical data for the material being transported; and (2) a letter from each disposal facility stating it is in receipt of the correspondence (1, above) and is approved to accept the material. These documents will be included in the RAR.

The Remedial Action Report will include an itemized account of the destination of all material removed from the Site during this remedial action. Documentation associated with disposal of all material will include records and approvals for receipt of the material. This information will be presented in the RAR.

All impacted soil/fill or other waste excavated and removed from the Site will be managed as regulated material and will be disposed in accordance with applicable laws and regulations. Historic fill and contaminated soils taken off-Site will be handled as solid waste and will not be disposed at a Part 360-16 Registration Facility (also known as a Soil Recycling Facility).

Waste characterization will be performed for off-Site disposal in a manner required by the receiving facility and in conformance with its applicable permits. Waste characterization sampling and analytical methods, sampling frequency, analytical results and QA/QC will be reported in the RAR. A manifest system for off-Site transportation of exported materials will be employed. Manifest information will be reported in the RAR. Hazardous wastes derived from on-Site will be stored, transported, and disposed of in compliance with applicable laws and regulations.

If disposal of soil/fill from this Site is proposed for unregulated disposal (i.e., clean soil removed for development purposes), including transport to a Part 360-16 Registration Facility, a formal request will be made for approval from OER with an associated plan compliant with 6NYCRR Part 360-16. This request and plan will include the location, volume, and a description of the material to be recycled, including verification that the material is not impacted by site uses and that the material to be recycled, including verification that the material is not impacted by site uses and that the material complies with receipt requirements for recycling under 6NYCRR Part 360. This material will be appropriately handled on-Site to prevent mixing with impacted material.

1.7 MATERIALS REUSE ON-SITE

Soil and fill that is derived from the property that meets the soil cleanup objectives established in this plan may be reused on-Site. ‘Reuse on-Site’ means material that is excavated during the remedy or development, does not leave the property, and is relocated within the same property and on comparable soil/fill material, and addressed pursuant to the NYC VCP agreement subject to Engineering and Institutional Controls. The PE/QEP will ensure that reused materials are segregated from other materials to be exported from the Site and that procedures defined for material reuse in this RAWP are followed.

Soil or fill excavated from the site for grading or other purposes will not be reused within a cover soil layer or within landscaping berms.

1.8 DEMARCATION

After completion of hotspot removal and any other invasive remedial activities, and prior to backfilling, the top of the residual soil/fill will be defined by one of three methods: (1) placement of a demarcation layer. The demarcation layer will consist of geosynthetic fencing or equivalent material to be placed on the surface of residual soil/fill to provide an observable reference layer. A description or map of the approximate depth of the demarcation layer will be provided in the SMP; or (2) a land survey of the top elevation of residual soil/fill before the placement of cover soils, pavement and associated sub-soils, or other materials or structures or, (3) all materials beneath the approved cover will be considered impacted and subject to site management after the remedy is complete. Demarcation may be established by one or any combination of these three methods. As appropriate, a map showing the method of demarcation for the Site and all associated documentation will be presented in the RAR.

This demarcation will constitute the top of the site management horizon. Materials within this horizon require adherence to special conditions during future invasive activities as defined in the Site Management Plan.

1.9 IMPORT OF BACKFILL SOIL FROM OFF-SITE SOURCES

This Section presents the requirements for imported fill materials to be used below the cover layer and within the clean soil cover layer. All imported soils will meet OER-approved backfill and cover soil quality objectives for this Site.

A process will be established to evaluate sources of backfill and cover soil to be imported to the Site, and will include an examination of source location, current and historical use(s), and any applicable documentation. Material from industrial sites, spill sites, environmental remediation sites or other potentially contaminated sites will not be imported to the Site.

The following potential sources may be used pending attainment of backfill and cover soil quality objectives:

- Clean soil from construction projects at non-industrial sites in compliance with applicable laws and regulations;
- Clean soil from roadway or other transportation-related projects in compliance with applicable laws and regulations;
- Clean recycled concrete aggregate (RCA) from facilities permitted or registered by the regulations of NYS DEC.

All materials received for import to the Site will be approved by a PE/QEP and will be in compliance with provisions in this RAWP. The RAR will report the source of the fill, evidence that an inspection was performed on the source, chemical sampling results, frequency of testing, and a Site map indicating the locations where backfill or soil cover was placed.

Source Screening and Testing

Inspection of imported fill material will include visual, olfactory and PID screening for evidence of contamination. Materials imported to the Site will be subject to inspection, as follows:

- Trucks with imported fill material will be in compliance with applicable laws and regulations and will enter the Site at designated locations;
- The PE/QEP is responsible to ensure that every truck load of imported material is inspected for evidence of contamination; and
- Fill material will be free of solid waste including pavement materials, debris, stumps, roots, and other organic matter, as well as ashes, oil, perishables or foreign matter.

Composite samples of imported material will be taken at a minimum frequency of one sample for every 500 cubic yards of material. Once it is determined that the fill material meets imported backfill or cover soil chemical requirements and is non-hazardous, and lacks petroleum contamination, the material will be loaded onto trucks for delivery to the Site.

Recycled concrete aggregate (RCA) will be imported from facilities permitted or registered by NYSDEC. Facilities will be identified in the RAR. A PE/QEP is responsible to ensure that the facility is compliant with 6NYCRR Part 360 registration and permitting requirements for the period of acquisition of RCA. RCA imported from compliant facilities will not require

additional testing, unless required by NYSDEC under its terms for operation of the facility. RCA imported to the Site must be derived from recognizable and uncontaminated concrete. RCA material is not acceptable for, and will not be used as cover material.

1.10 FLUIDS MANAGEMENT

All liquids to be removed from the Site, including dewatering fluids, will be handled, transported and disposed in accordance with applicable laws and regulations. Liquids discharged into the New York City sewer system will receive prior approval by New York City Department of Environmental Protection (NYC DEP). The NYC DEP regulates discharges to the New York City sewers under Title 15, Rules of the City of New York Chapter 19. Discharge to the New York City sewer system will require an authorization and sampling data demonstrating that the groundwater meets the City's discharge criteria. The dewatering fluid will be pretreated as necessary to meet the NYC DEP discharge criteria. If discharge to the City sewer system is not appropriate, the dewatering fluids will be managed by transportation and disposal at an off-Site treatment facility.

