

**37-02/12 27<sup>TH</sup> STREET**  
**BLOCK 368, LOT 22 (FORMER LOTS 22 AND 24)**  
**LONG ISLAND CITY, QUEENS, NEW YORK**

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# **Remedial Action Work Plan**

**VCP Project # 12CVCP064Q**

**Prepared for:**

**Mr. Spyridon Kouzios**  
**37-02/12 27 Street**  
**Queens, NY 11101**

**Prepared by:**

**Airtek Environmental Corp.**  
**39-37 29th Street**  
**Long Island City, New York 11101**

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# REMEDIAL ACTION WORK PLAN

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## LIST OF ACRONYMS

Acronym	Definition
AOC	Area of Concern
BOA	Brownfield Opportunity Area
CAMP	Community Air Monitoring Plan
CHASP	Construction Health and Safety Plan
DCR	Declaration of Covenants and Restrictions
DER	Division of Environmental Remediation
DUSR	Data Usability Summary Report
ECs	Engineering Controls
ELAP	Environmental Laboratory Approval Program
EPA	Environmental Protection Agency
ESA	Environmental Site Assessment
GQS	Groundwater Quality Standards
HAZWOPER	Hazardous Waste Operations and Emergency Response
ICs	Institutional Controls
mcg/m <sup>3</sup>	Micrograms per cubic meter
mg/kg	Milligrams per kilogram
NOC	Notice of Completion
NYC VCP	New York City Voluntary Cleanup Program
NYC DEP	New York City Department of Environmental Protection
NYC DOB	New York City Department of Buildings
NYC OER	New York City Office of Environmental Remediation
NYCRR	New York Codes Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
OSHA	United States Occupational Health and Safety Administration
PCBs	Polychlorinated Biphenyls
PCE	Tetrachloroethene
PE	Professional Engineer
PID	Photoionization Detector
PM	Particulate Matter
PPE	Personal Protective Equipment

<b>Acronym</b>	<b>Definition</b>
ppm	Parts per million
QA/QC	Quality Assurance/Quality Control
QEP	Qualified Environmental Professional
QHHEA	Qualitative Human Health Exposure Assessment
RA	Registered Architect
RAO	Remedial Action Objective
RAWP	Remedial Action Work Plan or Plan
RCA	Recycled Concrete Aggregate
RCR	Remedial Closure Report
RI	Remedial Investigation
RIR	Remedial Investigation Report
SCO	Soil Cleanup Objective
SCG	Standards, Criteria and Guidance
SI	Site Investigation
SMP	Site Management Plan
SMMP	Soil/Material Management Plan
SPDES	State Pollutant Discharge Elimination System
SVOC	Semi-Volatile Organic Compound
TAL	Target Analyte List
TCE	Trichloroethene
TCL	Target Compound List
TOGS	Technical and Operational Guidance Series
ug/m <sup>3</sup>	Micrograms per Cubic Meter
UST	Underground Storage Tank
VBP	VaporBlock Plus
VOC	Volatile Organic Compound

## CERTIFICATION

I, Mike Zouak, am a Qualified Environmental Professional as defined in §43-140. I have primary direct responsibility for implementation of the remedial action for the 37-02/12 27<sup>th</sup> Street, Long Island City, Queens, New York, Site.

I, Ravi Korlipara, am a Professional Engineer licensed in the State of New York and 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.

Ravi Korlipara

\_\_\_\_\_  
Name

\_\_\_\_\_  
NYS PE License Number

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

PE Stamp

Mike Zouak

\_\_\_\_\_  
QEP Name

\_\_\_\_\_  
QEP Signature

\_\_\_\_\_  
Date

## **EXECUTIVE SUMMARY**

Mr. Spyridon Kouzios has enrolled in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate a 9,021 square foot (ft<sup>2</sup>, approximately 0.207 acre) site located at 37-02/12 27<sup>th</sup> Street in the section of Long Island City, the Borough of 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 to applicable laws and regulations.

### **Site Location and Current Usage**

The Site is located at 37-02/12 27<sup>th</sup> Street in the Long Island City section in the Borough of Queens, New York and is identified as Block 368 and Lot 22 (former Lots 22 and 24) on the New York City Tax Map. A Site Location Map is provided as Figure 1 and Tax Map is provided as Figure 2. The Site is 9,021 square feet and is bounded by 37<sup>th</sup> Avenue and Public School (PS) 112 Dutch Kills to the north, 27<sup>th</sup> Street and residential structures to the east, residential structures to the south, and an automotive repair facility, a warehouse, residential structure to the west.

Currently, (former) lot 22 is occupied by a one-story plumbing supply warehouse. (Former) lot 24 is occupied by a two-story residential structure improved with a basement as well as an associated concrete yard.

### **Summary of Proposed Redevelopment Plan**

The proposed future use of the Site will consist of development with a seven-story mixed use commercial and residential structure. The building footprint will comprise the entire area of the site and will extend approximately 12 feet below grade to accommodate a parking area, mechanical rooms, and storage space. Based on this planned depth and the total area of the site, Airtek anticipates the generation of approximately 4,009 cubic yards (yd<sup>3</sup>) of excavation material during development of the sub-grade area. Mechanical ventilation for parking will be provided for the entire developed sub-grade area. The ground floor will be used for commercial retail space and the second floor will be used for commercial office space. The remainder of the

building will be developed as residential units. Lots 22 and 24 were merged into a single lot using a subdivision combination. The lot will retain the designation of Lot 22.

### **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; it is effective in both the short-term and long-term and reduces mobility, toxicity, and volume of contaminants; it is cost effective and implementable; and, it uses standards and methods that are well established in the industry.

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and implementation of all required NYC VCP Citizen Participation activities according to an approved Citizen Participation Plan;
2. Performance of a Community Air Monitoring Program for particulates and volatile organic carbon compounds;
3. Establishing Track 1 Unrestricted Use Soil Cleanup Objectives (SCOs);
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs, and marking and staking of excavation areas;
5. Excavation and removal of soil/fill exceeding the SCOs. Excavations will be performed in conjunction with site development to a minimum depth of 12 feet below ground surface;
6. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a photoionization detector (PID);
7. Sampling and analysis of excavated media as required by disposal facilities. Appropriate segregation of excavated media on-Site;
8. Removal of underground storage tanks (if encountered) 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;
9. Transportation and off-Site disposal of all soil/fill material excavated 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;
10. Collection and analysis of end-point samples to determine the performance of the remedy with respect to attainment of Track 1 Residential SCOs;
  11. Construction of a minimum 4-inch building slab;
  12. Installation of a VaporBlock Plus 20-mil vapor/moisture barrier beneath the structure and along the foundation sidewalls;
  13. As part of new development, construction of ventilated basement parking garage with high volume air exchange consistent with NYC Building Code;
  14. Installation of an active sub-slab depressurization system in areas of the building where sub-grade parking and high volume air exchange will not be implemented;
  15. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations;
  16. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations;
  17. Submission of an Remedial Action Report (RAR) that describes remedial activities, certifies that the remedial requirements have been achieved, lists any changes from this RAWP and describes all ECs/ICs to be implemented at the Site;
  18. 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 specified frequency; and
  19. Recording of a Declaration of Covenants and Restrictions that includes a listing of Engineering Controls and a requirement that management of these controls must be in compliance with an approved SMP; and Institutional Controls including 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 OER established the NYC VCP to provide governmental oversight for the cleanup of contaminated property in New York City. This RAWP (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. This cleanup plan 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.

A Citizen Participation Plan and a Sustainability Statement are included in this cleanup plan and are presented in Appendices I and II.

**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 to 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 Health and Safety Plan (HASP) 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 HASP. The Safety Coordinator maintains an emergency contact sheet and protocol for management of emergencies. The Site Safety Coordinator is Kevin Stevens (Tel. No.: 347-545-0252).

**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 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 (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 include 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 New York City noise control standards. Problems in these areas should be reported to the on-site Project Manager, Kevin Stevens (Tel. No.: 347-545-0252).

**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 Closure Report (RCR). This report will be submitted to the NYC OER and will be thoroughly reviewed.

**Stormwater Management.** To limit the potential for soil erosion and discharge, this cleanup plan has provisions for stormwater management. The main elements of the stormwater 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 (DOB) construction code requirements or according to specific variances issued by that agency. For this cleanup project, the hours of operation will be consistent with hours established by the NYC Buildings Department.

**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 VCP and provides project contact names and numbers and the locations of project documents that can be viewed.

**Complaint Management.** The contractor performing this cleanup is required to address all complaints. Any complaints can be reported to the on-site Project Manager, Kevin Stevens (Tel. No.: 347-545-0252), or call 311 and mention that the Site is in the NYC Volunteer 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 DOB 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 stormwater 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 Closure Report) that will be available for review in the public document repositories located at Queens Library, 37-44 21<sup>st</sup> Street, Long Island City.

**Long-Term Site Management.** Since the remedial plan is designed to achieve Track 1 SCOs, a Long Term Site Management Plan (SMP) may not be required. Should Track I SCOs not be met, a Long Term SMP will be necessary. To provide long-term protection after the cleanup is complete, the property owner will be required to comply with an ongoing SMP that calls for continued inspection of protective controls, such as Site covers. The SMP is evaluated and approved by the NYC OER. Requirements that the property owner must comply with are defined in the property's deed. 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**

Mr. Spyridon Kouzios has enrolled in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate a 9,021-square-foot (ft<sup>2</sup>, approximately 0.207-acre) site located at 37-02/12 27<sup>th</sup> Street in the Long Island City section of the Borough of 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) in a manner that will render the Site protective of public health and the environment consistent with the intended end use. 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 conforms to applicable laws and regulations.

### **1.1 SITE LOCATION AND current usage**

The Site is located at 37-02/12 27<sup>th</sup> Street in the Long Island City section in the Borough of Queens, New York and is identified as Block 368 and Lot 22 (former Lots 22 and 24) on the New York City Tax Map. A Site Location Map is provided as Figure 1 and Tax Map is provided as Figure 2. The Site is 9,021 square feet and is bounded by 37<sup>th</sup> Avenue and Public School (PS) 112 Dutch Kills to the north, 27<sup>th</sup> Street and residential structures to the east, residential structures to the south, and an automotive repair facility, a warehouse, residential structure to the west.

Currently, the former Lot 22 is occupied by a one-story plumbing supply warehouse. Lot 24 is occupied by a two-story residential structure improved with a basement as well as an associated concrete yard.

### **1.2 Proposed Redevelopment Plan**

The proposed future use of the Site will consist of development with a seven-story mixed use commercial and residential structure. The building footprint will comprise the entire area of the site and will extend approximately 12 feet below grade to accommodate a parking area, mechanical rooms, and storage space. Based on this planned depth and the total area of the site, Airtek anticipates the generation of approximately 4,009 cubic yards (yd<sup>3</sup>) of excavation material during development of the sub-grade area. Mechanical ventilation will be provided for the entire

developed sub-grade area. The ground floor will be used for commercial retail space and the second floor will be used for commercial office space. The remainder of the building will be developed as residential units. Lots 22 and 24 will be merged into a single lot using a subdivision combination. The proposed lot will retain the designation of Lot 22.

The proposed redevelopment plan is provided as Figure 3.

### **1.3 DESCRIPTION OF SURROUNDING PROPERTY**

The area surrounding the Site consists of residential and light industrial properties, and a school. The uses and features of adjoining properties are described below.

- North:** 37<sup>th</sup> Avenue, Public School (PS) 112 Dutch Kills
- East:** 27<sup>th</sup> Street, residential development
- South:** Residential development
- West:** (from north to south) Automotive repair facility, warehouse, residential

Site Plan Map showing the descriptions of surrounding properties is provided as Figure 4.

### **1.4 REMEDIAL INVESTIGATION**

A remedial investigation was performed and the results are documented in a report (RIR) entitled “Remedial Investigation Report, 37-02/12 27<sup>th</sup> Street,” and dated October 2012.

#### **Summary of Past Uses of Site and Areas of Concern (AOCs)**

Based on a review of Fire Insurance Maps, City Directories, and Regulatory Agency documents from Phase I Environmental Site Assessment (ESA) Report prepared by Airtek Environmental Corp. in October 2011, the following Site history was established. Lot 24 at the Site has been used for residential use since as early as 1898. Lot 22 at the Site was historically utilized for commercial/manufacturing purposes. The on-site warehouse building was developed in 1954 and has been used for storage machinery, offices, and manufacturing uses. A film processing facility was on Lot 22 from 1962 through 1986. A previous Phase I ESA of Lot 22 conducted by EEA, Inc. in September, 2007 indicated that Lot 22 was occupied by Able Elevator & Door Repair Co., Inc. from 1989 through 2007, which included an elevator equipment machine shop and paint booth.

The following Areas of Concern (AOCs) were identified during completion of the Phase I ESAs.

1. Historical utilization of Lot 22 for film processing, elevator equipment machine shop and paint booth operations.
2. Historical utilization of nearby properties for rug cleaning, auto repair, metal fabrication, chemical laboratory, and machine shop operations.

These findings are considered a recognized environmental condition because they constitute evidence of a likely release of hazardous chemicals and petroleum products which have impacted the Site.

### **Summary of the Work Performed under the Remedial Investigation**

The following work has been performed at the site:

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e., structures, buildings, etc.);
2. Installed six (6) soil borings, including three (3) within the warehouse on Lot 22 and three (3) surrounding the residential structure on Lot 24, at the Site. Collected thirteen (13) soil samples from the soil borings, including a duplicate sample, for chemical analyses;
3. Converted three (3) of the six soil borings to groundwater monitoring wells and collected four (4) groundwater samples, including a duplicate sample to investigate the subsurface groundwater quality at the property; and,
4. Installed three (3) soil vapor monitoring points and collected three (3) soil vapor samples for laboratory analysis.

### **Summary of Environmental Findings**

1. Elevation of the property ranges from approximately 32 to 35 feet.

2. Depth to groundwater ranges from 28.3 to 31.42 feet at the Site.
3. Groundwater flow is generally from south to north beneath the Site.
4. Depth to bedrock is greater than 40 feet at the Site.
5. The stratigraphy, from land surface to approximately 40 feet down, consists of historic fill from zero to 2 feet (concrete fragments and urban fill material). The fill layer is underlain by natural soil to variable depths ranging from 2 to 40 feet (silty clay, silty sand, sandy silt, coarse sand, loamy clay and clay). Bedrock was not encountered during the subsurface investigation.
6. Soil/fill samples collected during the RI indicated trace levels of several SVOCs and three VOCs in three soil samples, however, no samples exceeded Track I Residential SCOs for VOCs, SVOCs, Pesticides and PCBs. TCE was detected in one shallow soil sample (36 ppb) and no detection of a chlorinated hydrocarbon was reported for any other soil sample. Metals including copper (maximum of 50 ppm), Lead (maximum of 470 ppm) and zinc (maximum of 180 ppm) exceeded Unrestricted Use Track I Residential SCOs, and of these lead also exceeded Track II Restricted Residential SCOs (in one sample). Overall, findings for soil were unremarkable and did not show a source of contamination on this property. Low levels of contamination are consistent with findings of historic fill on the property.
7. Groundwater samples collected during the RI showed no detectable PCBs and no Pesticides exceeding 6NYCRR Part 703.5 Class GA Groundwater Quality Standards (GQS). Eight VOCs were detected in groundwater, and were all under GQS with the exception of PCE (maximum of 9.4 ug/L) and TCE in one sample (5.2 ug/L). The only SVOCs to exceed GQS were bis(2-ethylhexyl)phthalate at 12 ug/L (standard 5ug/L) and pentachlorophenol at 1.4 ug/L (standard 1ug/l) in one sample each. Metals including magnesium (maximum of 76,000 ug/L), sodium (maximum of 250,000 ug/L) and manganese (maximum of 1,190 ug/L) exceeded GQS. Findings suggest a possible offsite source of saline or brackish water, such as road salting.
8. Soil vapor results indicated low to moderate concentrations of petroleum related hydrocarbons included BTEX and associated compounds. Toluene exhibited the highest

levels ranging between 64-73ug/m<sup>3</sup> in three samples. Most other petroleum hydrocarbons were generally below 25ug/m<sup>3</sup>. Chlorinated VOCs were detected at higher levels in all soil vapor sampling locations. Trichloroethene (TCE) ranged from 83-3,000 ug/m<sup>3</sup>. Tetrachloroethene (PCE) was detected at all three locations ranging from 60-280 ug/m<sup>3</sup> and 1,1,1-Trichloroethane (TCA) at levels ranging from 8-190 ug/m<sup>3</sup>. These PCE and TCE concentrations are in actionable ranges established within the State DOH soil vapor guidance matrix. The chlorinated VOCs were not identified in onsite soils and VOCs in groundwater were at low levels. This suggests an offsite source of VOC contamination.