Discharge of water generated during remedial construction to surface waters (i.e. a stream or river) is prohibited without a SPDES permit issued by New York State Department of Environmental Conservation.

1.11 STORM-WATER POLLUTION PREVENTION

Applicable laws and regulations pertaining to storm-water pollution prevention will be addressed during the remedial program. Erosion and sediment control measures identified in this RAWP (silt fences and barriers, and hay bale checks) will be installed around the entire perimeter of the remedial construction area and inspected once a week and after every storm event to ensure that they are operating appropriately. Discharge locations will be inspected to determine whether erosion control measures are effective in preventing significant impacts to receptors. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by OER. All necessary repairs shall be made immediately. Accumulated sediments will be removed as required to keep the barrier and hay bale check functional. Undercutting or erosion of the silt fence toe anchor will be repaired immediately with appropriate backfill materials.

Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

1.12 CONTINGENCY PLAN

This contingency plan is developed for the remedial construction to address the discovery of unknown structures or contaminated media during excavation. Identification of unknown contamination source areas during invasive Site work will be promptly communicated to OER's Project Manager. Petroleum spills will be reported to the NYS DEC Spill Hotline. These findings will be included in the daily report. If previously unidentified contaminant sources are found during on-Site remedial excavation or development-related excavation, sampling will be performed on contaminated source material and surrounding soils and reported to OER. Chemical analytical testing will be performed for TAL metals, TCL volatiles and semi-volatiles, TCL pesticides and PCBs, as appropriate.

1.13 ODOR, DUST AND NUISANCE CONTROL

Odor Control

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

This odor control plan is capable of controlling emissions of nuisance odors. If nuisance odors are identified, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. OER will be notified of all odor complaint events. Implementation of all odor controls, including halt of work, will be the responsibility of the PE/QEP's certifying the Remedial Action Report.

Dust Control

Dust management during invasive on-Site work will include, at a minimum:

- Use of a dedicated water spray methodology for roads, excavation areas and stockpiles.
- Use of properly anchored tarps to cover stockpiles.
- Exercise extra care during dry and high-wind periods.
- Use of gravel or recycled concrete aggregate on egress and other roadways to provide a clean and dust-free road surface.

This dust control plan is capable of controlling emissions of dust. If nuisance dust emissions are identified, work will be halted and the source of dusts will be identified and corrected. Work will not resume until all nuisance dust emissions have been abated. OER will be notified of all dust complaint events. Implementation of all dust controls, including halt of work, will be the responsibility of the PE/QEP's responsible for certifying the Remedial Action Report.

Other Nuisances

Noise control will be exercised during the remedial program. All remedial work will conform, at a minimum, to NYC noise control standards.

Rodent control will be provided, during Site clearing and grubbing, and during the remedial program, as necessary, to prevent nuisances.

APPENDIX D

CONSTRUCTION HEALTH AND SAFETY PLAN

**186-02 JAMAICA AVENUE
BOROUGH OF QUEENS, NEW YORK**

**Construction Health and Safety Plan
(CHASP)**

NYC VCP Number: 15CVCP016Q

OER Project Number: 14EHAZ274Q

Prepared for:

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Bronx, New York 10465-283
(917) 599-6219

Prepared by:

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3770 MERRICK ROAD
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AUGUST 2014

Construction Health and Safety Plan (CHASP)

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1.0 INTRODUCTION

Soil Mechanics Environmental Services (SMES) has been retained by 186-02 JAMAICA AVE LLC to prepare this Construction Health and Safety Plan (CHASP) to be utilized during proposed site redevelopment activities including the complete removal of the existing one-story masonry building, foundations, and asphalt paved parking lot followed by the construction of new slab on grade 6-story building for self-storage use.

The Site is located at 186-02 Jamaica Avenue in the Hollis section of the Borough of Queens, New York and is identified as Block: 10352 and Lot: 108 on the New York City Tax Map. Figure 1 shows the Site Location. This CHASP was prepared based on our experience dealing with similar projects and in general conformance with New York City Department of Environmental Protection (NYCDEP) and New York State Department of Environmental Conservation (NYSDEC) protocols.

This document has been developed in accordance with the requirements of 29 CFR 1910.120 (“HAZWOPER”) to establish the procedures necessary for protecting on-site personnel from potential hazards resulting from all activities that will disturb surficial soil formations on the subject property, i.e., excavation of building foundations, installation of site improvements, excavation of utility trenches, stockpiling, backfilling, etc.

SMES has developed the following health and safety procedures for all personnel working on-site, that are involved with any activity that brings them into direct contact with the sites surficial soil, to follow during construction activities. The On-Site Environmental Technician or his representative will be on the property, on a daily basis, until exposure pathways for identified contaminants have been eliminated. The On-Site Environmental Technician or his representative will be responsible for informing these workers of the pertinent level of personal protection required and work rules to be observed. The On-Site Environmental Technician or his representative will have the authority to stop all work activities as deemed necessary based on: a.) visual assessment of the work activity; or b.) data obtained from field screening instrumentation. The On-Site Environmental Technician or his representative will maintain a daily sign in sheet to document all on-site personnel and visitors. No smoking, eating, use of lip balm/ lotions, or chewing of gum/tobacco will be permitted on the subject site during any activity that will disturb surficial soil formations. Under no circumstance will excavation activities commence prior to completion of utility mark-out activities.

Confined space entry will not be attempted, by any party, during site redevelopment activities. In the event a confined space entry becomes necessary during the aforementioned site redevelopment activities, the On-Site Environmental Technician will be contacted 48-hours prior to same in order that appropriate measures can be implemented.

The health and safety requirements discussed herein are based on currently available information obtained from the remedial investigation titled “*Remedial Investigation Report, 186-02 Jamaica Avenue, Queens, New York*”, dated June 2014 (RIR) and a preliminary analysis of associated potential hazards. This CHASP establishes the minimum protocols necessary for protecting all construction workers and technicians on-site.