Based on an evaluation of the data and information from the RIR and this RAWP, disposal of significant amounts of hazardous waste is not anticipated 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:

### **Groundwater**

- Prevent direct exposure to contaminated groundwater.
- Prevent exposure to contaminants volatilizing from contaminated groundwater.

### **Soil**

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

### **Soil Vapor**

- Prevent exposure to contaminants in soil vapor from off-site sources.
- Prevent migration of soil vapor from on/off-site sources into dwellings and other occupied structures.

### **3.0 REMEDIAL ALTERNATIVES ANALYSIS**

The goal of the remedy selection process 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 (including a Track 1 scenario) are evaluated, as follows:

- Alternative 1 involves
  - Removal of all soil/ fill exceeding Track 1 Unrestricted Use SCOs throughout the Site and confirmation that Track 1 Unrestricted Use SCOs has been achieved with post-excavation endpoint sampling. Excavation for development purposes would take place to a minimum depth of approximately 12 feet.
  - As part of development, installation of a vapor barrier beneath the building slab and along side walls and operation of high volume air exchange ventilation in a basement parking garage and a passive sub-slab depressurization system (SSDS) beneath the basement slab in other areas without parking and associated high volume air exchange. On the basis of soil vapor sampling performed prior to this

remedial action, active operation of the SSDS will be required. Attainment of a complete Track 1 remedial action will only be possible if future soil vapor sampling is performed after the remedial action and demonstrates to OER's satisfaction that the system can be operated in a passive mode.

- Alternative 2 involves
  - Removal of all soil/ fill exceeding Track 4 Site-Specific SCOs and confirmation that Track 4 has been achieved with post-excavation endpoint sampling. Excavation for development purposes would take place to a depth of approximately 12 feet;
  - Placement of a final cover over the entire site to eliminate exposure to remaining soil/fill;
  - Installation of a vapor barrier beneath the building slab and along side walls and operation of high volume air exchange ventilation in a basement parking garage and an active sub-slab depressurization system (SSDS) beneath the basement slab in other areas without parking and associated high volume air exchange.
  - Establishment of use restrictions including prohibitions on the use of groundwater from the site and prohibitions on sensitive site uses, such as farming or vegetable gardening, to eliminate future exposure pathways.
  - Establishment of an approved Site Management Plan 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; and
  - Placement of a deed notice to memorialize the remedial action and the Engineering and Institutional Controls to ensure that future owners of the site continue to maintain these controls as required.

### **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 (ECs) or Institutional Controls (ICs). 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 contaminated soil/fill exceeding Track 1 SCOs and groundwater protection standards, thus eliminating potential for direct contact with contaminated soil/fill once construction is complete and eliminating the risk of contamination leaching into groundwater. Potential exposure to contaminated soils or groundwater during construction would be minimized by implementing a Construction Health and Safety Plan, an approved Soil / Materials Management Plan and Community Air Monitoring Plan (CAMP). Potential future migration of soil vapors from offsite into the new building would be prevented by installation of a vapor barrier beneath the building slab and along side walls and operation of a high volume air exchange ventilation in a basement parking garage and a passive sub-slab depressurization system (SSDS) beneath the basement slab in other areas without parking and associated high volume air exchange. Attainment of a complete Track 1 remedial action will only be possible if future soil vapor sampling is performed after the remedial action and demonstrates to OER's satisfaction that the system can be operated in a passive mode.

Alternative 2 would achieve protections of human health and the environment by excavating the historic fill at the Site and by ensuring that remaining soil/fill on-Site meets Track 4 Site-Specific SCOs as well as by placement of institutional and engineering controls, including a composite cover system. The composite cover system would prevent direct contact with any remaining on-Site soil/fill. Implementing institutional controls including a deed notice and a Site Management Plan 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. Potential exposure to contaminated soils or groundwater during construction would be minimized by implementing an approved Soil/ Materials Management Plan and Community Air Monitoring Plan (CAMP). Potential contact with contaminated groundwater would be eliminated as it would be prohibited by the deed notice. Potential future migration of soil vapors into the new building would be prevented by installation of a vapor barrier beneath the building slab and along side walls and operation of high volume air exchange ventilation in a basement parking garage and an active sub-slab depressurization system (SSDS) beneath the basement slab in other areas without parking and associated high volume air exchange.

## **3.2 BALANCING CRITERIA**

### **Compliance with Standards, Criteria and Guidance (SCG)**

Alternative 1 would achieve compliance with the remedial goals, SCGs and RAOs for soil through removal to Track 1 Unrestricted Use SCOs and groundwater protection standards. Compliance with SCGs for soil vapor would also be achieved by installation of a vapor barrier beneath the building slab and along side walls and operation of a high volume air exchange ventilation in a basement parking garage and a passive sub-slab depressurization system (SSDS) beneath the basement slab in other areas without parking and associated high volume air exchange. Attainment of a complete Track 1 remedial action will only be possible if future soil vapor sampling is performed after the remedial action and demonstrates to OER's satisfaction that the system is not required to be operated in active mode and can be operated in a passive mode.

Alternative 2 would achieve compliance with the remedial goals, SCGs and RAOs for soil through removal of soil to meet Track 4 Site-Specific SCOs. Potential future migration of soil vapors into the new building would be prevented by installation of a vapor barrier beneath the building slab and along side walls and operation of high volume air exchange ventilation in a basement parking garage and an active sub-slab depressurization system (SSDS) beneath the basement slab in other areas without parking and associated high volume air exchange. A site management plan would ensure that these controls remained protective for the long term. Similar to the Track 1 alternative, 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 applicable SCGs.

### **Short-Term Effectiveness and Impacts**

This evaluation criterion assesses the effects of the alternatives 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 have similar-short term effectiveness during their respective implementations, as each requires excavation of historic fill material. Short term impacts are likely to be higher for the Alternative 1 due to excavation of greater amounts of soil. However, focused attention to means and methods during the remedial action during a Track 1 removal action, including community air monitoring and appropriate truck routing, would minimize or negate the overall impact of these activities and any differences between these alternatives. Both alternatives would both employ appropriate measures to prevent short term impacts, including a Construction Health and Safety Plan, a Community Air Monitoring Plan (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 Health and Safety Plan (CHASP) will be protected from on-Site contaminants (personal protective equipment would be worn consistent with the documented 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 ECs.

Alternative 1 would achieve the highest level of long-term effectiveness and permanence related to on-Site contamination by permanently removing all impacted soil/fill.

Alternative 2 would provide long-term effectiveness by removing most on-Site contamination and attaining Track 4 Site-Specific SCOs, establishing engineering controls including a composite cover system and vapor barrier across the Site, active ventilation of the parking area and an active SSDS under the remainder of the basement area; establishing institutional controls to ensure long-term management including use restrictions, a Site

Management Plan and placing a deed restriction to memorialize these controls for the long term. The SMP will ensure long-term effectiveness of all ECs and ICs by requiring periodic inspection and certification that these controls and restrictions continue to be in place and are functioning as they were intended assuring that protections designed into the remedy will provide continued high level of protection in perpetuity.

### **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 the total volume of contaminated media.

Alternative 1 would permanently eliminate the toxicity, mobility, and volume of contaminants from on-site soil by removing all soil in excess of unrestricted use SCOs and groundwater protection standards. Removal of soil to a minimum depth of approximately 12 feet would occur. Placement of a building slab, vapor barrier, ventilated parking below grade, and a passive SSDS in non-parking areas will lower toxicity by eliminating potential exposures to remaining vapors. Alternative 2 would greatly reduce the toxicity, mobility, and volume of contaminants from on-site soil because it would also include removal of a minimum of 12 feet of soil/fill for development purposes and will achieve Track 4 SCOs. Placement of a building slab, vapor barrier, ventilated parking below grade, and an active SSDS in non-parking areas will lower toxicity by eliminating potential exposures to remaining soil, groundwater, and vapors. Groundwater use restrictions will reduce toxicity by ensuring that there is no use of on-Site groundwater for potable purposes.

### **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.

For implementation of both remedies, standard construction equipment utilized for the overall earthwork would be used. OSHA trained personnel will complete all activities that include excavation and handling of impacted soils. No special permits other than earthwork permits required for completion of the required site redevelopment scope are required for implementation of the remedy.

### **Cost Effectiveness**

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

The capital costs associated with the Track 1 alternative are marginally higher than the Track 4 alternative in that a higher volume of soil/fill might have to be excavated for off-site disposal to achieve a Track 1 status over the entire site. In both cases, appropriate public health and environmental protections are achieved. Track 4 would require long term monitoring and higher associated costs.

Both alternatives satisfy the threshold balancing criterion and other criteria listed here, and each is fully protective of public health and the environment, will control migration of contaminants, will comply with SCGs, are effective for the short-term and long-term, are implementable and reduce both mobility and toxicity of contaminants.

## **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 observations by the project team, both of the alternatives would be acceptable to the community. Both remedial actions provide for protection of public health and the environment and minimize potential contaminant exposures. This RAWP will be subject to, and undergo public review under the NYC VCP and will provide the opportunity for detailed public input on the remedial alternatives and the selected remedial action. This public comment will be considered by OER prior to approval of this plan.

## **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 ICs applicable to the site.

Because of the complete soil removal, the Track 1 alternative provides protection of public health and the environment for both the proposed use of the Site and any future use. The Track 1 alternative provides a remedial action that is beneficial to the surrounding community and is consistent with the goals of the City for remediating and redeveloping brownfield sites. The Track 4 alternative also provides protection for the intended use.

Both alternatives for remedial action at the site are comparable with respect to the proposed use and to land uses in the vicinity of the Site. The proposed use is consistent with the existing

zoning designation for the property and is consistent with recent development patterns. The Site is surrounded by commercial and residential properties, and both alternatives provide comprehensive protection of public health and the environment for these uses. Improvements in the current brownfield 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 natural resources and cultural resources. This RAWP will be subject to undergo public review under the NYC VCP and will provide the opportunity for detailed public input on the land use factors described in this section. This public comment will be considered by OER prior to approval of this plan.

### **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.

Both remedial alternatives are comparable with respect to the opportunity to achieve sustainable remedial action.

## **4.0 REMEDIAL ACTION**

### **4.1 Summary of Preferred Remedial Action**

The preferred remedial action is Alternative 2, the Track 4 remedial action, combined with the attainment of Track 1 SCOs for soil from Alternative 1. Engineering controls will include: installation of a 4-inch building slab; installation of a 20-mil vapor barrier beneath the slab and along the foundation sidewalls construction of ventilated basement parking garage with high volume air exchange consistent with NYC Building Code; and installation of an active sub-slab depressurization system in areas of the building where sub-grade parking and high volume air exchange will not be implemented.

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 standards methods that are well established in the industry.

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and implementation of all required NYC VCP Citizen Participation activities according to an approved Citizen Participation Plan;
2. Performance of a Community Air Monitoring Program for particulates and volatile organic carbon compounds;
3. Establishing Track 1 Unrestricted Use Soil Cleanup Objectives (SCOs);
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs, and marking and staking of excavation areas;
5. Excavation and removal of soil/fill exceeding the SCOs. Excavations will be performed in conjunction with site development to a minimum depth of 12 feet below ground surface;
6. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a photoionization detector (PID);

7. Sampling and analysis of excavated media as required by disposal facilities. Appropriate segregation of excavated media on-Site;
8. Removal of underground storage tanks (if encountered) 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;
9. Transportation and off-Site disposal of all soil/fill material excavated 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;
10. Collection and analysis of end-point samples to determine the performance of the remedy with respect to attainment of Track 1 Residential SCOs;
11. Installation of a 4-inch building slab;
12. Installation of a VaporBlock Plus 20-mil vapor/moisture barrier beneath the structure and along the foundation sidewalls as part of standard construction practices;
13. Construction of ventilated basement parking garage with high volume air exchange consistent with NYC Building Code;
14. Installation of an active sub-slab depressurization system in areas of the building where sub-grade parking and high volume air exchange will not be implemented;
15. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations;
16. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations;
17. Submission of an Remedial Action Report (RAR) that describes remedial activities, certifies that the remedial requirements have been achieved, lists any changes from this RAWP and describes all ECs/ICs to be implemented at the Site;
18. 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 specified frequency; and
19. Recording of a Declaration of Covenants and Restrictions that includes a listing of

Engineering Controls and a requirement that management of these controls must be in compliance with an approved SMP; and Institutional Controls including 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 1 Soil Cleanup Objectives (SCOs) are proposed for this project and are specified in 6NYCRR Part 375-6.8(a) Unrestricted SCOs. Based on the development plan, soil/fill at the site will be excavated to a maximum depth of 12 feet below present grade. 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.

Soil and materials management on-Site and off-Site, including excavation, handling and disposal, will be conducted in accordance with the SMMP in Appendix III.

##### **Estimated Soil/Fill Removal Quantities**

The total quantity of soil/fill expected to be excavated and disposed of off-site is 4,009 cubic yards cubic yards (yd<sup>3</sup>). The disposal facility for site-derived impacted materials will be reported promptly to the OER Project Manager prior to start of excavation.

##### **End-Point Sampling**

Removal actions under this plan will be performed in conjunction with end-point sampling. Several post-excavation samples will be obtained to determine if deep excavation for development achieves Track 1 SCOs. In addition, if hotspots are identified, 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.
3. For sampling of volatile organics, bottom samples would be taken within 24 hours of excavation, and would be taken from the zero to six-inch interval at the excavation floor. Samples taken after 24 hours would 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.

Hotspot 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 end-point sample analyses. Labs for end-point sample analyses will be reported in the RCR. The RCR will provide a tabular and map summary of all 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 trigger analytes (those for which SCO exceedance is identified)

#### **Quality Assurance/Quality Control (QA/QC)**

For every 20 samples, one duplicate sample, one rinseate field blank, and a laboratory blank will be collected and submitted for laboratory analysis.

### **Import and Reuse of Soils**

Import of soils onto the property and reuse of soils already on site are not anticipated. If necessary, import of soil and/or reuse of soils already on site will be performed in conformance with the SMMP in Appendix III.

### **4.3 Engineering Controls**

Engineering Controls will include the following:

1. A site wide composite cover system consisting of the proposed concrete building foundation and slab, around and beneath the building;
2. Soil vapor barrier;
3. Ventilated parking garage, and
4. Active sub-slab depressurization system beneath the slab in areas that do not have parking and associated high volume air exchange.

#### **Composite Cover System**

The composite cover system is comprised of a minimum 4-inch concrete building slab with vapor barrier. The development plan includes full build-out and the cover system will encompass the entire property.