All contractors and subcontractors will be responsible for supplying their personnel on-site with safety equipment which, at a minimum, meets the requirements of this site (CHASP). The On-Site Environmental Technician or his representative will conduct all monitoring and testing discussed in this CHASP. The On-Site Environmental Technician or his representative will be authorized to remove or have removed any and all personnel working on the subject property who do not comply with the minimum standards outlined in this CHASP.

2.0 KEY PERSONNEL

The following is a list of key personnel (and their phone numbers) associated with this project:

- Construction Project Manager: Joe Esposito (347) 598-1269.
- Construction Supervisor: Don Jayne (207) 240-0222.
- Construction Site Safety Coordinator: Don Jayne (207) 240-0222.
- Environmental Site Safety Coordinator: Dan Marzano (516) 315-0574 or David Shencavitz (516) 315-1262.
- Professional Engineer: Carl Vernick (516) 221-7500.
- On-Site Project Manager: Daren Murphy (516) 315-1037.
- On-Site Environmental Technician: Dan Marzano (516) 315-0574 or David Shencavitz (516) 315-1262.

3.0 PREVIOUS INVESTIGATION(S)

Summary of the Work Performed under the Remedial Investigation

SMES performed the following scope of work:

1. Conducted a site inspection to identify AOCs and physical obstructions (i.e., structures, buildings, etc.);
2. Performed subsurface geophysical investigation, using ground penetrating radar (GPR) equipment, throughout all accessible portions of the Site;
3. Performed exploratory test pit at a GPR anomaly location identified at the Site to confirmed the presence/absence of USTs;
4. Investigated two (2) subsurface drainage structures located at the Site to confirm that they discharge into underlying soil formations and collected soil/sludge grab samples from structures for chemical analysis to evaluate soil quality;
5. Completed survey of Site to locate footprint of former buildings;

6. Installed sixteen (16) soil borings across the entire project Site and collected twenty-two (22) soil samples for chemical analysis from the soil borings to evaluate soil quality;
7. Supplemental soil probes GP-1 through GP-11 were installed at designated locations at the Site using truck mounted Geoprobe. Probe GP-1, GP-2, and GP-3 were installed in the area of the gasoline UST; GP-4 and GP-5 were installed near the oil/water separator; GP-6 and GP-7 were installed near the subsurface drainage structures; GP-8 and GP-9 were completed at random locations to address historic fill; and GP-10 and GP-11 were completed within the southern portion of the existing building at a GPR anomaly location;
8. Installed three (3) groundwater monitoring wells throughout the Site to establish groundwater flow and collected three (3) groundwater samples for chemical analysis to evaluate groundwater quality;
9. Installed six (6) soil vapor probes throughout the Site and collected six (6) soil vapor samples for chemical analysis.

Summary of the Environmental Findings

1. Elevation of the property is approximately 50.0 feet above sea level.
2. Depth to groundwater ranges from approximately 18.0 – 19.0 feet bgs at the Site.
3. Groundwater flow is generally from northeast to southwest (south/southwesterly flow component) beneath the Site.
4. The stratigraphy of the Site, from the surface down, consists of 2.0 to 8.0 feet of asphalt and soil fill, underlain, generally by a naturally bedded moderately dense coarse to fine sand formation with traces of silt and gravel extending to the deepest depths drilled.
5. Results of soil samples collected during investigations were compared to 6NYCRR Part 375-6.8 (a and b) Unrestricted Use (Track 1) and Restricted commercial Use Soil Cleanup Objectives (SCO). Soil samples showed VOCs including acetone (max 115 ug/kg), benzene (max 319 ug/kg), toluene (1320 ug/kg), m,p-xylenes (max 3250 ug/kg), and 1,2,4-trimethylbenzene (max 13100 ug/kg) were detected in the samples at concentrations that exceeded Track 1 Unrestricted Use SCO. None of the VOCs exceeded Restricted – Commercial Use SCO. Several SVOCs including pentachlorophenol (max 1140 ug/kg), benzo(a)anthracene (max 2840 ug/kg), chrysene (max 3130 ug/kg), benzo(b)fluoranthene (max 5490 ug/kg), benzo(k)fluoranthene (1360 ug/kg), benzo(a)pyrene (max 3370 ug/kg), indeno(1,2,3-cd)pyrene (max 3400 ug/kg), and dibenzo(a,h)anthracene (max 962 ug/kg) were detected at concentrations that exceeded Track 1 Unrestricted Use SCO. And of these, benzo (a)pyrene and dibenzo(a,h)anthracene also exceeded Restricted Commercial (Track 2) Use SCO in one shallow soil sample. One pesticides (dieldrin (max 5.91 ug/kg) in one (1) shallow (0-2 foot) sample exceeded Track 1 Unrestricted Use SCO. Several metals including arsenic (max 47.4 mk/kg), barium (max 476 mg/kg), cadmium (max 2.85 mg/kg), chromium (max 34.9 mk/kg), copper (max 921 mg/kg), lead (max 2260 mg/kg), nickel (42.0 mg/kg), and zinc (max 986 mg/kg) were detected

exceeding Track 1 Unrestricted Use SCO. Of these, barium, copper and lead also exceeded Track 2 Restricted Commercial Use SCO. No PCBs were detected in the samples.

6. Soil/sludge samples collected during the RI showed VOCs including acetone (max 1320 ug/kg), cis-1,2-dichloroethylene (max 666 ug/kg), and toluene (max 3780 ug/kg) were detected in the samples at concentrations that exceeded Soil Cleanup Objectives (SCO). SVOCs including benzo(a)anthracene (max 4130 ug/kg), chrysene (max 4530 ug/kg), benzo(b)fluoranthene (max 5610 ug/kg), and benzo(k)fluoranthene (2190 ug/kg) were detected above Restricted Commercial Use SCOs. Metals including arsenic (max 21.5 mg/kg), cadmium (max 15.2 mg/kg), chromium (max 135 mg/kg), lead (max 3250 mg/kg), and nickel (max 154 mg/kg) exceeded Unrestricted Use as well as Restricted Commercial Use SCOs.
7. Groundwater sample results were compared to NYSDEC 6NYCRR Part 703.5 Groundwater Quality Standards (GQS). Groundwater detected several metals but only iron, manganese, and sodium were detected above their respective GQS. There were no detections of VOCs, SVOCs, PCBs, or pesticides in groundwater samples.
8. Soil vapor results collected during the RI were compared to the compounds listed in Table 3.1 Air Guideline Values Derived by the NYSDOH located in the New York State Department of Health (NYSDOH) Final Guidance for Evaluating Soil Vapor Intrusion dated October 2006. Soil vapor samples showed low concentrations of petroleum related and chlorinated VOCs. The maximum concentrations of BTEX compounds was at 45 ug/m³. Highest reported concentrations were for acetone at 44 ug/m³. Chlorinated VOCs, tetrachloroethylene was detected at a maximum concentration of 2.7 ug/m³. 1,1,1-trichloroethane, carbon tetrachloride, and trichloroethene were not detected. Concentrations of chlorinated compounds are well below the monitoring levels established by NYSDOH matrix.