#### **Vapor Barrier**

Migration of soil vapor will be mitigated with a combination of vapor barrier, ventilated parking garage and active sub-slab depressurization system. The vapor barrier system for this site is a VaporBlock Plus VBP 20-mil vapor barrier, manufactured by Raven Industries, and will be installed beneath the structure's slab and along foundation sidewalls. Installation details (penetrations, joints, etc.) with respect to the proposed building foundation, footings, slab, and sidewalls are provided in Appendix IV. Product specification sheets are also included in Appendix IV. The RAR will include photographs (maximum of two photos per page) of the installation process, Professional Engineer (PE) certified letter (on company letterhead) from the primary contractor responsible for installation oversight and field inspections, and a copy of the manufacturer's certificate of warranty.

### **Sub-Grade Ventilated Parking**

As part of the development plan for sub-grade parking, a high volume air exchange ventilation system in the parking cellar will be installed and operated in accordance with the NYC Department of Buildings (DOB) mechanical code/requirements.

### **Sub-Slab Depressurization System**

Active sub-slab depressurization system beneath the slab in areas that do not have parking and associated high volume air exchange. Attainment of a complete Track 1 remedial action will only be possible if future soil vapor sampling is performed after the remedial action and demonstrates to OER's satisfaction that the system is not required to be operated in active mode and can be operated in a passive mode.

## **4.4 Institutional Controls**

Institutional Controls (IC) would manage contaminated 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 established in a Declaration of Covenant and Restrictions (DCR) assigned to the property by the title holder and 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:

- Recording of an OER-approved Declaration of Covenant and Restrictions (DCR) with the City Register or county clerk, as appropriate. The DCR will include a description of all ECs and ICs, will summarize the requirements of the Site Management Plan, and will note that the property owner and property owner's successors and assigns must comply with the DCR and the approved SMP. The recorded DCR will be submitted in the Remedial Action Report. The DCR will be recorded prior to OER issuance of the Notice of Completion;
- Submittal of a Site Management Plan in the RAR for approval 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 as specified by the OER 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;
- The Site will be used for residential and commercial use and will not be used for a higher level of use without prior approval by OER.

#### **4.5 Site Management plan**

A Site Management Plan (SMP) will be established for the property. Site Management is the last phase of remediation and begins with the approval of the RCR 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 the DCR and this RAWP. The SMP is submitted as part of the RCR but will be written in a manner that allows its use as an independent document. Site Management continues until terminated in writing by the OER. The property owner is responsible to ensure that all Site Management responsibilities defined in the DCR and the SMP 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 Brownfield Cleanup Agreement with OER. This includes a plan for: (1) implementation of ECs and ICs; (2) implementation of monitoring programs; (3) operation and maintenance of ECs; (4) inspection and certification of ECs; and, (5) reporting.

Site management activities, reporting, and EC/IC certification will be scheduled on a periodic basis to be established in the SMP and will be subject to review and modification by OER. The SMP 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 (QHHEA)**

Investigations reported in the RIR are sufficient to complete a 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 EA 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**

Based on the results of the RIR, the contaminants of concern are:

##### **Soil:**

- Metals, including Lead also exceeded Track 2 Restricted-Residential Use SCOs.

##### **Groundwater:**

- Metals, including Magnesium, Manganese and Sodium exceeded NYSDEC Part 703.5 Class GA Groundwater Quality Standards (GQS).
- VOCs- PCE and TCE exceeded GQS.
- SVOCs, including bis(2-ethylhexyl)phthalate and pentachlorophenol, exceeded GQS.

##### **Soil Vapor:**

- Elevated levels of VOCs were detected in the soil vapor during remedial investigations. Compounds of concern including CFC 12, Chloroform, TCA, TCE and PCE were detected above the monitoring threshold established by NYS DOH. Lower concentrations of (15) additional VOCs were detected in the soil vapor samples.

## **Nature, Extent, Fate and Transport of Contaminants**

Low level concentrations of metals are present in site soils. Metals of concern were generally not found in dissolved groundwater samples above GQS, except magnesium, manganese and sodium. Findings suggest a possible offsite source of saline or brackish water, such as road salting or saline intrusion, indicating that the property is not contributing to groundwater standard violation for these metals. VOCs in groundwater are found throughout the property at low concentrations marginally above GWS.

Soil vapor samples showed elevated levels of chlorinated VOCs which are believed to be present throughout the property. VOCs were not identified in onsite soils above Track 1 Unrestricted SCO's or groundwater protections standards. VOCs in groundwater were detected at low levels. It is expected that soil vapors may accumulate under the proposed building foundation.

## **Potential Routes of Exposure**

The five elements of an exposure pathway are: (1) a contaminant 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 building materials.

## **Receptor Populations**

### *On-Site Receptors*

The Site is currently occupied by a warehouse and a residential structure and there are human receptors under current conditions. During redevelopment and remediation activities, receptors

will include construction and remediation workers. Under future conditions, receptors will include employees, customers and commercial/residential tenants of the proposed commercial/residential establishment.

#### *Off-Site Receptors*

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

1. Commercial Businesses (up to 0.25 mile) – existing and future
2. Residential Buildings (up to 0.25 mile) – existing and future
3. Building Construction/Renovation (up to 0.25 mile) – existing and future
4. Pedestrians, Trespassers, Cyclists (up to .25 mile) – existing and future
5. Schools (up to .25 mile) – existing and future

### **Existence of Human Health Exposure**

#### *Current Conditions*

The site is currently a warehouse and a residential structure. There are limited potential migration pathways for direct contact with soil and fill and associated absorption or ingestion, since the Site access is restricted to onsite workers. The contaminants in soil and fill do not exceed Track 2 Restricted Residential SCOs, except for lead in one location, and do not pose an exposure threat. Groundwater is not exposed at the site and, because the site is served by the public water supply, groundwater is not used at the site.

#### *Construction/ Remediation Activities*

Once redevelopment activities begin, construction workers will come into direct contact with surface and subsurface soils, as well as groundwater, 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, fill, and groundwater. Similarly, off-Site receptors could be exposed to dust and vapors 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 and a Construction Health and Safety Plan.

*Proposed Future Conditions*

Under future remediated conditions, engineering controls will eliminate potential direct exposure pathways to soil and groundwater remaining in place, the ventilated parking garage and active sub-slab depressurization system will prevent potential exposure to soil vapors. There are no plausible off-site pathways for oral, inhalation, or dermal exposure to contaminants derived from the site after the remedial action is complete.

**Overall Human Health Exposure Assessment**

Based upon this analysis, complete on-Site exposure pathways appear to be present only during the current unremediated phase and the remedial action phase. Under current conditions, on-Site exposure pathways exist for contractors and others that may access the Site. During remedial construction, on-Site and off-Site exposures to contaminated dust will be addressed through dust controls, and through the implementation of the Community Air Monitoring Program, the Soil/Materials Management Plan, and a Construction Health and Safety Plan. After the remedial action is complete, there will be no remaining exposure pathways to on-Site soil/fill, as all soil above Unrestricted Use SCOs will have been removed and a vapor barrier system, ventilated parking garage and SSDS will have been installed as part of development.

## **5.0 REMEDIAL ACTION MANAGEMENT**

### **5.1 Project Organization and oversight**

Principal personnel who will participate in the remedial action include Certified Industrial Hygienist, Mike Zouak, President, and Qualified Environmental Professional, Christine Chen, Sr. Project Manager.

### **5.2 Site Security**

Site access will be controlled by a guarded gated entrance and an entirely fenced property.

### **5.3 WORK HOURS**

The hours for operation of remedial construction will be from to be determined. These hours conform to the NYC DOB construction code requirements.

### **5.4 Construction Health and Safety Plan**

The site-specific CHASP is provided in Appendix V. Prior to the commencement of the project, a Site Safety Coordinator will be assigned and reported to OER. 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 Hazardous Waste Operations and Emergency Response (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 Satisfaction.