For more detailed results, consult the RIR. Based on an evaluation of the data and information from the RIR and RAWP, disposal of significant amounts of hazardous waste is not suspected at this site.

4.0 HAZARD EVALUATION/POTENTIAL CHEMICAL EXPOSURE

Based on information obtained from the RIR, potential chemical exposure on-site are suspected to be VOCs, SVOCs, pesticides, and metal constituents. The groundwater table is approximately 18.0 – 19.0 feet below ground surface (bgs), therefore, excavation is not anticipated to be below the groundwater table.

The most likely routes of exposure to the aforementioned compounds are breathing of vapors or particulate-laden air released during soil disturbing activities. Dermal contact is also a potential exposure pathway. The remaining sections of this CHASP address procedures (including training, air monitoring, work practices and emergency response) to reduce the potential for unnecessary and unacceptable exposure to these contaminants.

The potential adverse health effects from the broad classes of chemicals potentially present at the site are diverse and potentially severe. Although many of these chemicals are known or suspected to result in chronic illness from long-duration exposures, due to the limited nature of the field work, acute effects are both more likely to be of concern and noticeable.

- *Volatile Organic Compounds (VOCs)*: health effects associated with exposure to volatile organics include eye, nose, and throat irritation; headaches, loss of coordination, nausea; damage to liver, kidney, and central nervous system. Key signs or symptoms associated with exposures to volatile organics include conjunctival irritation, nose and throat discomfort, headache, allergic skin reaction, dyspnea, declines in serum cholinesterase levels, nausea, emesis, epistaxis, fatigue, and dizziness.
- *Semi-Volatile Organic Compounds (SVOCs)*: typical symptoms of acute exposure particularly to semi-volatile organic compounds are: irritated eyes, nose or upper respiratory tract, headache, nausea, drowsiness, dizziness, and difficulty breathing.
- *Pesticides*: typical symptoms of acute exposure to pesticides including chlordane and 4,4'-DDT are: irritation of the eyes, nose, and throat, difficulty breathing, nausea, vomiting, stomach pains, headache, dizziness, irritability, loss of appetite, nausea, muscle twitching, convulsions, and loss of consciousness.
- *Metals*: typical symptoms of the exposure to barium are: irritation of the eyes, nose, and upper respiratory system; benign pneumoconiosis; typical symptoms of the exposure to copper are: headaches, dizziness, nausea, vomiting, and diarrhea; typical symptoms of the exposure to mercury are: coughing, chest pain, dyspnea, bronchial pneumonitis, tremors, insomnia, irritability, indecision, headache, fatigue, weakness, stomatitis, salivation, gastrointestinal disturbance, anorexia, low weight, proteinuria, and irritated eyes and skin; typical symptoms of the exposure to zinc are: sweet metallic taste, dry throat, cough, chills, fever, tight chest, dyspnea, rales, reduced pulmonary function, headache, blurred vision, muscular cramps, low back pain, nausea, vomiting, fatigue, lassitude, and malaise.

This CHASP addresses potential environmental hazards from the presence of potential hazardous materials. It is not intended to address the normal hazards of construction work, which are covered by Occupational Safety and Health Administration (OSHA) regulations and/or local and state construction codes or regulations.

5.0 DUST CONTROL

To prevent the potential off-site transport of dust, which may contain VOCs, SVOCs, pesticides, and metal constituents, the following dust control measures will be implemented during all earth disturbing operations:

- Wetting down of exposed soil surfaces to suppress dust in dry weather.
- Wetting down of open excavations to suppress dust in dry weather.
- All haul trucks will have tarp covers.
- All on site vehicles will be limited to 5 MPH.
- Egress points will be secured to prevent tracking out of dust.

6.0 HAZARDOUS MATERIALS CONTINGENCIES

All known potentially hazardous materials will be removed from work areas prior to the beginning of excavation. However, because of historic backfilling activities at the site, there is a potential for the discovery of additional materials during site excavation activities. In the event that previously unidentified potentially hazardous materials are discovered during excavation, then the following contingency procedures will be followed. All excavations will be continuously monitored for the presence of buried tanks, drums or other containers, sludges, or soil, which show evidence of potential contamination, such as discoloration, staining, or odors. If any of these are detected, excavation in the area will be halted. The On-Site Environmental Technician or his representative will immediately notify the owner's representative and Soil Mechanics Environmental Services (SMES) personnel.

The affected area will be cordoned off and no further work will be performed at that location until the appropriate contingency response plan, described below, is implemented. All contingency response actions will be carried out in accordance with the contingency Health and Safety procedures specified below.

6.1 Underground Storage Tanks (USTs)/Drum/Container Contingency Plan

If drums or other containers are encountered, the area will be cordoned off and the below listed steps will be followed. In the event additional underground storage tanks (USTs) are identified, they will be decommissioned as outlined in 40 CFR Part 280 and 6NYCRR Parts 612 –614 (see Section 15.0).

- 1.) If there is evidence of petroleum spill, notify the NYSDEC Spill Hotline within two (2) hours.
- 2.) Examine the drum to determine its condition and whether it contains any materials. If the drum is empty, remove and dispose of as scrap.
- 3.) If the drum contains any material, sample the contents using procedures appropriate to the condition of the drum. All samples will be analyzed for volatile and semi-volatile organic compounds, PCB's, metals, reactivity, and flash point following NYSDEC ASP procedures by a New York State Department of Health ELAP-certified laboratory.

- 4.) Move the drum using appropriate precautions to a secure location with secondary containment.
- 5.) Following NYSDEC approval, the drum will be disposed of in accordance with all applicable regulations.