All field personnel involved in remedial activities will participate in training required under 29 CFR (Code of Federal Regulations) 1910.120, including 40-hour Hazardous Waste Operator training and annual eight (8)-hour refresher training. The 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 will be required to sign a CHASP acknowledgment. Site-specific training will be provided to field personnel. Additional safety training may be added depending upon 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 (personal protective equipment) 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 VOCs and particulate levels at the 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 nonintrusive 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 CAMP will be reported to the OER Project Manager and included in the Daily Report.

### **VOC Monitoring, Response Levels, and Actions**

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.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area exceeds five (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 five (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 five (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 five (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 shut down.

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 ( $\text{mcg}/\text{m}^3$ ) 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

reevaluation of activities initiated. Work will resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m<sup>3</sup> 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 remediation and construction have been or will be obtained prior to the commencement of remediation and construction. Acceptance 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**

### **Preconstruction Meeting**

OER will be invited to attend the preconstruction 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 markouts. 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 activities performed under the RAWP.

### **Equipment and Material Staging**

Equipment and materials will be stored and staged in a manner that complies with applicable laws and regulations. The location of proposed equipment and material staging areas, truck inspection station, stockpile areas, and other pertinent remedial management features will be in the center of the property, with access from 27th. Street.

### **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 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.

## **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 will be reported to OER prior to start of remediation.

## 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; and,
- Photograph of notable Site conditions and activities.

Daily report template will be provided by OER. The frequency of the reporting period may be revised in consultation with the 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 RCR.

### **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 RCR 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 RCR. 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.

### **5.13 Data Usability Summary report**

The primary objective of a Data Usability Summary Report (DUSR) is to determine whether or not data meets the site-specific criteria for data quality and data use. The DUSR provides an evaluation of analytical data without third party data validation. The DUSR for post-remedial samples collected during implementation of this RAWP will be included in the RCR.

## **6.0 REMEDIAL CLOSURE REPORT**

An RCR will be submitted to OER following implementation of the remedial action defined in this RAWP. The RCR will document that the remedial work required under this RAWP has been completed and has been performed in compliance with this plan. The RCR 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 and DUSR;
- 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;
- Recorded DCR; and,
- Reports and supporting material will be submitted in digital form.

## **Remedial Closure Report Certification**

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

*I, \_\_\_\_\_, 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 name Site number.*

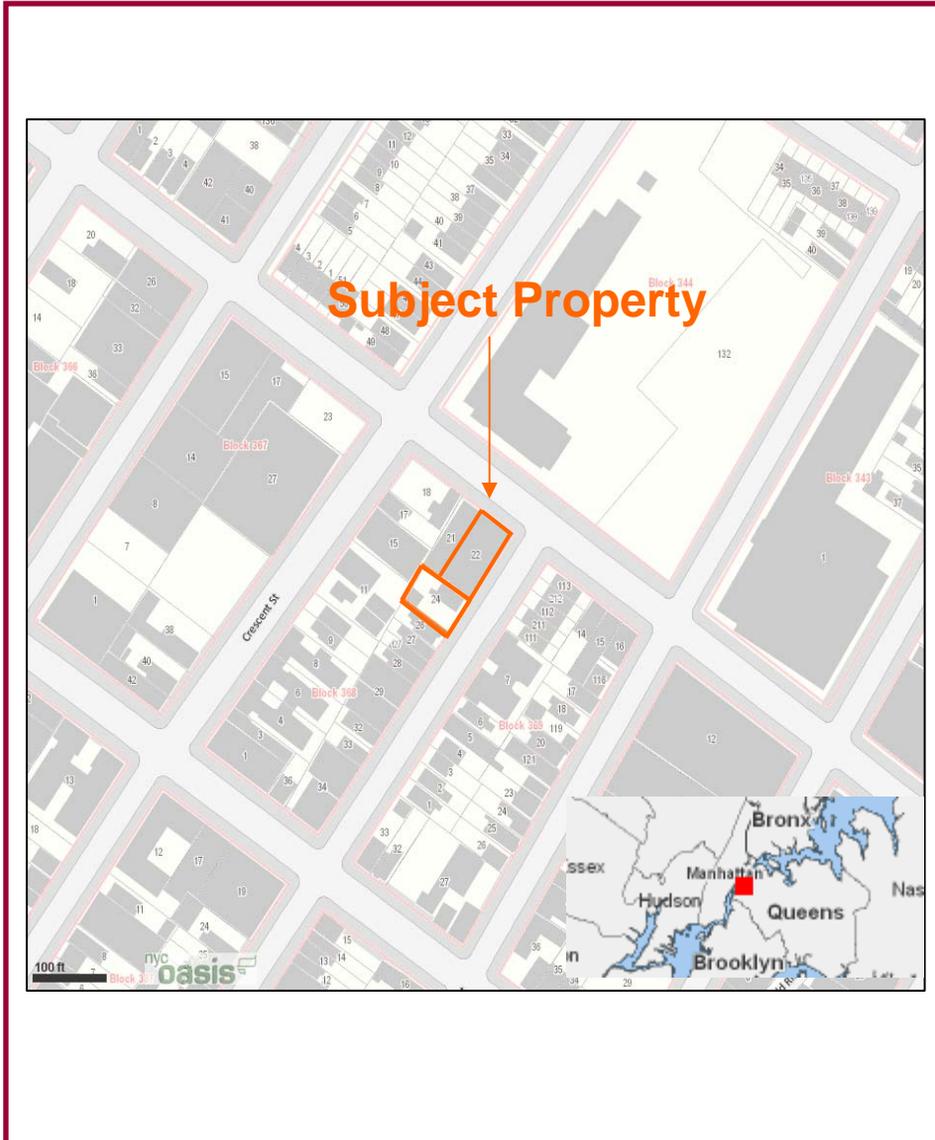
*I certify that the OER-approved Remedial Action Work Plan dated (to be determined) and in any Stipulations were implemented and that all requirements in those documents have been substantively complied with. I certify that contaminated soil, fill, liquids or other material from the property were taken 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 six-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	2	1
Remedial Excavation	14	13
Demobilization	15	1
Record Declaration of Covenants and Restrictions	20	5
Submit Remedial Closure Report	24	4