7.0 MEDICAL EMERGENCY

Medical emergencies can be described as situations which present a significant threat to the health of personnel involved in construction activities. These can result from exposure to chemicals, heat stress, cold stress, and poisonous insect bites. Medical emergencies must be dealt with immediately and proper care should be administered. This may be in the form of first aid and emergency hospitalization. In the event of a medical emergency, assess whether or not the victim can be safely transported to medical facilities. If the victim cannot be moved without the risk of aggravating their condition, refer to Section 9.0 "Emergency Notification" and summon an ambulance and appropriate emergency response personnel.

8.0 TRANSPORTING VICTIMS

If the victim can be safely transported without risk of additional injury, the nearest hospital is:

Queens Hospital Center
82-68 164th Street
Jamaica, New York 11432
Main Phone: 1 (718) 883-3000
Adult Emergency Room: 1 (718) 883-3090

The hospital is located at 8268 164th Street, Jamaica, New York. The most direct or emergency route from the Site to Queens Hospital Center is as follows (Figure 2 shows the Hospital Location Plan):

- Head west on JAMAICA AVENUE toward 185th STREET;
- Turn right onto 168th STREET;
- Turn LEFT onto HILLSIDE AVENUE;
- Turn right onto 164th STREET;
- Turn left onto 82nd STREET which is entrance to QUEENS HOSPITAL CENTER;
- Follow signs to EMERGENCY ROOM.

9.0 EMERGENCY NOTIFICATION

The following is a list of telephone numbers for the nearest hospital and emergency response personnel:

Queens Hospital Center	1 (718) 883-3000
Adult Emergency Room	1 (718) 883-3090
Fire Emergency	911
Ambulance/Rescue Squad	911
NYC Police Department	911
National Response Center	1 (800) 424-8802
Poison Information Center	1 (800) 562-8816
Chemtree	1 (800) 424-9555
NYSDEC Spill Hotline	1 (800) 457-7362
NYC Department of Health	1 (212) 442-9666
NYSDEC Region II Headquarters	1 (718) 482-4933

10.0 EMERGENCY MEDICAL TREATMENT

A first aid kit will be provided on-site for emergency medical treatment. The On-Site Environmental Technician or his representative will assume responsibility for determining the need to call the hospital. The On-Site Environmental Technician or his representative will monitor site personnel for heat and cold stress.

Heat Stress: Wearing personal protection equipment, such as Tyvek coveralls, can contribute to heat stress. There are five major categories of heat-related disorders:

- Transient heat fatigue, caused by non-acclimation of workers to heat, is characterized by decline in the workers' alertness and concentration.
- Heat rash, also known as prickly heat, is caused by the body's inability to remove sweat by evaporation. This is aggravated more by the wearing of protective clothing, which prevents the sweat from evaporating. Frequent showers, the use of baby powder, and resting at regular intervals can alleviate the condition.
- Heat cramps are painful spasms caused by loss of salt and other electrolytes from the body. Relief is provided by drinking half a glass of water containing half a teaspoon of salt every 15 minutes. Cramps can also be prevented by drinking an electrolyte mixture (such as Gatorade) while working. Persons who have heart problems or are on low sodium diets must consult a physician for relief of heat cramps.

- Heat exhaustion is caused by excessive sweating. The worker will continue to sweat, but experience extreme weakness, fatigue, giddiness, nausea, or headache. The worker may vomit or faint. The skin will be clammy or moist, complexion will be flushed or pale and body temperature will be normal or slightly higher. The victim should lie down in a cool place, with the feet elevated 8-12 inches. Lightly salted liquids – i.e., half a glass of water with half a teaspoon of salt – should be administered every 15 minutes. Cool, wet cloths can also be applied. If vomiting occurs, discontinue fluids and take victim to the hospital.
- Heat stroke, the most dangerous form of heat-related injury, is life threatening. Body temperature will rise significantly and rapidly, i.e., >105⁰F; the skin will be hot, dry, and usually red in spots; pulse will be rapid and strong. The victim will no longer be sweating. An ambulance must be summoned immediately but, in the meantime, move the victim to a cool place, soak his/her clothes with water, and fan his/her body vigorously to promote cooling and quickly reduce body temperature.

Prevention is the first and foremost means of handling heat stress problems. Workers should drink 1 to 1.6 gallon of fluid per day to maintain body fluids and body weight.

Cold Stress: Frostbite is characterized by white to grayish-yellow skin color and should be treated by rapidly warming the affected part in running water at 102 to 105⁰F.

Hypothermia is characterized by excessive shivering and, in severe cases, unconsciousness may result. Warm the victim as quickly as possible by moving to a warm, sheltered area and/or placing him/her in a tub of water 102 to 105⁰F.

Field crewmembers and contractors should inform the Site Supervisor if they feel excessively chilled. The Site Supervisor should be alert to cold weather, and assure that workers are warmly dressed and take shelter periodically.

11.0 PERSONAL PROTECTION ON-SITE

Based on currently available information, Level D protection should be adequate for most of the work to be performed on-site. For the purpose of this CHASP, Level D areas are defined as areas where gross ambient organic vapor levels (monitored in real time) range from site background to 5 ppm over background. Background readings will be obtained each day within the work area prior to commencement of work and along the perimeter of the work site.

For the purpose of this CHASP, Level D personnel protection will be required. Level D protection consists of: work cloths/coveralls, gloves, safety boots, and a hard hat.

If concentrations of organic vapors, as monitored in real time, exceed 5 ppm over site background, or toxic airborne substances are known to exist, personal protection will be upgraded to Level C.

For the purpose of the CHASP, Level C areas are defined as areas where gross ambient organic vapor levels, monitored in real time, exceed 5 ppm over background but are less than 500-ppm, or where the presence of toxic/explosive airborne substances are known or suspected.

Level C protection adds a full-face air-purifying respirator to the Level D protection described above and requires Tyvek coveralls, chemical resistant gloves, and boots.

During the course of excavation activities, all efforts will be made to minimize activities that will create dust. Dust suppression, including wetting down the work area, will be utilized as necessary.