## **FIGURES**



**FIGURE 1: SITE LOCATION MAP**

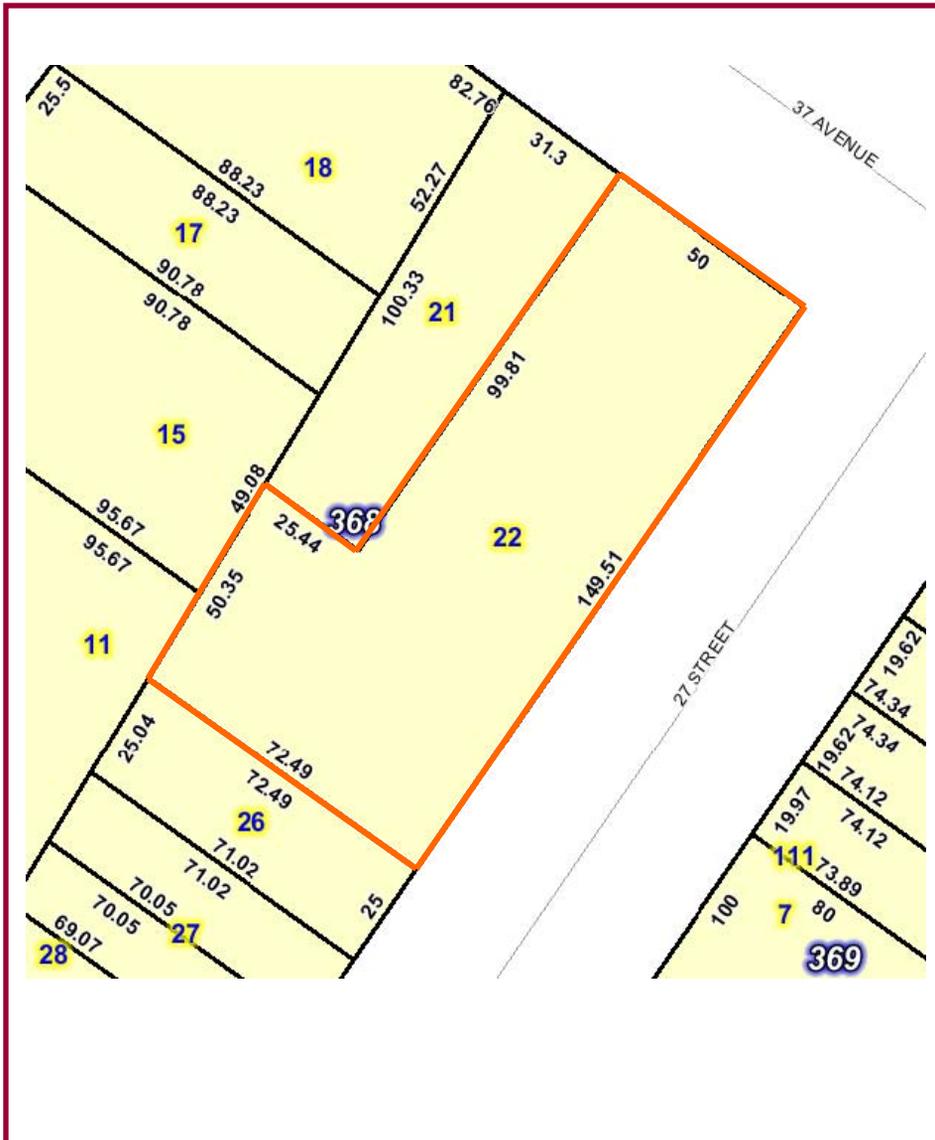
**Block: 368**

**Lot: 22 (Former Lots 22 & 24)**

**Address: 37-02 & 37-12 27<sup>th</sup> Street**  
 Long Island City, Queens, NY 11101377

**Airtek Project Number: 11-1024**

**Date: 09-26-2012**



**FIGURE 2: TAX MAP**

**Block:** 368

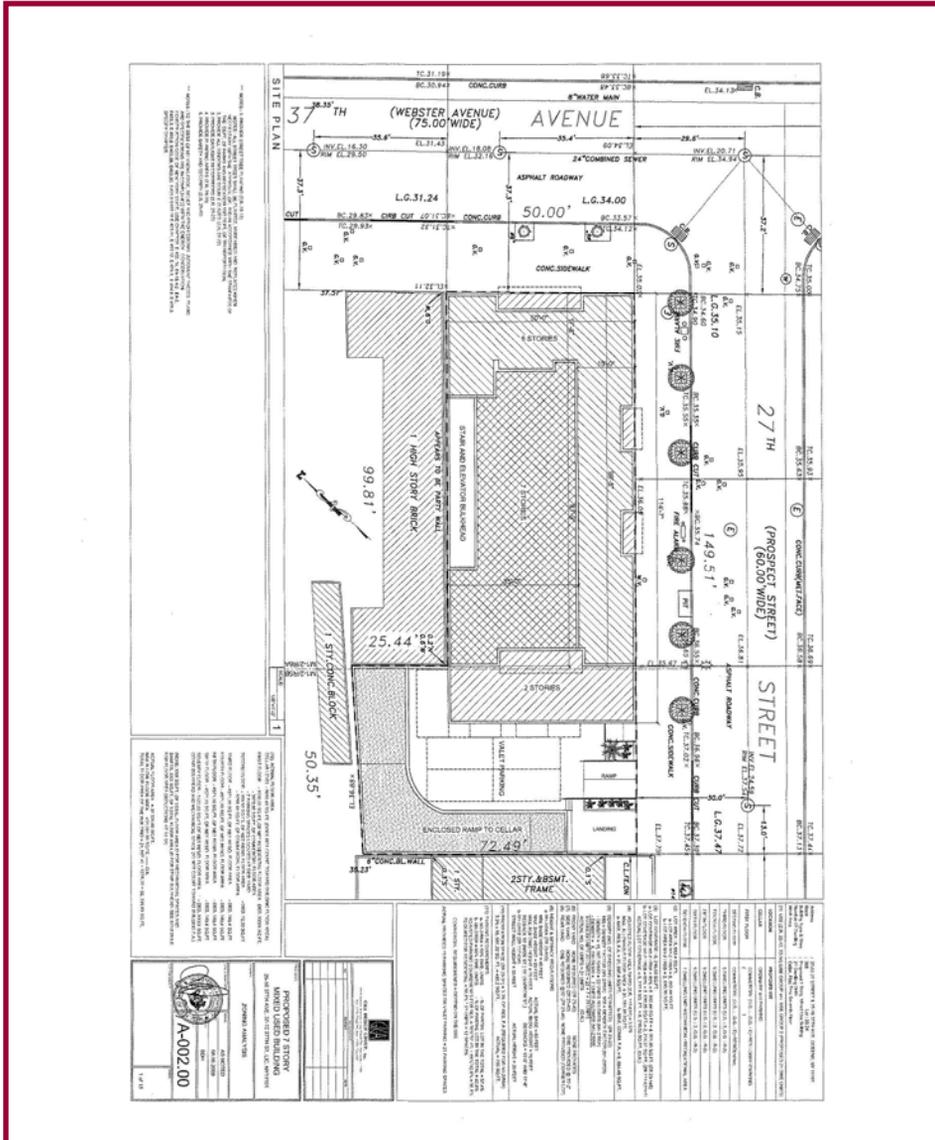
**Lot:** 22 (Former Lots 22 & 24)

**Address:** 37-02 & 37-12 27<sup>th</sup> Street  
 Long Island City, Queens, NY 11101377

**Airtek Project Number:** 11-1024

**Date:** 09-26-2012

39 – 37 29<sup>th</sup> Street, Long Island City, New York, 11101  
 Phone (718) 937-3720 Fax (718) 937-3721  
 www.airtekenv.com



**FIGURE 3: PROPOSED REDEVELOPMENT PLAN**

**Block: 368**

**Lot 22 (Former Lots: 22 & 24)**

**Address: 37-02 & 37-12 27<sup>th</sup> Street**  
 Long Island City, Queens, NY 11101377

**Airtek Project Number: 11-1024**

**Date: 09-26-2012**



SUBJECT PROPERTY

LEGEND:

 SUBJECT PROPERTY BOUNDARY

**AIRTEK ENVIRONMENTAL CORP.**  
**39-37 29th STREET**  
**LONG ISLAND CITY, NY 11101**  
**TEL: 718.937.3720**  
**FAX: 718.937-3721**  
**AIRTEK PROJECT NUMBER: 11-1024**

Project: **37-12 27TH STREET**  
**BLOCK 368, LOT 22**  
**(FORMER LOTS 22 & 24)**  
**LONG ISLAND CITY, NY 11101**

Drawing No: **FIGURE 4 - SITE PLAN MAP**

Date: 09/26/2012  
 Drawn by: M. PORTER  
 Checked by: C. CHEN  
 SCALE: **NTS.**



## **APPENDICES**

## **APPENDIX I**

### **CITIZEN PARTICIPATION PLAN**

The NYC Office of Environmental Remediation (OER) and Mr. Spyridon Kouzios 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 Voluntary Cleanup Program (VCP), Mr. Spyridon Kouzios 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 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.

**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.

**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. Mr. Spyridon Kouzios will inspect the repositories to ensure that they are fully populated with project information. The repository for this project is:

Queens Library

37-44 21<sup>st</sup> Street, Long Island City, Queens

718-752-3700

Monday: 9:00AM to 8:00PM, Tuesday: 2:00 PM to 7:00 PM, Wednesday – Friday: 11:00 AM to 7:00 PM, Saturday: 10:00 AM to 5:30 PM, closed Sunday

**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.

**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 Mr. Spyridon Kouzios reviewed and approved by OER prior to distribution and mailed by Mr. Spyridon Kouzios. Public comment is solicited in public notices for all work plans developed under the NYC VCP. 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.