11.1 Basic Equipment

Basic safety equipment will be kept on-site to monitor site conditions and respond to emergency situations. This equipment includes, but is not limited to, the following:

- 1.) First Aid Kits
- 2.) Portable eyewash
- 3.) Type ABC fire extinguisher
- 4.) Photo Ionization Detector (PID)
- 5.) Dust Trak dust monitor

11.2 Personnel Training

All personnel working on-site that are involved with any activity that brings them into contact with the sites surficial soils will have received a minimum of 40 hours of Health and Safety training in accordance with OSHA 1910.120(E)(2).

Craft Labor who will be working on-site are responsible for understanding and complying with CHASP requirements and for notifying either the On-Site Environmental Technician or their supervisor of any concerns they might have for their health and safety on the job.

Craft Labor and all other support personnel are responsible for conducting themselves in a safe manner, mindful of the inherent hazards associated with working around contaminated materials, heavy equipment, and extreme environmental conditions.

12.0 FIELD PROCEDURES

Work areas will be initially defined as Level 'D'. If conditions warrant, personnel protection will be upgraded as deemed necessary by the On-Site Environmental Technician or his representative. Level 'C' will be cordoned off while work is taking place. Access to areas designated will be provided only to those persons directly involved in the field operations and only if the appropriate level of personal protection is worn. All equipment and personnel will be subjected to decontamination procedures before leaving an area of restricted access. Separate work zones and decontamination zones will be pre-designated in areas requiring Level C protection.

12.1 Air Monitoring

Air monitoring shall be conducted in accordance with requirements specified in 29 CFR 1910.134 to assure proper selection of engineering controls, work practices, and personal protective equipment so that workers are not exposed to levels which exceed permissible exposure limits, or published exposure limits. Air monitoring, with respect to volatile organic contaminants and dust, will be conducted concurrent to work activities at the site and for the duration of same.

Once having identified concentrations of specific contaminants and their respective permissible exposure limits (PEL), as identified by NIOSH and/or OSHA, appropriate respiratory protection will be selected. In cases pertaining to oxygen deficient environments, pressure demand supplied air will be utilized accordingly. In cases where oxygen deficiency is not an issue, individual contaminants and their respective concentrations must be determined.

Monitoring equipment to be utilized, as deemed necessary, will include: a photo-ionization detector (PID) and dust monitor. The On-Site Environmental Technician and any other personnel within the work area or area of restricted access, will modify personal levels of protection, as deemed appropriate, relative to 29 CFR 1910.134.

12.2 Community Air Monitoring – Volatile Organic Compounds

Air quality will be continuously monitored, by the On-Site Environmental Technician or his representative, at downwind perimeter of the contaminated work area while soil-disturbing activities are occurring. The action levels and required responses are listed below:

ACTION LEVEL	RESPONSE ACTION
Less than 5 ppm above background*	Continue work.
More than 5 ppm, but less than 10 ppm above background	Implement vapor emission response plan.
More than 10 ppm above background	Stop work. Perform downwind monitoring in accordance with vapor emission response plan.

Vapor Emission Response Plan

When vapor concentrations at the downwind edge of the work area exceed 5 ppm over background then work will be temporarily suspended and the On-Site Environmental Technician or his representative will notify the owner or the owner's representative. Work may be resumed if:

- 1.) Concentrations at the downwind edge of the work area fall below 5 ppm over background; or
- 2.) Concentrations measured 200 feet downwind or at half the distance to the nearest residential or commercial structure, whichever is less, is below 5 ppm over background.

If the downwind concentrations measured 200 feet downwind or at half the distance to the nearest downwind residential or commercial structure, whichever is less, exceed 5 ppm over background, then all work will be halted and the On-Site Environmental Technician or his representative will notify the owner or the owner's representative.

Community Air Monitoring – Particulates

Real-time particulate monitors will be used to monitor airborne total particulate levels during all excavation and all moving or loading of soil from contaminated areas (TSI Dust Trak Model 8520, MIE PDR 1,000 or equivalent). Particulate levels will be continuously monitored within and at the upwind and downwind ends of the work area. If the work area is limited to under a 50-foot radius then only upwind and downwind levels will be measured.

If downwind dust particulate levels, integrated over a period of 15 minutes, are more than 0.15 mg/m³ greater than the upwind particulate level, then appropriate dust suppression measures will be implemented.

12.3 Record Keeping

The On-Site Environmental Technician will maintain a record of all individuals present at the work site, levels of worker protection, and general conformance with this CHASP. Meter readings will be periodically recorded in addition to noting observed peak readings.

13.0 DECONTAMINATION

All equipment and personnel will be subjected to decontamination procedures before leaving an area of restricted access. Separate work zones and decontamination zones will be pre-designated, if needed, in areas requiring Level C protection.

13.1 Level C Areas

The decontamination zone within a Level C area will be lined with plastic to contain wash waters. Reusable equipment will be cleaned with appropriate solutions. Disposable equipment, coveralls, gloves, etc. will be placed in plastic bags and disposed of as household waste in available on-site receptacles. Respirators will be worn throughout the decontamination process. Liquid wastes, contained in the process of Level C decontamination, will be placed in drums to be supplied by the contractor for disposal in accordance with applicable regulations.

13.2 Level D Areas

Before leaving Level D work areas, loose soil will be brushed from equipment and clothing. Equipment will be washed with detergent and water. Disposable coveralls, gloves, etc. will be placed in plastic bags and disposed of as household waste in available on-site receptacles.

14.0 GENERAL WORK PRACTICES

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

- Eating, drinking, chewing gum, or tobacco, and smoking are prohibited, except in designated areas on the site. These areas will be designated by the On-Site Environmental Technician.
- Workers must wash their hands and face thoroughly upon leaving the work area and before eating, drinking, or any other such activity. The workers should shower as soon as possible after leaving the site.
- Contact with contaminated or suspected surfaces should be avoided.
- The buddy system should always be used; each buddy should watch for signs of fatigue, exposure, and heat stress.