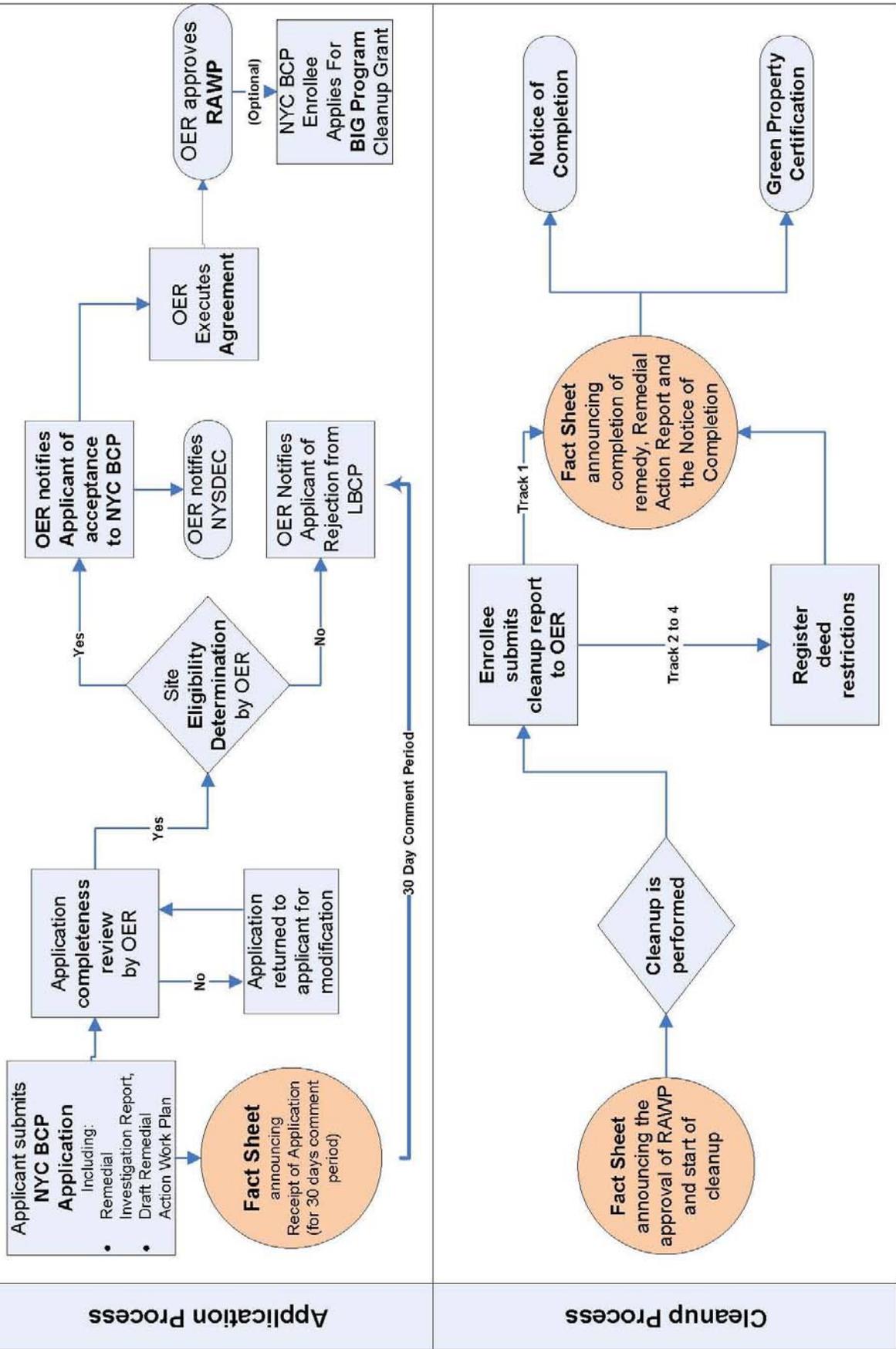
- **Public Notice announcing the approval of the RAWP and the start of remediation**

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 the Site, and announcing the issuance of the Notice of Completion.

# Flow Chart For NYC Brownfield Cleanup Program (NYC BCP)



## APPENDIX II

### SUSTAINABILITY STATEMENT

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

**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 RCR. 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 RCR.

**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.

Under future conditions, building recontamination from potential off-site sources will be prevented through the use of a vapor barrier below the buildings slabs and the construction of sub-grade depressurization systems. Current regulations will be met for storage and handling of any materials on site that may present a potential recontamination threat. If a Track 1 remedy cannot be achieved, long term site management will include periodic site inspection that will identify and correct any new issues of environmental concern.

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

**Paperless Voluntary Cleanup Program.** Mr. Spyridon Kouzios is participating in OER's Paperless Voluntary 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.** Mr. Spyridon Kouzios 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.

## **APPENDIX III**

### **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 RCR. 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 will be located at least 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 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;
- 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.

Outbound truck transport routes are in the Section 5.8 of the RAWP. 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 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 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 New York under a governmental remediation program. The letter will provide the project identity and the name and phone number of the 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 RCR.

The RCR 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 RCR.

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 RCR. A manifest system for off-Site transportation of exported materials will be employed. Manifest information will be reported in the RCR. Hazardous wastes derived from on-Site will be stored, transported, and disposed of in compliance with applicable laws and regulations.

### **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. The soil cleanup objectives for on-Site reuse are listed in the RAWP. “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 Engineering Controls. The QEP will ensure that reused materials are segregated from other materials to be exported from the Site.

Organic matter (wood, roots, stumps, etc.) or other waste derived from clearing and grubbing of the Site will not be buried on-Site. 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 RCR.

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 QEP and will be in compliance with provisions in this RAWP. The RCR 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.

## **1.10 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 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 RCR. A 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.

### **1.11 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.

### **1.12 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.

### **1.13 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.

### **1.14 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 QEP's certifying the Remedial Closure 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 QEP responsible for certifying the Remedial Closure 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.

### **1.15 Import of Clean Cover**

No soil is anticipated to be imported to the Site for use as clean cover. In the event that the development plan changes and clean cover is necessary to cap any open space/residual fill, the following protocol will be used.

All imported soil will be uncontaminated, clean soil that meets the lesser of the appropriate NYSDEC 6 NYCRR Part 375-6.8 Restricted Use Class SCOs and the NYSDEC 6 NYCRR Part 375-6.8 groundwater protection SCO. However, if Track I is achieved at the site, all imported material must meet Part 375 Unrestricted Use SCOs. In the event that material is imported onsite, a Clean Fill Report will be submitted to OER prior to importation.

The imported uncontaminated, clean soil cover will be from an approved source/facility and will be evaluated by the PE/QEP to ensure:

- 1) That a segregated stockpile is properly maintained at the source and will not be comingled with any other material prior to importing and grading the clean soil material at the Site;
- 2) That the material does not include any solid waste, including construction and demolition material, as it's prohibited;
- 3) That screening for evidence of contamination by visual, olfactory and PID soil screening practices prior to testing at the source as well as upon importing to the Site for grading is completed; and
- 4) That a maximum five-part composite sample will be collected from the segregated stockpile at the source at a minimum frequency of one sample per 250 cubic yards and analyzed for the following Full List parameters:
  - VOCs by EPA Method 8260C (rev. 2006)
  - SVOCs by EPA Method 8270D (rev. 2007)
  - Pesticides by EPA Method 8081B (rev. 2000)
  - PCBs by EPA Method 8082A (rev. 2000)
  - TAL Metals by EPA Method 6010C (rev. 2007).

**APPENDIX IV**  
**VAPOR/MOISTURE BARRIER**

## **APPENDIX V**

# **CONSTRUCTION HEALTH AND SAFETY PLAN**