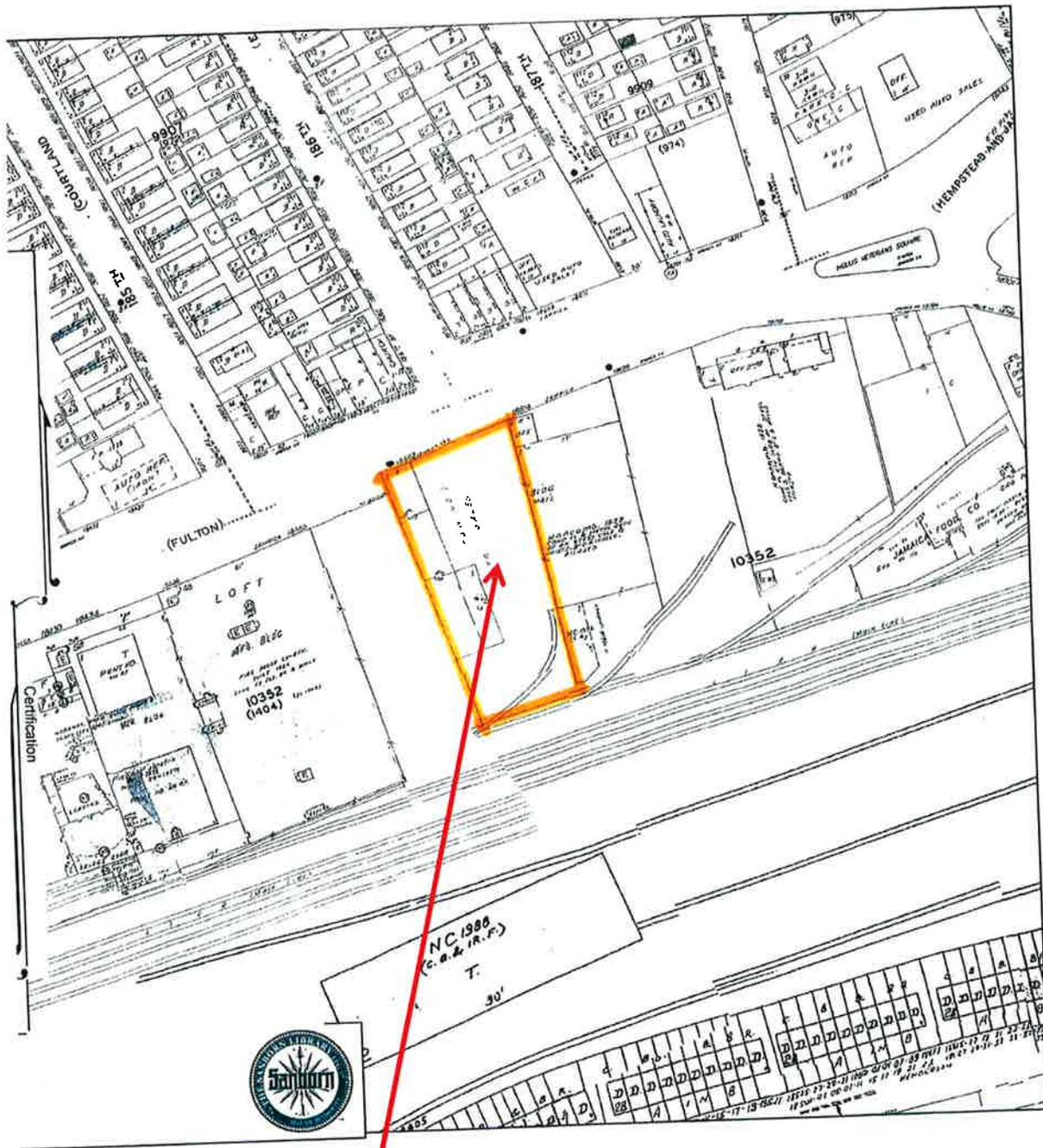
15.0 UST CLOSURE PROTOCOL

In the event any USTs are identified during site redevelopment activities, they will be removed/closed in general conformance with 40CFR Part 280 and/or 6NYCRR Parts 612-614. If any petroleum contaminated soils, which display petroleum odors and/or staining, are encountered during the excavation/grading process, the contaminated material will be removed and properly disposed of in accordance with all NYSDEC requirements.

16.0 ACKNOWLEDGMENT OF CHASP

This is an affidavit that must be signed by all workers who enter the site. A copy of the CHASP must be on-site at all times and will be kept by the On-Site Environmental Technician or his representative.

FIGURE 1
SITE LOCATION MAP



SUBJECT PROPERTY



SOIL MECHANICS
Environmental Services

3770 MERRICK ROAD • SEAFORD, NY 11783
(516) 221-7500 FAX (516) 679-1900
www.soilmechanicscorp.com

SITE LOCATION MAP
QUEENS, NEW YORK

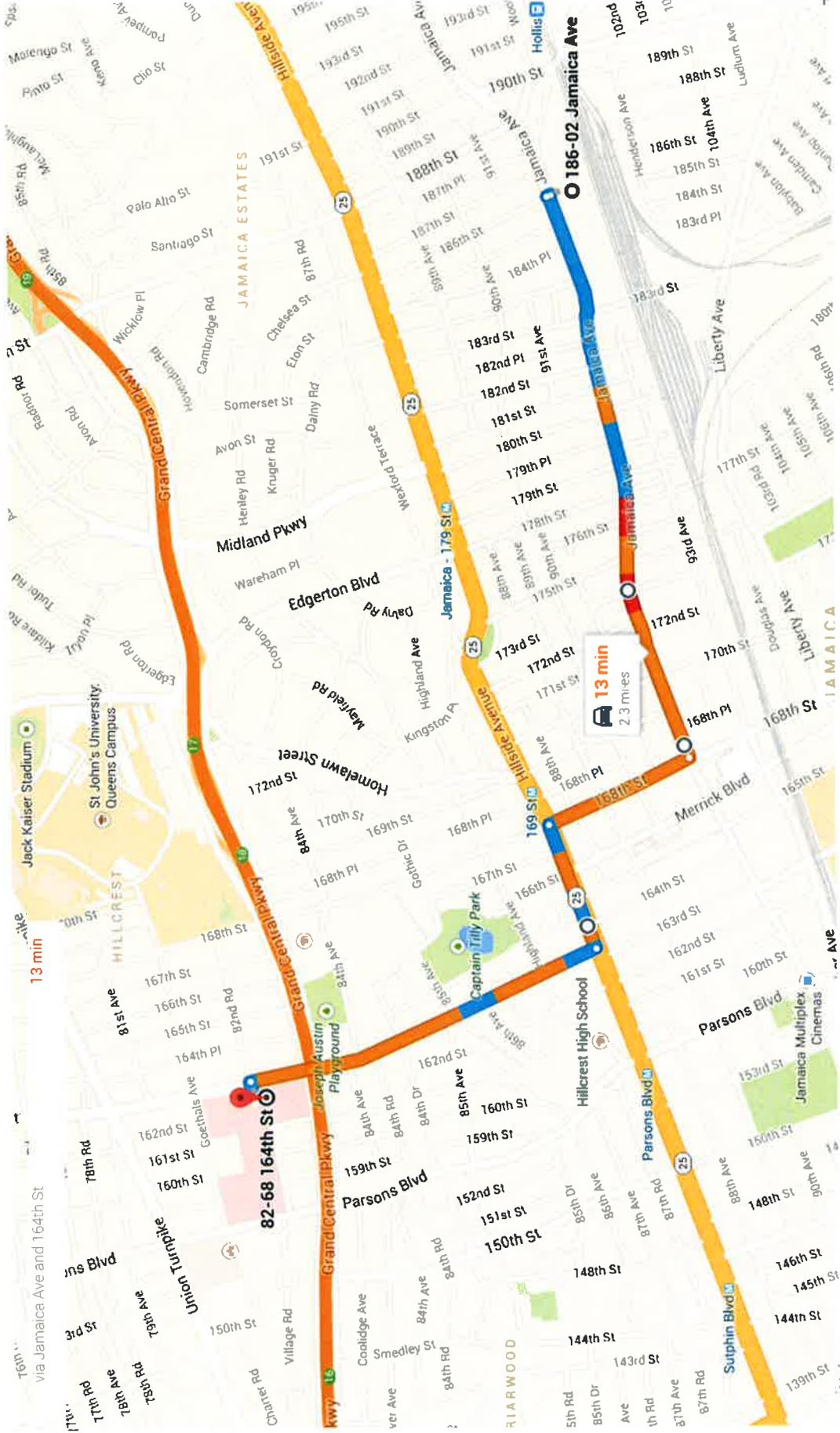
DATE: 5/1/2014

SCALE: N.T.S.

JOB NO.: 13-671



FIGURE 2
HOSPITAL LOCATION PLAN



ATTACHMENTS

ATTACHMENT A
VAPOR BARRIER SPECIFICATIONS



Stego® Wrap 20-Mil Vapor Barrier

STEGO INDUSTRIES, LLC



Vapor Retarders
07 26 00, 03 30 00

1. Product Name

Stego Wrap 20-Mil Vapor Barrier

2. Manufacturer

Stego Industries, LLC
216 Avenida Fabricante, Suite 101
San Clemente, CA 92672
Sales, Technical Assistance
Ph: (877) 464-7834
Fx: (949) 257-4113
www.stegoindustries.com

3. Product Description

USES: Stego Wrap 20-Mil Vapor Barrier is used as a below-slab vapor barrier, and as a protection course for below grade waterproofing applications.
COMPOSITION: Stego Wrap 20-Mil Vapor Barrier is a multi-layer plastic extrusion manufactured with only the highest grade of prime, virgin, polyolefin resins.
ENVIRONMENTAL FACTORS: Stego Wrap 20-Mil Vapor Barrier can be used in systems for the control of soil gases (radon, methane), soil poisons (oil by-products) and sulfates.

5. Installation

UNDER SLAB: Unroll Stego Wrap 20-Mil Vapor Barrier over an aggregate, sand or tamped earth base. Overlap all seams a minimum of six inches and tape using Stego Tape or Crete Claw® Tape. All penetrations must be sealed using a combination of Stego Wrap and Stego accessories.

For additional information, please refer to Stego's complete installation instructions.

6. Availability & Cost

Stego Wrap 20-Mil Vapor Barrier is available nationally via building supply distributors. For current cost information, contact your local Stego Wrap distributor or Stego Industries' sales department.

7. Warranty

Stego Industries, LLC believes to the best of its knowledge, that specifications and recommendations herein are

accurate and reliable. However, since site conditions are not within its control, Stego Industries does not guarantee results from the use of the information provided and disclaims all liability from any loss or damage. No warranty, express or implied, is given as to the merchantability, fitness for a particular purpose, or otherwise with respect to the products referred to.

8. Maintenance

None required.

9. Technical Services

Technical advice, custom CAD drawings, and additional information can be obtained by contacting Stego Industries' technical assistance department or via the website.

4. Technical Data

TABLE 1: PHYSICAL PROPERTIES OF STEGO WRAP 20-MIL VAPOR BARRIER

PROPERTY	TEST	RESULTS
Under Slab Vapor Retarders	ASTM E 1745 Class A, B & C – Standard Specification for Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs	Exceeds Class A, B & C
Water Vapor Permeance	ASTM F 1249 – Test Method for Water Vapor Transmission Rate Through Plastic Film and Sheeting Using a Modulated Infrared Sensor	0.0071 perms
Puncture Resistance	ASTM D 1709 – Test Methods for Impact Resistance of Plastic Film by Free-Falling Dart Method	3500+ grams*
Tensile Strength	ASTM D 882 – Test Method for Tensile Properties of Thin Plastic Sheeting	97.7 lbf/in.
Permeance After Conditioning (ASTM E 1745 Sections 7.1.2 - 7.1.5)	ASTM E 154 Section 8, F 1249 – Permeance after wetting, drying, and soaking ASTM E 154 Section 11, F 1249 – Permeance after heat conditioning ASTM E 154 Section 12, F 1249 – Permeance after low temperature conditioning ASTM E 154 Section 13, F 1249 – Permeance after soil organism exposure	0.0088 perms 0.0081 perms 0.0084 perms 0.0077 perms
Thickness	ACI 302.1R-04 – Minimum Thickness (10 mils)	20 mils
Roll Dimensions		14 ft. wide x 105 ft. long or 1,470 ft ²
Roll Weight		140 lbs.

Note: perm unit = grains/(ft² *hr* in.Hg)

* The material maxed out the testing equipment and did not fail at 3746 grams.

